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ABSTRACTS

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*Immunogenicity and safety demonstrated in two Phase 3, randomised, double-blind, placebo-controlled trials. Seroresponse rate (considered clinically relevant) was defined as the percentage of subjects who achieved an anti-chikungunya SNA NT80 titre ≥100. Adult and adolescent subjects (12 to <65 years) achieving seroresponse at Day 22, a primary endpoint: 97.8% (n=2503/2559) vs. 1.2% (n=5/424) with placebo; at Day 15, a secondary endpoint: 96.8% (n=2355/2434) vs. 0.8% (n=3/395) with placebo; at Day 8, a secondary endpoint: 46.6% (n=1169/2510) vs. 0.5% (n=2/419) with placebo. Older adult subjects (≥65 years) achieving seroresponse at Day 22, a primary endpoint: 87.3% (n=165/189) vs. 1.1% (n=2/183) with placebo; at Day 15, a secondary endpoint: 82.3% (n=149/181) vs. 2.8% (n=5/176) with placebo; seroresponse at Day 8 was not measured in older adult subjects. There are no data available for less than 8 days.[1]

VIMKUNYA, suspension for injection in pre-filled syringe

Active substance: Chikungunya vaccine (recombinant, adsorbed). **Composition:** One dose (0.8 ml) contains 40 micrograms protein of chikungunya virus (CHIKV) virus-like particles (VLP) adsorbed on aluminium hydroxide, hydrated. Produced in human embryonic kidney cells by recombinant DNA technology. Derived from CHIKV Senegal strain 37997. **Excipients:** Sucrose, Dipotassium phosphate, Potassium dihydrogen phosphate, Sodium citrate, Water for injections. **Indication:** Indicated for active immunisation for the prevention of disease caused by chikungunya virus (CHIKV) in individuals 12 years and older. The use of this vaccine should be in accordance with official recommendations. **Administration:** intramuscular (IM) injection. Must not be injected intravenously, intradermally, or subcutaneously. **Contraindication:** Hypersensitivity to the active substance or to any of the excipients. **Precautions:** Appropriate medical treatment used to manage immediate allergic reactions must be immediately available in the event an acute anaphylactic reaction occurs. The safety and efficacy has not been assessed in patients with immunodeficiency and patients using systemic immunosuppressive therapies. The safety and efficacy of VIMKUNYA in children below 12 years of age have not been established. **Undesirable effects: Very common:** Injection site pain, fatigue, headache, myalgia. **Common:** Chills, malaise, arthralgia, nausea. **Uncommon:** Redness, swelling, or bruising on injection site, pyrexia, dizziness, nasal congestion, rash. **Rare:** Paraesthesia, pain in extremity, diarrhoea, lip swelling, lymphadenopathy, gastroenteritis, oropharyngeal pain, rhinorrhoea. **Subject to medical prescription. Marketing Authorisation Holder:** Bavarian Nordic A/S, Philip Heymans Alle 3, DK-2900 Hellerup, Denmark. **Date of Revision of text:** February 2025. Refer to the Summary of Product Characteristics for further information. Adverse events should be reported to: drug.safety@bavarian-nordic.com.

Reference: 1. VIMKUNYA (chikungunya vaccine, recombinant, adsorbed), Summary of Product Characteristics.

GL-VIM-2500013 | August 2025

VIMKUNYA is a brand of Bavarian Nordic A/S.

Vimkunya®
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BAVARIAN NORDIC

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OP 001

Digital innovation on early warning of droughts and floods for outbreak prevention in the context of climate resilience of communities in Mozambique

*P. Notico[1], B. Nhantumbo[2], T. Marrufo[1], A. Jose[1], P. Maholela[1], E. Muiamine[1], O. Inlamea[1], E. Samo Gudo[1]
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Introduction: Mozambique is highly vulnerable to extreme weather events like droughts and floods, which impact public health. Digital innovations in early warning systems are vital for enhancing community resilience through timely preparedness and response.

Objectives: This study aimed to evaluate the accessibility and effectiveness of digital warning systems for extreme weather events in Mozambique and their relationship with community preparedness and response.

Methodology: A cross-sectional study was conducted in Chibuto district, Gaza province, using multi-stage sampling. Households were randomly selected, and qualitative data were collected through in-depth interviews. Eligibility requires at least three years of residency during extreme weather events. Data analysis included frequency calculations and association tests using Chi-square and Fisher"s exact tests at a 5% significance level. Ethical approval was granted (Ref: 193/CIBS-INS/2021).

Results: The most common device for accessing early warnings was the basic mobile phone (64%), followed by radio (36%), smartphone (35%), television (26%), and computer (2.4%). Gender differences were observed in radio use (59% men vs. 30% women, $p < 0.05$). Digital warnings were affected by extreme weather events, with smartphone access reduced by floods (27%, $p = 0.011$), computers by heat waves (100%, $p = 0.006$), radios by droughts (87%, $p = 0.003$), and televisions by river floods (25%, $p = 0.031$). Local authorities played a key role in river floods (25%, $p = 0.009$) and drought warnings (60%, $p < 0.001$). Media channels were significantly associated with field floods (45%, $p = 0.001$). Television (33%, $p = 0.045$) and radio (33%, $p = 0.018$) were strongly linked to preparedness programs and community response measures.

Discussion: Findings reveal disparities in access to digital warnings, influenced by socioeconomic factors and event-specific conditions. Improving communication strategies can enhance community preparedness.

Conclusion: Digital warning systems are essential for community resilience in Mozambique. Strengthening digital infrastructure and integrating communication channels can improve preparedness and response to extreme weather, reducing health and social impacts.

Fig. 1

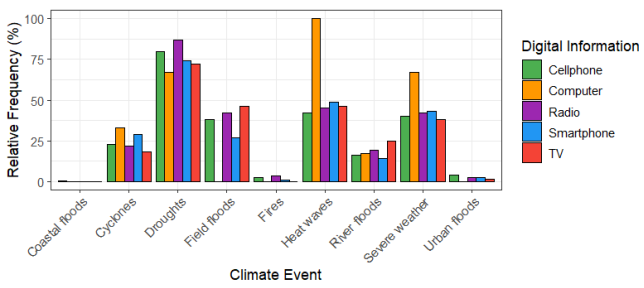
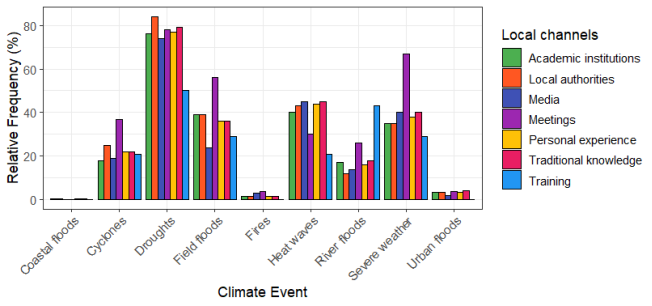


Fig. 2



OP 002

Heat-related illnesses among migrant farmworkers in Spain

L. van Selm[1], S. Williams[1], L. A. Rodríguez-Guerrero[2,3], J. A. González-Rodríguez[3], D. Izuzquiza-Regalado[4], S. Notario-Gallego[5], S. Diop[6], E. Briones-Vozmediano[2,3], *A. Requena[1]
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Introduction: As global temperatures are rising, heatwaves have been increasing in frequency and duration in Spain. Outdoor workers, including farmworkers, face high levels of occupational heat exposure and are at increased risk of suffering from heat-related illness (HRI). Migrants make up a big share of farmworkers and might be at increased risk of suffering from HRI, due to limited control over workplace conditions, high economical needs, fear of speaking up to supervisors and language and cultural barriers.

Methods: A survey was conducted among migrant farmworkers in Almería (n=127) and Lerida (n=173) in Spain in the summer of 2024. Surveys were conducted face-to-face in Spanish or English. The survey took 20-30 minutes and included questions about sociodemographic, living conditions, working conditions, occupational heat exposure, experience with heat-related illness, heat-related perceptions and behaviours and access to healthcare services.

Results: Most participants were male (94.7%) and from Senegal (25%), Morocco (24%) or Colombia (14%). Almost half the participants (42.3%) reported at least three HRI symptoms in the current hot season, being higher in Almería (59.1%) than in Lerida (30%). The most frequently reported symptoms were very thirsty (59%), headache (54.7%) and muscle cramps (37.3%). Only 8% reported having visited a doctor for medical issues after working in the heat. In Lerida most farmworkers reported having received information on heat-related risks (80,9%), while in Almería this was only 48%. All participants reported drinking water during their working shifts, with 94% drinking at least 2 liters. Most workers agreed that working in a hot environment could negatively impact workers health in general (76.3%) or their own health in specific (61%). They believed that preventive methods (89.3%) and appropriate clothing (76.3%) could reduce heat-related health risks.

Discussion: The reported number of HRI symptoms for both study sites exceed the global average of 21% farmworkers experiencing at least 3 HRI symptoms. Therefore, farmworkers in Spain are at high risk of suffering from HRI. Although further increasing levels of HRI training and risk-perception could to some extent reduce HRI among migrant

farmworkers, organizational changes to improve safety and reduce occupational heat are necessary to protect the health of migrant farmworkers in Spain.

OP 003

Gaps and opportunities for data systems and economics to support priority setting for climate-sensitive infectious diseases in sub-Saharan Africa – A rapid scoping review

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Climate change alters risks associated with climate-sensitive infectious diseases (CSIDs), including those with pandemic potential and zoonotic origins. This poses additional threats to vulnerable populations already encumbered by health burdens, further amplified by social factors such as gender inequalities. Effective decision-making in pandemic preparedness and response requires transparent, evidence-based processes across human, animal, and environmental sectors, backed by fit-for-purpose data systems and robust economic analyses. Currently, critical evidence gaps and inadequate institutional governance hinder African states' ability to prevent, detect, and respond to CSIDs. This study explores the role of data systems and economics in priority setting for CSID pandemic preparedness and response in sub-Saharan Africa.

We conducted a rapid scoping review guided by PRISMA-ScR guidelines. A literature search was performed across six bibliographic databases in November 2023. A list of 14 target CSIDs was produced informed by the World Health Organization's Public Health Emergencies of International Concern and R&D Blueprint Pathogen lists, and a database of CSIDs. Studies were included if published between 2010-2023, and relevant to sub-Saharan Africa, pandemic preparedness, a target CSID, and applied or assessed economic evaluations or data systems. Extracted data were synthesised using bibliometric analysis, topic categorisation, and a narrative synthesis including the application of a gender lens.

We identified 68 relevant studies. While African author involvement has been increasing since 2010, few studies were led by senior authors from African institutions. Data system studies (n=50) showed broad coverage across target CSIDs and the WHO AFRO region but also a high degree of heterogeneity, indicating a lack of clearly defined standards. Economic studies (n=18) primarily focused on COVID-19 or Ebola and mostly originated from South Africa. Both data system and economic studies identified limited interoperability across human, animal, and environmental sectors and showed a notable absence of gendered considerations. These gaps present important opportunities to strengthen priority setting during pandemics and if addressed could lead to more equitable health outcomes.

OP 004

Leveraging digital environmental surveillance to address climate-sensitive diseases through the One Health approach

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Question: An increasing number of countries and populations are at risk of climate change-related emergencies such as floods, heat waves, droughts, wildfires and hurricanes which contribute to the spread of climate-sensitive infectious diseases. To address this situation, the World Health Organization advocates for enhanced disease surveillance using the One Health approach. However, the digital surveillance landscape remains fragmented, with isolated digital tools collecting human, animal and environmental health data.

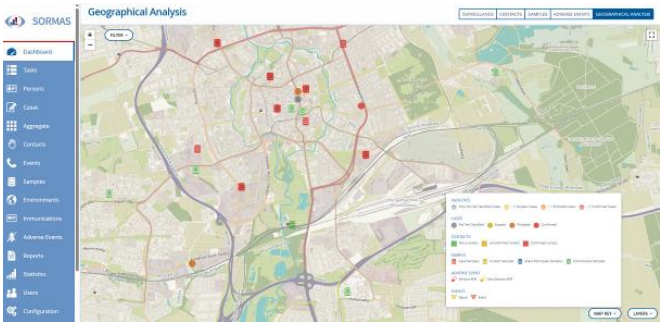
Methods: The SORMAS (Surveillance Outbreak Response Management & Analysis System) is an open-source digital platform designed for routine disease surveillance, early detection, and outbreak management. Target beneficiaries are personnel involved in the control of epidemics and pandemics from the community level to the ministry of health. SORMAS enables real-time, multidirectional data exchange among stakeholders and includes modules for over 40 infectious diseases. The platform is accessible on computers and mobile devices, online or offline. Based on an initial environmental surveillance development from the Water-based Outbreak Prediction in Peri-Urban Africa (SORMAS-WOPPA) project, the module was integrated into SORMAS and enhanced by the SORMAS Foundation's team to address vector- and water-borne diseases. This was done using agile epidemiological and system requirements analysis, followed by the preparation of GitHub issues for software development. Programming was also followed an agile methodology, incorporating continuous cycles of testing, feedback, and integration.

Results: The SORMAS environmental surveillance module facilitates planning and management of sampling of water, vectors, soil or air. It enables documentation of samples by time and GPS location, tracks the transportation of samples to the laboratory, issues diagnostic procedures, and records the results. Additionally, the module integrates and triangulates findings with other sources, such as notifiable disease reporting, event-based surveillance and clinical management data. It also supports the management of response measures based on these integrated results.

Conclusion: This innovative development lays the groundwork for the full incorporation of the One Health approach in digital disease surveillance and outbreak response worldwide. The current module is ready to be piloted in real settings and will be further enhanced according to countries' needs.

Fig. 1

Fig. 2



OP 005

Lassa fever surveillance in Guinea – Five years of enhancing diagnostic capacity and expanding detection

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The persistent challenges of viral hemorrhagic fevers, particularly in resource-limited settings, emphasize the need for strengthened laboratory preparedness and diagnostic capacity. At the end of Ebola outbreak in West Africa (2014-2016), a long-term capacity-building project started in Guinea with the goal of enhancing the country's ability to detect and respond to viral hemorrhagic fever outbreaks. Through training, infrastructure improvements, and technical support, a network of three laboratories was successfully setup, with two of them located in the Forest region. This improved surveillance system led to the early detection of both the Ebola resurgence and Marburg emergence in 2021.

Between 2020 to 2024, Lassa virus diagnostics was strengthened in the three laboratories leading to the detection and confirmation of 34 acute Lassa Fever (LF) cases. In-country nanopore sequencing identified the circulating viruses as sub-clusters of the lineage IV which is known to circulate in this geographic area. Generally, the case fatality rate was 59% and one-third of the confirmed cases received ribavirin treatment. Remarkably, 82% of LF cases were detected in the Forest region, but the reinforced diagnostic capabilities in the capital town also led to the identification of a nosocomial outbreak in Conakry in 2022.

This work offers a comprehensive overview of all LF cases detected so far in Guinea since 2020. It has not only improved response times and case management but also enhanced the overall understanding of Lassa fever dynamics in Guinea, informing future control strategies. Ultimately, the expansion of Lassa fever surveillance also led to the completion of seroprevalence studies in Forest Guinea, revealing a widespread circulation of Lassa virus in the human population in this area.

OP 006

Health risks and health system responses at the human-animal-environment interface – A case study of internally displaced populations in Bamako, Mali

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[2]University Clinical Research Center, Bamako, Mali

Background: In the Sahel, conflicts and extreme weather events have fuelled the displacement of 400,000 people. Pastoralists migrated with their livestock to cities where they face precarious living conditions around livestock markets. The health implications of this process of urban re-settlement remain underexplored.

Objective: We analysed the health risks faced by internally displaced people (IDP) living near livestock markets in Bamako (Mali) and the response of the urban health system actors.

Methods: We carried a case study in two settlements around livestock markets in Bamako. We collected data through 40 key informant interviews, a document review and used thematic content analysis. We held a consultation meeting with a wide range of stakeholders (from displaced and host communities, health and related sectors, grassroots organisations, national and international NGOs, urban public services and policymakers) to co-produce recommendations.

Results: Our study revealed interconnected challenges. Environmental health risks persist as local authorities view settlements as temporary, which undermines sustainable interventions. The underfunded urban health system lacks capacity to address the needs of IDP. Zoonotic disease vulnerability is increased by inadequate epidemiological surveillance and poor coordination between actors of the animal, human, and environmental health sector. Barriers to health care include difficulties to navigate the urban health system and financial constraints. Over time, solidarity between IDP and host communities has deceased. The protracted nature of the crisis and a perceived low severity of the health situation of IDP have disrupted humanitarian aid flows, while development assistance remains scarce due to diplomatic tensions. Interventions remain driven by the priorities of NGOs rather than comprehensive needs assessments, and IDP and their host communities are excluded from the process.

Conclusion: Multiple interacting factors contribute to a fragmented response to the health needs of IDP and their livestock living in Bamako. Priorities include collaborative approaches to an integrated surveillance system at the human-animal-environment interface and ensuring effective coordination of all relevant actors.

OP 007

Understanding Community resilience to prevent outbreaks of climate-sensitive disease in the context of climate change in rural communities in southern region of Mozambique

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Mozambique is a country with high exposure to extreme events. building health system resilience can improve both preparedness and response. Therefore, implementing

technological innovations to establish sustainable solutions is essential for the resilience of vulnerable populations, which are sustained and achieve substantial impact in supporting long-term development. The objective of this study was to identify knowledge about strengthening community resilience to the impacts of floods and droughts, the mechanisms of community-based innovation as well as the risks associated with these events. A mixed-method study was carried out in the Chibuto district. In the quantitative approach, structured interviews were carried out using electronic form and the population sample was selected through multi-stage sampling. The qualitative approach was carried out using a key informant at the district level. In total, 251 households were interviewed. Of the households surveyed, 62% (n = 155) had between 6 and 10, and around 80% (200/254) of households were headed by women, hazards related to extreme climatic events were identified, where droughts, heat waves, and river floods were most related, floods and heat waves were the extreme events that showed significant variations (P<0.001). On the other hand, the impacts were significant on infrastructure, including health, access to drinking water, health services, human health resources, and public health. Malaria, acute febrile illness, and diarrhea were the most reported health events across all extreme weather events. Free access to services to extreme weather events and traditional healers as well as community pharmacies are available close to the community regardless of extreme weather events. Drought was the most reported extreme climate event, followed by severe weather and heat waves. In general, access to healthcare is limited by extreme weather events. When there is bad weather, communities do not seek health services, including pharmacies and medicines. Heat waves limit the population"s access to medicines; Floods limit communities from seeking health services; Access to traditional healers is not conditioned by extreme weather events, it is recommended to use seasonal forecast information for cases of malaria and diarrheal diseases to test the early warning model. Train health professionals including Community Health workers and Test different health care delivery models on climate change.

Fig. 1

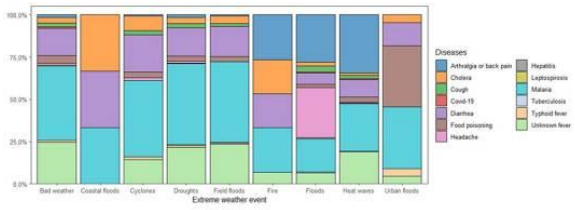
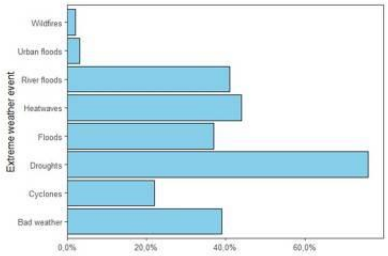


Fig. 2



OP 008

The epidemiology and diagnostics of urinary tract infection (UTI) in children and adolescents in sub-Saharan Africa – A scoping review

*P. Gerlach[1], P. Mlotshwa[1], T. Alfvén[1], G. Gaudenzi[1]
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Background: Urinary tract infection (UTI) is a frequent cause of febrile disease in children and adolescents all over the world, yet it is not easy to diagnose. Urine culture is the gold standard, however in low-resource settings, where lab facilities are scarce, it is hard to perform and treatment is often empirical. Urine dipsticks, on the other hand, lack both sensitivity and specificity and are not abundantly available (1). Given this, together with existing financial restraints and the high burden of disease, clinicians in sub-Saharan Africa (SSA) face particular challenges in diagnosing pediatric UTI and making treatment decisions.

Aim: The aim of this scoping review is to provide an overview of evidence on childhood and adolescent UTI in SSA, focusing on epidemiology and diagnostics, and exploring the potential for emerging diagnostic tools viable in such settings. The review is part of UTI-Diag, an innovative diagnostic initiative led by Karolinska Institutet in Stockholm, Sweden, in collaboration with African and European research partners. Funded by the European & Developing Countries Clinical Trials Partnership (EDCTP), UTI-Diag is being implemented in healthcare facilities in Senegal and Cameroon, with local leadership from the Instituts Pasteur of both countries.

Methods: Medical databases are searched for articles, guidelines, and reports related to UTI in childhood and adolescence in SSA, published within the last 30 years. The most relevant databases in this context are PubMed, Web of Science, Global Health, African Journals Online, and African Index Medicus. The reviewing and writing process will follow PRISMA guidelines for Scoping Reviews.

Expected results: A preliminary PubMed search revealed around 1200 articles, of which around 80% are expected to be relevant for this review. The panel of aetiologic agents is expected to be similar to Europe, however focus will be on agents driving anti-microbial resistance (AMR) in pediatric UTI in SSA. Dipsticks and the presence of fever are expected to be the main diagnostic tools in settings where urine culture cannot be performed routinely. Coexistence of childhood urinary tract pathologies from both bacterial UTI and schistosomiasis, and whether this translates into diagnostic pathways, will be explored.

1. Maclennan C, Swingler G, Craig J, et al. Urinary Tract Infections in Infants and Children in Developing Countries in the Context of IMCI. Geneva: World Health Organization; 2005.

OP 009

Estimating the impact of heat on quality of care of birth in Zimbabwe and South Africa – Combining time motion and participant observation methods

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Background: Extreme heat in labour wards can cause fatigue and reduced focus in healthcare workers (HCWs), potentially compromising maternal care. Many resource-limited health systems lack adaptation strategies to manage rising temperatures. This study examines the impact of heat stress on midwives' performance and quality of care during childbirth in Zimbabwe and South Africa.

Methods: Observations were conducted in Mt Darwin Hospital, Zimbabwe (Oct 2023–Jul 2024) and Mamelodi Hospital, South Africa (Feb 2024–Sep 2024) across hot and cold seasons. Using a time-motion tool, we recorded midwives' task completion times and adherence to WHO maternal care quality indicators, including: evidence-based practices (e.g., skin-to-skin contact), patient experience (e.g., communication, continuous presence), and service efficiency (e.g., breaks). Heat exposure was estimated using ERA-5 reanalysis temperature data, and mixed-effect models were applied, adjusting for workload, staffing, and complications.

Participant observation focused on interpersonal dynamics, provision of care, and adaptation strategies. Researchers recorded informal conversations and field notes, applying thematic analysis to identify emerging patterns.

Results: Participant observations revealed visible heat stress on hot days, leading to fatigue, reduced service provision, and communication shifts with patients. Factors such as hydration, break frequency, clothing, and infrastructure (e.g., ventilation, heat-trapping materials) influenced midwives**"** irritability, lethargy, and efficiency.

A total of 249 sessions in Zimbabwe and 241 in South Africa were recorded using time-motion methods. Median session lengths were 33.5 min [IQR 23.3–49.2] in Zimbabwe and 52.5 min [IQR 31.5–95.2] in South Africa. Most sessions occurred in morning shifts (80.5% in SA, 51.4% in Zimbabwe), with no night data in South Africa. Delivery complications were observed in ~25% of cases. Data analysis is ongoing, and full results will be presented at the conference.

Conclusion: This study is the first to integrate time-motion analysis with participant observation to assess heat-related impacts on maternal healthcare delivery. Findings will inform climate adaptation strategies to enhance health system resilience in Zimbabwe, South Africa, and beyond.

OP 010

Stillbirth and associated factors in marginalized migrant and refugee populations on the Thai-Myanmar border – A retrospective population cohort

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Introduction: Most of the stillbirths worldwide occur in vulnerable populations and in low- and middle-income countries, in which adequate data often is missing. This objective of this study is to analyse causes of stillbirth and factors associated with stillbirth in a resource-limited, refugee and migrant population on the Thai-Myanmar border.

Methods: Retrospective analysis (deidentified population data) and classification using the WHO ICD-PM classification of the cause of stillbirth of singletons with an estimated age of equal or more than 28 weeks estimated gestational age (EGA) in women who gave birth or followed antenatal care (ANC) between 1986 and 2022 in clinics of the Shoklo Malaria Research Unit. Logistic regression was used to analyse factors associated with stillbirth in singleton pregnancies, described by Adjusted Odds Ratio and 95% confidence interval (AdjOR (95%CI)).

Results: Of 63,055 singleton births, 1.1% (700/63,055) were stillborn. The stillbirth rate decreased from 24 per 1000 (182/12,235) in 1990-1999 to 9 per 1000 (208/23,961) in 2010-2020. In the 79.0% (553/700) classifiable cases stillbirths were mostly antepartum (75.6%, 418/553) [RM1] or intrapartum (24.4%, 135/553). Home birth accounted for 14.3% (4,771/62,355) for the livebirths compared to 31.8% (142/700) of the stillbirths.

Significant associations (AdjOR (95%CI)) for stillbirth in this population included: small for gestational age 2.6 (2.3-3.3), congenital abnormality 9.0 (6.8-11.8), moderate and late prematurity (more or equal then 32 weeks EGA) 9.4 (7.8-11.2), extreme prematurity (28 till <32 weeks EGA) 63.7 (50.7-80.0) and breech delivery 11.1 (8.6-14.1). Early first ANC contact before 14 weeks" gestation 0.8 (0.6-0.9) and four or more ANC contacts 0.4 (0.4-0.5) were associated with a significantly reduced risk of stillbirth.

Conclusion: The rate of stillbirth has declined in this resource-limited population over the past decades. The majority of stillbirths could be classified and four in five were antepartum. Improving access to health care services for early ANC and at least four ANC contacts are modifiable risk factors that could enhance the reduction in the stillbirth rate in this population.

OP 011

Prevalence of probable pulmonary arterial hypertension among patients diagnosed with Schistosoma mansoni related hepatosplenic diseases at the Endoscopy unit of Nansio district hospital, Ukerewe district, north-western Tanzania

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Background: Pulmonary arterial hypertension (PAH) is a chronic progressive condition resulting from elevation in precapillary pulmonary artery pressure due to inflammation, vascular tone imbalance and progressively remodeling of the pulmonary vasculature. Schistosoma mansoni is well-recognized as a cause of PAH, which is estimated to occur in 5-15% of patients with severe hepatosplenic disease, however, PAH is rarely considered endemic areas. Here we report the prevalence of probable PAH in patients diagnosed with hepatosplenic disease related to S. mansoni infection.

Methods: Analytical cross-sectional surveys were conducted among adult patients attending endoscopy unit at Nansio district hospital between 2022-2024. Demographic and clinical history were collected using a pre-tested questionnaire.

Patients were ultrasonographically examined for S. mansoni related hepatosplenic morbidities. Echocardiography was used to determine the probability of PAH. Furthermore, patients were endoscopically examined for the presence of oesophageal varices. Single urine and stool samples were collected and examined for presence of S. mansoni infection using Point-of-Care Circulating Cathodic Antigen rapid test and Kato Katz technique. Results: We report the results of 225 patients with complete data. Of all the patients, 72% (n=162) were males and majority were farmers (64.8%) and 14.5% were involved in fishing. Blood vomiting and melena were reported by 70.3% and 65.8% of the patients. On physical examination, 80%, 23% and 77% had abdominal distension, splenomegaly and splenomegaly and others. Ascites and collateral veins were detected in 30.2% and 91.6% patients respectively. The overall prevalence of S. mansoni infection based on KK-technique on POC-CCA were 5.8% and 29.9% respectively. The prevalence of HCV, HIV and HBV were 0.5%, 3.6% and 9.5%. On ultrasound examination based on Niamey protocol, 36.7% and 39% of the patients had moderate and severely enlarged spleen. Similarly, 3.9% and 96.1% had moderate and severe enlarged left liver lobe. Majority of the patients had grade IV (61.7%) oesophageal varices while 2.6%, 8.3% and 20.4% had grade I, II and III. The prevalence of probable Pulmonary Arterial Hypertension (PAH) was 17.4% (Male -15% and female 16%), Conclusion: PAH occurs in patients diagnosed with S. mansoni related hepatosplenic morbidities. To improve management outcome, it is important to consider PAH as part of the management plan.

OP 012

Integrated anthelmintic-based control of *Taenia solium* cysticercosis/taeniasis, soil-transmitted Helminthiasis and Schistosomiasis – Safety, effectiveness and implementation strategies

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Control of soil transmitted helminths (STH) and Schistosomiasis (SCH) has been part of routine programmes for many years, yet, the efficacy and effectiveness of these programmes is challenged by low and failing drug efficacy and growing concerns of anthelmintic resistance, calling for a revision of the MDA-drug strategies. In this regard, the novel fixed-dose co-formulation (FDC) including albendazole and ivermectin has proven to be safe and to overcome most of the challenges in drug efficacy for STH. For *Taenia solium* the situation is very different from STH and SCH as currently there are no countries routinely implementing control. The EU-funded 3SI-CONTROL project will assess the safety and cost-effectiveness of the FDC co-administration with praziquantel in reducing the prevalence of *T. solium*, STH and SCH, in a randomised controlled trial embedded in solid implementation research. Results from 3SI-CONTROL will thereby provide a scientific evidence base on the safety and effectiveness of integration of *T. solium* control with STH and SCH, considering the One Health approach. Beyond this, the substantial implementation research component will enable bridging the gap between the evidence-based practice (results on safety and effectiveness) and the actual implementation in the routine, real-world setting.

These results, joined by a comprehensive dissemination and advocacy plan, will provide leverage to stimulate uptake of *T. solium* in the existing routine NTD control programmes, enabling the implementation of a safe and integrated control strategy with a higher effectiveness, tackling three top ranking NTDs. By harnessing advanced concepts in One Health, implementation research, and pharmacovigilance, our project aims to deliver transformative impacts in NTD control, reducing the individual, social and economic burdens of resource poor rural populations.

OP 013

Feasibility of using the PAWPER-XL-MAC tape for weight-based arpraziquantel dosing to facilitate the control of schistosomiasis in preschool-aged children

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Schistosomiasis is a waterborne, parasitic disease of significant public health concern in many African countries and beyond. To address the historical treatment gap for young children, the Pediatric Praziquantel Consortium has developed a child-friendly formulation, arpraziquantel 150 mg (arPZQ). Parallel to clinical development and registration, the Consortium access team has launched a rigorous implementation research program (ADOPT) to introduce and establish access, acceptance and uptake of arPZQ in endemic settings in Africa. In the frame of ADOPT, we conducted a landscape analysis to explore experiences of key stakeholders regarding operational aspects and needs for drug dosing and administration in young children. ArPZQ dosing is based on weight and requires scales since an alternative weight surrogate such as a dose pole is currently not available. The use of weighing scales raised concerns related to availability and applicability in the context of community-based mass drug administration. Based on modelling results pertaining to existing weight estimation methods for drug dosing in young children across populations and geographical settings, we found higher accuracy for two-dimensional methods such as the Pediatric Advanced Weight Prediction in the Emergency Room tape (PAWPER-XL MAC) over one-dimensional methods using age or height parameters. The additional measurement of the mid-upper arm circumference takes into consideration malnutrition which is relevant in the context where schistosomiasis is endemic, to avoid overestimation of weight and resulting dosing errors. Based on the wide application of mid-upper arm circumference measurement in nutrition monitoring and height measurement in MDA campaigns, the tool offers a potential low cost, simple and readily available solution for arPZQ dosing. The feasibility is currently being tested in the frame of a pilot implementation in Uganda and we plan to share latest insights and unpublished data at ECTMIH.

Kurscheid J. et al. Considerations and expectations for the administration of dispersible arpraziquantel to young children: a landscape analysis. International Health. 2025

OP 014

A HUGS farewell – Highlighting key findings from the four-year Hybridisation in UroGenital Schistosomiasis (HUGS) project in Malawi

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Following from a Joint Investigator Award of £1.7 million in April 2021 from the Wellcome Trust to Prof J Russell Stothard and Professor Janelisa Musaya, several multidisciplinary researchers were brought together to develop a Onehealth response to the concerning rise of hybrid schistosomes in Malawi. This 4-year collabroative initiative between the UK and Malawi was coined "HUGS: Hybridisation in UroGenital schistosomiasis". Specifically, the HUGS investigation is a multidisciplinary longitudinal population study that sought to reveal the transmission biology, epidemiological impact and clinical importance of *Schistosoma haematobium*-hybrids in Malawi. The HUGS team helped to unravel the complex and dynamic epidemiology of urogenital and intestinal schistosomiasis in Mangochi and Nsanje Districts. The project officially started in April 2021 and completed all fieldwork in March 2025. The HUGS project was split into three interrelated studies: human epidemiology, livestock and wildlife epidemiology and medical malacology. Each was drawn together by how humans and animals make use of the aquatic habitat where exposure to schistosomes or contamination with schistosomes takes place. HUGS research was based around the four interlinked questions that: 1.Test if the proportion of hybrid coinfection was uniform across two representative communities where *S. haematobium-mattheei* or *S. haematobium-bovis* occurred inclusive of household GPS mapping/participant questionnaire for associated local risk factors; 2. Verify if the proportion and spatial patterns of hybrid coinfection held or was altered after praziquantel treatment in these communities in a 2-year longitudinal follow-up study; 3. Ascertain if there is any association of altered host morbidity in hybrid coinfection as measured by portable ultrasonography and point-of-contact (POC) assays e.g. differential white blood cell counts; 4.Reveal hybrid environmental transmission upon malacological and abattoir surveillance, interrogating collected schistosomes with advanced genetic profiling noting any hybridization directional bias. In this presentation, I review the HUGS project and highlight key answers to these questions. Foremost, *S. mattheei* and *S. haematobium-mattheei* infections have now been formally incriminated in male/female genital schistosomiasis, and a sizeable proportion of urogenital schistosomiasis with these parasites occurs in pre-school-aged children, despite biannual preventive chemotherapy.

P 445

Acceptability of MDA with praziquantel among toddlers aged 9-24 months – Results from a cross-sectional study from Madagascar

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Question: The World Health Organisation recommends mass drug administration (MDA) with praziquantel (PZQ) for children of pre-school age (PSAC), and a paediatric formulation is now licensed. Acceptance for PSAC can be influenced by a number of factors, so availability alone is not sufficient for successful uptake. This study aims to investigate the factors influencing the acceptability of PZQ for toddlers aged 9-24 months (mo) in the Boeny region, Madagascar.

Methods: A cross-sectional study was performed from February to December 2023. PZQ treatment was offered to the caregivers (CGs) in primary care facilities, hospitals and during community outreach. Data on socio-demographic characteristics, knowledge of schistosomiasis, awareness and previous experience in PZQ-MDA were collected. The prevalence of treatment acceptance and refusal was estimated. Factors associated with refusal were assessed, given the high prevalence of acceptance. To identify factors associated with treatment refusal, adjusted prevalence ratios (aPR) were estimated using Poisson regression.

Results: Of 5154 toddlers enrolled, 50.2 % (2586) were female, 33% (1703) were aged 9-12 mo, 30.9% (1592) aged 13-17 mo and 36.1% (1859) aged 18-24 mo. CGs were mostly mothers (90.7%, 4674); 1970 (38.2%) were farmers. Previous experience with PZQ-MDA was reported by 2108 (39.2%).

Treatment was accepted by 4446 CGs (86.3%) and refused by 708 (13.7%). Higher treatment refusal was associated with fear of adverse events (aPR 3.63, IC 2.95-4.46), lack of previous experience with PZQ-MDA (aPR 1.78, CI 1.47-2.15), and lack of knowledge about the risk of schistosomiasis in toddlers (aPR 1.5 CI 1.14-1.99). CGs other than the parents (1.70. CI 1.3-2.22) and CGs of younger toddlers (aPR 1.51, CI 1.29-1.77 for the age 9-12 mo and 1.26, CI 1.07-1.50 for the age 13-17 mo) refused treatment more frequently, while farmers had lower refusal (aPR 0.68, CI 0.57-0.80).

Conclusion: Overall acceptance of PZQ was high. The fear of adverse events, the lack of previous experience of PZQ-MDA and the lack of knowledge of the risk of infection in this age group represent barriers for the acceptance. Awareness campaigns on both PZQ-MDA and schistosomiasis among toddlers could overrun them.

OP 016

Novel intervention strategies for schistosomiasis elimination

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Background: Elimination of schistosomiasis as a public health problem by 2030 is a declared goal of the WHO. Pemba Island, Tanzania, achieved this goal in 2017 and now proceeds towards transmission interruption. The existing spatial heterogeneity of *Schistosoma haematobium* infections calls for targeted interventions. In the SchistoBreak project, implemented from 2020-2024, new adaptive intervention approaches were investigated for their contribution to elimination.

Methods: In low prevalence areas, a new schistosomiasis surveillance-response approach, including test-treat-track-test-treat (5T) and snail control activities, was assessed for its sensitivity and potential to prevent recrudescence. In hotspot areas, the impact of a multidisciplinary intervention package, consisting of mass drug administration, behavior change communication, and snail control measures was investigated. Annual school- and household-based cross-sectional surveys were conducted to monitor *S. haematobium* prevalence and infection intensities, schistosomiasis-related knowledge, attitudes and practices, and economic status.

Results: Each year, more than 6000 individuals were surveyed. The 5T strategy was very useful to identify and treat infected individuals. Across the 3 years of implementation, the surveillance-response approach showed a sensitivity of 43% and the low prevalence levels were mostly maintained. In hotspots, prevalences were significantly reduced in schoolchildren and showed a decreasing trend in the community in Year 1 and 3, but slightly increased in Year 2. Hotspot areas were hallmarked by a large number of poor and rural households, and waterbodies containing *Bulinus*. Behavior change communication significantly improved knowledge and attitude scores of exposed schoolchildren. The overall prevalence remained ~1% across all years, with heavy intensities ≤0.3%.

Conclusions: The novel adaptive intervention approaches did not result in interruption of transmission within 3 years. Yet, important insights and evidence were generated that can inform control program decisions and the development of schistosomiasis elimination guidelines.

OP 017

Integrating *Strongyloides stercoralis* diagnostics into Rwanda's soil-Transmitted Helminth and Schistosomiasis control programme – The SCAN study

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Question: *Strongyloides stercoralis* infection, affecting 300–600 million people worldwide, remains underrecognized in many endemic regions. The 2024 WHO guidelines emphasize integrating advanced diagnostics, including Baermann, agar plate culture (APC), and a novel recombimant antigen-based (NIE/SsIR) rapid diagnostic test (RDT), into existing soil-transmitted helminth (STH) and schistosomiasis control programs. This study asked whether such integration is feasible in Rwanda, where *S. stercoralis* prevalence data have been scarce.

Methods: Between September and October 2024, a cross-sectional survey was conducted in Gisagara and Rubavu districts. Participants aged ≥5 years provided stool and blood samples. Stool was tested using Baermann, APC (in Gisagara only), and Kato-Katz, while the RDT (recombinant *S. stercoralis* antigens-based, detecting IgG4) was run on whole blood in Gisagara and plasma in Rubavu. Laboratory technicians underwent intensive training focused on parasite identification and sample handling, and all data were managed in REDCap with real-time quality checks.

Results: A total of 1,415 participants (719 in Gisagara, 696 in Rubavu) were enrolled, with 52.6% female and a mean age of 23.6 years. Fecal assays detected 35 positives overall. Baermann+APC prevalence was 1.1% in Gisagara (95% CI: 0.5–2.3%) and 3.9% in Rubavu (95% CI: 2.6–5.7%), mirroring RDT findings (1.4% and 3.6%, respectively). Notably, adults showed higher RDT positivity than children (p=0.0005), suggesting cumulative exposure. Despite initial difficulties with larval identification, technicians reported increased confidence post-training. The RDT was rated user-friendly, requiring minimal setup and yielding rapid results.

Conclusions: Integrating *S. stercoralis* diagnostics into Rwanda"s helminth control program proved operationally feasible. While Baermann and APC enabled direct visualization of larvae, they demanded specialized training. The RDT, offering simplicity and rapid turnaround, can enhance screening capacities if validated in larger cohorts. Future efforts should include expanded surveillance, cost-effectiveness analyses, and potential incorporation of ivermectin mass drug administration where thresholds are met. Strengthened diagnostic capabilities can help close the gap in strongyloidiasis control and inform policy decisions in similar low-resource settings.

OP 018

Urogenital schistosomiasis increases the risk of *Plasmodium falciparum* infection in Burkina Faso

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There is significant overlap in the global distribution of malaria and neglected tropical diseases (NTDs), with the largest health burden in Sub-Saharan Africa, where areas are co-endemic for malaria and schistosomiasis, soil-transmitted helminths, or lymphatic filariasis. Some studies suggest helminth infections may increase susceptibility to malaria, but evidence is limited. This study investigated the association of urogenital schistosomiasis with the risk of *Plasmodium falciparum* parasitaemia in rural Burkina Faso. A cohort of 424 subjects participated in five cross-sectional malaria surveys. Active *Schistosoma haematobium* infection was diagnosed at baseline using plasma circulating anodic antigen (CAA) detection, while *P. falciparum* infection was diagnosed at each survey via blood smear microscopy. Longitudinal analysis assessed the association between baseline urogenital schistosomiasis and *P. falciparum* parasitaemia over time, adjusting for gender, age, village, ethnicity, and hemoglobin genotype. Subjects with active urogenital schistosomiasis had a ≈ 25% increase in cumulative incidence of *P. falciparum* infection (IRR=1.26, 95% CI=1.08-1.46, p=0.004), as well as non-significant trend towards higher parasite density (Expβ=1.12, 95% CI=0.96-1.31, p=0.133) and higher odds of infection over five surveys (OR=1.79, 95% CI=0.89-3.59, p=0.104). Higher intensity of schistosomiasis increased *P. falciparum* cumulative incidence (IRR=1.12, 95% CI=1.05-1.19, p=0.001) and parasite density (Expβ=1.08, 95% CI=1.01-1.15, p=0.026), and a trend towards increased odds of infection was also observed (OR=1.28, 95% CI=0.91-1.80, p=0.159). This study provides longitudinal evidence that urogenital schistosomiasis is associated with an increased risk of *P. falciparum* parasitaemia, highlighting the need for integrated control strategies for both diseases, especially in school-aged children and adolescents.

OP 019

Preclinical in vivo models to study the zoonotic potential of emerging viruses

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Emerging viral infections had posed an increasing threat for public health in the last years, challenging healthcare systems and economics worldwide. Examples are the recent epidemics caused by filoviruses such as Ebola or Marburg virus, the COVID-19 pandemic, and the re-emergence of avian Influenza virus, Mpox and Yellow fever virus.

When a new virus infects humans, the most challenging steps towards developing an effective vaccine or an antiviral therapy is understanding its pathogenesis and transmission in humans, and this is usually hampered by the lack of appropriate preclinical in vivo models that can mimic the disease caused by these pathogens in humans.

Humanized mice have become a powerful tool to model, at least in part, the pathogenesis of human-specific viruses.

In the last years, our lab was able to establish humanized mice to study the pathogenesis of different species of filoviruses, adenoviruses, coronaviruses and flaviviruses.

Here, we will describe the basic features of these models and how they can be adapted to study the virus of interest in a human-like environment. We propose that mice with human immune systems may be valuable tools to investigate the pathogenesis of new emerging viruses including pathogen "X"."

OP 020 |P 020

Deciphering adaptive immunity in response to respiratory viral infection and vaccination using a lymphoid organoid system

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Introduction: To date, the detailed human immune system's'response to the wide variety of viral pathogens and the numerous vaccines and vaccine candidates created to combat them is still poorly understood. Preclinical animal models and ex vivo analysis of human peripheral blood are, most of the time, the mainstays of current research in this area. Peripheral blood, however, often cannot adequately capture the complex reactions and interactions of immune cells within lymphatic tissue, which are central to the adaptive immune response. In this respect, human immune organoid technologies present a promising solution to this limitation. Especially for respiratory infections, tonsils – part of the lymphatic system and one of the body"s"first lines of defense - –re particularly relevant.

Objectives: We hypothesize that investigating viral infection and vaccination in a lymphatic organoid model derived from human tonsil tissue will advance our understanding of human immunity and may serve as an early indicator for the outcome of future clinical vaccine trials.

Materials and Methods: We have successfully established a co-culture system of human tonsil organoids with a human lung cell line (A549) overexpressing ACE2, TMPRSS2, and DPP4. Upon stimulation of the organoids with mRNA and protein subunit vaccines against severe acute respiratory syndrome coronavirus type 2 (SARS-CoV-2), as well as MVA-based viral vector vaccine candidates against SARS-CoV-2 and the middle east respiratory syndrome coronavirus (MERS-CoV), we aim to compare the immune response of vaccination to natural viral infection with SARS-CoV-2 and MERS-CoV.

Results: In tonsil organoids, we observed distinct immune cell population patterns that differ clearly from the typical distributions in PBMCs, showing elevated B cell but reduced T cell numbers. Additionally, tonsil-derived immune cells accumulated in germinal center-like structures, which did not appear in the PBMC control culture. Vaccine stimulation of the organoids and viral infection of the A549 cells resulted in enhanced plasmablast development, whereby major T cell populations remained unchanged when compared to unstimulated organoids.

Conclusion: Overall, our data suggests that stimulation of the organoid model with infectious virus results in elevated plasmablast counts compared to vaccination. Moreover, we observed that the different vaccine platforms tested induce distinct patterns of immune cell activation and stimulation.

OP 021

Heat-shock protein 70 gene for detection and discriminating *T. cruzi*

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Trypanosoma cruzi is the causative agent of Chagas disease, a neglected tropical disease, and one of the most important parasitic diseases worldwide. The development of new diagnostic tools for *T. cruzi* detection and DTUs (discrete typing units) typing is still a significant challenge. Taking into account the genetic polymorphism and phylogenetic relationships studied on *hsp*70 gene among *T. cruzi* and *T. rangeli* isolates, we designed, optimized and evaluated a duplex PCR-*hsp*70 TcTr for the detection of *T. cruzi* and *T. rangeli* and a PCR-RFLP *hsp*70 DTU for the genotyping of *T. cruzi* DTUs. These methods were evaluated in a reference panel of 36 well-characterized *T. cruzi* isolates, and 444 samples from vectors, animal reservoirs and humans collected from Bolivia, Argentina, Belize, Colombia and Mexico. A single fragment covering 1380 bp of the *hsp*70 coding region was successfully PCR-amplified and sequenced for 33 strains of *T. cruzi*, *T. cruzi marinkellei* and *T. rangeli*. The relationships between these sequences and the genetic polymorphisms (137 polymorphic nucleotide positions and 99 parsimony informative sites) is sufficient to differentiate *T. cruzi* from *T. rangeli*. The duplex PCR-*hsp*70TcTr designed allows the simultaneous detection of *T. cruzi* and *T. rangeli* directly from human"s"clinical samples, triatomine and animal reservoirs. The overall diagnostic sensitivity and specificity were 76.8% and 100%, respectively. Four genetic groups are seen in *T. cruzi* phylogenetic network, corresponding to DTUs TcI and TcIII, TcIV and DTUs TcII, TcV, and TcVI which do not form separate entities. The variation identified among *T. cruzi* isolates (103 polymorphic nucleotide positions and 10 parsimony informative sites) indicates that the gene is an appropriate molecular marker for the typing of *T. cruzi* lineages. The PCR-RFLP *hsp*70 DTU designed allows the typing of the parasite lineages directly from human"s"clinical samples, triatomine and animal reservoirs in about 50%, even though it needs the combination with another molecular tool to differentiate the DTU V and IV. The cytoplasmic *hsp*70 gene constitutes a genetic target that allows the detection of *T. cruzi* and *T. rangeli* and a differentiation of *T. cruzi* DTUs. We present two molecular tools on the basis of a single PCR. The obtained results contribute to the study compilations of geographic distribution of the prevalent DTUs in humans, vectors and reservoir in endemics areas.

Fig. 1

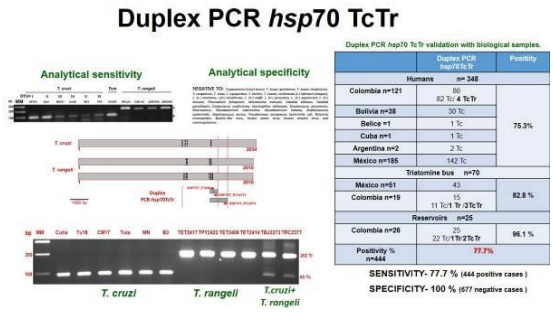
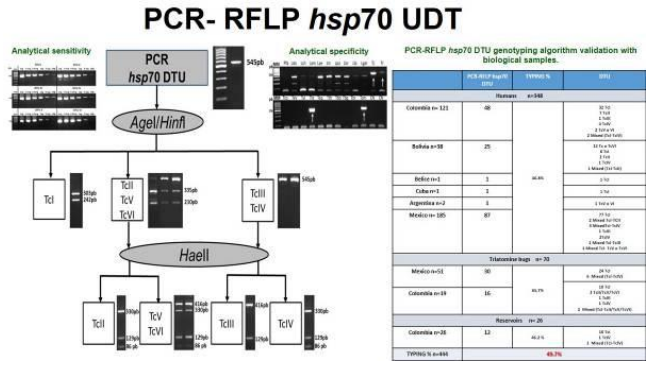


Fig. 2



OP 022

Glutamate dehydrogenase-modulated PGE2 regulates distinct Treg features and symptom development in helminth disease

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Background and question: The immune regulation driving disease progression during the brain inflammatory and zoonotic disease neurocysticercosis (NCC) is remarkably complex, resulting in epileptic seizures and severe progressive headaches. We have recently identified the lipid mediator PGE2 secreted from parasitic glutamate dehydrogenase (GDH)-modulated monocyte and microglia as a driver of regulatory T cell (Treg) development, essential to

control disease in asymptomatic, non-epileptic NCC patients. Here, we characterize the epigenetic and transcriptional determinants of GDH-PGE2-modulated Treg development and the clinical implications in brain inflammation silencing.

Methods: Targeted lipidomics and extensive LC/MS/MS profiling of lipid mediators in controls, NCC asymptomatic and patients with epilepsy guided the identification of disease- and GDH-remodeling of eicosanoids and metabolites. In-depth immunoprofiling and pulsing of controls" ”nd patients" ”eripheral cells with expressed parasite GDH and PGE2 guided the context-dependent Treg development in asymptomatic versus symptomatic disease. The epigenetic and transcriptional determinants of Treg development and landscapes in NCC patients were furthermore assessed via ATACSeq and RNASeq as compared to in vitro-induced Treg and ex vivo-sorted Tconv from healthy individuals.

Results: Targeted lipidomics revealed a bias arachnoid acid metabolism in NCC patients with a pronounced COX-PGE2 pathway in asymptomatic disease, which declined following anti-helminthic treatment. Importantly, the upregulation of the COX-PGE2-Treg axis is associated with distinct features of enhanced CNS migration and endothelial cell adhesion potency (CD69hi, CCR7+, VLA-4hi, LFA-1+) of ST2+Tregs, but absent in brain inflammatory symptomatic disease. The marked increase of PGE2 and precursor metabolites in patients" ”era is positively correlated with pronounced EP2 and EP4 receptor expression on peripheral naïve CD4+ T cells. Moreover, integrative sequencing analyses interestingly revealed the non-canonical TNFR2-NF-kB and the JAK-STAT signaling pathways as important regulators controlling GDH-PGE2-driven Treg differentiation and thus a potential role in the regulation of symptomatic NCC.

Conclusions: This work highlights important insights into lipid mediators as novel regulators of Treg cell development with distinct features maintaining immune tolerance in NCC with relevance for other inflammatory brain diseases.

OP 023

Replacing animal models with intestinal organoids – A workflow for studying host-microorganism interactions

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Intestinal organoids provide a transformative approach to infectious disease research, offering a powerful alternative to traditional animal experimentation. These three-dimensional structures, derived from stem cells, mimic the key features of the intestinal epithelium, including cellular diversity and physiological functions. In this study, we present a comprehensive workflow using human and/or bovine intestinal organoids to investigate the complex interplay between the host, enteropathogenic microorganisms, and the gut microbiome.

Our workflow begins with the generation and culture of intestinal organoids derived from either commercial sources or primary-cultured adult stem cells, followed by standardized microinjection of microorganisms into the organoid lumen. To better reflect the complex gut environment, we incorporate a defined microbial community, such as the Extended Simplified Intestinal Human Microbiota (SIHUMIx). For proof-of-concept, we challenge this system with *Mycobacterium avium* subsp. *paratuberculosis* using a multiplicity of infection of 1:30. Each experiment includes 500 organoids with three biological replicates per condition and two control groups.

Following inoculation, we monitor microbial colonization and epithelial responses at 2h, 24h, and 48h through multiple analytical approaches. These include real-time imaging to visualize structural changes, quantitative PCR to measure microbial loads, and comprehensive transcriptomic analysis (RNA-Seq) to identify pathways related to immune function, barrier integrity, and other relevant biological processes.

Our optimized system provides a controlled environment for studying complex host-microorganism interactions, eliminating the inherent variability of animal models. The organoids maintain their integrity throughout the experiment, enabling detailed observation of early infection events and host response patterns. This approach reduces ethical concerns associated with animal research, improves experimental control, and allows species-specific response studies.

OP 024

Characterisation of the early steps of ebola virus infection

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Ebola virus disease (EVD) emerges in populations in which most of the individuals do not have pre-existing immunity against the virus. In this scenario, the transition between innate and adaptive immunity plays an important role in EVD survival. Dendritic cells (DCs) are professional antigen-presenting cells that capture Ebola virus antigens, travel to the tissue draining lymph nodes and activate virus-specific T cells thus acting as chief coordinators in this transition. In the context of Ebola virus (EBOV) infection, there is a conflict between in vitro and in vivo studies on the role of DCs. In vitro data shows that monocyte derived DCs (moDCs) are susceptible to infection, preventing their activation and ability to activate T cells. This disruption has been proposed as a crucial component in severe EVD. However, in vivo data paints a more complex narrative, where DCs are activated, EBOV-specific T cells are generated but the T-cell response appears aberrant and hyperactivated. MoDCs are derived from monocytes in inflammatory settings, but they do not develop from DC progenitors. "T“ue" ”r conventional DCs (cDCs), derive from a specific bone marrow lineage which is dependent on FMS-like tyrosine kinase 3 (Flt3). We have investigated the role of these cDCs in response to EBOV

infection in mice and humans. In the mouse system, cDCs can prime CD8 T-cells via cross-presentation of antigens obtained from cell debris of EBOV-infect cells, offering the first mechanistic explanation for excessive T cell activation observed in severe human EVD. To study these cells in the human context, we have generated a mixed DC co-culture system from stem cells and utilized a recombinant EBOV expressing green fluorescent protein (EBOV-GFP). "I“flammatory" ”Cs, like moDCs and DC3s, are highly susceptible to infection, while cDC1s are resistant. Contrary to previous in vitro data, infected DCs show an upregulation of activation markers. Further, we demonstrate that human cDC1s can internalize EBOV infected cellular debris and become activated, with CLEC9A playing a key role. Efforts are ongoing to expand EBOV-specific T cells using HLA-A2-restricted NP peptides to establish successful T cell priming. Finally, using a transwell migration assay, we demonstrate that infected "i“flammatory" ”Cs can migrate towards the lymphoid chemoattract CCL19 through an upregulation of CCR7. We propose that this may contribute to viral dissemination, an important component in severe EVD.

OP 025

Epidemiological characteristics of autochthonous dengue, chikungunya and Zika virus transmission events in Europe 2007-2023 – A systematic review and secondary analysis

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Background: The local transmission of dengue, chikungunya, and Zika viruses has become an increasingly significant public health concern in Europe. Tracking epidemiological trends is essential for developing effective intervention strategies. This study aims to examine the epidemiological features of autochthonous Aedes-borne arbovirus transmission across Europe.

Methods: A systematic review of the literature was conducted for studies published from January 1, 2007, to January 31, 2024, reporting autochthonous cases of dengue, chikungunya, and Zika in Europe. Data sources included MEDLINE, EMBASE, and reports from the European Centre for Disease Prevention and Control (ECDC). Descriptive statistics and a secondary analysis were used to summarize the epidemiological characteristics of local transmission events (LTEs), assess potential temporal trends and explore relationships between various epidemiological factors. The time intervals between key events were analyzed to identify possible delays in LTE detection and response.

Results: A total of 59 studies were included, detailing 56 LTEs. The frequency of LTEs showed a progressive increase, with an average of 1.25 (95% CI: 1.17–1.35) times increment annually. France reported the highest number of dengue LTEs (N=37), whereas Italy recorded the largest number of dengue cases in a single LTE (N=41). Across all arboviral LTEs, the median interval between symptom onset in the primary case and the identification of the index case was 35.5 days (range: 23.0–76.0). For chikungunya, longer delays in detection were associated with a higher total number of cases per LTE, although this result may be influenced by the small sample size.

Conclusions: A noticeable rise in the frequency of Aedes-borne arboviral LTEs in Europe has been observed, coupled with significant delays in outbreak detection. Enhancing the prompt identification of LTEs is critical for improving public health responses.

OP 026

Human movement and dengue epidemic dispersion – Results from a case- control study in Cienfuegos, Cuba

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Background: Whereas it has long been recognized that dengue dispersion is human-mediated at broad spatial scales (i.e., national, regional and global level), the importance of human movement at fine spatial scales has not been well studied. We present the results of a study exploring the importance of sites of high day-time population concentration (called "d“y-time hubs")”and mobility in the dispersion of the largest dengue epidemic reported in Cienfuegos city, prior to the start of the COVID 19 epidemic.

Methods: An analytical observational study was carried out, starting with participant observation and expert opinion techniques for the identification and geolocation of day-time hubs, such as markets, schools, bus and train terminals, health centers and recreation centers. The case control study explored the patterns of population mobility between the homes and the day-time hubs. The first 100 dengue cases (positive IgM-test) registered in the epidemiological surveillance databasewas the beginning of the outbreak, were included. Two controls were selected for each case (febrile case with negative IgM test), matched by place of residence and date of onset of symptoms. On the basis of a semi-structured questionnaire, information on the day-time hubs visited in the last 15 days prior to the onset of symptoms, was collected from all included participants. The odds ratio (OR 95%CI) was estimated by type of day-time hub. Routine surveillance data on mosquito infestation levels were retrieved from the blocks of residence from day-time hubs, cases and controls, and the house indices were calculated on block level.

Results: 27 day-time hubs with high population concentration and mobility were identified and geolocated. More than 45% of all day-time hubs presented high *Aedes aegypti* infestation rates and did not differ significantly from those found in the houseblocks of cases and controls. Subjects who worked outside the home had a higher risk of getting dengue (1.89 ; CI 95% 1.14 -3.13) than those who stayed at home. The risk of getting dengue in subjects who worked or visited health institutions was significantly higher (2.89 (CI 95% 1.44-5.81) than those who didn"t”frequented those places. For the rest of the day-time hub types, no statistically significant difference was found between cases and controls.

Conclusions: Human movility play an important role in dengue epidemic dispersion. Special attention requires surveillance and control in health institutions.

OP 027

Chikungunya viral kinetics, transmission and the concept of household antiviral intervention

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Question: Chikungunya virus (CHIKV) is a major public health concern in tropical regions with an increasing risk of spread to more temperate areas. Clustering of cases suggests a high risk of household transmission during outbreaks and an opportunity for an interventional strategy[1]. We investigated the feasibility of antiviral interventions at the household level to reduce the impact of an outbreak.

Methods: During recent CHIKV outbreaks in Cambodia, index cases of acute CHIKV infection were identified at referral hospitals and underwent regular serial sampling for viral load over 10 days. Household members of index cases were investigated for anti-CHIKV antibodies. Seronegative household members were included in symptom surveillance and followed up with repeat serology 6 weeks later. Symptomatic participants were tested for new CHIKV infections using molecular assays.

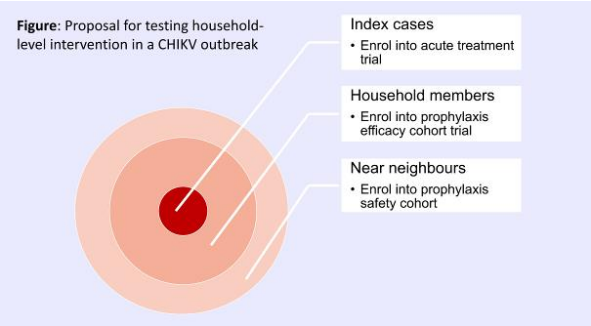
Results: Among 46 index cases, 29 were followed for viral kinetics. Modelling of circulating viral loads suggested peak viraemia prior to symptom onset and a mean 7-day duration of detectable viraemia. From 150 household members, 75 were seronegative for CHIKV at baseline, with 55 completing follow-up, of whom 21 (38%) seroconverted by 6 weeks and 10 (18%) were symptomatic. Most symptomatic infections occurred within a few days of the index case diagnosis. Higher infection rates were associated with a larger household size, family relationship to the index case, and non-use of mosquito coils.

Conclusion: The high rate of early secondary household CHIKV transmission and within-subject viral kinetics identify an opportunity for targeted household treatment and prevention. An effective antiviral strategy may consist of concurrent treatment of index cases and prophylactic administration to their household members, which could be tested as proposed in Figure 1. Coupled with rapid diagnosis, this may significantly impact the magnitude of CHIKV outbreaks.

Reference: 1. Watson HR, Duong V, Ly S, Mandron M, Siqueira AM, Ribeiro GS. Household clustering supports a novel chemoprophylaxis trial design for a mosquito-borne viral disease. Int J Infect Dis 2022; 122: 169-173, doi:10.1016/j.ijid.2022.05.020

Figure 1. Proposal for testing household-level intervention in a CHIKV outbreak

Fig. 1



OP 028

Nonstructural Protein 1 (NS1) - –nd Envelope Protein Domain III (EDIII) - –pecific antibody responses in Dengue virus (DENV)-naInd -preimmune individuals following live-attenuated DENV vaccination

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Question: Qdenga® is a tetravalent DENV vaccine that has been approved by the European Medicines Agency (EMA) in 2022. The vaccine is based on a live-attenuated DENV-2 virus that provides the genetic backbone for all four of the (chimeric) vaccine viruses expressing the pre-membrane and envelope protein of DENV-1, -2, -3, and -4, respectively, and is administered subcutaneously in two doses with a three-month interval. In this study, we analyze the Qdenga®-induced IgM and IgG immune responses in DENV-naInd -preimmune individuals.

Methods: Longitudinal serum samples were collected from 16 DENV-naInd 12 DENV-preimmune probands at timepoints 0 (administration of first dose), 1 (ca. 30 days post first dose), 2 (ca. 90 days post first dose, administration of second dose), and 3 (ca. 120 days post first dose). Humoral immune responses were analyzed by an Enzyme-Linked Immunosorbent Assay (ELISA) panel (Panadea pan-DENV (NS1) IgM ELISA, Panadea pan-DENV (NS1) IgG *SE* (Specificity Enhancer) ELISA, serotype-specific DENV (EDIII) IgG ELISA, and DENV IgM/IgG Indirect Immunofluorescence Testing (IIFT) on Vero cells infected with native DENV.

Results: Pan-DENV NS1 IgG responses were induced in 16/16 DENV-naIaccinees, although in 3/16 probands seroconversion was only observed after administration of the second dose. 10/12 probands reporting a previous DENV infection were found to be pan-DENV NS1 IgG positive at the timepoint of vaccination, and responses were strongly boosted by the first dose. In DENV-naIndividuals, serotype-specific EDIII IgG responses were biased towards DENV-2, with 1/16, 11/16, 5/16, and 3/16 probands testing positive for DENV-1, DENV-2, DENV-3, and DENV-4 EDIII serotype-specific antibodies at timepoint 3, respectively. Vaccination of individuals reporting a previous DENV infection induced a strongly cross-reactive EDIII response in 9/12 probands. In this group, serotype-specific EDIII antibodies were detectable only for a single serotype per proband (2 x DENV-1, 2 x DENV-2, 3 x DENV-3, 2 x DENV-4) at timepoint 3.

Conclusions: The analysis revealed significant differences in the immune responses of vaccinees with and without previous DENV infection, respectively. While anti-EDIII IgG antibodies were predominantly targeting DENV-2 in DENV-naïvaccinees, a strongly cross-reactive anti-EDIII IgG response was observed in DENV-preimmune vaccinees with serotype-specific antibodies targeting only one individual serotype per proband.

OP 029

Understanding human-animal-tick interaction and risk factors which lead to the exposure to Crimean-Congo Haemorrhagic Fever Virus (CCHFV) in Uganda – A multidisciplinary study

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Crimean-Congo Haemorrhagic Fever (CCHF) is a zoonotic disease with a wide geographic range. It can present with non-specific symptoms leading to a severe disease with fatality. In Uganda, we observe increased cases of CCHF, with a high case fatality rate. However, the true extent of total cases is unknown due to mild and possibly misdiagnosed cases. Furthermore, environmental and behavioural risk factors for CCHF are not fully understood in Uganda, and the populations most at risk have not yet been identified. A better understanding of exposure risks can guide educational programs and interventions. This study, therefore, integrated a quantitative serology survey with a qualitative study to understand CCHFV exposure dynamics in Uganda.

We conducted 24 focus group discussions and 30 in-depth interviews to examine human, animal, and tick interaction dynamics in six distinct environmental and cultural districts in Uganda. These findings informed a serosurvey design to identify risk factors associated with tick exposure and CCHFV transmission. The seroprevalence study is currently underway and will provide data from 1920 participants across the six districts. Blood is collected alongside a structured survey informed by our qualitative study. CCHFV antibody testing will be performed to estimate CCHFV exposure and identify risk behaviours for exposure.

Social science findings revealed various interaction practices influenced by cultural, environmental, and socioeconomic factors that may be linked with tick interactions and direct transmission of CCHFV. These included hunting wild animals and birds, tick plucking and eating, animals sleeping within the household, slaughtering sick animals for consumption, and rituals using animals, their products, or by-products. These results will be presented alongside the seroprevalence and structured survey results and discussed in relation to their implications for CCHFV transmission and control in Uganda.

OP 031

Mosquito-track AI sensor – An AI-driven bioacoustics and climate monitoring system tailored for mosquito surveillance and tracking

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Mosquito-borne diseases such as malaria and dengue pose a significant global health challenge, requiring efficient surveillance to track mosquito populations and predict potential epidemics. Traditional methods rely on manual trapping and species identification, which are labour-intensive and inefficient. To address this, an IoT-enabled, AI-driven bioacoustics and climate monitoring system, has been developed for real-time mosquito surveillance and tracking. The system integrates an ESP32 microcontroller for data processing and wireless communication, an INMP441 microphone for mosquito sound detection, an A9G GSM/GPS module for tagging each recording with GPS coordinates, and a DHT22 sensor for monitoring temperature and humidity. Data is stored locally and can be retrieved wirelessly over a Local Area Network (LAN) or transmitted to a cloud storage platform via Wi-Fi. The system utilizes a Convolutional Neural Network-based classification approach, trained on spectrogram representations of mosquito wingbeat sounds. The dataset comprises 68,264 mosquito and non-mosquito sound samples, preprocessed using the Short-Time Fourier Transform to convert audio recordings into time-frequency spectrogram images. The classification pipeline consists of a binary classification model that determines whether a recorded sound originates from a mosquito, followed by a multi-class classification model that predicts its genus and sex, achieving 94% accuracy for mosquito sound detection and 97% accuracy for genus and sex classification across *Anopheles, Aedes and Culex genera.* This system enhances vector surveillance, early detection of pathogens, and contributes to research on epidemic preparedness.

OP 032

The virome of German mosquitoes

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Mosquito-borne diseases contribute significantly to global health risks, with estimates over 80% of the human population is at risk of vector-borne diseases.[1] Arboviruses represent only a minor fraction of the mosquito virome. Non-pathogenic viruses can have a crucial impact on vector competence. Metagenomic approaches are excellent tools for monitoring zoonotic pathogens and discovering host-associated viruses with unknown relevance. Virome studies have significantly expanded our knowledge of the full spectrum of viruses associated with mosquitoes[2]. While the focus is on arbovirus vectors, other European mosquitoes have been barely researched in terms of their associated viruses. Mosquitoes of the same species with wide distribution can exhibit significant differences in their "c“re virome," ”ndicating that ecological factors play an important role in virome formation.3 Our main goal was to uncover the virome of the native mosquitoes in Germany. For this purpose, we used our viral metagenomic and Megavir bioinformatic pipeline. Samples collected across Germany derived from 26 species (or complex) which belongs to 6 genera (Aedes, Anopheles, Culex, Culiseta, Coquillettidia, Uranotaenia). Altogether we sequenced more

than 25 000 individual mosquitoes in 416 pools. We identified over 2000 described or novel viruses which is the first detailed compendium of European mosquito viruses. Important arboviruses like West Nile Virus or Usutu virus were found in known hosts which emphasize the importance of large-scale metagenomics as tool for xenosurveillance. Alpha and Beta diversity indexes were compared with ecological factors. Based on our analysis species is a major factor which shaping the host virome. Seasonality and collection place have influence on the virome formation. Our result is in consensus with the existing literature and shows that the core virome of mosquitoes are heavily influenced by ecological factors.[3] Explore the mosquito virome is essential to better understand the circulation of viruses and prevent arbovirus epidemics.

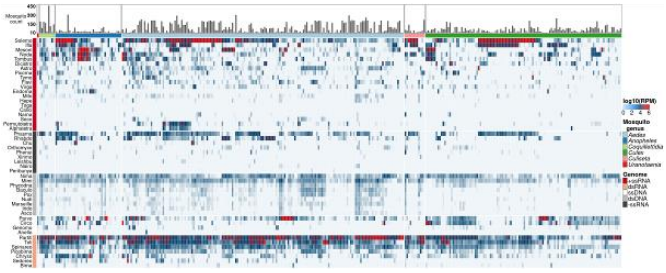
[1]Franklinos, L. H. et. al.(2019). The effect of global change on mosquito-borne disease. In The Lancet Infectious Diseases (Vol. 19, Issue 9).

[2] de Almeida, J. et. al. (2021). The virome of vector mosquitoes. In Current Opinion in Virology (Vol. 49).

[3]Liu, Q et. al. (2023). Association of virome dynamics with mosquito species and environmental factors. Microbiome, 11(1).

The heatmap shows the found viral families.

Fig. 1



OP 034

The disease that bites – An assessment on snakebite envenoming in 40 provinces of Vietnam

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Background: Snakebite envenoming is a neglected tropical disease endemic to Vietnam. The availability of appropriate antivenom and guideline-based management of snakebite cases are crucial for a favourable treatment outcome. This study assessed hospital snakebite admissions, antivenom availability and treatment practices for snakebite envenoming in Vietnam.

Methods: Data on the number of snakebite admissions and antivenom availability from 2018 to 2022 were collected from 62 provincial hospitals in 40 provinces of Vietnam. Of these, 48 (77%) hospitals provided a subset of snakebite patient files for 2021 and 2022 for in-depth analysis. A total of 2,024 files were reviewed to identify the culprit snakes and describe symptoms and snakebite management practices. Snakebite cases were assigned a severity grade based on the local and systemic signs of envenoming, prothrombin time, and platelet count test results.

Results: From 2018 to 2022, 23,877 snakebite envenoming cases were admitted to 59 of the 62 provincial hospitals included in this study, with three hospitals not seeing a single case. Among hospitals with cases, the highest median number of cases per year was reported in Quang Ngai Provincial Hospital (507 cases, IQR: 486–530) and the lowest reported in 311 Hospital (Gia Lai Province) (1 case, IQR: 1–1). Antivenoms were available in 29 (47%) hospitals, more common in the southern part of the country. Several medically important snake species were identified, which showed distinct distribution patterns. Based on our severity grading, antivenoms were given either unreasonably in cases which were not recommended or inadequately in cases which were indicated, when available. For ancillary treatment practices, antibiotics and corticosteroids were administered to a high proportion of 53% and 46% of cases, respectively.

Conclusion: This study provides the first country-wide description of the burden and hospital management of snakebites in Vietnam. There were significant differences in the case numbers, availability of appropriate antivenom, and culprit snakes across the 40 provinces. This study also reveals major deficits in the management of snakebites in the country. To address these deficits, training of health care personnel, an update of national management guidelines and additional new types of antivenom are needed.

OP 035

Active search strategy for cases of human African trypanosomiasis in non-endemic villages 10 years ago by the management team of the rural health zone of bagata, Kwilu province in the DRC

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Introduction: The WHO has set the objective of eliminating HAT as a public health problem by 2020 and eradication by 2030. However, this elimination also requires the integration of control activities at the level of endemic health zones for a sustainability of activities at the level of multi-purpose health services. One of the activities that can be monitored is the regular survey of so-called non-endemic villages. The objective is to share an active search strategy for cases of human African trypanosomiasis in non-endemic villages 10 years ago led by the management team of the rural health zone of Bagata, Kwilu province in the DRC. .

Methodology: The team mapped 19 non-endemic villages over 10 years old; no probabilistic quota sampling by geographical location carried out and sensitized the villages with the use of the community relay; identified and carry out screening with the TDR. The suspects brought back for parasitological confirmation examination at the general referral hospital.

Results and discussion: 19 villages mapped, 9 selected and visited, 8620 people identified, 7310 examined, 67 suspects screened, 51 submitted for confirmation, including 7

cases diagnosed and 4 villages that have become endemic again.

This strategy was used in a context of low coverage of the HAT package and decline in UM activities in the health zone.

Conclusion: In this period of low prevalence, targeting the prospecting of non-endemic villages by a health district team would be one of the long-term avenues to be exploited to find the last cases, avoid re-emergence and accelerate elimination.

OP 036

Post Kala-Azar Dermal Leishmaniasis (PKDL) – Novel findings and recommendations from the 7th PKDL Consortium meeting (28-29 November 2024, Kolkata, India)

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Epidemiology: The number of PKDL cases have decreased in India, fluctuating in Nepal and even rising in Bangladesh. The PKDL rate after VL in Indian subcontinent (ISC) is around 10% vs 26% in Sudan. Xenodiagnosis confirmed that patients with VL, PKDL and HIV-VL co-infection as also dogs can infect sand flies.

Risk factors: Risk factors for PKDL include drug treatment for VL, intercurrent infections, environmental exposure, as well as parasite and vector related factors, and may differ between the ISC and Eastern Africa (EA).

Immunology: The balance of IL-10 and IFN-γ as found in the skin may also be demonstrated in the peripheral blood, making the latter a surrogate marker. A check point target (LAG-3) has been identified. The centrin gene deficient *L. donovani* (LdCen -/-) vaccine is being developed in parallel with a new Leishmanin Skin Test (LST) antigen serving as a marker for protection.

Parasitology: Potential hybridization in the sand fly vector between *L. donovani*, *L. major* and *L. tropica* may account for the occurrence of *L. donovani* viscerotropic vs. dermatotropic strains.

Clinical: While differential diagnosis of PKDL is extensive, co-infection with leprosy has now been demonstrated, re-emphasizing the need for an integrated approach to skin NTDs.

Diagnosis: qPCR can be used for diagnosis and test of cure; Recombinase Polymerase Amplification (qRPA) may be performed within a field-laboratory suitcase.

Treatment: Recent ra16andomizedrials using AmBisome (± miltefosine), miltefosine (± paromomycin) will be considered in the new WHO Guidelines. New compounds include LXE408, and CpG-D35 as an immune modifier. Novel monitoring biomarkers may include 3-D scanning and AI technology.

Recommendations:

1. ISC: active case finding for PKDL remains a priority in the kala-azar elimination program
2. Research priorities for PKDL

<u>To better understand</u>

1. differences between PKDL in ISC vs. EA
2. optimizing VL treatment to reduce PKDL rate
    1. multidrug approach ±
    2. immune modifier drug and/or vaccine
3. role of intercurrent infections as a risk factor
4. checkpoint target inhibition as potential treatment target
5. evidence for an animal reservoir

<u>To translate</u>

1. strategies based on understanding underlying immunological mechanisms to context-adapted interventions

<u>To develop</u>

1. POC tools for diagnosis and biomarkers, including the Leishmanin Skin Test (LST)
2. concomitant monitoring for other hypopigmentary skin diseases
3. better (oral) treatment for PKDL

OP 037

Epidemiology and mortality of visceral leishmaniasis in Brazil – A 17-Year analysis of Brazilian notifiable diseases information system (SINAN) database

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Background: Visceral leishmaniasis (VL) is a notifiable disease in Brazil, disproportionately affecting the Northeast and Northern regions, particularly among children. However, patient characteristics and the epidemiology of VL in Brazil remain poorly documented in the literature.

Method: We conducted a descriptive analysis using data from the Brazilian Notifiable Diseases Information System (Sistema de Informação de Agravos de Notificação—SINAN), a database now made available by the Brazilian Ministry of Health for free consultation in an anonymized format. We examined demographic and clinical characteristics, treatment patterns, and mortality of VL confirmed cases reported to SINAN between 2007 to 2023, inclusive.

Result: Over the 17 years of reporting, Brazil recorded 55,723 confirmed VL cases, with 31.8% (17,738) occurring in children under five. A total of 90.0% (50,098) were new cases, while 5.3% (2,972) were relapses. New cases were managed with pentavalent antimony (PA) (55.7%, 27,886), liposomal amphotericin B (L-AmB) (23.2%, 11,613), and amphotericin B deoxycholate (ABD) (12.1%, 6,072). By comparison, most relapses were treated with L-AmB (48.0%, 1,426), followed by PA (25.2%, 748) and ABD (15.3%, 455). Treatment status was undocumented for 10.9% (5,453) of new cases and 6.2% (185) of relapse cases. Among new cases, 9.4% (4,719/50,098) of patients died, compared to 8.4% (250/2,972) in relapse cases. The absolute risk of death among new cases by age group was 10.3% (330/3,203) for infants <1 yr, 3.9% (505/12,873) 1–5 yrs, 2.1% (147/6,890) 5–

15 yrs, 9.8% (1,855/18,847) 15–50 yrs, and 23.4% (1,847/7,864) >50 yrs. Similar patterns were observed in relapse cases: 5.2% (5/96) in infants, 1.4% (9/625) 1–5 yrs, 2.5% (7/277) 5–15 yrs, 9.2% (133/1,438) 15–50 yrs, and 16.9% (96/568) >50 yrs.

Conclusion: Our findings confirm that mortality is highest among infants under one year and adults over 50, aligning with known risk factors. Although there is no formal recommendation to use L-AmB for relapse cases, it is more commonly used for severe, complicated, or special groups, making the comparability of treatment outcomes challenging between new and relapse cases and also between different drugs. Targeted prevention, improved treatment access, and enhanced surveillance are crucial to reducing mortality and improving outcomes in these high-risk groups.

Keywords: Visceral Leishmaniasis, Epidemiology, Brazil, South America

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OP 038

Expanding access to specialized care for neglected tropical diseases – A pilot implementation study of telemedicine for Chagas disease and cutaneous leishmaniasis in a national reference public hospital in Brazil

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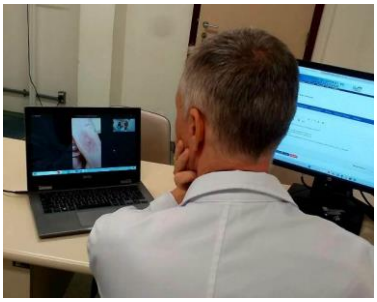
Question: The aim of this study was to investigate the feasibility and acceptability of Telemedicine (TM) as a care strategy for Neglected Tropical Diseases (NTDs) in a public hospital center specializing in infectious diseases in Rio de Janeiro, Brazil. A proof-of-concept study was conducted for the use of synchronous medical video consultations for clinical monitoring of two NTDs of epidemiological relevance in the country: Cutaneous Leishmaniasis (CL) and Chagas Disease (CD).

Methods: This is an implementation research study supported by the sequential steps of the Design Science Research Methodology. An implementation pilot was designed, developed, and evaluated. Video teleconsultations were conducted via WhatsApp Web on a laptop and patients completed questionnaires before and after them. The study was approved by the responsible Ethics Committee.

Results: Forty-six patients were recruited in person, 50% with a confirmed diagnosis of CL and 50% with CD, at different clinical stages of disease. Thirty-eight telemedical consultations were carried out over an 8-week period, 22 with CL patients and 16 with CD. Seventy-eight percent of CL patients and 52% of CD lived in another municipality, demonstrating that distance and travel to the specialized center for in-person consultations are a relevant access barrier. A low level of education was observed among the participants in both groups: 21.7% of CL and 26.1% of CD were illiterate, and 39.1% and 56.5%, respectively, studied only up to the 5th grade of elementary school. Despite this, 82.6% of CL patients and 91.3% of CD reported having previously made video calls, and only 36% of all patients reported needed help from a family member or friend to conduct teleconsultations. The mean age in the group that required help for teleconsultations was slightly higher than the general group (63.5 years vs. 58.9 years), as was the illiteracy rate (42.2%). Sixty-one percent of CL patients and 95% of CL patients said they were able to clearly explain their health problems to their doctor during a teleconsultation. Overall**,** patient satisfaction rates with teleconsultation were above 80% in both groups, and 94.7% would recommend teleconsultation to other patients. **Conclusions** The intervention was effective in promoting synchronous access of patients to their health care teams. The results point to the simplicity and good acceptability of telemedicine in CL and DC care in the studied context.

Fig. 1



OP 039

Barriers and opportunities in adopting serological diagnostic for neurocysticercosis in district hospital in Zambia using CFIR framework

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Background: Neurocysticercosis (NCC), caused by the invasion of the zoonotic tapeworm *Taenia solium* larvae in the central nervous system (CNS), is common in people with epilepsy in low and middle-income countries where sanitation is poor and pigs roam in search of food. NCC Diagnosis is challenging because it relies on brain imaging exams (CT or MRI), which are poorly available in endemic rural or resource-limited areas. Furthermore, many promising interventions in serological diagnosis in health are characterized by non-adoption or abandonment by individuals or by failed attempts to scale up locally, spread distantly, or sustain the innovation long-term at the organization or system level. The Consolidated Framework for Implementation Research (CFIR) is a commonly used implementation science framework to facilitate the design, evaluation, and implementation of evidence-based interventions. We describe its comprehensiveness in investigating barriers and opportunities to adopting a serological diagnostic test for the diagnosis of NCC by the Zambian healthcare system.

Methods: We conducted a qualitative study utilizing rapid ethnography to observe and structure our implementation questions, data collection methods, analysis, and reporting around CFIR. We collected qualitative data via semi-structured interviews with key stakeholders throughout the rapid ethnography conducted in the Eastern part of Zambia. We identified and documented the five most important domains influencing the implementation of innovations in general practice.

Results: Surveys were administered to 11 and 7 stakeholders in Nyimba and Petauke, respectively. In all districts, the mean organizational readiness to implement serological diagnosis was high, while items associated with the organizational capacity to implement scored lower. The constructs "innovation adaptability" Innovation design," and "Innovation cost" scored higher. Across all districts, low mean readiness was observed in the financial resources domain. These findings provide evidence regarding specific change management activities that could occur amongst targeted stakeholders before the rollout of serological diagnosis for NCC.

Conclusion: We found CFIR to be a powerful implementation tool that facilitated the capture of opportunities and barriers, nuances, and key voices throughout the implementation process.

OP 041
Buruli ulcer wound care and management – A systematic review

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Background: Currently, good wound care practices, in addition to antibiotic treatment, are highly recommended, but our understanding of best wound care practices for BU is limited. There is currently a recommended guideline on BU wound care published by the WHO; however, there is little evidence of effective field and clinical practice for these principles (WHO, 2006, Lehman et al., 2007). Variations in the specific cleaning agents and dressing materials used in endemic regions require a thorough search to harmonise the effects of wound care protocols on the clinical outcome of Buruli ulcer disease.

A literature search would provide useful information on the protocols used by facilities managing BU worldwide to ensure a standardised procedure and adherence to wound care guidelines. From synthesised literature, a general protocol for wound care in BU can be designed and proposed to ensure uniformity and possible good healing outcomes. Testing for the impact of the wound care protocols on the clinical outcome will result in the choice of an effective management plan and recommendations for clinical practice.

Methods: To provide recommendations for wound care, a systematic review of the literature was conducted which identified wound care practices globally, and their effect on BU outcomes.

Results: High variations in wound care practices were observed across all BU endemic regions which resulted in varying healing and clinical outcomes. The type of cleaning agents used for wound care in BU included Povidone-iodine solution, vinegar, herbal concoctions, 2% acetic acid, metronidazole, hypochlorite, alcohol, soap and water, and chloramine-metronidazole-nitrofurantoin solutions. Types of dressing include herbal concoctions, vaseline gauze, gauze sponge, bandage, reusable bandage, nitric oxide dressings, Drawtex, Eusol dressings and tie-over dressings. Healing outcomes varied from time to healing to improvements in healing rates.

Conclusion: To ensure comparable and measurable clinical outcomes across BU endemic regions globally, there is a need to harmonise wound care protocols to ensure uniform care and improve clinical outcomes. A suggestion to include other components of care in the protocols will offer a holistic approach to care. This will also promote the integrated management plans of the WHO towards NTDs.

OP 042
Shedding light on noma in Mozambique, after decades of neglect

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Noma is a rapidly progressing, disfiguring orofacial necrotising infection that primarily affects children living in poverty. Despite being preventable and treatable with readily accessible medicines, 90% of patients are estimated to die due to lack of access to prompt and appropriate care. To date, there is no primary data reporting noma in Mozambique. Our aim was to collect empirical evidence on the ongoing presence of noma in Zambezia Province, Mozambique, for the first time. In addition, we assessed the knowledge, attitudes and practices towards noma of health practitioners.

To identify acute noma patients we used a passive case search approach at the maxillofacial and paediatric wards of the reference hospital. To find noma survivors, we conducted a community-based active case search, showing posters of noma sequelae to crowds of potential informants. Demographic and clinical data were collected from confirmed noma cases. Harnessing the community-based search, we visited health facilities on a convenience-sampling basis. Health professionals were invited to participate on a quota-sampling basis, and were administered a questionnaire including open and close-ended questions.

Over a five-week period in 2024, two acute noma cases and 21 survivors having had noma between 1971 and 2015 were identified (See Figure and plot). Using a cohort-estimated healthcare-seeking proportion of 18·75% and assuming a survival rate of 10%, the annual incidence in rural areas of Zambezia was estimated at 13·7 per 100,000 children under the age of nine, suggesting that at least 213 noma cases occur yearly in the region.

Forty-one health professionals were interviewed. Of these, 59% were aware of noma, and 26.8% reported having personally attended an acute noma patient. However, their

knowledge of noma"s clinical characteristics or management was poor, especially in its early stages. Only 12% correctly diagnosed noma stage 1, and 5% stage 2. University-level professionals had a significantly better understanding of the disease than nurses and technicians. All participants were keen on receiving specific noma training.

In conclusion, the total lack of data does not mean noma is non-existent. This study provides a simple methodology to rapidly identify noma cases in high-risk areas. Increased investment, awareness and management capacity by health professionals are urgently needed to stop the consequences of this preventable and treatable disease.

Fig. 1

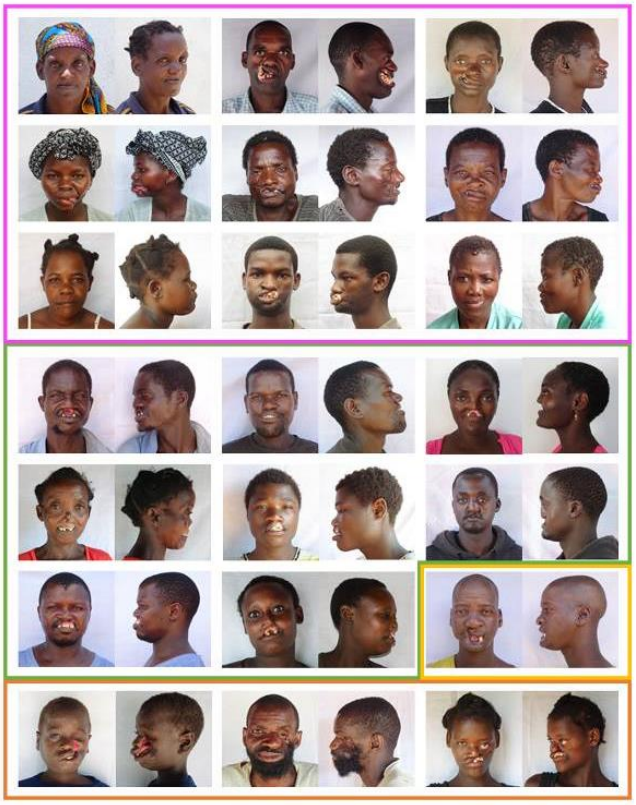
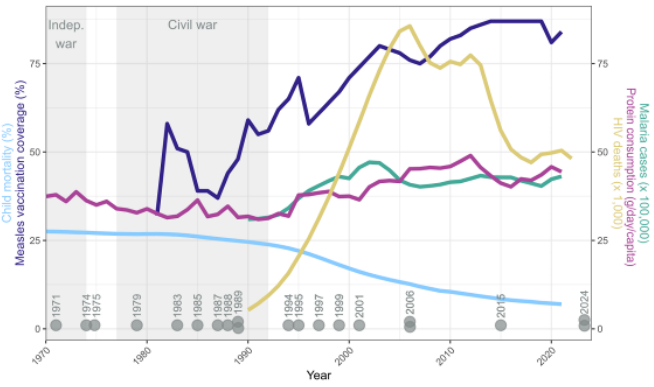


Fig. 2



OP 043

Sexual and reproductive health needs of refugee women on Lesbos, Greece – A participatory cross-sectional study

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Objective: To describe the prevalence of common sexual and reproductive health (SRH) indicators among women of reproductive age residing in Closed Controlled Access Centre (CCAC) Mavrovouni on Lesbos, Greece, and describe to what extent these women access healthcare.

Methods: A household survey comprising 119 questions across nine SRH domains was completed by 247 refugee women of reproductive age residing in CCAC Mavrovouni. Nine refugee co-researchers were engaged in question development, recruitment, data collection, and analysis in June and July 2023.

Results: Most women reported adequate antenatal care (89%, 25/28) and healthcare-assisted births (100%, 14/14), but postpartum care was suboptimal with 44% (7/16) not accessing any services despite 63% (10/16) reporting complications. About half (47%, 56/120) of women with children were single mothers. Two women had a child die at sea. Family planning showed considerable unmet need, with only 24% (42/178) of women using modern contraception and over 25% (17/66) desiring fertility treatment but none accessing it. Despite 83% (173/208) reporting adequate access to menstrual materials, only 14% (29/207) were able to consistently alleviate pain. Of 246 women, 146 (61%) experienced gynaecological symptoms, yet 60 (43%) did not access healthcare. Low screening for sexually transmitted infections (18%, 43/240) and cervical cancer (0.4%, 1/246) was reported. Of 244 women, 74% (180/244) experienced verbal, 52% (127/244) physical, and 36% (87/244) sexual abuse in their lifetime. Gender-based violence was most reported in home countries, during travel and during pushbacks. 54% (133/147) of women experienced at least one pushback and 23% (57/247) reported denial of medical care. Across all domains, most women (67%-91%) had not received healthcare information.

Conclusion: In refugee camp Mavrovouni, there is an urgent need for comprehensive SRH services that address diverse health needs. Involving refugees in the design, implementation and analysis of research enhances the relevance of data collection tools, accuracy of findings and empowers communities to shape their own health.

OP 044

Regional disparities in attitudes towards female genital mutilation and early marriage in Guinea

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Introduction: This study examines the intricacies of social attitudes in Guinea, a nation where female genital mutilation and early marriage are deeply entrenched in cultural practices. Despite stringent legislation and international initiatives to eradicate these customs, they persist, with Guinea exhibiting one of the highest rates of female circumcision in sub-Saharan Africa. The objective of this study was to elucidate the nuances of attitudes towards these practices across four distinct regions of Guinea, analysing how cultural, educational, and socioeconomic factors influence these perspectives.

Methodology: The methodology employed in this study comprised a quantitative survey of participants stratified by sex across four regions of Guinea (Conakry, Kindia, Boké, and Labé). Participants, selected using cluster sampling techniques, were queried on their knowledge, attitudes, and practices pertaining to female genital mutilation and early marriage. Participants were selected according to rigorous statistical principles to ensure representativeness. Informed consent was obtained from each participant, and all procedures were performed anonymously and confidentially.

Results: Analysis of data from 1,942 women and 1,294 men revealed significant disparities. In Conakry, 72% of women and 78% of men recognise the adverse consequences of FGM on health and well-being, compared to 32% of women and 28% of men in rural areas. Regarding early marriage, 87% of respondents in Conakry expressed strong opposition, while only 48% of participants in other regions demonstrated such opposition. This differentiation highlights the dichotomy between urban areas, where awareness appears to have a substantial impact, and rural areas, where cultural traditions dominate.

Conclusions: This investigation revealed significant disparities and contradictions in attitudes towards female genital mutilation (FGM) and early marriage in Guinea. This underscores the necessity of awareness-raising strategies that consider cultural and regional variations. Consequently, the findings necessitate concerted action aimed at disseminating information and transforming social norms, fostering inclusive dialogue that respects traditions while upholding human rights and gender equality, and emphasising the requirement for tailored awareness strategies that consider cultural and regional differences.

Keywords: Disparities, Female Genital Mutilation, Early Marriage, Guinea.

OP 045

Implementing WHO Robson Classification System to understand and compare the cesarean section rates in four public-private hospitals in Bangladesh

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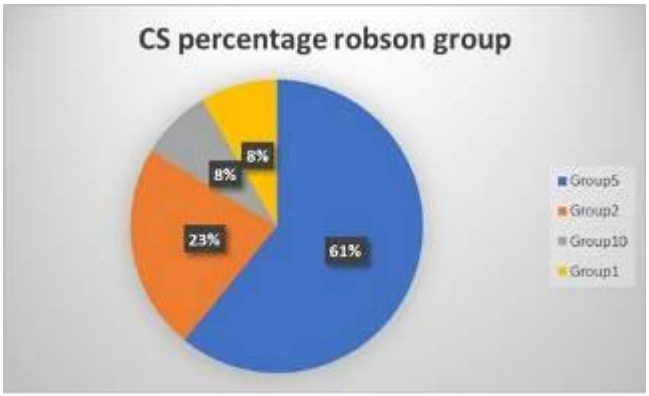
Background: Cesarean section (CS) is a potentially lifesaving obstetric procedure. However, there are concerns about the rising CS rate in many countries including Bangladesh. The Ten-Group Robson classification system is presently recommended as an effective monitoring tool for comparing CS rates and identifying target groups for intervention aimed at reducing the rates. The aim of this study was to implement and understand the cesarean section rate in four hospitals using the Robson classification system.

Methods: A cross-sectional study involving 2803 women who gave birth at the obstetric unit of four public and private hospitals in Narayanganj district between February 2024 and January 2025. Data were analyzed using the IBM-SPSS Statistics.

Results: There was a 69.2% aggregate CS rate, (46.7%: public, 94.8% private). The largest contributors to the CS rate were multiparous women with previous CS, single, cephalic, term (group 5), nulliparous women, single, cephalic, term, with induced labor or pre-labour CS (group 2), women with preterm single cephalic, term (group 10), and single cephalic term nulliparous women in spontaneous labor (group 1), accounting for 38.9%, 14.5%, 5.1%, and 5.4%, respectively. Previous CS was the most prevalent indication for CS (1093; 38.9%), followed by inadequate progress in labor (24; 10.5%).

Conclusions: Robson groups 5, 2, 10, and 3 were the primary contributors to the elevated CS rate observed in study sites. The most significant impact on the CS rate will be achieved through interventions that focus on reducing the first CS by enhancing the management of spontaneous and induced labors and strengthening clinical practice to promote vaginal birth after CS.

Fig. 1



OP 046

Incidence and infection dynamics of the human papilloma virus in a 4-year cohort in rural Madagascar – A longitudinal study

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Question: Human papillomavirus (HPV) is one of the most common sexually transmitted infections worldwide, though 90 percent of infections are self-cleared, high-risk (HR) carcinogenic types were responsible for 660,000 cases of cervical cancer (CC) in 2022. Vaccines preventing infections with HPV have been introduced since 2006, and have been shown to reduce CC incidence following high vaccination coverage. Madagascar is among the countries with the most delayed implementation of an HPV vaccination schedule. Further, there is scarce data on both the frequency of HPV infection and the dynamics of clearance and reinfection. This study aims to estimate the incidence and clearance of HPV to support and inform the implementation of vaccination programmes in the country. Additionally, this study will contribute to bring supporting information on the viral dynamics of HPV and the risk factors for persistence of HR infections.

Methods: This longitudinal study in Boeny, Madagascar was implemented in three primary health care centers over four timepoints (TP) from March 2021, with data collection expected to end in early 2025. A Luminex bead-based PCR assay is performed on cervical-vaginal lavage specimens for HPV typing of 19 HR and 2 low risk subtypes. Statistical analysis in R will include descriptive statistics, measures of incidence and rate of clearance of infection. Regression analysis will be utilized to determine risk factors for persistence of HPV infection.

Results: To date, 95 women attended three, 424 two and 521 one visit. First longitudinal results show that common HR-HPV types at TP1 (n= 481) were HPV45 (11% of women) and HPV52 (7.9%), while at TP2 (n= 557), HPV52 (8.4%) and HPV68 (6.3%) are predominant. Among women joining both T1 and T2 (n= 110), 12.7% cleared all existing infections, 17.3% acquired new infections and 31.8% of cases remained positive for any HPV subtype. The highest rates of HR-HPV persistence were seen in HPV52 with 71.4% of infections persisting and HPV68 with 57.1% persisting.

Conclusion: Preliminary results show that different HR strains of HPV circulate in Madagascar with more new infections than clearances after one year, highlighting the importance for the implementation of vaccination programmes. Factors influencing incidence and clearance will be further evaluated in order to provide additional information to design programmes preventing infection with HPV as well as CC onset and progression in Madagascar.

OP 047

Cervicovaginal bacterial communities in adult Malagasy women of reproductive age with human papillomavirus infection and female genital schistosomiasis

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The vaginal microbiome (VM) plays an important role for women"s health and changes in its composition have been associated with several sexually transmitted infections. Specifically, the VM is described to have a role in the persistence of human papillomavirus (HPV) infection. Furthermore, recent findings suggest that female genital schistosomiasis (FGS), caused by a chronic infection with *Schistosoma haematobium*, might exacerbate the risk of both HPV infection and cervical cancer. Typical symptoms of FGS are non-specific and diagnosis is done using colposcopy. Few studies have described the characteristics and variability of the VM in association with FGS, showing different bacterial communities or abundant *Trichomonas vaginalis*. The objective of our study was to characterize the VM of adult women of reproductive age in Madagascar – a country with a high burden of both FGS and HPV infections.

A cross-sectional study was conducted at three primary health care centres in the Boeny region of Madagascar. Data was collected from women aged 18-49 years between March and August 2021, including colposcopy results, cervicovaginal lavage (CVL) samples, socio-demographics, personal habits and clinical history. HPV infection was assessed on CVL samples by performing E7-MPG, using a Luminex bead-based technology. CVL samples were shipped to the Institute of Clinical Molecular Biology, Kiel, Germany, for 16S V3V4 rDNA sequencing.

From 500 enrolled participants, 443 were included in the final analysis after quality check of testing results. Using VALENCIA, the five community state types (CST I - V) could be identified. The majority of VM were characterized as CST IV (highly diverse and without *Lactobacillus* dominance), followed by CST III (dominated by *Lactobacillus iners*). CSTs were associated with age groups and antibiotics usage, while variability in the alpha and beta diversity was associated with urbanicity, diet behavior, antibiotics usage and vaginal discharge. Differential abundance analysis showed that the genus *Limosilactobacillus*, among others, was less abundant in HPV-positive women, but no differences were observed among women with different FGS and HPV/FGS statuses.

This first study of VM in Madagascar showed no *Lactobacillus* dominance in the Malagasy population. Further studies are needed to characterize the role of VM for high burden gynecological disorders, especially those affecting the most neglected populations.

OP 048

The impact of Lassa Virus infection on placental pathology and pregnancy outcome

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Introduction: Lassa virus (LASV), a member of the Arenaviridae family, is the causative agent of Lassa fever (LF), a viral hemorrhagic fever that is endemic in West African countries. LASV is transmitted to humans through contact with infected rodents, which serves as the natural reservoir. Furthermore, human-to-human transmissions occur. LF has a high case fatality rate, however, the underlying pathomechanisms are only poorly understood. Pregnant women are especially vulnerable, since a retrospective study showed high maternal mortality and a very high adverse pregnancy outcome with fetal or perinatal loss. It is currently not known, if adverse effects rather arise through the systemic effects of virus infection or through direct infection of the placenta.

Methods: We recruited eight pregnant women at gestational ages of 13–39 weeks, who were admitted to Irrua Specialist Teaching Hospital (Edo State, Nigeria) between 2022-2023 with RT-PCR confirmed LF. Most patients had mild to moderate disease, however one patient had severe disease with vascular leak and shock leading to fatal outcome. We collected placental samples for histopathological analysis, correlated with clinical and paraclinical data.

Results: 25% (2/8) of women experienced abortion at the end of the first trimester. 25% (2/8) of pregnancies resulted in intrauterine fetal death, including one (1/8) maternal fatality. 50% (4/8) of children were born live at gestational ages 22-39. We detected virus protein positive cells in placenta tissue in 100% (8/8) of the LASV patients, confirming a high degree of direct placental infection for the first time in LF. In contrast to other severe viral infections, we did not detect intervillositis or villitis in any of the LASV cases. Instead, we could show for the first time that placental changes upon infection are widespread, but most prominent at the maternal-fetal barrier with distinct endotheliopathy. Spatial transcriptomics of placenta tissues showed widespread impact of LASV infection with unique vascular and immunopathological transcriptomic signatures.

Conclusions: This first comprehensive case series on pregnancy outcome, placental and fetal health of LASV-infected pregnant woman showed the high impact of LF with direct virus infection of all placentas on this specific population. Moreover, our novel, exemplary findings in placental tissue will likely also impact our view on the pathophysiology of LASV in other tissues.

OP 049

Safety and tolerability of praziquantel among pregnant women and infants – Results from a cluster randomised clinical trial (freeBILy trial) in Madagascar

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Question: There is increasing evidence of morbidity and high prevalence of schistosomiasis in pregnant women (PW) and preschool aged children. The recommendation to include PW in Mass Drug Administration (MDA) with praziquantel (PZQ) from the second trimester is being challenged by the reluctance due to a lack of safety data. In children under two years of age, a test-and-treat strategy is currently recommended as safety data are very limited.

Methods: We assessed the safety of PZQ among PW and 9-month-infants from a Cluster Randomized Clinical Trial which evaluated the potential impact of test-based schistosomiasis treatment with point-of-care Circulating Cathodic Antigen (POC-CCA) integrated into routine antenatal care. In the intervention arm (IA) all PW (second trimester) with a positive test were treated with PZQ 40 mg/kg. Testing was offered to their 9-month-infants and a fixed dosage of 300 mg crushed PZQ was administered in case of positivity. In the control arm (CA) no POC-CCA was offered to PW. If schistosomiasis was suspected, they were referred to the local health system. Safety in PW was assessed by measuring adverse perinatal and pregnancy outcomes. Perinatal outcomes were maternal death during pregnancy or within 42 days of pregnancy termination, and neonatal death within 28 days of birth. Pregnancy outcomes were preterm birth (born alive before 37 weeks' gestation) and foetal death occurring after 22 completed weeks' gestation. The occurrence of death within 30 days of receiving PZQ was the safety outcome chosen for infants. Outcomes were reported as a comparison of frequencies between IA and CA, using the Fisher exact test. Single outcomes were assessed by excluding participants with missing data.

Results: A total of 4613 PW were enrolled. Four pregnancy-related deaths (4/2081, 0.19% and 4/2392, 0.17%, p= 0.9735) were reported in both IA and CA. Neonatal deaths were 14 in the IA (14/2094, 0.7%) and 25 in the CA (25/2406, 1%, p=0.1813). No differences were found for preterm births and foetal deaths between IA and CA (209/1354, 15.4% vs 375/1913, 19.6% p=0,0521 and 26/2094, 1.2% vs 38/2406, 1.6%, p=0,3399). Among 1242 infants in the IA one death was recorded versus 0 in the CA.

Conclusions: Our data show no differences in adverse perinatal or pregnancy outcomes after PZQ treatment in PW, supporting their inclusion in MDA. The good safety profile found for infants will help inform public health interventions in this vulnerable age group.

OP 050

Factors associated with decision-making autonomy among women of childbearing age in Benin regarding their sexuality, contraception and health

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Question: Women's decision-making autonomy is a key indicator for reducing gender inequalities and for socio-

economic development. In Benin in 2021, the national MICS survey shows that only 11.6% of women make decisions about their own health. The aim of this study is to identify the factors associated with women's decision-making on health, sexuality and contraception in the departments of Atlantique, Couffo and Borgou in Benin, with a view to implementing an improvement programme.

Methodology: A cross-sectional study was carried out between 26 April and 8 May 2024, using a 3-stage random sample (district, commune and household) and a face-to-face questionnaire. It targeted unionized women aged 15-49. With regard to contraception and health, a woman is considered to have decision-making autonomy if she is able to make the decision herself, and with regard to sexuality, if she is able to refuse her partner sexual intercourse when she does not want it.

Results: A total of 1144 women between the ages of 15 and 49 were included, representing a participation rate of 98.2% of the sample.

The level of autonomy in health decision making was estimated to be 32.4%. The autonomy of decision making regarding modern contraception was estimated at 11.3% (including 61.6% who used contraception without their partner's knowledge) and 60.6% of the women were able to refuse their partner sex if they did not want it. However, this decision was respected by their partner in only 12.5% of cases. In multivariate analysis, the different forms of autonomous decision making were more common in urban than in rural areas and increased with age, education level and wealth quintile.

Conclusion: In conclusion, women's decision-making autonomy remains low in the departments studied in Benin. By considering the factors involved, communication and empowerment activities can be targeted to promote women's decision-making autonomy.

OP 051

A digitalized health ecosystem – The way forward to achieve UHC in Zanzibar

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Introduction: Due to financial unsustainability and critical shortfalls in the delivery of quality care, the Zanzibar government established a University Health Insurance (UHI) policy in 2023 aimed at providing the financial sustainability of provision of quality health services. Central to this reform is the integration of digital technology via 'Matibabu' Cards, which digitally connect citizens to clinics and generate essential healthcare facility data. This study aims to demonstrate the value of integrating digital data sources to empower government decision-making processes in achieving Universal Health Coverage.

Methodology: All citizens were eligible for a Matibabu card, a unique ID used to track healthcare utilization at public facilities. During registration, individual background characteristics were recorded, and household socioeconomic status (SES) was assessed with the Poverty Probability Index (PPI). A healthcare utilization dashboard, linked to the Matibabu Card, was designed to provide insights into healthcare costs, service usage, and equity concerns. Additionally, all healthcare facilities (N=297) – both public and private - embarked on a comprehensive quality assessment and rating program (SafeCare). Data on the quality trajectories were captured in digital databases and linked to the dashboards and patient visits.

Results: Currently, 94% of Zanzibar"s population is registered with the Matibabu Card, integrated into the Zanzibar Health Interoperability Layer, enabling comprehensive tracking of healthcare utilization linked to patient SES and the service quality metrics of the visited facility. Between 2020 and July 2024, 232,770 patient visits by 104,820 unique patients to 116 unique public health facilities were captured, with all clinics undergoing multiple onsite quality assessments. The linkage of the utilization data to facilities' performance on quality of care generates further opportunities to study determinants of patients" healthcare-seeking behavior.

Conclusion: Zanzibar"s digital health dashboards exemplify successful technological integration in a healthcare financing reform. Leveraging data-driven insights has enhanced government transparency, optimized resource allocation, and targeted high-impact areas, such as non-communicable diseases and maternal and child health. This case study serves as a model for regions aiming to implement similar digital health solutions to address public health challenges.

OP 052

Unannounced quality assessment in health centres in Burundi – Findings based on data collected from 788 health centres

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Introduction: In order to improve the performance of the health system, Burundi has been implementing a performance-based financing strategy since 2010. A persistent weakness in the health system is the quality of care and services. To address this, an evaluation approach known as "unannounced evaluation" was adopted and scaled up nationally. The aim of this study is to show how this approach can contribute to continuity and sustainability of quality of care and services with a view to strengthening health systems

Materials and Methods: The study analysed data collected quarterly starting in June 2020 and ending on 31 March 2024. A purposive sample of 7 health centres was selected in each province visited. The evaluation was conducted over 4 days by a joint team of two central managers and an auditor from the audit body in the province visited. The evaluation tool contained an average of 7 quality criteria out of a total of 21 criteria in the whole grid, for which the evaluators gave a score. These criteria could vary between health centres, with the exception of two indicators, "working environment conducive to quality care" and "financial and accounting management in line with good management", which were used consistently in all facilities evaluated using this approach

Results: All health provinces were visited and 788 health centres were assessed unannounced for technical quality. The average performance score was 26% (ranging from 0% to 97.6%). Of the 788 healths centres assessed, 152 (19%) were taken over in another quarter using this approach. Comparing the second round results with the first, 101 (66%) scored higher in the second round, 3% stayed the same and

31% fell. There was an average score increase of 6.3% between the two rounds. For the two continuously assessed criteria, the average scores for 396 health centers were 38% for scheduled and 14% for unannounced. This difference between the two types of assessment exceeds the 10% threshold allowed by the manual

Conclusion: Compared with the programmed evaluation, the health centers showed a low level of quality during the unannounced evaluation, but performance improved during the various rounds following this new approach. Adopting this approach and extending it to all health facilities is one way of ensuring that the process of improving the quality of care in health facilities in particular is sustained, and that the health system in Burundi in general is strengthened

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OP 053

Eligibility and enrollment into a health insurance for the poor – Lessons from a programme in Bénin

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Following the WHO recommendations to increase financial access to quality healthcare across the world without facing financial hardship, the Benin government initiated a health insurance programme. The health insurance aimed to protect the entire population from the risks of impoverishment while accessing health care. It was decided that the government would subsidize insurance premiums at 100% for the extreme poor, 40% for the non-extreme poor, and the remaining segment of the population would pay their own insurance premiums. A pilot phase to the programme started in July 2019 and targeted the extremely poors in three health zones.

We carried out a survey on a representative sample of 3,150 individuals aged 18 years and over across the three health zones. This setting implies that the poorest people living in the piloting areas were all exposed to health insurance for a minimum of four years. Data from this survey provide a suitable sample to investigate the matching between eligibility and enrollment across the survey respondents. Furthermore, it allows us to identify the social profiles of current and potential beneficiaries of the health insurance programme to guide policymakers in adjusting the programme"s beneficiary database.

The preliminary results showed that a large share of eligible individuals were not all enrolled in the programme (82% of poorest) while some individuals who benefited were not deemed eligible to the programme (91% of people enrolled). The lack of enrollment does not appear to be related to an absence of healthcare needs as a large proportion of eligible individuals reported health problems, (31% of poorest reported having chronic disease). Furthermore, health insurance beneficiaries reported to have forgone healthcare services for financial reasons in the past year, emphasizing that the programme did not alleviate financial barriers to healthcare. In particular, we found that individuals were stigmastised by the labelling of the health insurance programme being an "*Insurance for poor*" and preferred not to use their beneficiary card when using care.

OP 054

The link between the national essential medicines list and pharmaceutical policy processes that enhance access to medicines – A scoping review

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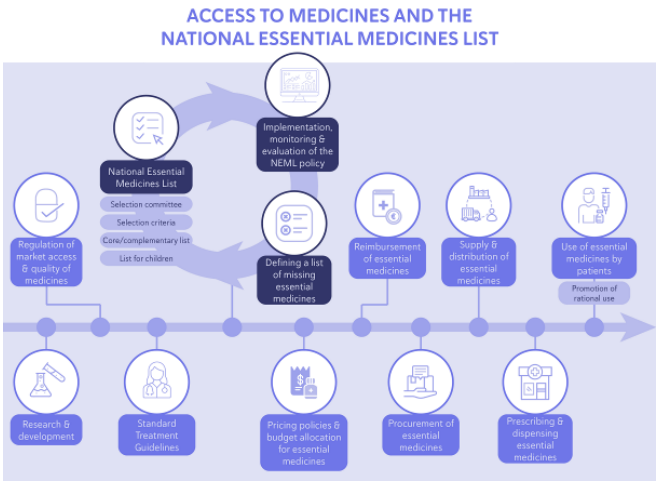
Background: Access to medicines is achieved by the complex interplay of factors at different levels in the health system. To improve access to medicines, National Essential Medicines Lists (NEMLs), usually based on the World Health Organization"s Model List of Essential Medicines, can guide policy processes such as selection, reimbursement and purchasing. We conducted a scoping review to gain more insight into the value of the NEML in access to medicines and its link with other policy processes.

Methods: We developed a theoretical framework of pharmaceutical policy processes in a country that can have a role in access to medicines and how this relates to the NEML (Figure 1). Several databases were used to search for academic and grey literature using keywords referring to essential medicines lists. Inclusion criteria were the link between the NEML and other policy processes or its implementation (excluding the selection process) (see Figure 1). Non-English literature and those published before 2002 were excluded. The first round of screening was done with ASReview (an AI-aided software) based on two machine-learning models. The full-text screening was then done manually. Relevant findings were extracted and categorised into different themes based on the theoretical framework.

Results: Out of 4214 scientific articles and 1000 grey literature reports, 107 met the inclusion criteria. Overall, each article or report covered two themes/policy processes on average for both academic and grey literature. The three themes most frequently covered were: procurement (n=53), treatment guidelines (n=38), and reimbursement (n=37). R&D (n=0) and use by patients (n=1) were covered the least. Academic literature focused more on NEML implementation and prescribing & dispensing than grey literature. The grey literature focused more on how the NEML was used, and which policy processes it was linked with in a specific country.

Conclusions: This scoping review underscores how gaps exist in the literature in terms of the implementation and interconnectivity of the NEML with other policy processes. Further research is needed to address this area to ensure that the impact of the NEML to improve access to essential medicines is documented.

Fig. 1



OP 055

Equity of maternal and child health services in Afghanistan – A spatiotemporal analysis of national survey datasets

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Introduction: Afghanistan's healthcare landscape is marked by geopolitical instability and inequities in maternal and child health (MCH) services. Following a chaotic transition period beginning in early 2020 and the Taliban's resurgence in 2021, there was a temporary collapse in funding, healthcare infrastructure, and support from international developmental partners. This study analyzed coverage levels and corresponding spatiotemporal trends in sociodemographic inequalities during this period, utilizing data from the 2010/2011 and 2022/2023 Afghan Multiple Indicator Cluster Surveys (MICS).

Methods: The study's primary outcome was an adapted Composite Coverage Index (CCI) that combined seven essential MCH interventions with corresponding inequality measures, evaluated using Slope Indices of Inequality (SII). These interventions included antenatal care (ANC4), skilled birth attendance (SBA), BCG, diphtheria-pertussis-tetanus (DPT3), measles vaccination (MSL), and treatment for suspected pneumonia (ARI) and diarrhea (ORS). Inequalities were analyzed across wealth, education, and urban/rural status at both national and provincial levels.

Results: The analysis revealed persistent socio-economic inequalities across all strata, with the most significant economic disparities observed in SBA and the largest educational disparities in vaccine coverage in 2022/23. Nationally, the CCI increased from 42.1% (95% CI: 40.3% to 44%) in 2010/11 to 46.2% (95% CI: 44.6% to 47.9%) in 2022/23. The overall access to essential MCH interventions slightly increased between the two studies. However, this overall improvement masks severe regional disparities, particularly in the eastern and southern regions, where coverage across multiple interventions significantly declined.

Conclusion: The findings underscore the persistence of substantial inequalities, with severe consequences for already vulnerable populations facing multiple hardships. These increasing disparities threaten to exacerbate existing challenges in accessing essential healthcare services, particularly for those of lower socio-economic status. Urgent, targeted interventions are necessary to address these inequities and effects of funding cuts and gender marginalization and to mitigate their detrimental impact on Afghan women and children.

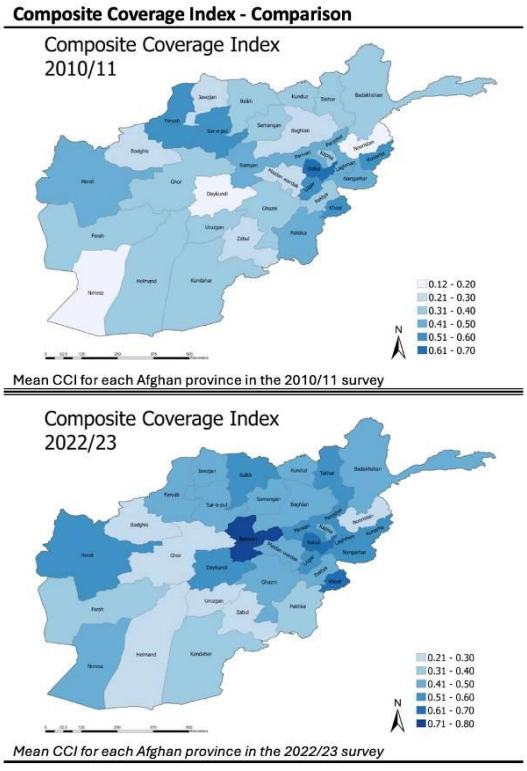
Fig. 1

	CCI 2010/11 (95% CI)	SII 2010/11 (p.p.) (95% CI, p-value)	CCI 2022/23 (95% CI)	SII 2022/23 (p.p.) (95% CI, p-value)	Difference in SII (p.p.) (95% CI, p-value)
Total					
	42.1% (40.3%, 44%)		46.2% (44.6%, 47.9%)		
Wealth Quintile					
Poorest	30.9% (27.3%, 34.5%)		31.8% (29.2%, 34.4%)		
Second	37.9% (35.1%, 40.7%)		40.7% (38.6%, 42.9%)		
Third	39.8% (37.1%, 42.5%)	28.1 p.p. (27.7%, 28.6%, p < 0.001)	47.2% (45.3%, 49.1%)	33.6 p.p. (33.5%, 33.8%, p < 0.001)	5.4 p.p. (4.9%, 5.6%, p < 0.001)
Fourth	46.2% (43.8%, 48.5%)		51.8% (49.4%, 54.1%)		
Richest	56.4% (54%, 58.7%)		62.7% (60.2%, 65.1%)		
Education Level					
None or pre-primary	40.3% (38.4%, 42.1%)		42.2% (40.4%, 43.9%)		
Primary	52.1% (48.1%, 56%)	34.2 p.p. (33.4%, 34.9%, p < 0.001)	56.8% (54.2%, 59.3%)	33.1 p.p. (33%, 33.2%, p < 0.001)	-1.1 p.p. (-1.8%, -0.4%, p = 0.003)
Secondary or higher	63.6% (59.4%, 67.8%)		61.4% (59.2%, 63.6%)		
Area of residence					
Urban	55.8% (53.4%, 58.1%)	N/A (Crude: 16.7%)[1]	57.4% (54.8%, 60%)	N/A (Crude: 14.5%)[1]	N/A (Crude: -2.2%)[1]
Rural	39.1% (37%, 41.1%)		42.9% (41%, 44.7%)		

Composite coverage indices (i.e. average weighted coverage with essential MCH intervention) with corresponding 95% confidence interval from jackknifing for each year and all three equity dimensions. Slope Index of Inequality (SII) for wealth and educational equity dimensions and corresponding differences (i.e. linearized absolute difference between highest and lowest education/wealth levels).

1 – SII calculation not applicable for urban/rural dimension. Displaying the crude difference of urban minus rural coverage and the difference in coverage from 2022/23 minus the difference in coverage from 2010/11, respectively.

Fig. 2



Mean CCI for each Afghan province in the 2010/11 survey

Mean CCI for each Afghan province in the 2022/23 survey

OP 056

An exploration of the slow progression of health taxes as a fiscal measure to respond to the surging burden of non-communicable diseases in Uganda

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Introduction*:* Noncommunicable diseases (NCDs) are responsible for more than 70 percent of deaths, three-quarters of which occur in low- and middle-income countries. Policy tools designed to address this challenge including fiscal measures such as health taxes still experience a low appreciation especially in Sub-Saharan Africa. Therefore, this study set out to explore the political economy factors underpinning the slow progression of health taxes on unhealthy commodities at the centre of NCDs in Uganda.

Methods: A case study design focusing on alcoholic, sugar sweetened, and tobacco products was adopted. Qualitative interviews with twenty-six national level key informants were conducted complimented by a review of relevant documents. Analysis followed a thematic approach guided by the problem-based political economy analysis framework.

Results: Overall, the slow progression was attributed to multinational actions to delay or stifle such efforts. The global norm promotion behind the push for health taxes was often met with industry creation of alternative universe where they did not appear to oppose directly but rather dominated the system with alternative information promoting their preferred narratives. The country"s economic marketing as a favorable investment destination creates a policy conflict which hampers fiscal measures to control consumption of unhealth commodities. Regional economic treaties for which the country committed undermine national level efforts to adopt policy measures which affect such commitments. The clientelism and transactional politics around the legislative processes creates incentives for multinationals to lobby legislators to undermine public health measures as a control of NCDs.

Conclusion: Achieving success from fiscal measures such as health taxes in responding to the surging burden of NCDs will require altering the legislative and economic contexts which incentivizes multinationals to undermine public health measures.

OP 058

Analysis of investments in health centres introducing performance-based financing in burundi – The case of karusi health province

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Introduction: In Burundi the performance-based financing and free care (FBP-G) strategy has improved the use of services. However, the quality of care and services remains low. One of the factors identified is the low level of investment in improving the quality of care in health centres (HCs). The study aims to identify the investments that affect the quality of care and the factors that are barriers to achieving them

Materials and methods: Retrospective and mixed-methods study with reasoned choice was carried out in 32 health centres under FBP-G contract in the Karusi Health Province between 2016 and 2020. The elements studied included investments in terms of quantity, quality and gaps, as well as factors thought to influence these investments in these health care. Data was collected from 120 key informants using an interview form and grid . This was supplemented by secondary data obtained from key FBP-G stakeholders at central and provincial levels, and by a literature review. Data entry, processing and analysis were carried out using the ODK application and STATA 15 software

Results: The results showed changes in more than 50% of cases: incumbents (56.2%), deputy incumbents (62.5%), chairs of health committees (59.4%) and management committees (65.6%). Only 56% of HCs had planned investments of around 14% of the total budget for the period 2016-2020. Capital expenditure incurred amounted to 4.1% of total expenditure. Only 15% of HCs had invested in the construction of reception rooms and 43.8% in the purchase of equipment and materials. The factors identified as influencing investment included management autonomy, the quality of coaching, staff turnover, the leadership of HC managers, the fear of investing and hoarding.

Conclusion/Recommendations: The need for investment in quality of care was poorly covered by the expenditure of the HCs studied. The factors involved are mainly managerial, including weak leadership capacity, insufficient staff coaching and staff instability. Removing these bottlenecks could improve coverage of the need for investment in quality of care.

OP 063

Sustaining medical education amidst crisis – Lessons learned from Gaza

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The healthcare system in Gaza has faced collapse due to targeted attacks on medical facilities, healthcare personnel and educational institutions. This has raised a critical question: What role can medical institutions and faculties worldwide play in supporting medical education in disaster-struck areas?

To address this question, a roundtable discussion was organized with PalMed Academy, involving medical faculties in Gaza and various international medical institutions. This collaborative effort aimed to develop sustainable support mechanisms for medical education amidst crisis conditions.

One significant outcome of this collaboration was the establishment of the International Alliance for Medical Schools in Gaza (AIMS-G), which fostered cooperation between local faculties and international partners. Key initiatives included the provision of essential materials and laboratory support, expertise sharing through online exchange programs (VIS), and creative fundraising efforts like "Poetry for Palestine." Additionally, AIMS-G facilitates connections with existing frameworks such as PalMed Academy to enhance collective impact.

Long-term recovery must prioritize rebuilding medical education, infrastructure, and workforce capacity. Awareness and advocacy efforts are also central, focusing on breaking the silence within institutions by fostering dialogue on the challenges faced by Gaza"s medical community. By aligning with global networks, medical institutions worldwide could contribute to material donations, (online) educational exchanges, (remote) clinical placements, and mentorship opportunities.

The current support for medical institutions in crisis can provide valuable lessons for future disruptions of medical education, enabling the global health workforce to be sustained while addressing local needs. In conclusion, the collaboration between local and international medical institutions offers needed possibilities in sustaining medical education in Gaza. By building resilient networks and mobilizing resources, the global medical community plays a pivotal role in empowering healthcare professionals in crisis regions.

OP 064

Optimising type 2 Diabetes Mellitus Care in Lagos, Nigeria – Cost and benefit estimates using real world data

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Introduction: Diabetes mellitus accounts for a significant share of morbidity and mortalities in ages 30 – 70 years worldwide. In sub-Saharan Africa, diabetes care is often sub-optimal for reasons ranging from health systems weaknesses to patient illiteracy and non-compliance with recommendations. This study explores the potential costs and health benefits of optimising type 2 diabetes care in Lagos State, Nigeria.

Methods: Longitudinal data on medical care patterns and resource use (consultations, medications, diagnostics, and lifestyle counseling) over a one-year period were collected retrospectively from 84 health facilities in Lagos. Medical resource prices were obtained from a sub-sample of 26 facilities. Patient care gaps were assessed by comparing actual journeys to official diabetes management guidelines. Mixed-effect regression analyses were employed to explore the impact of care elements on blood glucose control and model the potential complications averted if all patients received recommended care, with extrapolation to the entire Lagos population.

Results: Data from 642 diabetes type 2 patients were analyzed. A one-unit increase in consultation score and having health insurance coverage were linked to 47-unit and 29-unit lower blood glucose levels, respectively. Optimizing diabetes care requires 3,716 USD per patient annually, totaling 2.1 billion USD statewide, with medications comprising 97% of costs. Enhanced care could reduce the risks of stroke and myocardial infarction by 2% (12,675 cases) and 4% (22,282 cases) over seven years, respectively, at a cost of 61,492 USD per complication averted.

Conclusion: The investment required to optimise diabetes care in Lagos is currently unfeasible. There is a need to create innovative financial mechanisms, including digital value-based care interventions and adopt cost-saving care approaches including pooled medication procurement, while investing in local medicines production capacity and expansion of the health insurance coverage.

OP 065

Prevalence and associated factors of smoking among school-going youth in Guinea

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Introduction: Tobacco use remains a significant public health concern, particularly in adolescents and young adults. This study sought to ascertain the prevalence of smoking and elucidate the factors associated with tobacco use among Guinean students.

Methods: From January to September 2024, a survey was conducted in three major regions of Guinea (Kindia, Faranah, and Kankan) with secondary school and university students recruited using a three-stage stratified sampling method. Data were collected using self-administered questionnaires and analysed using the R software. Descriptive and logistic regression analyses were used to identify the factors associated with smoking.

Results: Among the 1283 participants included in the analysis, 39.1% were identified as smokers. Youths in Kindia exhibited a significantly higher risk (AOR = 2.70; $p < 0.001$) than those in Faranah did. Males demonstrated a higher likelihood of smoking than females (AOR = 4.07; $p < 0.001$), and university students showed a greater propensity for smoking than high school students (AOR = 1.46; $p = 0.004$). Furthermore, the perception that smoking cessation was facile was associated with an increased risk of tobacco use (AOR = 1.75; $p = 0.032$). The influence of family and friends was particularly pronounced among mothers who smoked (AOR = 6.65; $p = 0.019$) and best friends who engaged in smoking behaviour (AOR = 1.78; $p < 0.001$).

Conclusion: The prevalence of tobacco use among school-attending youth in Guinea remains high and appears to be strongly associated with peer influence. Appropriate preventive interventions focusing on enhancing risk awareness and highlighting the challenges of cessation could potentially contribute to a reduction in this behaviour.

Keywords: Tobacco, pupils, students, associated factors, prevalence, Guinea.

OP 066

Hypertension management in Aracaju – Insights from a computational simulation approach

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Background: Hypertension is a major cause of cardiovascular disease (CVD) morbidity and mortality, particularly in urban settings where health system fragmentation limits effective management. The Aracaju Hypertension Simulator, adapted from the São Paulo Hypertension Simulator, identifies systemic bottlenecks and

evaluates intervention strategies. This study examines how computational modeling can inform hypertension management, integrating real-world data and stakeholder insights. The model assesses intervention scalability, policy implications, and the role of preventive strategies in reducing hypertension burden.

Methods: A system dynamics model was adapted to simulate hypertension progression and intervention impacts in Aracaju. The model incorporated population health dynamics, CVD outcomes, screening and diagnosis, healthcare capacity, and treatment adherence. It targeted individuals aged 30 and above, projecting outcomes over 30 years (2011–2041). Behavioral validation ensured model alignment with historical trends, while sensitivity and uncertainty analyses identified key parameters affecting health outcomes. A scenario-based approach evaluated the effects of screening expansion, adherence interventions, health system strengthening, and preventive measures on hypertension control and CVD reduction.

Results: Integrated interventions combining patient engagement and health system improvements increased controlled cases by 24% and reduced CVD events by 5%, demonstrating a significant impact compared to the Base scenario. These interventions increased diagnostic and treatment demand, emphasizing the need for expanded healthcare capacity. Enhancing diagnostic and treatment infrastructure further increased controlled cases by 28% and reduced CVD events by 6%, underscoring the importance of system-level investments in screening, professional training, and service delivery. The most comprehensive scenario, integrating all interventions with preventive measures, achieved a 28% increase in controlled cases and an 8% reduction in CVD events, reinforcing the long-term benefits of prevention.

Conclusions: The Aracaju Hypertension Simulator demonstrates the scalability and adaptability of system dynamics modeling as a decision-support tool. Through its interactive interface, the research team developed a policy brief in collaboration with city hall, fostering initial engagement in hypertension management strategies. Findings highlight the need for a multi-sectoral approach, combining early screening, adherence support, health system strengthening, and prevention to sustainably reduce hypertension burden. Future work will expand on preventive interventions and policy integration to enhance long-term impact.

Fig. 1

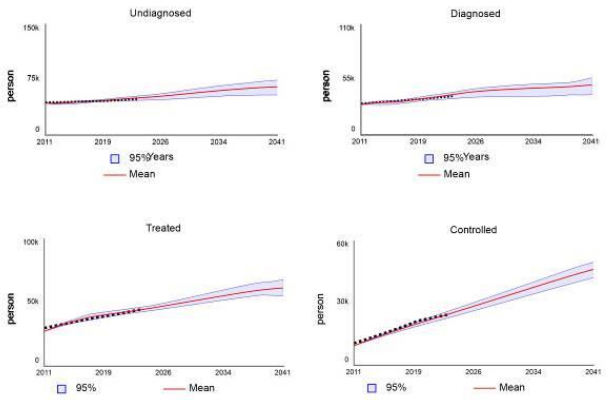

Fig. 2

OP 067

Bridging hypertension care shortfalls between provider capacity and patient needs – A pooled analysis of data from 199 countries and territories

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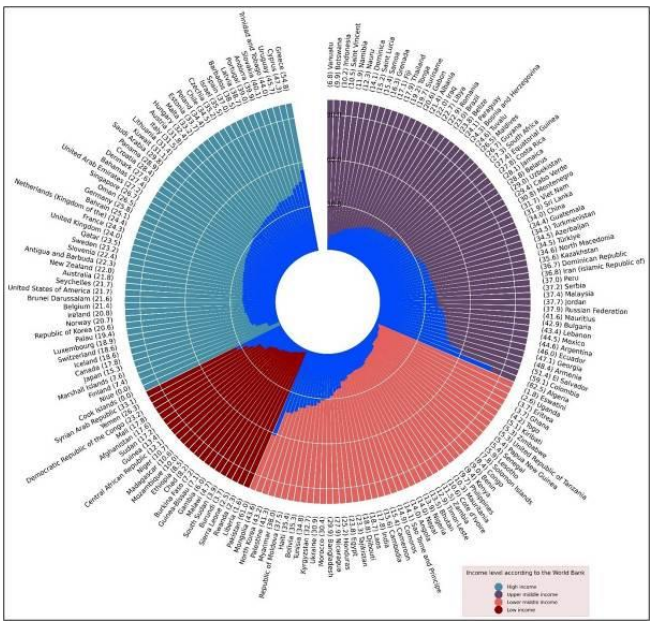
Question: The number of people living with hypertension has doubled in the past thirty years, with 90% of growth seen in low- and middle-income countries (LMICs), where the disparities in treatment are the largest. Availability of adequate, trained workforce, i.e., human resources, is critical for improving people's access to quality hypertension services, yet, no studies have systematically estimated the global gaps between health system capacity provided by physician and non-physician providers (nurses, pharmacists, community health workers) and patients" needs for hypertension management globally.

Methods: We extracted data on population, physician and non-physician provider density per 10,000 people from the 2021 World Bank Databases for 199 countries and territories and data on hypertension prevalence from the NCD-RisC Factor Collaboration. We estimated the patient need for clinic visits under three scenarios: 12 clinic visits per year (base scenario, reflecting practice in most LMICs), six visits per year (intermediate scenario), three visits per year (low scenario), one visit per year (minimal scenario), and two scenarios based on health worker capacity to provide clinic services: 20 patients per day (base capacity) and 10 patients per day (low capacity).

Results: The overall prevalence of hypertension was 37% globally; 36% in high-income countries, 40% in upper-middle-income countries, 36% in lower-middle-income countries, and 37% in low-income-countries. Physician (19.2), nurse (47.3), and pharmacist (3.9) densities per 10,000 people increased progressively with increasing wealth, with the highest combined workforce densities reported in the high-income countries (131 per 10,000 people) compared to LMICs (20-131 per 10,000 people). Majority of the countries (72%) showed deficits in base scenario, with deficits decreasing in intermediate and minimal scenarios. In LMICs, deficits persisted even in minimal scenario. Compared to involving physicians alone, incorporating non-physicians in hypertension workforce under same scenarios reduced these deficits, with 36 countries achieving significant net surpluses.

Conclusion: Our analysis highlights significant disparities in health service capacity globally if hypertension management continues to rely solely on physicians. Task-shifting to non-physician providers is vital in addressing current global disparities in hypertension management needs.

Fig. 1



OP 068

Assessment of mental health concerns during pregnancy using the E-Heza Digital Data Solution in Rwanda

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Background: Maternal mental health issues, including depression and anxiety, significantly impact maternal and neonatal health. In Rwanda, perinatal mental health services remain underdeveloped. TIP Global Health implemented the E-Heza Digital Data Solution in 31 health centers across four districts to enhance antenatal care (ANC) by integrating mental health screening using the Edinburgh Postnatal Depression Scale (EPDS).

Objective: To assess the prevalence of mental health issues during pregnancy and evaluate the effectiveness of E-Heza in identifying and addressing these conditions, reducing missed diagnoses, and supporting timely interventions in Rwanda.

Methods: E-Heza was implemented in ANC services to integrate mental health screening at every visit using the EPDS. Real-time data collection guided clinical decisions. Healthcare providers received training to interpret results, provide counseling, or refer patients. Data were analyzed alongside district-level health data for contextual relevance.

Results: The implementation of E-Heza increased maternal mental health screenings, identifying depressive and anxiety symptoms in 8.7% of 5297 screened ANC attendees from October 2022 to December 2024. Among these, 28% exhibited suicidal ideation. Most cases were detected in Gakenke District, where 63.5% reported depressive symptoms, and 20.5% expressed suicidal thoughts. In Kigali City"s Gasabo District, suicidal ideation was higher, with 45% of those showing depressive symptoms. E-Heza reduced diagnostic gaps, improved monitoring of mental health trends, and enhanced provider confidence. Patients benefited from earlier identification and timely referrals to appropriate mental health services based on the severity of their conditions where they received interventions such as counseling, medication, or support groups.

Discussion: E-Heza demonstrates the feasibility and impact of integrating mental health screening into ANC in low-resource settings. By enabling real-time, data-driven care, E-Heza bridges service gaps and aligns with evidence supporting early interventions to improve outcomes for mothers and infants.

Conclusion: The integration of mental health screening into ANC using the E-Heza tool is an effective strategy for addressing maternal mental health issues in Rwanda. Scaling such digital solutions could strengthen health systems and contribute to broader maternal and child health goals in similar low-resource settings.

OP 070

Toward inclusive and culturally adapted access to mental healthcare – Preliminary results from participatory action-research in Burkina Faso

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Context: West Africa is facing a growing burden of non-communicable diseases (NCDs). There is an urgent need to generate evidence for the management of the increasingly worrying problem of NCDs through context-specific approaches. We engaged high-quality action research to improve the population's health through sustainable capacity building (*STOP-NCD project*: Burkina Faso, Ghana and Niger). This will help improve prevention, screening, diagnosis and the provision of primary care for the management of hypertension, diabetes and common mental health disorders.

Aim & methods: In this presentation, we focus specifically on mental health. In 2024, a socio-anthropological survey was conducted in two regions in Burkina Faso where 23 focus groups and 74 individual interviews were hold with key stakeholders (healthcare providers, managers, community members, traditional healers, customary leaders, patients, families). The data collected was thematically analyzed to identify the factors facilitating or limiting access to care for people with mental disorders - who encountered specific barriers compared to diabetes and/or hypertension.

Results: We identified barriers that cut across the three pathologies: 1) lack of economic resources to ensure long-term patient care, 2) mixed and complex therapeutic itineraries, 3) lack of capacity in health facilities to carry out awareness-raising activities, 4) lack of political will. However, additionally some aspects seem to be specific to mental health and are related to the limited help-seeking behaviors toward formal healthcare resources. First, for mental disorders, participants call our attention to the fact that care represents a significant burden for families economically and socially. Second, there is a wide variety of explanations as to the origin of mental disorders, thus impacting healthcare utilization, particularly in a context few qualified healthcare professionals are available.

Discussion: Based on our results, we will make recommendations for the health services access. The project is currently at its second phase, in which we are conducting co-production workshops with stakeholders involved in the fight against NCDs. In these workshops, priorities for interventions are discussed to collaboratively select the best suited ones for the sociocultural context. By sharing this experience, we hope to engage with the audience and hopefully discuss similar experiences in sub-Saharan Africa.

OP 071

Female Genital Mutilation/Cutting among asylum-seeking women in Berlin, Germany, 2018-2022

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Question: Germany receives large numbers of refugees, including from countries where female genital mutilation/cutting (FGM/C) is practiced. Empirical data on FGM/C among asylum-seekers in Germany are lacking, providing an obstacle to needs assessment and healthcare provision for this vulnerable group. This study aimed to assess FGM/C prevalence among newly asylum-seeking women in Berlin and present health complaints and FGM/C-related perceptions.

Methods: A cross-sectional study was conducted among female asylum-seekers in Berlin presenting at the mandatory initial medical examination according to German asylum law. Between 10/2018 and 09/2022, women aged ≥18 who self-reported FGM/C were asked for informed consent to be interviewed. We used a semi-structured questionnaire investigating self-reported FGM/C type (I/II or III), physical complaints and pain domains, as well open-ended questions on women"s personal attitudes and experiences regarding FGM/C.

Results: In total, 15,167 new asylum-seeking women approached the medical examination in Berlin in the study period. From these, 281 (1.9%) self-reported FGM/C. Restricting the population to FGM/C- practicing countries (n=3306), this yielded an 8.5% prevalence. Affected women originated mostly from Guinea (n=62; 22.1%), Nigeria (n=45; 16.0%), and Somalia (n=47; 16.7%). A total of 151/281 women consented to an interview. The majority of these (86; 57.0%) self-allocated to Type I/II, 33 (21.9%) to Type III, and 31 (20.5%) could not allocate their FGM/C type. Menstrual pain was the most reported complaint (77.5%), followed by pain during defecation (29.1%), micturition (24.5%), hypermenorrhea (19.2%) and urinary incontinence (14.5%). Physical complaints were more present among women with FGM type III. Women had undergone FGM/C at a median age of 6 years, mostly performed by a female non-related person (64.5%). The vast majority (90.1%) perceived FGM/C negatively and described adverse impacts on psychosocial and sexuality-related health; 7.9% had a neutral or positive attitude towards it, mostly claiming it to be a part of their culture.

Conclusion: Women living with FGM/C in Germany exist, and they carry a considerable physical and psychosocial health burden. Our findings emphasize the need for the German healthcare system to respond to such health needs in a holistic and culturally sensitive manner. Further research is required to develop community-centered interventions to support the affected population.

Fig. 1

OP 072

Readiness of primary healthcare units to manage non-communicable diseases based on the WHO-package of essential non-communicable disease interventions in Sidama, Ethiopia

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The four major non-communicable diseases(NCDs), namely cardiovascular diseases, cancers, chronic respiratory diseases, and diabetes, are the leading causes of premature death and disability. Nearly two in five of all deaths in Ethiopia occurred as a result of NCDs. WHO Package of Essential Non-communicable (PEN) Disease Interventions is designed for integration of NCD management into primary healthcare units (PHCUs). The implementation of the PEN in Ethiopia is at an early stage and the readiness of the PHCUs in implementing the WHO-PEN disease intervention strategy is unknown. Therefore, this study aims to assess the current capacity and gaps in the PHCUs and identify areas for improvement and future intervention on these major NCDs.

A sequential mixed-method study design was employed. A total of 45 health facilities (Primary hospitals and health centres) are selected by stratified sampling. WHO"s Service Availability and Readiness Assessment (SARA) and Package of Essential Non-communicable (PEN) disease intervention tools were used as an observation checklist. In-depth interviews were conducted with health authorities and NCD focal persons. The data were collected using the Kobo toolbox and cleaned and analyzed using STATA version 15 and ATLAS.ti 24. Descriptive, inferential statistics and thematic analysis were used to analyze the data.

More than 70% of the health facilities provide an out-patient service only, and 41(91.11%) are open 24/7. There is no separate NCD clinic in 33 (73.3%) of the PHCUs. The majority of the health facilities (>89%) have basic amenities. Yet, below one-third have computer access with internet and functional communication equipment. NCD guidelines are available in 32 (71.11%) and there are dedicated NCD staff in only 25 (55.56%) of the PHCUs. Laboratory tests are available in more than two-thirds and acetic acid is available in 18 (40.00%) of the PHCUs. Essential drugs for NCD treatment are available in less than half of the PHCUs 19 (42%). Emerged themes include high staff turnover, lack of staff training, shortage of diagnostic equipment and medicines, knowledge and skill gap, lack of integration of stakeholders and inadequate community sensitization.

There is inadequate medicine, diagnostic tests, NCD guidelines and trained staff to address the four major NCDs using the WHO-PEN disease intervention strategy in PHCUs. The management of CRD and cervical cancer was overlooked in the study area.

OP 073

Efficacy and tolerance of artemisinin-based combination therapies for uncomplicated malaria in children aged 6 to 59 months in Guinea (2016–2023) – A multicenter study

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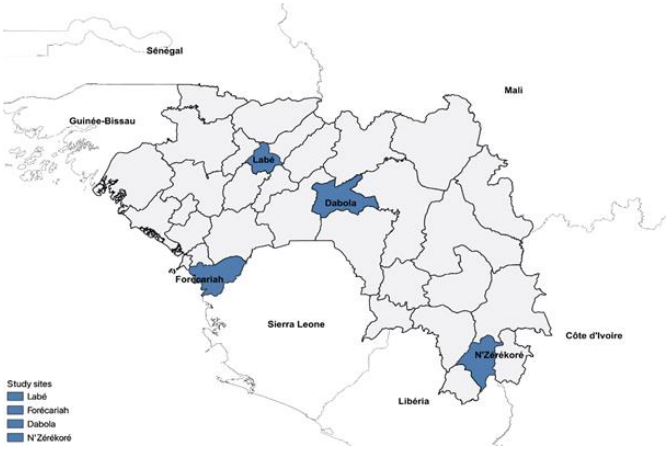
Introduction: Malaria remains a significant public health challenge in sub-Saharan Africa, causing high morbidity and mortality, especially in children under five. Artemisinin-based combination therapies (ACTs) are the cornerstone of treatment. This study aims to evaluate the efficacy and safety of ACTs for treating uncomplicated malaria in children over eight years in Guinea.

Methods: Artemisinin-based therapies were evaluated in children aged 6–59 months with uncomplicated malaria using yearly multicenter randomized controlled phase-four studies. Participants were randomized to receive Artemether-Lumefantrine, Artesunate-Amodiaquine, or Artesunate-Pyronaridine. Clinical and parasitological responses were monitored over 28 days using WHO protocols. Data collection included standardized procedures for treatment, follow-up, and adverse event monitoring, providing robust insights into the safety and effectiveness of these therapies. Molecular markers (pfk13, pfmdr1) were analyzed for resistance. Kaplan-Meier estimates assessed efficacy.

Results: The study included 1,200 children aged 6–59 months with uncomplicated malaria across Guinea. Day 28 corrected efficacy rates were 95.8% for Artemether-Lumefantrine, 94.3% for Artesunate-Amodiaquine, and 96.2% for Artesunate-Pyronaridine. Molecular analysis showed no pfk13 mutations linked to artemisinin resistance, while pfmdr1 polymorphisms indicated potential lumefantrine sensitivity. Artesunate-Pyronaridine achieved the fastest parasite clearance (median: 24 hours), followed by Artesunate-Amodiaquine (median: 32 hours) and Artemether-Lumefantrine (median: 36 hours). Adverse events were mild (e.g., fever: 22%, vomiting: 15%) and comparable across therapies, with no severe events or deaths reported. Kaplan-Meier analysis confirmed sustained efficacy, with treatment failure rates of 2.5%, 3.8%, and 2.2% for Artemether-Lumefantrine, Artesunate-Amodiaquine, and Artesunate-Pyronaridine, respectively.

Conclusion: Artemisinin-based therapies remain highly effective and safe for treating uncomplicated malaria in children in Guinea. Continued monitoring is essential to address emerging resistance and sustain malaria control efforts.

Fig. 1



OP 074

Physicochemical parameters of *Anopheles* mosquito larval habitat and their effects on larval abundance in Osun State, southwest Nigeria

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Malaria remains endemic in sub-saharan Africa. The present study investigates the effect of Anopheles larval habitat on larva abundance across the three senatorial districts of Osun State, Nigeria.

Larva prospection was carried out weekly between 0700hr - 1100hr for a year (January to December, 2022). The collected larva were conveyed to the laboratory of the Department of Animal and Environmental Biology, Osun State University, Osogbo, Osun State, Nigeria were they were morphologically identified. Water samples from the encountered larva habitats was collected and analyzed for physico-chemical properties such as pH, temperature, turbidity, alkalinity, hardness, conductivity and salinity using standard equipment and procedures. The relative larva abundance was calculated.

The *Anopheles* larval habitat temperature was between 25.5°C and 25.7°C. There was a noticeable variation in temperature and larval abundance ($p > 0.05$). Ila with a temperature of 25.7°C had the lowest larva abundance as compared to Inisa and Ipetumodu with a temperature of 25.5°C and 25.6°C respectively. The pH across the study areas was slightly alkaline between 7.04 and 7.48 and with a significant variation with the larva abundance ($p < 0.05$). The conductivity, hardness and salinity also varied significantly with the larva abundance ($p < 0.05$).

The present study therefore reveals the effect of physicochemical parameters on *Anopheles* larva abundance. Thus, indicating the stringent need for mosquito larva habitat surveillance through larva source management with a view to decimating the larva habitat which invariably reduces residents" exposure to malaria and other *Anopheles*-borne diseases.

OP 075

Connecting private health sector data and community surveillance on malaria diagnostics and treatment in Kisumu, Kenya

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Introduction: The latest World Health Organization (WHO) report indicates that at least 249 million people were infected with malaria in the year 2022 with children bearing the largest burden. Despite progress made towards the control of malaria in endemic countries, key indicators of global malaria burden have stalled since 2015. Achieving the targets of Sustainable Development Goal 3 by 2030 is rapidly becoming infeasible. Malaria elimination will require additional and innovative approaches, as Goal 3 cannot be reached through "business as usual". This study explored the adoption of an Artificial Intelligence (AI)-driven Connected Diagnostics (ConnDx) App for malaria Rapid Diagnostic Test (mRDT) interpretation to support early malaria detection, in the community and private health sector across health facilities in Kisumu County, Kenya.

Methods: An App was used for decision support, to collect data and upload images of malaria mRDTs for AI interpretation from Kisumu private sector stakeholders-5 health facilities, 25 chemists and 50 Community Health Promoters (CHPs)- between July 2024 to January 2025. The AI was trained to interpret mRDT images from Paracheck, Abott/SD-Bioline, First Response, Meriscreen, ParaHIT, Standard Q and Carestart.

Results: We conducted 8,006 mRDTs between July 2024 and January 2025 across various testing sites: 5 health facilities (62.5%, n = 5,005), 25 chemists (17.3%, n = 1,383), and 50 CHPs (20.2%, n = 1,618). The overall malaria positivity rate was 28.9% (2,311/7,972), with the highest prevalence observed among children and adolescents aged 5–17 years (40.2%, 865/2,150). Pregnant women exhibited a malaria prevalence of 24.6% (200/814). Higher malaria positivity rates were recorded among patients tested at the community level by CHPs (43.5%,697/1,604) followed by chemists (35.5%, 488/1,375). A total of 6,244 tests (68.4%) were interpreted using both AI and human interpretation, achieving a 97.1% (6,062/6,244) concordance (Cohen's kappa= 0.93 [95% CI: 0.92–0.94]). AI demonstrated robust diagnostic performance, achieving a sensitivity of 94.8% [95% CI: 93.8-95.7] and a specificity of 98.0% [95% CI: 97.6-98.4], compared to external expert human interpretation as the reference standard.

Conclusion: We conclude that mRDT interpretation by AI can be applied in a scalable manner to connect private sector malaria data to ongoing public sector malaria monitoring efforts. Malaria testing close to patients increases case finding.

OP 076

From 1923 to 2023, a century of endemic malaria – Comoros can eliminate it?

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Malaria was first confirmed in Comoros in 1923 by Jean Raynal (Raynal, 1928), who in 1925 was appointed by the French colonial government to investigate a fatal epidemic in Grande Comore. Since then, malaria has become an endemic disease in the Comoros archipelago. In 2023, a century later, malaria remains a major health problem that the authorities are committed to eradicate. The aim of this demonstration is to retrace the evolution of malaria epidemiology from 1923 to 2023 in order to understand its decline and maintenance in Comoros. Thus, World Health Statistical Yearbooks and WHO World Malaria Reports, as well as the databases of the National Malaria Control Program (PNLP-Comores) were consulted to compile a database of malaria cases from 1923 to 2023. Using both historical and more recent sources of population data, the annual incidence of malaria was calculated for the three islands of the Union of Comoros. In parallel, data on various malaria control measures implemented during this period were recorded and used to examine their effects on the malaria evolution trend. The malaria epidemic of 1923 to 1925 caused over 2,500 deaths on Grande Comore alone. Malaria incidence averaged over 3,307 cases per 100,000 inhabitants between 1955 and 1976, less than 2,410 cases between 1993 and 1999, and over 7,360 cases between 2004 and 2009. From 2010 to 2017, incidence declined from 15,074 cases to less than 323 cases per 100,000 inhabitants, a 94% of reduction. However, since 2018, there has been a resurgence of malaria cases in Grande Comore, with incidence exceeding 1,000 cases per 100,000 inhabitants. This study showed how malaria has evolved in Comoros over a century, characterizing the effects of the control measures implemented: indoor residual spraying, mass distribution of insecticide-impregnated mosquito nets, mass treatment with Artequick, and improved diagnosis, care and treatment of patients. Comoros has been classified as a country in the malaria elimination phase, but definitive elimination remains a major challenge.

Keywords: malaria, epidemiology, control strategy, Artequick, LLINs, Union des Comores.

Reference: Raynal, J., 1928. Enquête sanitaire à la Grande Comore en 1925: observation de paludisme à forme épidémique. Bull Soc Path Exot 21, 132–41.

Figures:

Figure 1: Chronology of malaria control programs and campaigns.

Figure 2: Malaria cases and incidence trends.

Fig. 1

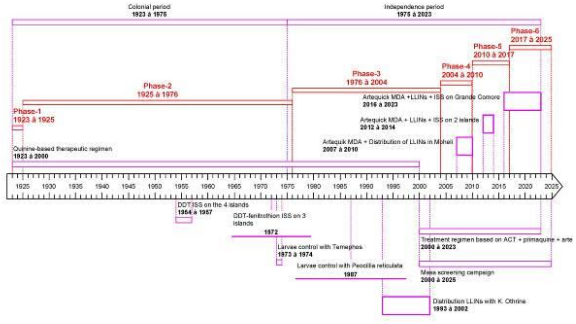
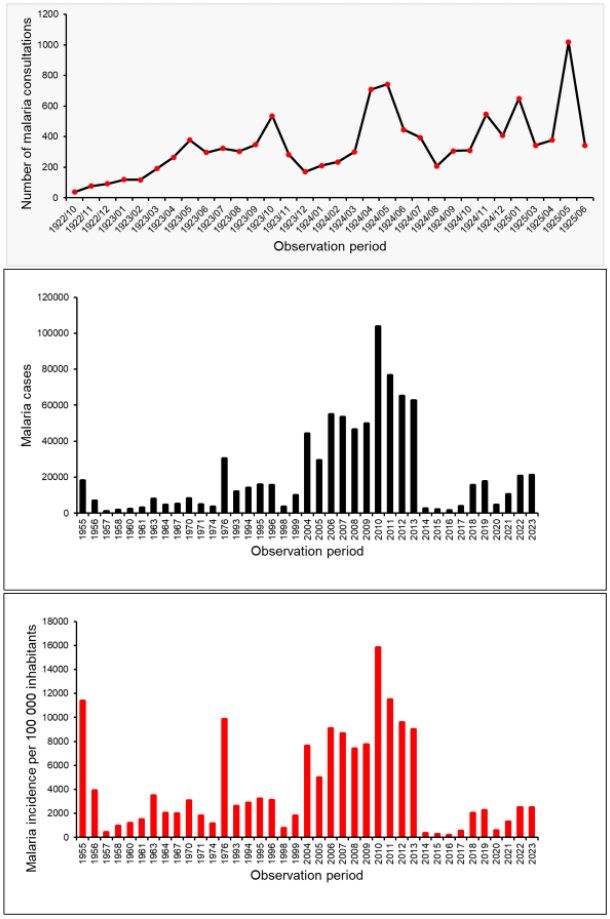


Fig. 2



OP 077

Integrated vector management in malaria-endemic regions of sub-Saharan Africa

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Introduction: Malaria remains a major public health issue, with Sub-Saharan Africa disproportionately affected, accounting for the majority of global cases and deaths. Current interventions like insecticide-treated nets and indoor residual spraying are losing efficacy due to mosquito resistance and behavioral changes.

Objective: The goal of this study was to assess the impact of integrated vector management on malaria risk, specifically for children and pregnant women, in malaria-endemic regions of sub-Saharan Africa to inform and optimize malaria control strategies in high-burden areas.

Methods: We conducted a systematic search of databases, including MEDLINE, EMBASE, and PubMed, for studies published between January 2004 and January 2025 that evaluated integrated vector management in sub-Saharan Africa. Studies included children or pregnant women and reported outcomes such as malaria infection rates or mosquito density. Eligible study designs were cluster-randomized trials and observationnal studies. Data were extracted independently by two reviewers, and pooled risk ratios (RR) for binary outcomes were calculated using random-effects models. Subgroup analyses compared the effectiveness of a combination of two or three interventions to that of a single intervention.

Results: Out of 11,302 studies identified, 16 met the inclusion criteria. These studies, comprising nine randomized controlled trials and seven observational studies, showed that integrated vector management significantly reduced malaria risk compared to single interventions (RR = 0.58, 95% CI: 0.49-0.68).

Conclusion: Integrated vector management showed strong potential as an effective and sustainable approach to malaria control. It should be prioritized and further invested in to enhance malaria control in high-risk regions.

Key words: Integrated Vector Management, Malaria control, Children, Pregnant women, Sub-Saharan Africa

OP 078

A century of medical records reveal earlier onset of the malaria season in Haut-Katanga induced by climate change

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Questions: Despite worldwide efforts to eradicate malaria over the past century, the disease remains a significant challenge in the Democratic Republic of the Congo (DRC) today. Climate change is even anticipated to worsen the situation in areas with higher altitudes and vulnerable populations. This study in Haut-Katanga, a highland region, aims to evaluate the effectiveness of past control measures and to explore the impact of climate change on the region"s distinct seasonal malaria pattern throughout the last century.

Methods: We integrated colonial medical records (1917–1983) from two major mining companies (Union Minière du Haut-Katanga and the Générale des Carrières et des Mines) with contemporary data (2003–2020) from Lubumbashi. Concurrently, we combined colonial climate records (1912–1946) with recent data from satellite images and weather stations (1940–2023). We used Generalised Additive Models to link the two data sources and to test for changing seasonal patterns in transmission.

Results: Malaria transmission in Haut-Katanga has fluctuated significantly over the past century, influenced by evolving control strategies, political conditions and a changing climate. A notable decrease in cases followed the introduction of dichlorodiphenyltrichloroethane (DDT), while a surge occurred after the civil wars ended at the beginning of the new millennium. Recently, the malaria season began 1–2 months earlier than historically observed, likely due to a 2–5°C increase in mean minimum temperatures, which facilitates the sporogonic cycle of the parasite.

Conclusion: Despite contemporary control efforts, malaria incidence in Haut-Katanga is similar to levels observed in the 1930s, possibly influenced by climate change creating optimal conditions for malaria transmission. Our historical data shows that the lowest malaria incidence occurred during periods of intensive DDT use and indoor residual spraying.

Consequently, we recommend the systematic reduction of vector populations as a key component of malaria control strategies in highland regions of sub-Saharan Africa.

Fig. 1

OP 079

Malaria molecular surveillance in western Equatoria State, south Sudan

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Malaria is a major public health problem in South Sudan, and comprehensive control interventions are planned by the National Malaria Control Programme (NMCP). However, service delivery and data collection are challenged by fragilities of the health system, whose functioning relies on the financial and technical support provided by international donors and by the implementation support provided by Non-Governmental Organisations (NGOs). In particular, data on the prevalence of different plasmodial species, drug-resistant strains or strains evading diagnostic tests, are scarce or absent. As part of a malaria response programme coordinated by the NGO Doctors With Africa CUAMM in Western Equatoria State, an operational research study was conducted to strenghten malaria diagnosis and surveillance by capacity building activities and epidemiological investigations. The study took place in three Primary Health Care Centers (PHCC) in Lakamadi, Mundri and Mvolo Counties over a 6-month period (November 2021-May 2022). Malaria diagnosis by Rapid Diagnostic Testing (RDT) was integrated into PHCC routine activities for children under five years old and pregnant women regardless of fever (1902 participants), and Dried Blood Samples were collected for Next Generation Sequencing (NGS) analysis of the plasmodial genome. Amplicon NGS (AmpSeq) targeting species-specific sequences and antimalarial drug resistance loci was completed, while whole-genome NGS including genotyping *hrp2/3* deletions causing false negative RDT results is currently ongoing. The presence of Plasmodium spp. was detected in 26% of participants by RDT and in 42% by AmpSeq. The AmpSeq results also highlighted that 3% of infected participants harbor non-falciparum species that are not detectable by RDT currently used in South Sudan, including *P. vivax*, whose treatment requires primaquine in addition to artemisinin-based drugs. Mutations in the *kelch13* gene were observed in 1% of infections and included a validated marker of artemisinin resistance (A675V). The quintuple *dhfr-dhps* haplotype associated with complete resistance to sulfadoxine-pyrimethamine (IRN-GE) was observed in 39% of infections. The generated data were shared with the NMCP and will be used to inform future control policies, including the possible introduction of new RDT, and different drug formulations for prevention and treatment.

OP 080

15 years of molecular surveillance of antimalarial drug resistance in Rwanda

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Over the past decade, malaria prevalence in Rwanda has dropped significantly. Increased control measures include the community-based screening and treatment program for which Rwanda serves as a model country. Also, adherence to treatment and vector control measures are strong. Rwanda abolished use of chloroquine (CQ) in 2001, switched to sulfadoxine-pyrimethamine (SP) *plus* amodiaquine until 2005, and introduced artemether-lumefantrine as first-line treatment in 2006. Today, Rwanda is in the epicentre of emerging artemisinin partial resistance in Africa. The emergence of artemisinin resistance in Africa is a major concern, and in that context, susceptibility to partner drugs becomes more relevant. Molecular markers can help estimating that as well as artemisinin resistance.

For the last 15 years, we have closely monitored trends of molecular markers for antimalarial drug resistance in the Huye district of southern Rwanda. High-grade SP resistance as indicated by a predominance of *PfDHFR*/*PfDHPS* quintuple and sextuple mutations was discernible already in 2010. The central CQ resistance marker, *PfCRT* K76T, declined from 76% (2010) to 18% (2010-2018) and remained constant since at around 25%. In contrast, a novel proposed CQ resistance marker, *PfAAT1* S258L, remained at fixation for the 15 years of observation. In 2015, we observed diverse mutations in the *Plasmodium falciparum Kelch-13* (*PfK13*), followed by a selection of mutations that associate with delayed parasite clearance, *i.e.*, *PfK13* R561H and A675V. In parallel, markers in the *P. falciparum multi-drug resistance 1* (*PfMDR1*) gene have evolved into a pattern associated with increased tolerance to lumefantrine, a partner drug in ACT. We did not detect other markers indicative of partner drug tolerance, *e.g.*, in the *PfCRT* gene.

Our data are from a confined area, but span more than a decade of regular surveillance from a focal point regarding antimalarial drug resistance. The persistence of *PfCRT* K76T

20 years after the replacement of CQ and fixation of *PfAAT1* S258L are surprising and may indicate ongoing drug pressure or introduction of parasites from elsewhere. Rwanda will be the first country to introduce multiple first line treatments for malaria to counteract artemisinin resistance. Longitudinal data with the opportunity to revisit molecular assessment of samples offer a unique insight in ongoing drug selection in the *P. falciparum* population before, during and after policy changes.

OP 081

Spatial–temporal distribution of incidence and mortality of neonatal-tetanus and its epidemiological determinants in southern Pakistan – November 2024

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Background: Neonatal-tetanus remains a public health threat in many low-middle-income countries including Pakistan. Administration of tetanus-toxoid vaccine to pregnant women can reduce the neonatal deaths by up to 94%. In Pakistan, little attention given to its spatial-temporal dynamics. The objective of this study is to identify geographic hotspots, temporal trends, epidemiological determinants and to inform targeted interventions.

Methods: A spatiotemporal analysis of neonatal-tetanus cases and deaths was conducted in Sindh Province from January 1st 2022 to November 30th 2024. All cases and deaths were identified through integrated Disease Surveillance and Response System. Parents/Guardian were approached. In-personal interviews conducted to collect information regarding maternal TT vaccination, safe delivery practices, delivery site and cord cutting practices. Spatial autocorrelation and hot spot analysis were used to detect spatial dependency and spatial clustering of the neonatal-tetanus cases and deaths. Adjusted odd ration (AOR) and 95% confidence-interval with p-value <0.05 were calculated.

Results: A total of 127 cases (median age: 08days range 03-25days) and 93 deaths (case-fatality-rate 73%) were reported. The overall incidence-rate was 16 /100,000. The highest incidence rate was reported in year 2022 (n= 86: AR: 11/100,000). Male accounted AR= 17/100,000. The peak of the cases found in January(n=23). On hot spot analysis two major clusters were identified: Malir (n=25: attack-rate=75/100,000) and Thatta (n=16: attack-rate 106/100,000). **Spatial autocorrelation analysis** detected negative spatial dependency in the distribution of cases and deaths. The risk of NNT was high with mother un-vaccination against tetanus (AOR: 21.7, C.I: 6.5-72.1), delivery conducted at home (AOR: 6.6, C.I: 1.2-36-1), and Surma (lead sulphide) application on umbilicus (AOR: 8.3, C.I: 1.7-39)

Conclusion: Current study revealed that the Sindh faced significant health challenges to support global strategy of elimination of the NNT. There is urgent need for Strengthening TT vaccination programs and awareness among mothers regarding safe delivery practices. The clustering of cases highlights the importance of geographically tailored strategies.

OP 082

The restrictive vaccine vial opening policies in rural Guinea-Bissau – Experiences of those affected, implications, and feasibility of change

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Any remaining doses of unpreserved multi-dose vaccines must be discarded 6 hours after reconstitution. Many countries implement restrictive vial opening policies (RVOPs), limiting administration of these vaccines to when a certain number of children are present. In Guinea-Bissau, this results in health facilities (HFs) restricting BCG, measles (MV), and yellow fever (YFV) vaccinations to predefined days.

Two studies were nested within an ongoing vaccine trial in rural Guinea-Bissau. During the trial, HFs in three regions were supplied with extra BCG vials to halt RVOPs for BCG.

In a qualitative study, we explored experiences of caregivers of vaccine-eligible children and health care workers (HCWs) with the RVOPs. This was done through focus group discussions (FGDs, n=4, 29 caregivers), semi-structured interviews (SSIs, n=9 HCWs), and a thematic network analysis. Most caregivers reported several difficulties in obtaining BCG, MV, and YFV vaccinations. Many stated returning to the same HFs repeatedly was their only option for obtaining vaccinations. Most HCWs perceived the RVOPs as a logical result of limited vaccine availability but implementing RVOPs affected their sense of purpose and job satisfaction. To optimize the vaccination process, many participants recommended abandoning the RVOP, and allocating more resources to the HFs.

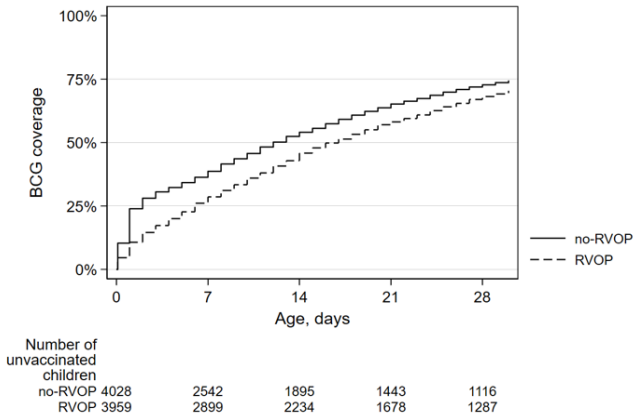
In a mixed-methods study, we quantitatively described how RVOPs affect the implementation of the childhood vaccination programme (components 1 and 2) and qualitatively explored the feasibility of abandoning RVOPs at the HF level (component 3). Data for components 1 and 2 were collected through a HF survey (n=23) and visits to children"s (n=7,987) households. For component 3, we used SSIs with HCWs (n=5). All HFs applied RVOPs for BCG, MV, and YFV and these vaccines were provided less frequently than other vaccines. BCG-vaccination coverage and timeliness significantly improved with no RVOPs compared with RVOPs (*Figure 1*) while vaccination session sizes and missed BCG-vaccination opportunities decreased. All HCWs deemed abandoning the RVOPs feasible but emphasised the need for added funding to procure extra vaccines.

RVOPs is one of several persisting barriers for vaccinations in rural Guinea-Bissau afflicting caregivers and HCWs. It is possible to reduce vaccination session sizes and missed BCG-vaccination opportunities by abandoning the RVOPs,

but additional funding for vaccines is needed to permanently abandon the RVOPs.

Fig. 1

Figure 1: BCG coverage for age in days among children by RVOP cohort.



BCG= Bacillus Calmette-Guérin vaccine, RVOP= Restrictive vial-opening policy.

OP 083

Presenting complaints, diagnoses, and referral of acutely ill children and adolescents managed using a clinical decision support algorithm in primary care facilities in Tanzania – A descriptive longitudinal analysis

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Introduction: Reliable data on paediatric primary care consultations are essential for effective resource allocation and priority-setting. Digital clinical decision support algorithms (CDSA) assist healthcare workers (HCW) in patient management, by providing diagnoses and treatments based on entered symptoms and signs. This study describes the presenting complaints, standardized diagnoses and management of children and adolescent outpatients managed with a CDSA in Tanzania.

Methods: We analysed data from the DYNAMIC project, where HCW from 60 health facilities (HF) in Morogoro and Mbeya regions had access to a CDSA for the management of all acutely ill children aged 1 day to 14 years. Descriptive statistics summarized presenting complaints, diagnoses, and referral, by age, sex, region, season, and HF type (dispensary/health center).

Results: From February 2023 to October 2024, 46,721 cases were managed with the CDSA. Cases were evenly distributed by sex (50% female), with 3% of cases aged <2 months, 90% 2-59 months and 7% over 5 years. Among cases ≥2 months, the main reasons for consultations were fever (61%), respiratory (49%), digestive (28%) and skin complaints (13%). Additional complaints included ENT conditions (3%), ocular, genitourinary, neurological, accident-related and other complaints (each 2%). Neurological (14%) and genitourinary (6%) complaints were more frequent in children ≥ 5y. Other complaints were consistent across sex, region, season and HF type. Common cold, bacterial pneumonia, acute diarrhea, and uncomplicated malaria accounted for 66% of all diagnoses; however, malaria was more common in older children (24% in ≥ 5y vs 11% in 2-59m); and common cold and acute diarrhea less frequent (21% and 5%, respectively, in ≥ 5y vs 44% and 13% in 2-59m). Non-severe headache and pyelonephritis were among the most common diagnoses in children ≥5y, but rare in younger children. Severe illnesses were more frequent in older children (4.9% in ≥ 5y vs 3.0% in 2-59m). HCW recommended referral to higher-level HF in 2.5% of cases, though nearly half of caregivers could not proceed with the referral.

Conclusion: These findings provide standardized data into age-specific presenting complaints, diagnoses, and referral practices among paediatric outpatients in Tanzania. The underrepresentation and higher illness severity among children≥5y suggest barriers to primary care access. The results also highlight persistent challenges to referral for severely ill children.

OP 084

Greater malnutrition in school-aged boys and in pastoralists following climate stressors in a rural community in northern Tanzania

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Background: Climate variability and environmental changes are key determinants of food security and child malnutrition, particularly in rural African communities. The Mount Meru ecosystem in Northern Tanzania, a biodiverse yet highly heterogeneous landscape, is home to populations that rely on pastoralist, agropastoralist, and farming livelihoods, each facing distinct climate-induced vulnerabilities.

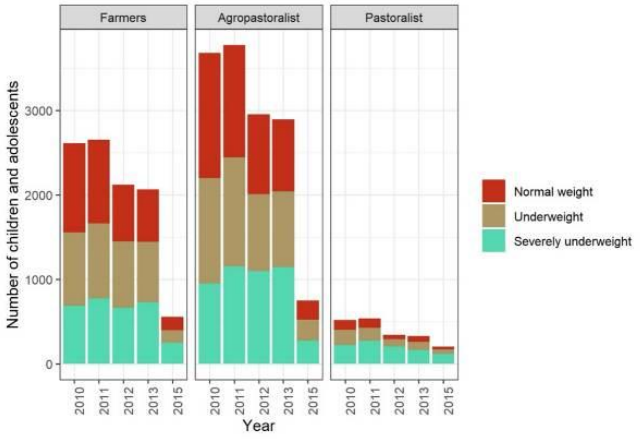
Methods: We analysed five waves of anthropometric data (height, weight, and BMI) collected between 2010-2015 from 26,009 school-aged children and adolescents (6-18 years) across 18 villages. Waves of data collections were implemented by a Tanzanian non-governmental organization Oikos East Africa. Using a Bayesian hierarchical modelling approach, we assessed temporal trends in undernutrition in relation to livelihood strategies, socio-demographic characteristics, and climate factors, including rainfall anomalies, land surface temperature, and evapotranspiration.

Results: Undernutrition prevalence remained consistently high, with significant temporal variability. Boys were more vulnerable than girls. However, by including interaction between age and sex, we observed a differential effect: while undernutrition odds increased with age for boys, they decreased for girls as they aged. Pastoralist communities were particularly vulnerable, with children exhibiting the highest odds of undernutrition compared to those from farming and agropastoralist communities. Climate anomalies were key drivers of nutritional risk, with lower precipitation and higher evapotranspiration anomalies significantly increasing the odds of undernutrition.

Conclusions: Our findings underscore the critical role of climate variability in shaping child nutritional outcomes, emphasizing the need for targeted, climate-adaptive interventions. By identifying sub-groups that are more vulnerable to undernutrition following climate stressors, we

provide actionable evidence for policy-makers. We highlight the importance of integrating environmental and socio-demographic data in nutritional surveillance and policy planning to mitigate the impact of climate change on communities.

Fig. 1



OP 086

Patterns of PrEP and condom use among adolescents and young adults aged 15-24 years old in Mozambique

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Background: In Mozambique, with a national HIV prevalence of 12,5%, pre-exposure Prophylaxis (PrEP) is part of combination prevention strategies since 2017 in few provinces, and in 2021 scaled up nationally to all at-risk individuals. The implementation of campaigns to promote condom use in Mozambique has increased over the last 2 decades. Adolescent and young adult populations have remained very vulnerable to HIV infection due to sexual risk behaviours. This study assessed patterns of PrEP and condom use among adolescent and young adults.

Methods: Prospective cross-sectional study based on secondary data analysis of theNational Survey on the Impact of HIV and AIDS in Mozambique (INSIDA 2021) conducted from April 2021 to February 2022. This study assessed the patterns of PrEP and condom use among adolescent and young adults aged 15–24 years using a structured questionnaire. Stata software v.18 was used to perform data analysis.

Results: Of 2,821 participants interviewed who reported not living with HIV (thus HIV negative), 0.2% (n=9) reported currently use of PrEP. Of 2,281,.8.1% (n=229) reported having heard about PrEP prior to the survey, of which 14,4% (n=33) reported having taken PrEP. Among these 33, 78.7 % (n=26) were aged between 20 to 24 years old, 69.6% (n=23) were females, and 78.7 % (n=26) with secondary education or higher level. Among 196 who reported had never taken PrEP, 45.5% (n=89) reported not using condoms and 91% (n=42) reported multiple sexual partners in the past 12 months.

Conclusion: PrEP awareness and use as well as condom use are low among young people in Mozambique. Concerted efforts are required to influence PrEP and condom use to prevent HIV transmission, especially in adolescents and young adults sexually active with multiple sexual partners.

Key words: PrEP use; Condom use; young people; HIV prevention; Mozambique.

OP 087

Community health workers' acceptability of a Directly Observed Antiretroviral therapy (DOART) programme for children and adolescents living with HIV in Nigeria – A mixed method study

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Background: The World Health Organization recommends enhanced adherence counselling (EAC) for people living with HIV (PLHIV) with unsuppressed viral load. Despite receiving EAC, a significant proportion of children and adolescents living with HIV (CALHIV) continue to face challenges with antiretroviral therapy (ART) adherence, resulting in viral load non-suppression even after EAC sessions. To overcome this challenge, we implemented home-based Directly Observed ART (DOART) for CALHIV with presumptive treatment failure diagnosis. In this study, we assessed the acceptability of the DOART intervention among community health workers (CHWs) in Nigeria.

Method: Between September and December 2024, CALHIV with high VL (>/=1000 copies/ml) were assigned to CHWs, also known as Case Managers (CM), for directly observed ART. Each CM was assigned 2-4 clients for regular home visits and follow-up to ensure ARV intake. CMs were trained to elicit barriers and to provide medication adherence counselling to CALHIV and their caregivers. Other services CM offers include TB screening, weight checks, and nutritional advice. In January 2025, A quantitative Likert scale (1-5) survey was administered to 480 CHWs and five focus group discussions were conducted to understand willingness to participate in DOART and identify barriers and facilitators. The mean of survey responses was calculated and described using descriptive statistics. Data from FGD were analysed using content analysis.

Results: Of the 480 CHWs that participated in the survey, 225 (46.9%) were aged 26-35 years, and the majority were female (57.5%). The mean score of affective attitude is 4.3 (agree), burden 3.3 (agree), perceived effectiveness 4.4 (strongly agree), opportunity cost 2.9 (neutral), self-efficacy 3.6 (agree), and ethicality 4.2 (agree). Questions related to intervention effectiveness had the most strongly disagreeing responses. Qualitative data identified barriers such as caregivers" refusal of home visits due to community stigma, non-disclosure of HIV status, and too frequent home visits. FGD participants recommended remote ART monitoring and the use of treatment supporters to address identified barriers.

Conclusion: This formative research shows that DOART was perceived acceptable and can improve medication adherence among CALHIV patients with unsuppressed VL. To improve viral load suppression, the frequency of home visits needs to be reduced, remote monitoring introduced, and CHWs trained.

OP 089

A seamless single-vial integration of a molecular test and lateral flow detection for point-of-care infection diagnostics

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Question: Modern point-of-care (PoC) diagnostics of infections demand highly sensitive, instrument-free molecular detection methods. The integration of such technologies typically requires complex microfluidic systems and external readers, which are often far too expensive. Cost-effective alternatives, such as lateral flow tests (LFTs) combined with nucleic acid amplification, are unsuitable due to the open handling of amplification products, which poses critical contamination risks.

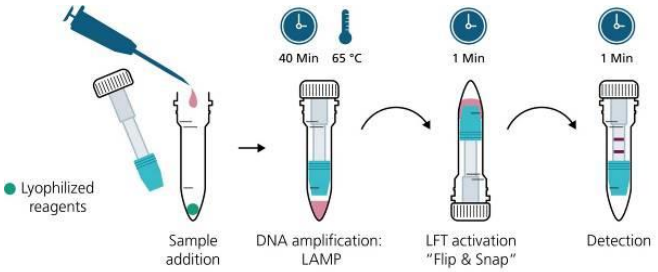
Methods: We have developed CampyTube, a simple and user-friendly format for the integration of an isothermal DNA amplification (LAMP) with an embedded instrument-free detection on a miniaturized LFT in a single vial. This is realized via two innovative components: a specially designed vial insert, and a miniaturized LFT. The insert and the mini-LFT enable integrated LAMP with subsequent detection by naked eye in only 25 µl of liquid, without any additional buffer or further manual steps. The amplification takes ~30-40 min, and the readout ~1 min. All test components, from the dry amplification reagents to the mini-LFT, are incorporated in a standard single vial which is closed after the addition of the liquid sample and never has to be opened again. This ensures an absolute prevention of carry-over contamination and makes the system very safe and simple to use in PoC-settings.

Results: We have initially developed and evaluated CampyTube for the monitoring of Campylobacter contamination at the meat production facilities and achieved the detection of as low as 60 Campylobacter genome copies per reaction. Yet this highly versatile system can be adapted for other targets. We are currently evaluating this system for malaria diagnostics and have confirmed its direct compatibility with 8% (v/v) blood. The field study in Benin is planned for the coming months.

In comparison to the other systems (test cassettes and cartridges), CampyTube requires no complex microfluidics, no batteries, no additional mechanisms for buffer addition, and significantly less material (~80% less plastic, 3x less nitrocellulose). The design allows for use with simple standard heating blocks and is both cost-effective and sustainable.

Conclusions: CampyTube is the first solution that transforms a standard laboratory vial into a highly efficient, yet simple and affordable system for PoC molecular diagnostics.

Fig. 1



OP 090

VL-INNO – AI-driven digital microscopy for improved diagnosis and quality control in visceral leishmaniasis

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Question*:* Visceral leishmaniasis (VL) is a significant public health problem, with an estimated 30,000 new cases per year and the highest burden in rural settings of East Africa and Brazil. Tissue aspiration (mainly from the spleen and bone marrow) microscopy remains a cornerstone in the VL diagnostic algorithm and is the reference method for assessing parasitological cure. Continuous quality assurance of both slide preparation and microscopist expertise is essential to ensure accurate diagnosis of active VL, treatment failure, relapses and cure.

Methods*:* EDCTP2-funded VL-INNO project aims to develop an innovative digital microscopy solution enhanced with edge-based artificial intelligence (AI), integrated within a mobile app for real-time detection and quantification of *Leishmania* amastigotes. This consists of two modules: i) a smartphone-based app able to transform conventional microscopes into digital ones, and ii) TeleSpot, a web-based platform for remote collaborative image analysis. This system is being deployed in the Leishmaniasis Research Treatment Center (LRTC), University of Gondar, Ethiopia following an implementation research approach and conducting a technology usability and acceptability evaluation with the participation of 5 laboratory staffs. Curated bone marrow and spleen aspirate microscopy slides from VL cases and controls were obtained from the LRTC and a collection from Instituto de Salud Carlos III, Spain. The slides are digitized, creating two datasets: one for AI model training and diagnostic algorithm development using labelled amastigotes and implemented in the YOLO v-11 architecture; and another for validation of its diagnostic performance.

Results: Different rounds of training and technology implementation have been conducted, followed by usability assessments, in order to improve the acceptability of this solution.

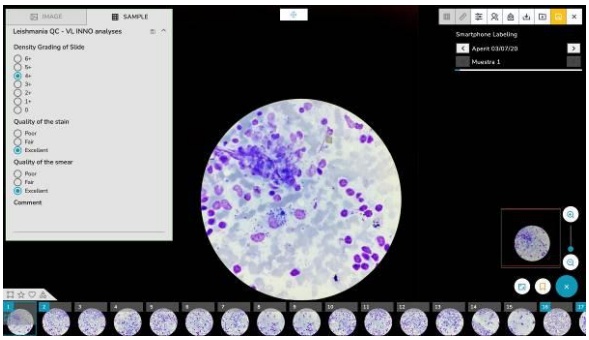
A digital, remote quality control system has been deployed through TeleSpot.

A preliminary version of this platform addresses slides quality and parasites count with 71.1% precision and 82.7% recall.

Conclusions*:* This project represents a significant advancement in the standardization and automation of VL diagnosis, enabling remote quality control in resource-limited settings and potentially enhancing the accuracy of diagnosis by microscopy. Paving the way for broader integration of digital and AI-driven tools in neglected tropical disease management, improving diagnostic efficiency and accessibility.

Fig. 1

Fig. 2



OP 092

Tuberculosis treatment support tools – A pragmatic multisite randomized controlled trial in Argentina

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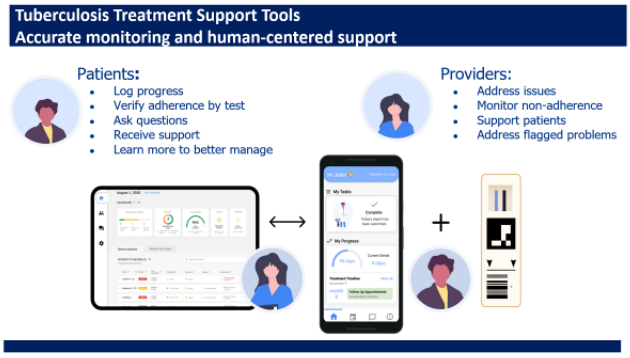
Background: The impact of digital adherence technologies on tuberculosis (TB) treatment outcomes remains poorly understood. We evaluated whether the TB Treatment Support Tools (TB-TST), combining an interactive web app with treatment supporters and an adherence drug metabolite test, can improve treatment outcomes in patients under self-administered treatment.

Methods: Pragmatic randomized controlled trial in four public reference hospitals in Argentina. Participants newly diagnosed with drug-susceptible TB aged 16 and older were randomized 1:1 to standard of care (SC) or SC plus intervention (TB-TST). Participants in the TB app were instructed to report their medication intake daily, upload a photo of a drug metabolite urine random test run weekly to confirm adherence and exchange messages with a treatment supporter for assistance. The primary outcome was treatment success (completion or cure). We used intention-to-treat (ITT) and per protocol analysis, exit surveys and interviews.

Results: We enrolled 555 individuals, 51% female, mean age 33+/-13, 95% completed primary school or higher, 51% employed, and 63% reported a household income at or below poverty line. 30 patients were deviated from protocol and 17 patients never started the intervention. Treatment success was 81.6% vs 74.4%, and default was 17.2% vs 24.4%, ($p<0.05$ for intervention and control respectively. Results differed among the 4 hospitals. TB-TST was more effective among women and <35 years. In an exit survey, 80 participants described the companion app as very helpful, practical, and efficient and would highly recommend it to others.

Conclusions: TB-TST intervention improved treatment outcomes in the study population. It is important to explore how COVID-19 pandemic, site differences, and app engagement impacted implementation, but the findings suggest a need to explore further implementation of this intervention to support patients on self-administered treatment as a feasible alternative to directly observed therapy for a substantial proportion of patients with TB.

Fig. 1



OP 096

Validation of an image analysis based system with artificial intelligence for the detection of protozoa and helminths in stool samples

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Microscopic visualisation of concentrated faeces remains the gold standard technique for microbiological diagnosis. However, these methods vary in sensitivity, processing time and are professional-dependent. Alternatively, automated image analysis systems may be a suitable solution, decreasing the workload of laboratory staff and improving sample analysis. The Human Fecal Ova & Parasite (*O&P*) Detection system (Techcyte®) is an artificial intelligence (AI) software that employs neural network algorithms based on digital image analysis. *O&P* provides presumptive diagnostic

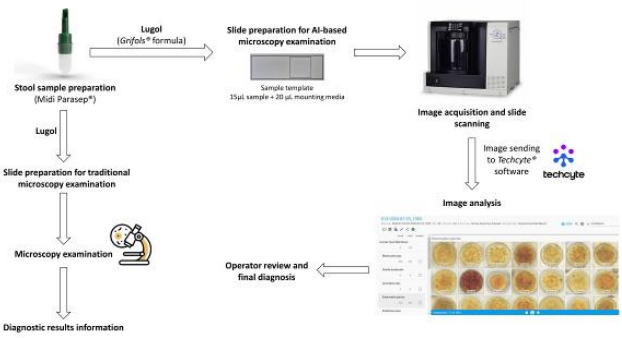
results by automated observation of the sample. The aim of this study is to validate the AI software for the detection and diagnosis of protozoan and helminth infections in clinical stool samples.

A collection of clinical stool samples (n=180) was retrospectively analysed for *O&P* validation during the months of July to October 2024. Positive samples with confirmed monopathogenic (n=118) or mixed (n=31) protozoan and helminth infections, as well as negative samples (n=31) were included. Samples were concentrated using the Midi Parasep® devices with Alcorfix™, or by the Ritchie technique. The slides were automatically scanned with the NanoZoomer S360 MD scanner (Hamamatsu®), which captured high-resolution images using a 20x20mm area with two depths of focus (Z-stacks). The images were sent to the Techcyte® server for analysis using the *O&P* software, and were ready for review and validation by the operator. The results of the microscopic examination were compared with the presumptive detection and identification results of the AI system after operator review.

The comparative validation study demonstrated a sensitivity of 96.64% [95% confidence interval (CI) 91.94-98.76], a specificity of 93.55% (CI 77.16-98.87), a positive predictive value of 98.63% (CI 94.63-99.76) and a negative predictive value of 85.29% (CI 68.17-94.46) for the overall detection with the O&P system compared to conventional microscopy. The Kappa value 0.869 (CI: 0.773-0.964) describes a significant correlation between the two diagnostic techniques.

Automation of stool microscopy with AI tools can help improve the diagnosis of intestinal parasites by providing reliable results through operator interpretation and review. Such systems hold promise for overcoming the limitations of conventional microscopy, and optimising the throughput of clinical microbiology laboratories.

Fig. 1



OP 097

Taking point of care ultrasound to the southern region districts of Malawi – A needs assessment

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Introduction: Access to healthcare in low-resource settings like Malawi is hindered by limited resources. Diagnostic imaging is crucial for timely diagnosis yet is often unavailable. Point-of-care ultrasound (POCUS) offers an opportunity for bedside imaging to facilitate clinicians' decision-making[1]. For sustainable implementation a local needs assessment is essential.

Methods: This cross-sectional study was conducted among healthcare workers (HCWs) and District Health Management Teams (DHMTs) in secondary-level healthcare facilities of four districts in the Southern Region of Malawi—Chiradzulu, Mangochi, Neno, and Nsanje. Data were collected through standardized questionnaires and focus group discussions (FGDs), focusing on POCUS indications, barriers, and facilitators. Quantitative data were analyzed using descriptive statistics in R, while qualitative data from the focus groups were analyzed thematically using NVivo software.

Results: 143 HCWs responded to the questionnaires and 34 DHMT members participated in FGDs. HCWs and DHMT see a strong need for POCUS. Overall, indicated use of POCUS was expected to be highest in obstetrics (54.5%), cardiology (34.8%), cases of extrapulmonary tuberculosis and kidney failure (27.3% each) as well as trauma (25.8%). The ranking varied by district, level of care (community versus district hospital), and type of facility (faith-based versus public). Current barriers to general ultrasound use included lack of ultrasound gel (45%), power supply (30.8%), limited trained personnel (19.3%), need for diagnostics after-hours (17.1%), and non-functional ultrasound machines (12.9%). Lack of equipment and limited capacity to acquire and maintain it were recognized barriers amongst DHMTs. They also highlighted limited access to accredited training and mentors to support capacity building for POCUS providers. In some districts international? partners supported POCUS implementation? through equipment purchase and maintenance, training, and mentorship. Partners mostly lacked the flexibility to align with district priorities determined by DHMTs.

Conclusion: While POCUS was deemed a desirable resource and priorities were clearly stated, DHMTs feel disempowered to acquire and maintain equipment or align implementing partners to district priorities.

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OP 098

Three years of continuous molecular surveillance of Dengue in Vietnam and the potential of inflammatory biomarkers as alternative tools for clinical triaging upon admission

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Background: Dengue remains a significant global health threat in tropical regions. The severity of the disease is influenced by both host and viral factors. While genetic diversity in the dengue virus (DENV) may contribute to variations in disease outcomes, host immune responses and genetic predispositions play a crucial role in determining disease progression. Identifying reliable biomarkers to predict disease severity could improve triage and management during outbreaks.

Methods: A total of 426 patients presenting with symptoms of viral haemorrhagic fever were screened for dengue, Zika, and chikungunya using multiplex real-time PCR, and DENV serotypes were further differentiated. Plasma levels of 48 inflammatory biomarkers were quantified using a magnetic bead-based assay. Additionally, DENV genotypes were analysed through phylogenetic sequencing of the capsid-premembrane gene. Machine learning models were developed by integrating cytokine data and clinical features, such as symptom duration prior to hospital admission, to predict which patients required hospitalization. The model"s performance was evaluated using cross-validation techniques, assessing sensitivity, specificity, and accuracy.

Results: Dengue was identified as the primary viral cause of haemorrhagic fever over the three-year study period, with DENV-2 being the predominant serotype, followed by DENV-1 and DENV-4. Phylogenetic analysis revealed a shift in DENV-2 from the Asian I genotype to the Cosmopolitan genotype in 2021. Plasma concentrations of inflammatory biomarkers, including TNF-Beta, HGF, MIP1-Beta, and SCGF-Beta, were significantly associated with clinical severity. A feature selection process identified these four cytokines as strong predictors of disease severity. By incorporating these biomarkers along with time since symptom onset, the predictive model achieved nearly 80% accuracy in identifying patients requiring hospitalization. Sensitivity and specificity analyses confirmed the model's robustness for early triaging.

Conclusions: TNF-Beta, HGF, MIP1-Beta, and SCGF-Beta were identified as key biomarkers associated with dengue. Machine learning models incorporating these markers demonstrated high accuracy in classifying dengue patients, suggesting their potential as alternative diagnostic tools for clinical assessment. Additionally, the observed shift in DENV-2 genotypes underscores the importance of ongoing surveillance to inform public health strategies.

OP 099

Aircraft lavatory wastewater surveillance for SARS-CoV-2 and other viruses at airports in Thailand, October 2023 - July 2024

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Background: Establishing an internationally equitable aircraft-based wastewater genomic surveillance system is imperative to effectively monitor the dissemination of the SARS-CoV-2 and other enteric viruses that can be detected from human excretionin the wastewater. We conducted the surveillance of lavatory wastewater in aircrafts to identify other coronaviruses beyond SARS-CoV-2 and enteric viruses.

Methods: We collected lavatory wastewater from aircraft by port health officers between October 2023 to July 2024 at Suvarnabhumi (BKK) and Phuket International (HKT) airports. Lavatory wastewater samples were stored at 2-8 degrees Celsius and sent to lab centre within 48 hours. Four PCR protocols, including 1) SARS-CoV-2 Real-time PCR 2) Quan pan-CoV PCR protocols 3) Xui pan-CoV PCR protocol and 4) Enterovirus family PCR, were used to identify the pathogen. We aimed to detect the pathogens from the aircraft lavatory wastewater. And evalaution of the plausibility of emerging pathogen from the lavatory wastewater.

Results: A total of 100 lavatory wastewater samples from 54 flights from 24 countries were collected. The flights were from the Middle East, Africa, Australia, Asia and Europe. Thirty two of 100 samples (32%) were SARS-CoV-2 positive tested by real-time PCR. Sixteen samples (16%) were detectable by Quan and/or Xui CoV PCR assay respectively. Sequencing of pan-cov products revealed positive for 4 samples of SARS-COV-2, 12 samples of HCoV 229E and 2 samples of HCoV OC43. Four samples (4%) were detected enterovirus and subsequently identified EV-C116, CoX-A13, CoX-A22, HRhV-A34. The positive rate was highest in April 2024 (75%) when was highest traveller volume due to Thai New Year festival. Long-haul flights (≥ 8 hrs) showed higher positive rate (57.89%).

Conclusions: Not only was SARS-CoV-2 detectable in aircraft lavatory wastewater samples, but there was successfully identified other coronaviruses such as HCoV 229E and HCoV OC43 by using family and genus-specific PCR. It plays a crucial role inimplementing surveillance of novel coronavirus pandemics in the future, particularly MERS or novel coronavirus. The successfully detectable enteroviruses in lavatory wastewater is implicated to detect poliovirus, which is experiencing a resurgence globally. For conclusion, aircraft lavatory wastewater surveillance demonstrates usefulness for the introduction of pandemic pathogens such as polio, novel coronavirus or pandemic influenza A into the countries or re.

Fig. 1

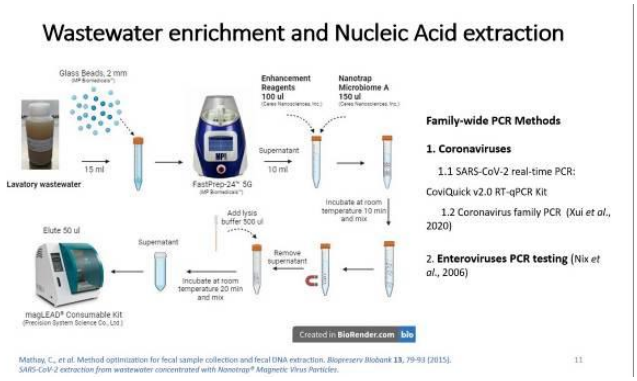

Fig. 2

OP 100

Artificial Intelligence – A turning point in pandemic preparedness and response? A SWOT analysis

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Question: The COVID-19 pandemic has revealed many shortcomings in the way health systems prepare for and respond to pandemics. In this context, artificial intelligence (AI) has been presented as a revolutionary solution capable of helping detect epidemics, assisting in diagnosis and predicting the spread of viruses and other health threats. These advances have led many researchers to extol AI's immense potential for pandemic preparedness and response

(PPR). However, its adoption during the Covid-19 pandemic raises questions and uncertainties about its real effectiveness, its technical constraints and its social, ethical and legal implications.

Methods: We conducted a scoping review using the updated Joanna Briggs Institute (JBI) methodological guidance for scoping reviews and systematically searched three databases: ProQuest, PubMed, and Scopus. We searched for articles published between January 2014 and December 2024. We performed a SWOT analysis to identify the strengths, weaknesses, opportunities and threats associated with its use for PPR, based on the five pandemic preparedness and response subsystems defined by the World Health Organization.

Results: After screening, 34 articles met our inclusion criteria. The analysis reveals the great potential of AI for PPR, particularly through the rapid detection of outbreaks, automation of tasks and improved access to information (strengths). In addition, AI could help optimize research and innovation, as well as coordinate the response to health crises at the international level (opportunities). However, several weaknesses remain, such as the lack of transparency and the poor adaptability of algorithms to unexpected developments in pandemics. In addition, AI raises the risk of invasion of privacy and social control. The emergence of unequal access to AI technologies and algorithmic biases could increase health disparities (threats).

Conclusion: In the face of this analysis, we emphasize the essential aspect of intergovernmental cooperation to ensure the sustainable and equitable integration of AI for PPR. However, a more profound transformation of the management of health crises is necessary, in order to move from a strictly "Pasteurian" (single cause) approach to PPR to a holistic vision that takes into account social, economic and environmental determinants. Thus, AI should not be implemented as an isolated solution, but as an innovation supporting a systemic and sustainable approach.

OP 101

Integrated One Health digital platform for outbreak management

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[14]Kafkas University, Kars, Turkey
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Increased global mobility, climate change, and environmental alterations have contributed to the accelerated spread of zoonotic infectious diseases. Swift identification of the causative agent during an outbreak is crucial for the timely implementation of effective control measures. A well-structured, user-friendly digital system for collecting outbreak data is essential to enable a rapid response and ensure efficient outbreak management.

A digital One Health platform that integrates data from various diagnostic sources, enabling real-time outbreak surveillance for health professionals and stakeholders was established. The platform facilitates the collection and integration of anonymized patient data with results from diverse diagnostic methods directly in the field. By including samples from humans, animals, vectors (ticks, mosquitos) and the environment, the system supports a comprehensive One Health approach to disease surveillance.

Real-time data accessibility allows experts from multiple disciplines to rapidly identify emerging threats, track disease transmission, and implement timely interventions. A key feature of the platform is its ability to organize data by species and syndromic approach, allowing for more precise analysis and targeted response strategies. Visualizing all results on an interactive map enhances situational awareness, enabling health authorities and researchers to monitor outbreaks, identify patterns, and coordinate responses more effectively. The interconnected system ensures rapid, data-driven decision-making, ultimately strengthening public health preparedness and response.

This One Health digital platform has the potential to revolutionize global outbreak surveillance by enabling faster detection, more efficient data integration, and improved coordination of response efforts across borders.

OP 102

Strengthening epidemiological systems through laboratory systems– The PROALAB program's experiences and achievements in West-Africa

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Introduction: In response to the 2014–2015 Ebola epidemic in West Africa, the German Development Bank (KfW) mobilized funds to enhance epidemiological surveillance and strengthen epidemic preparedness and response. In 2018, the West African Health Organization (WAHO) launched the PROALAB (Programme Ouest-Africain des Laboratoires), a laboratory capacity-building initiative funded by KfW.

Methodology: The program was structured around two components:1) Equipment reinforcement, subdivided into five categories: Laboratory equipment, reagents, and consumables; Solar equipment; IT; Incinerators; Building renovations.2) Training and certification workshops on cross-cutting themes, including: Quality management systems; Biological risk management; Biomedical waste management; Computerized laboratory systems; Equipment maintenance; Antimicrobial resistance; Arbovirus surveillance.

Results: 1) Laboratory Strengthening: In the first phase, 10 laboratories across four ECOWAS countries received

equipment deliveries in 2023. The second phase expanded to five additional countries, covering 15 more laboratories, with equipment procurement currently underway. 2) Capacity Building & Certification: The West African Biorisk Management Network (WABNet) was established under WAHO"s leadership. 71 laboratory experts were certified in Biorisk Management through the International Federation of Biosafety Associations. 30 additional experts received certification in biomedical waste management. Two national biosafety associations were founded in Burkina Faso and Togo. Regional Technical Working Groups were established for all cross-cutting themes, leading to the development of roadmaps and operational plans. Key guidance documents were developed and implemented. Training Impact: Over 50 training workshops were conducted, with more than 200 laboratory workers certified through PROALAB. COVID-19 Response: Before the first SARS-CoV-2 case was detected in the West African region, laboratory workers from all 15 ECOWAS countries were trained in PCR testing for SARS-CoV-2, ensuring early preparedness.

Conclusion: The PROALAB program has significantly strengthened epidemiological surveillance and laboratory systems across the region. A third phase, aiming to cover all 15 ECOWAS countries, is currently in preparation. Moving forward, collaboration with key technical and financial partners will be crucial to harmonizing strategies, optimizing resources, and avoiding duplication of efforts.

OP 103

An investment too good to be true – Assessing the official return-on-investment estimates for pandemic preparedness

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The World Health Organization, World Bank, Government of Twenty and key international health organizations have requested investments of US$31.1 billion per year in pandemic preparedness and response. These include US$26.4 from LMICs and an additional US$10.5 in new ODA. To justify these unprecedented costs, these institutions have relied on two return-on-investment cases by the WHO/World Bank and the G20 High Level Independent Panel on Pandemic Preparedness.

Yet, an examination of these return-on-investment (ROI) cases reveals the use of problematic assumptions, crude baselines for comparison, and a failure to properly examine wider economic impacts and disease burdens. These assumptions inflate ROI. Issues include the assumption that pandemic investment can mitigate one-hundred percent of economic impacts within three years, that the combined economic impact of HIV, tuberculosis and malaria are only US$22 billion a year compared to US$7 trillion per year for pandemics, no disaggregation between direct and indirect pandemic costs, and the assumption that an effective vaccine that can stop transmission will be developed within one year of an outbreak.

Given the identified shortcomings involved with the return-on-investment cases presented by these key global institutions to justify unprecedented financial requests, it becomes important for policymakers to understand the limitations of these investment cases, as well as to reflect upon the associated implications and opportunity costs for wider global health.

OP 104

Early detection of emerging infectious diseases outbreaks through sentinel surveillance system in Senegal

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Introduction: Emerging infectious diseases pose significant threats to developing countries, where surveillance tools for early detection and response are often inadequate. Since 2012, Senegal"s Ministry of Health, in collaboration with the Institut Pasteur de Dakar, has been working to establish an integrated syndromic-based sentinel surveillance system for the early detection of outbreaks of emerging diseases.

We aimed to describes the key components of the 4S Network and analyzes its data from 2015 to 2023 to assess its effectiveness in detecting and responding to infectious disease outbreaks in Senegal. The evaluation includes an analysis of the system"s timeliness and completeness.

Methods: The Sentinel Syndromic Surveillance Network in Senegal (4S Network) integrates multiple syndromes (malaria, arboviral or hemorrhagic fever infections, diarrheal syndromes, influenza-like illness) using a sentinel site approach. Data are collected daily by sentinel general practitioners (SGPs). These practitioners report epidemiological findings in real time via an android-based smartphone application. Standard WHO case definitions are used to ensure comparability and are based on clinical criteria. Statistical methods, including moving averages**,** are used to identify early warning signals. Biological samples were collected to confirm diagnoses using RT-PCR or serology.

Results: From 2015-2023, the 4S Network processed data from 1,816,340 patient visits. The system demonstrated good timeliness (94.5%) and completeness (80%) of reporting. The system effectively detected and triggered alerts for 48 outbreaks across various infectious diseases. Specific findings included peaks in influenza, malaria and the detection of multiple outbreaks of arboviral or hemorrhagic fever infections such as Dengue fever, Yellow fever, Zika, Chikungunya, West Nile, Rif Valley fever, Crimean-Congo hemorrhagic fever, etc. Early multidisciplinary and multisectoral investigations facilitated rapid outbreak control and prevented further spread using a One Health approach.

Conclusion: The 4S Network has proven to be an effective early warning system for infectious disease outbreaks in Senegal. The study underscores the value of syndromic surveillance in resource-limited settings and highlights the need for similar systems in other regions. Findings suggest that such surveillance networks can significantly enhance public health preparedness and response efforts.

OP 105

A human cerebral organoid model to investigate the host-pathogen determinants of Ebola virus persistence in the central nervous system

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Endemic in equatorial Africa, Ebola virus (EBOV), a member of the *Filoviridae* family, causes Ebola virus disease (EVD), a severe, systemic illness with an average case-fatality ratio of 45%. The recent characterization of long-term EBOV persistence in immune-privileged sites in EVD survivors has implications both for public health (i.e., reigniting and prolonging outbreaks) and for individuals (i.e., recrudescent inflammatory syndromes in survivors). EBOV persistence in the central nervous system (CNS) associated with severe meningoencephalitis has been rarely documented in human and nonhuman primate survivors; however, the host-virus determinants of CNS persistence are unknown. The current absence of tractable animal and *in vitro* models to investigate EBOV persistence critically limits experimental investigation. To address this gap, we present a partially immunocompetent human cerebral organoid model to explore EBOV persistence in a broad range of CNS host cells, including glial and neuronal populations. In this model, we investigated putative mechanisms for establishing and maintaining EBOV persistence at tissue and cellular levels, revealing microglia accumulation in sites of infection and astrocytes as late targets of EBOV. In cerebral organoids, EBOV persistently replicated for at least 120 days, accompanied with the release of pro-inflammatory markers such as CCL-2 and IL-6. Over time, we observed the accumulation of defective viral genomes along with naturally occurring EBOV variants. In long-term 2D *in vitro* culture maintained for 20 to 91 days, we further gathered evidence for a differential antiviral response in persistently infected microglia and astrocytes and cell-to-cell EBOV transmission among microglia and astrocytes, suggesting a multitude of host and viral mechanisms collaboratively determining EBOV persistence in the CNS.

OP 107
Comparison of diagnostic methods for the detection of schistosomiasis in a clinical cohort – Key takeaways and future perspectives

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Schistosomiasis is a neglected tropical disease caused by the parasitic flatworms of the genus *Schistosoma*. It is the second most impactful parasitic disease after malaria, with over 250 million people infected. The WHO roadmap for NTDs to 2030 targets schistosomiasis for elimination as a public health concern in all countries, key to achieving this target is developing novel diagnostics. To this end we have compared in-house PCR testing to urine CAA and urine filtration microscopy on a clinical cohort; to evaluate the suitability of these diagnostic methods and guide future development.

The clinical cohort used for testing consisted of 379 participants in the DFG HelmVit study, which recruited pregnant women in Lambaréné, Gabon. Each participant was tested for *Schistosoma hematobium* infection using several methods including urine filtration microscopy, UCP-LF CAA, POC-CCA and finally PCR on cell-free DNA from plasma samples. We used statistical methods to evaluate the performance of each of these tests and evaluate the suitability of plasma PCR as a screening or diagnostic method. The PCR approach relied on the detection of the DraI repeat region of *S. hematobium* whereas we also employed a crude DNA extraction method (Quantabio Extracta) to minimize sample input to only 20µl and keep equipment to a minimum. This yielded a test with a reduced sensitivity, though one that was still a good predictor of infection. Additionally owing to the little sample input and high throughput, as well as potential adaptation to POC settings, such a test could offer a useful screening tool after some development. However, in general we found several discrepancies between the different test methods, suggesting the need for more sensitive and specific diagnostics approaches.

Such studies are essential for defining the current gaps and limitations to elimination of schistosomiasis. In this study, the need for more sensitive and specific, high-throughput molecular testing was highlighted. To this end further research and development must be dedicated to take advantage of technological developments to deliver such POC tests. In the case of schistosomiasis, molecular tests to diagnose female genital schistosomiasis (FGS), detected drug resistance to praziquantel and for xeno-monitoring and surveillance should also be of priority.

T4 OP01
Epidemics that didn't happen – A case study of the One Health Approach to Rabies prevention and control in Kenya

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Introduction: Rabies is a viral zoonotic disease that affects both humans and animals including domestic and wild animals. Rabies has an extremely high fatality rate, approaching 100% once clinical symptoms appear. The incidence of rabies poses a significant threat to both human life and livelihoods. On June 14, 2024, a community volunteer based in Marsabit county detected and reported three cases of suspected animal rabies to local veterinary and health authorities. According to the report from community volunteers, the three cases involved rabid donkeys suspected to have been bitten by a rabid stray dog. The Subcounty One Heath team verified these rabies alerts as true events which then triggered response from the County One Health Unit (COHU) on June 20, 2024. Additionally, a similar rabies incidents were reported in Wajir county on May 16, 2024, and a second rabies incident was reported in Marsabit County on January 7,2025.

Methods: The COHU members dispatched a rapid response team to the affected sites. This multisectoral team composed of veterinarians, healthcare workers, community health volunteers and local administrators conducted vaccination of animals against rabies and engaged in risk communication and community engagement as part of the response strategy to the rabies alerts.

Results: A total of 1,373 animals were vaccinated including 386 dogs, 963 donkeys and 24 cats. A total of 1,054 community members were reached with key messages about rabies prevention including school-going children.

Additionally, 25 doses of human anti-rabies vaccine were distributed.

Conclusions: The outbreaks were contained within 7-1-7 metrics in Marsabit County. This took only one day to detect the rabies case, one day to notify the appropriate health authority and six days from notification to response. The joint intervention reduced the chances of disease spreading among the animals and spilling over to humans.

T4 OP02

Unravelling the drivers of antimicrobial resistance in farming communities in Bushbuckridge municipality, South Africa – Human and animal antibiotic use and bacterial pathogens in water from boreholes

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This study aimed to improve understanding of antibiotic use in livestock and human health; to understand water, sanitation and hygiene practices in the communities; to determine the presence of ESKAPE pathogens in underground water sources and evaluate antibiotic resistance profiles of the pathogens from community boreholes in Bushbuckridge municipality, Mpumalanga province, South Africa. In South Africa there are challenges with access to water, sanitation and hygiene infrastructure in rural communities, creating potential ground for spread of resistant pathogens. While previous studies have shown evidence of antibiotic resistance bacteria and trace antibiotic residues in the environment there are data gaps in understanding the full extent to which water sources serve as reservoirs for antibiotic resistant bacteria esepecially those of clinical importance.

The methodology of this study used face to face questionnaire interviews to collect data from 128 patients presenting with acute conditions at three clincics and from 209 subsistence livestock farmers presenting at a borehole or visited at their homes. Water samples were collected from 5 randomly selected boreholes and the Kirby Bauer disc diffusion method was used to determine the antibiotic susceptibility profiles of isolated bacteria. Data was analysed using Excel and in R (T-test, ANOVA).

The resuslts showed that 33% of bacteria isolated from borehole water samples were ESKAPE pathogens namely *Acinetobacter baumanii* (13%), *Pseudomonas aeruginosa* (13%) and *Enterobacter cloacae* (7%). *Pseudomonas aeruginosa* showed resistance to more than three antibiotics. Coliforms were within recommended limits. Penicillins were the most prescribed antibiotics, reported in over 75% of the patients. Antibiotic prescribing for all three clinics met the WHO country recommendations of at least 60% prescribed antibiotics to be from Access category. Respiratory infections were the most common complaint reported in 45% of the patients. Only 16% of farmers reported using antibiotics with oxytetracycline used by majority of the farmers. 97% of patients and 93% of farmers reported using pit latrines while 1% used the bush. Approximately 50% of interviewed people use borehole water as sole source of drinking water and of these 60% of patients and 42% farmers reported not treating water before use which of concern considering the evidence of presence of ESKAPE pathogens in the community's underground water sources.

T4 OP03

Nontyphoidal *Salmonella* transmission reservoirs in sub-Saharan Africa – A genomic assessment from a One Health Perspective

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Background: Nontyphoidal *Salmonella* causes more than 1.2 million annual deaths worldwide, the majority in resource-limited countries such as sub-Saharan Africa. Nontyphoidal *Salmonella* have also become increasingly resistant to antibiotics and are the most frequent cause of bacteraemia in sub-Saharan Africa. Recent data suggests that this typically livestock- associated pathogen has genetically developed and adapted to different hosts and environments, proposing anthroponotic transmission.

Methods: Within this study, we collected *Salmonella* from humans (stool and blood), animals and the environment (dust and soil), in Tanzania and in Ghana. Strains were identified by biochemical methods and confirmed using the VITEK 2 System. Serotyping and antibiotic susceptibility testing was performed. Further, isolates were subjected to sequencing using a NextSeq 500 Illumina sequencer.

Results: 9,099 samples were collected. From these, 222 Nontyphoidal *Salmonella* were identified comprising 58 serovars. The highest level of resistance was in humans with fluroquinolone resistance on the increase and multidrug resistance highest in isolates from blood cultures (24%, n/N=11/46). Of the invasive strains, MLST analysis confirmed the serovars and sequence types *S*. Typhimurium (ST313/ST19) being most common followed by *S*. Enteritidis (ST11/ST1479) and *S*. Dublin (ST10). A sequence type overlap amongst humans and livestock or environmental strains was detected for ST19.

Conclusions: Our study demonstrates a broad serovar distribution of *Salmonella* from livestock and the environment not typically associated with human infections. The substantially high level of multidrug resistance and emerging fluoroquinolone resistance seen in the invasive nontyphoidal *Salmonella* poses a challenge to current treatment strategies. Interestingly, we found ST19 more common in invasive human disease but also prevalent in samples from livestock compared to ST313, only seen in human samples. These findings strongly support the hypothesis of anthroponotic transmission of ST313 but not of ST19 in sub-Saharan Africa.

T4 OP04

Climate and other environmental determinants of common pediatric syndromes in Tanzania – A multivariate analysis

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While the epidemiology of malaria is well-established to be influenced by a complex interplay of environmental factors - including temperature, rainfall, vegetation, and altitude - less is known about how these factors affect other common paediatric diseases. This study investigates the relationship between environmental factors and the prevalence of malaria, pneumonia and acute diarrhea in Tanzania. We used routinely collected clinical data from 60 primary care health facilities across the Mbeya and Morogoro regions in Tanzania, where children < 15 years were managed using a digital clinical decision support algorithm. Clinical data included consultation date, age, sex, selected symptoms and signs, basic measurements, and malaria test results. The diseases of interest were malaria, pneumonia and acute diarrhea. Environmental variables—altitude, vegetation index (EVI), land surface temperature (LST) and rainfall—were retrieved from the Google Earth Engine platform. Clinical cases were geospatially linked to environmental data based on the patients' ward of residence. A time lag between the consultation date and the corresponding environmental data was applied — 4 weeks for malaria, 1 week for pneumonia and acute diarrhea. Associations between environmental factors and disease occurrence were evaluated using multilevel multivariable logistic regression modeling. From February 2023 to October 2024, 54,698 pediatric consultations were recorded, including 7,030 confirmed malaria cases (13%), 5,411 pneumonia cases (10%) and 4,116 acute diarrhea cases (8%). Lower altitude, higher rainfall, LST between 25°C to 31°C, and higher EVI were all significantly associated with increased malaria prevalence (Fig. 1 & Fig 2A). Conversely, higher altitude significantly correlated with increased likelihood of pneumonia and acute diarrhea (Fig 2B & 2C). Warmer LST (>25°) were associated with decreased pneumonia risk. Increased rainfall showed a dual pattern: increasing pneumonia and decreasing acute diarrhea odds. Our results demonstrate significant associations between environmental factors and the prevalence of malaria, pneumonia, and acute diarrhea, highlighting the importance of integrating environmental considerations to predict disease transmission patterns. Fig 1. Malaria positivity rate according to environmental data A)Altitude; B)Vegetation (EVI); C)Rainfall, D)Temperature Fig 2. Multilevel multivariate logistic regression for A)Malaria; B)Pneumonia; C)Acute diarrhea

Fig. 1

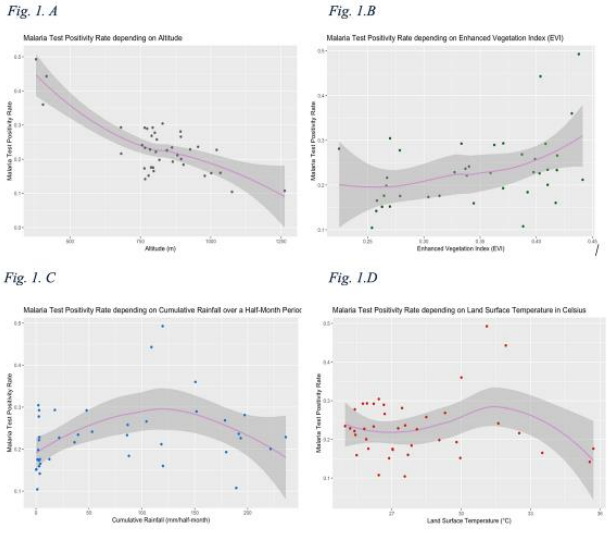

Fig. 2

Fig. 2.A

	n	OR	95% CI	P-value
Age				
2 -11 months	10563	Reference		
1 – 4 years	19538	2.54	2.34 – 2.75	p<0.001
5-14 years	2638	4.84	4.26 – 5.49	p<0.001
Sex				
Female	16365	Reference		
Male	16374	0.95	0.89 – 1.02	0.182
Altitude (meter)				
0 – 499	17846	Reference		
500 - 999	3826	2.74	1.03 – 7.31	0.044
1000 - 1499	1915	0.14	0.05 – 0.41	p<0.001
1500 - 1999	7196	0.07	0.03 – 0.14	p<0.001
2000 - 2499	1956	0.04	0.01 – 0.14	p<0.001
Rainfall (mm/2 weeks)				
No rainfall	11315	Reference		
1 - 99	13215	1.19	1.08 – 1.32	p<0.001
100 - 199	3319	1.16	1.01 – 1.32	0.038
200 -299	2963	1.09	0.94 – 1.26	0.311
300 - 399	1391	1.26	1.05 – 1.52	0.015
400 - 499	536	1.58	1.25 – 1.98	p<0.001
Land surface temperature (Celsius)				
25.0 – 30.9	6661	Reference		
10.0 – 24.9	19888	0.94	0.83 – 1.05	0.321
31.0 – 36.9	5122	0.78	0.71 – 0.87	p<0.001
≥ 37.0	1068	0.63	0.51 – 0.77	p<0.001
Vegetation (EVI)	32,739	1.71	1.11 – 2.65	0.016

Fig. 2.B

	n	OR	95% CI	P-value
Age (days)				
0 – 59 days	1548	Reference		
2 – 11 months	17878	3.53	2.74 – 4.54	p<0.001
1 – 4 years	31207	3.97	3.07 – 5.10	p<0.001
5-14 years	3998	4.36	3.34 – 5.68	p<0.001
Sex				
Female	27252	Reference		
Male	27379	1.04	0.99 – 1.10	0.115
Altitude (meter)				
0 – 499	28353	Reference		
500 - 999	5359	1.73	0.90– 3.32	0.107
1000 - 1499	4173	2.54	1.41– 4.60	0.002
1500 - 1999	12677	1.47	1.00 – 2.15	0.051
2000 - 2499	4069	3.01	1.59 – 5.71	0.001
Rainfall (mm/half-month)				
No rainfall	21223	Reference		
1 - 99	22325	1.23	1.14 – 1.33	p<0.001
100 - 199	4810	1.25	1.12 – 1.40	p<0.001
200 -299	4340	1.36	1.23 – 1.51	p<0.001
300 - 399	1505	1.47	1.25 – 1.73	p<0.001
400 - 499	428	1.03	0.75 – 1.41	0.327
Land surface temperature (Celsius)				
10.0 – 25.9	10936	Reference		
26.0 – 35.9	40261	0.85	0.78 – 0.92	p<0.001
≥ 36.0	3434	0.67	0.58 – 0.77	p<0.001
Vegetation (EVI)				
0 – 0.19	7387	Reference		
0.20 – 0.39	32913	0.93	0.84 – 1.02	0.129
0.40 – 0.59	14135	1.02	0.91 – 1.15	0.062
≥ 0.60	186	1.51	0.98 – 2.34	0.067

Fig. 2.C

	n	OR	95% CI	P-value
Age (days)				
0 – 59 days	1548	Reference		
2 – 11 months	17878	2.75	2.26 – 3.35	p<0.001
1 – 4 years	31207	2.15	1.77 – 2.62	p<0.001
5-14 years	3998	1.01	0.80– 1.27	0.605
Sex				
Female	27252	Reference		
Male	27379	1.06	1.01 – 1.11	0.023
Altitude (meter)				
0 – 499	28353	Reference		
500 - 999	5359	1.09	0.73 – 1.63	0.991
1000 - 1499	4173	1.84	1.31 – 2.59	p<0.001
1500 - 1999	12677	1.88	1.51 – 2.33	p<0.001
2000 - 2499	4069	2.34	1.64 – 3.35	p<0.001
Rainfall (mm/half-month)				
No rainfall	21223	Reference		
1 - 99	22325	0.87	0.81 – 0.94	p<0.001
100 – 199	4810	0.64	0.57 – 0.72	p<0.001
200 -299	4340	0.63	0.56 – 0.71	p<0.001
300 - 399	1505	0.63	0.52 – 0.76	p<0.001
400 - 499	428	0.44	0.30 – 0.65	p<0.001
Land surface temperature (Celsius)				
10.0 – 25.9	10936	Reference		
26.0 – 35.9	40261	1.10	1.01 – 1.20	0.023
≥ 36.0	3434	1.06	0.93 – 1.21	0.425
Vegetation (EVI)	7387			
0 – 0.19	32913	Reference		
0.20 – 0.39	14135	0.89	0.81 – 0.96	0.005
0.40 – 0.59	186	0.68	0.61– 0.76	p<0.001
≥ 0.60	21223	0.72	0.40 – 1.31	0.328

T4 OP05

One Health in practice – Perception and understanding of antimicrobial resistance across stakeholders in Ghana

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Question: The One Health approach has been promoted internationally towards addressing the chronic threat that antimicrobial resistance (AMR) poses to health and

development. This study aimed to describe and compare the perception and understanding of AMR among different One Health stakeholders in Ghana. It also assessed their understanding of the One Health concept and its applicability within their local context.

Methods: Key-informant interviews were conducted with 21 institutional stakeholders. Participants were recruited through purposive and snowball sampling to represent animal, environmental, and human health sectors at district, regional, and national level. In-depth interviews were conducted with 11 community members and 8 farmers in the Asante Akim North District. A customer exit strategy was used to sample respondents at various antibiotic sales locations. After verbatim transcription and if needed translation from Twi to English, interviews were coded following a mix of deductive and inductive approach in NVivo14 using thematic analysis.

Results: Although institutional stakeholders considered the One Health approach as fundamental in addressing AMR most attention was still paid to human health, followed by animal health, while environmental health received the least attention. Cross-sectoral collaboration is generally lacking at the district level. There was limited awareness of AMR at the community level, with several respondents not being aware of its existence and implications. Farmers associated AMR with unclean environments, which they saw as a source of disease, and frequent antibiotic use, which they believe contributes to resistance. They demonstrated strong awareness of the interconnectedness between animal, environmental, and human health.

Conclusions: The results showed that AMR was a priority at the institutional level but not at the community level, where it was considered largely as an abstract health challenge and thus less relevant relative to other health and economic priorities. The application of the One Health approach proved challenging at the district level. While farmers had high experiential knowledge of One Health, the interconnectedness of different health domains proffered by One Health was less tangible for community members.

T4 OP06

Addressing antimicrobial resistance research gaps in sub-Saharan Africa – A One Health approach

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The overuse of antibacterial agents in human and veterinary medicine has led to reduced effectiveness and the emergence of antimicrobial resistance (AMR) has become a global health threat. While high-income countries have established robust AMR surveillance systems, low- and middle-income countries, particularly in sub-Saharan Africa, face critical gaps in monitoring. Coinfections with neglected tropical diseases (NTDs) further complicate this challenge.

This project aims to strengthen AMR and NTD management across seven sub-Saharan countries by enhancing local capacity to identify key transmission pathways. Using a One Health approach, researchers from eight participating countries are investigating AMR linkages between humans, animals, and the environment. This includes sampling from various sectors, screening for extended-spectrum β-lactamases producing *E. coli* (ESBL-EC) as well as Carbapenem-resistant *E. coli* (CREC) and Salmonella. To detect ESBL-EC and CREC, samples from livestock, food and environment are screened using selective methods for cephalosporin- and carbapenem resistance. The additional evaluation of hygienic practices will lead to the development of guidelines and standard operating procedures (SOPs), which will be made accessible *via* a mobile application.

Preliminary results, reflecting investigations until the 12th of February 2025 from several participating countries, are quite heterogenous among the sample types and resistant agents. Antibiotic susceptibility testing (AST) of 254 human isolates identified 184 ESBL-EC (72.4 %), 14 CREC (5.5 %), and 9 Salmonella (3.5 %). Among 170 chicken cecal samples, 156 ESBL-EC (91.8 %), 9 CREC (5.3 %), and 40 (23.5 %) Salmonella positive samples were detected. In 178 cattle cecal samples, 115 ESBL-EC (64.4 %), 14 CREC (7.9 %), and 24 (13.5 %) Salmonella-positive samples were identified. Sampling of 146 raw vegetables from local markets revealed 52 ESBL-EC (35.6 %), 12 CREC (8.2 %), and 20 (13.7 %) Salmonella-positive samples. Out of 77 wastewater samples, 52 contained ESBL-EC (67.5 %), 32 contained CREC (41.6 %), and 47 (61 %) were tested positive for Salmonella.

These findings underscore the urgent need for effective AMR surveillance and intervention. Strengthening local capacities through a One Health framework is essential to curbing AMR spread and improving public health in sub-Saharan Africa.

T4 OP07

Strengthening diagnostic laboratory infrastructure to combat antimicrobial resistance in rural Ghana – Challenges and Opportunities

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Antimicrobial resistance (AMR) among bacterial pathogens poses a significant threat to public health in Ghana, particularly in rural areas with limited healthcare infrastructure and diagnostic capacity. Empirical antibiotic prescriptions in these settings drive the emergence and spread of resistant strains. Strengthening AMR surveillance and diagnostics in underdeveloped regions is one of the five pillars of WHO"s action plan to combat AMR. To achieve this, a proposed framework incorporates three key components: (1) Infrastructure Development, focusing on equipping diagnostic

laboratories with essential bacteriology tools (2) Capacity Building, aimed at training laboratory personnel and healthcare professionals in diagnostic and antimicrobial stewardships, respectively; and (3) Sustainable Implementation Strategies, ensuring long-term functionality and integration into national health policies.

We report on the establishment of an ongoing AMR surveillance in three rural areas of Ghana. Microbiology laboratories for low-resource settings were established within district hospitals in Agogo (2019), Assin Fosu (2020), and Agroyesum (2023), staffed with trained laboratory personnel and fully equipped to run surveillance per WHO guidelines. Collectively, 4,260 clinical samples (Agogo, 1718; Assin Fosu, 2074; and Agroyesum, 470) were analysed, including blood, urine, wound, and stool samples, with *Escherichia coli, Klebsiella* spp.*, Enterobacter* spp.*, Staphylococcus aureus* and *Acinetobacter* spp. being the most frequent pathogens isolated. These laboratories have significantly enhanced clinical decision-making by providing clinicians with bacterial identification and antibiotic susceptibility testing data, enabling early diagnosis, targeted patient treatment and improved empirical antibiotic selection. In parallel, AMR reports summarizing antibiotic resistance profiles of predominant pathogens in each hospital catchment area have been shared with the clinicians, further improving antibiotic prescribing practices. Surveillance data have also been entered into WHONET under the Global Antimicrobial Resistance Surveillance System (GLASS) guidelines.

Besides highlighting the development, impact, and future opportunities of the AMR surveillance in these rural Ghana, we will discuss challenges faced, including logistical constraints, clinicians' behavior towards the culture-based diagnostics, and strategies to improve adoption and long-term sustainability,

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T4 OP08

AKAB – A psychometric tool to measure AMR related knowledge, attitudes, and behavior

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Question: Antimicrobial resistance (AMR) is an escalating global health crisis, with particularly devastating impacts on developing countries in the Global South. AMR development is largely driven by human behavior. Most prominently, AMR is caused by antibiotics misuse by patients, health care workers, and farmers. To mitigate current trajectories of global AMR development, it is vital to understand the psychology underlying the misuse of antibiotics. That is, we must assess what humans know and think about AMR and how that influences their decision-making and behavior. Earlier attempts to measure these constructs did not provide instruments that adhere to standards of psychological testing. Therefore, we developed a new measurement toolbox to assess individuals" knowledge, attitudes, and behavior regarding AMR: the AMR Knowledge, Attitudes, and Behavior (AKAB) tool.

Method: The development process followed modern psychometric standards. Item development was based on an expert taxonomy of AMR and a Delphi study. We administered the initial item pool to a general-population sample of N = 502 German participants. Via psychometric analyses, including exploratory and confirmatory factor analyses, we evaluated psychometric criteria and used them to select the best items. Next, to support the Zanzibar AMR action plan and facilitate surveillance and mitigation efforts, we used the best items to assess AMR-related knowledge, attitudes, and behavior in Zanzibar. Items were professionally translated to Swahili. N = 1218 (n = 413 health care workers, n = 104 farmers, n = 701 general population) Zanzibari participated in a large field study.

Results: Based on this data, we establish cross-cultural validity of our tool and identify knowledge gaps and the prevalence of problematic behaviors in the three relevant target groups.

Conclusion: In this talk, we illustrate the tool's application in facilitating local AMR action plans. The AKAB tool is open source, and this study can serve as a blueprint for cross-cultural adaptation. Considering the psychometric quality of the tool and the flexibility of the large item pool, we recommend it as a standard tool for behavioral studies on AMR.

LBA OP 01

Potential predictors of treatment abandonment in cutaneous leishmaniasis in the southern Amazon region of Brazil – An unexplored issue

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Question: Cutaneous leishmaniasis (CL) is a neglected tropical disease that is highly endemic in Brazil, particularly in the Amazon region. Although CL is fully treatable through the Brazilian public health system, the available therapeutic regimens have limitations that may compromise patient adherence, including significant adverse effects, parenteral administration, and prolonged treatment duration. Despite these challenges, few studies have investigated treatment abandonment among CL patients. This cross-sectional study aimed to identify potential predictors of treatment abandonment in patients with CL in the state of Mato Grosso, located in the southern Brazilian Amazon.

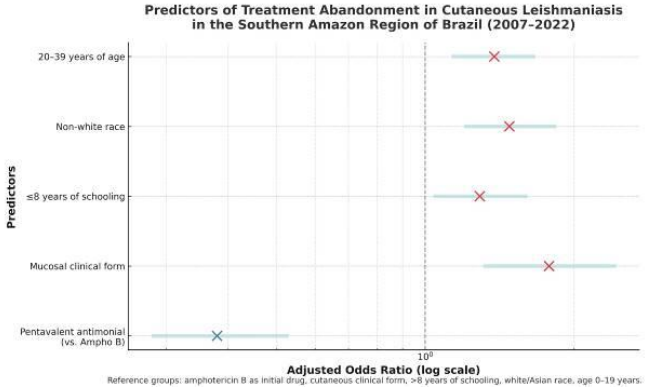
Methods: Data for all confirmed cases of CL reported over a 16-year period (2007–2022) among residents of Mato Grosso were extracted from the national reporting system. For each case, we collated sociodemographic (sex, age, race, and education level) and clinical (clinical form, diagnostic confirmation criteria, CL/HIV coinfection status, drug initially administered, and evolution) variables. Treatment abandonment was defined as the primary outcome based on the evolution variable. We modelled the outcome as a function of a set of candidate demographic and clinical predictors using multivariate logistic regression.

Results: From 2007 to 2022, Mato Grosso reported 35,538 new cases of CL, of which 565 resulted in treatment abandonment. The odds of treatment abandonment among

patients with CL were higher in individuals aged 20–39 years (odds ratio [OR]: 1.38; 95% confidence interval [CI]: 1.13–1.67), those of non-white race (OR: 1.48; 95%CI: 1.20–1.84), individuals with ≤8 years of schooling (OR: 1.29; 95%CI: 1.04–1.61), and patients with the mucosal clinical form (OR: 1.78; 95%CI: 1.31–2.43). Conversely, lower odds of treatment abandonment were observed among individuals initially treated with pentavalent antimonial (OR: 0.38; 95%CI: 0.28–0.53) compared to those treated with amphotericin B.

Conclusions: Our findings highlight potential sociodemographic and clinical predictors for treatment abandonment among CL patients in the Brazilian Amazon. These results suggest the need for targeted strategies to improve adherence, particularly among young adults, non-white individuals, those with low education levels, and patients with the mucosal form of the disease. These actions should be prioritized at the primary healthcare level to enhance early intervention and reduce treatment abandonment.

Fig. 1



LBA OP 02

Opisthorchiasis in northern Cambodia – Human-animal infection patterns and risk factors

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Background: Opisthorchiasis, caused by *Opisthorchis viverrini* (OV), affects over 12 million people in Southeast Asia and is a significant risk factor for cholangiocarcinoma (CCA), a fatal bile duct cancer. In Cambodia, information on OV infection is limited, but it is likely present in areas where raw fish consumption is common. Domestic animals (dogs and cats) may serve as reservoir hosts and contribute to the transmission. This study aimed to assess the infection burden in humans and animals and risk factors in Preah Vihear province, northern Cambodia.

Methods: We conducted a cross-sectional study on OV infection among humans and domestic animals across eight villages in Preah Vihear province. Stool samples from 1,741 individuals and 232 domestic animals (188 dogs, 44 cats) were examined for OV using modified formalin ethyl acetate concentration technique (FECT). Sociodemographic and occupational characteristics, hygiene and dietary behaviors were assessed using questionnaires. Mixed-effects logistic regression was used to identify risk factors accounting for village-level clustering.

Results: Overall, 44.7% (95% CI: 42.4-47.0%) of humans were infected, ranging from 27.7% to 60.4% across villages. Cats and dogs showed infection prevalence of 22.7% (95% CI: 11.5-37.8%) and 11.2% (95% CI: 7.1%-16.6%), respectively. No significant correlation was found between villages-level animal and human prevalence (ρ=–0.27, p=0.49). Individuals aged ≥50 years had a significant higher odds of infection compared to aged 5-14 (adjusted Odds Ratio (aOR)=5.7; 95% CI: 3.3-9.8) while government employees had significant lower odds than students (aOR=0.2; 95% CI: 0.1-0.5). Unexpectedly, open defecation was associated with lower odds of infection (aOR=0.6; 95% CI: 0.4-0.95). Reported raw and undercooked fish consumption was not significantly associated with OV infection (p>0.05). Human infection was more likely in households with infected animals, suggesting a contribution of domestic animals to transmission.

Conclusion: OV infection is highly prevalent in northern Cambodia where raw fish food is consumed with older age identified as a significant risk factor, while employment and open defecation may reduce the infection risk. The presence of infected animals suggests zoonotic contribution to transmission. These findings underscore the importance of an integrated multisectoral One Health intervention strategy targeting humans, animal, and environmental sanitation.

LBA OP 03

Persistence of onchocerciasis in Cameroon 5 years from the 2030 roadmap goal – urgent alternatives needed

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Question: Despite success of annual mass drug administration (MDA) with ivermectin (IVM) (Sauerbrey et al, 2018), onchocerciasis persists in Cameroon, especially in Yabassi and Massangam Health Districts (HDs) (Kamga et al, 2016; Atekem et al, 2016). Although Yabassi was still relying solely on IVM-based MDA, Alternative Treatment Strategies (ATS) were piloted in Massangam in 2017 and 2018 (Atekem et al, 2016), in response to WHO recommendations to accelerate elimination (WHO, 2024), resulting in a significant reduction in infection prevalence, shifting from hyper- and meso-endemic to hypo-endemic levels. To refine control strategies and move towards elimination, this study aimed to assess onchocerciasis situation in hotspot communities five years after ATS cessation in Massangam and following ten additional rounds of MDA inYabassi.

Methods: A quantitative cross-sectional survey was conducted in December 2023 in Massangam and February 2024 in Yabassi. Participants underwent comprehensive assessments, including recording of Socio-anthropological information (name, age, sex, treatment history, reasons for non-compliance to treatment) and parasitological examinations (skin snipping) to assess *Onchocerca volvulus* microfilaridermia.

Results: The overall prevalence of *O. volvulus* infection was 18.8% (95% CI: 13.8–24.3) in Massangam and 31.6% (95% CI: 28.0%–35.6%) in Yabassi. The intensity of infection was

3.136 (SD: 19.3) mf/ss in Massangam and 8.13 (SD: 34.5) mf/ss in Yabassi. No significant association was observed between compliance to interventions and rates and intensities of infection both in Massangam (Rho: 0.011; p=0.967) and Yabassi (Rho: 0.017; p=2.914).A marked rebound in parasitological indicators was observed in hotspot communities in Massangam five years post-ATS cessation compared to baseline levels (p: 0.04), and in sentinel communities in Yabassi, the prevalence remained almost unchanged after ten additional rounds of ivermectin treatment, decreasing from 43.8% (95% CI: 37.7% – 50.1%) to 38.8% (95% CI: 33.0% – 45.0%) (p: 0.222).

Conclusions: These findings raise concerns about the potential resistance of O. volvulus and suggest that ivermectin alone may not be enough to achieve elimination goals, calling for the introduction of targeted, coordinated and sustained ATS to reach the 2030 goals.

LBA OP 05

Postpartum hemorrhage management and maternal outcomes – A comprehensive retrospective study across 16 Rwandan Hospitals, 2024

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Background: Globally, Postpartum hemorrhage (PPH) remains a significant contributor to maternal morbidity and mortality. The PPH is the leading cause of Maternal Mortality (45%) in Rwanda. The objective of this study is to assess the management of postpartum hemorrhage in 16 Hospitals of Rwanda where adherence to clinical guidelines remains inadequately documented.

Methods: A retrospective study was conducted in 16 hospitals located in 7 districts of Rwanda. The data were collected using Criteria Based Clinical Audit (CBCA) procedure by trained nurses/midwife. PPH was defined as blood loss exceeding 500 ml and severe PPH defined as a loss of more than 1000 ml. A total of 650 PPH cases were included in the final analysis. Ethical approval was given by Rwanda National Ethics Committee. All analysis was performed using SPSS (IBM Version 26

Results: the analysis included **650 medical records**, of them 91 (14%) with severe PPH and 559 (86%) with PPH. 38% of women were aged between 25-34 years, 46.3% had a gravidity of 2-4 and 92.8% were referred from other facilities. 49.1% underwent Caesarean sections, with a higher prevalence of severe PPH among these cases (81.3%). The m**anagement Practices**: 96.5% received oxytocin immediately post-delivery, **Uterine Massage**: Conducted in 96.7% of SPPH cases and Vital signs were monitored in 91.8% of cases. However, immediate bleeding occurred in **37.2%** after vaginal delivery and **28%** during Caesarean sections. As outcomes, **12 women died**, while **22 survived with chronic conditions** and **5 deaths**, **40 stillbirths**, and **5 newborns with chronic conditions**.

Conclusion: The study highlights that while there is good compliance with PPH management guidelines, adverse maternal and newborn outcomes remain prevalent. The findings suggest a need for enhanced adherence to treatment protocols and improved management strategies to mitigate the poor outcomes associated with postpartum hemorrhage.

Key words: Postpartum Hemorrhage, PPH, Maternal outcomes, Newbon outcomes, Retrospective, Clinical Guidelines, Maternal Health

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LBA OP 06

Who provides obstetric and neonatal care in Lubumbashi, Democratic Republic of Congo?

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Question: Maternal and neonatal mortality remains high in the Democratic Republic of the Congo (DRC), this may be partly due to limited access to qualified healthcare providers. The objective of this study is to describe the profile of maternal and neonatal care providers in health facilities in a rapidly expanding urban context like Lubumbashi.

Methods: We conducted a cross-sectional observational study between November and December 2023 at 971 healthcare facilities providing childbirth care in the city of Lubumbashi. Using a structured questionnaire, we collected data on the number and qualifications of healthcare providers working in these facilities and their training. We conducted a descriptive analysis by type and level of facility using R software (4.5.1).

Results: A total of 7,419 healthcare providers offering obstetric and neonatal care were identified: 29.3% medical doctors, 49.5% nurses, and 11.9% midwives birth attendants, of whom only 2.3% were certified. More than a quarter of facilities (26.3%) had no doctor, and over half (57.3%) had no midwife. The shortage was particularly pronounced in the private sector, where 27.1% of facilities had no doctor and 58.5% had no midwife, compared to 7.7% and 30.8% respectively in the public sector. The most frequently offered in-service training courses across facilities were on partograph use (11.3%), hemorrhage management (10.7%), and active management of the third stage of labor (10.6%).

Conclusion: In Lubumbashi, notable disparities were observed in the distribution and qualifications of healthcare providers, particularly between public and private facilities. Strengthening the capacity of human resources for health remains essential to improve access to and the quality of maternal and neonatal care. In contexts of resource constraints, this may include concentrating skilled providers in fewer, better equipped facilities.

LBA OP 07

Creating a geocoded database of health facilities offering childbirth care in 23 Sub-Saharan African Cities

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Rationale: Most maternal and perinatal deaths in sub-Saharan Africa (SSA) are preventable with timely access to quality childbirth care (CBC). In urban areas, despite short distances, access to CBC is often suboptimal, due to traffic congestion and/or poor infrastructure. However, identifying areas with poor accessibility is challenging due to a lack of validated and comprehensive lists of health facilities that offer CBC. To address this gap, this study describes the process of producing geo-coded lists of facilities providing childbirth care in 23 SSA cities.

Methods: For each city, we systematically searched for existing national and subnational open-access sources of health facility lists, including through communication with agencies involved in maintaining these lists. Facilities within the city boundary were retained, and data were harmonized by removing non-CBC facilities and duplicates. The presence of CBC was verified through online searches from online gazetteers, individual facility websites, social media, and through personal communication with local contacts in the respective cities.

Results: The final list per city was a unique, geocoded list of facilities offering CBC with attributes including code, name, common name, GPS coordinates, level, ownership, operational status, zone, region, district, and source. There was significant variability in data availability across the cities; in Blantyre (Malawi), eight open-access sources were combined, resulting in a list of 32 preliminary CBC-providing facilities, while in Nairobi (Kenya), a verified and comprehensive list of facilities offering CBC was available through the Ministry of Health"s registry, reducing the need for secondary sources or external validation. Where data availability varied, as in Conakry (Guinea), two Ministry-provided lists on facilities and annual births were merged to identify sites offering CBC.

Conclusion: There is an urgent need to develop reliable, publicly available master facility lists offering CBC. This forms the basis for assessing spatial access, and improving access to childbirth care can effectively help reduce maternal and perinatal deaths in rapidly expanding urban areas of SSA.

Keywords: Maternal Health, Childbirth Care, Spatial Accessibility, Urban Health, Sub-Saharan Africa

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LBA OP 08

Implementation of HEARTS in the Americas – Targeting health systems to improve the quality of cardiovascular risk management in primary health care

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Introduction: Cardiovascular diseases (CVD), mainly heart disease and stroke, are the leading cause of death in the Americas, with over 2.2 million deaths annually. Hypertension, affecting nearly 40% of adults, is the principal modifiable risk factor, yet only 37% achieve adequate control. To address persistent gaps in access, service coverage, and quality of care, PAHO launched HEARTS in the Americas to strengthen CVD prevention and management through primary health care (PHC). The program is also promoting the measurement of implementation effectiveness and the performance of its main drivers as part of a continuous quality improvement strategy.

Methods: Led by Ministries of Health and supported by PAHO, HEARTS is guided by a Quality Framework integrating standardized clinical pathways, validated blood pressure devices, essential medicines, and quality improvement cycles. Implementation is anchored in eight hypertension control drivers and seventeen interventions tailored to PHC. Countries adopt a national HEARTS Clinical Pathway and promote task-sharing, enabling nurses and other providers to measure BP, initiate treatment, and manage follow-up. Over 40,000 health workers have been trained, and 1.2 million users have accessed virtual courses.

Results: By December 2024, HEARTS was active in 7,158 PHC facilities across 28 countries, covering 37 million adults. Over 5.7 million patients were enrolled, with 63% achieving BP control. Country-level results are compelling:

• El Salvador: Full national rollout in under two years. BP control doubled (18% to 36.3%) and CVD mortality declined by 18%.

• Cuba: Nationwide implementation with simplified protocols and domestic drug production. Over 60% of 1.5 million patients achieved control.

• Dominican Republic: Standardized protocols in 1,000 centers and free medicines via 382 pharmacies. 66% of treated patients were controlled.

• Chile: Legal and digital reforms enabled nurses and pharmacists to titrate therapy.

Conclusions: HEARTS offers a scalable, sustainable model for embedding team-based, evidence-informed CVD care into PHC systems and accelerating progress toward regional NCD targets.

LBA OP 09

Stakeholders" perceptions of the implementation and use of the 2022 WHO treatment decision algorithms for Pediatric Pulmonary Tuberculosis – A multi-country qualitative evaluation in Sub-Saharan Africa

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Despite global efforts, childhood tuberculosis (TB) remains underdiagnosed and undertreated, particularly in high-burden, resource-limited settings. Over 96% of children who die from TB were not on treatment at the time of death, underscoring the urgency of earlier and more accurate diagnosis. In 2022, the World Health Organization (WHO) introduced Treatment Decision Algorithms (TDAs) to support structured clinical decision-making for pulmonary TB in children under 10. This qualitative study, embedded within the TB-ALGO-PED study, explored the perspectives of key stakeholders on the implementation, use, adaptation, and sustainability of the TDAs across five countries: Uganda, Niger, Guinea, Nigeria, and South Sudan. Using an adapted Medical Research Council (MRC) process evaluation framework, with an added focus on sustainability, data were collected through document reviews, informal conversations, and four focus group discussions with key stakeholders (n=25), including field implementers, Epicentre researchers, MSF TB advisors, and study coordinators. Data were analyzed using reflexive thematic analysis. Results indicated that stakeholders largely viewed the TDAs as a valuable tool to address persistent diagnostic gaps in pediatric TB, improve clinical reasoning, and foster collaboration among medical staff. However, significant barriers persisted, including limited operational

guidance, nonspecific symptoms, high workloads, and constrained diagnostic capacity. Context-specific adaptations were often necessary to improve feasibility, especially in settings with high burdens of HIV or malnutrition, but these also introduced variability in practice and interpretation between settings. Sustainability was a key concern. Without national policy integration, ongoing capacity-building, and alignment with routine child health services, TDA use may decline after project support ends. To ensure long-term impact, stakeholders recommended clearer operational guidance, integration into pre- and in-service training, alignment with other programs, and stronger coordination with national programs. These measures were seen as essential to embed the TDAs into health systems and improve the timely diagnosis and treatment of pediatric TB.

Fig. 1

Table 2. Alignment of emergent themes with key domains in the adapted MRC process evaluation framework. The domain is shown in bold, followed by the underlying domains listed below.

Theme	MRC framework domain	Illustrative Quote
1. Conceptual ambiguity & contextual variation	**Implementation** Context	*"I would notice that there is a difference in how the projects perceive what the algorithm is telling them. So, like in some places, they take it as gospel, they're like, OK, this is the score, so he must be on TB treatment, and somewhere, like I think in Maiduguri, there is more of that bent."* (P. 3)
2. Operationalizing implementation: collaboration, practice & systemic realities	**Implementation** Context	*"I think there is still room for improvement, but we have to think about the context where it was implemented... Overall, I think there are really substantial improvements [related to the implementation of the TDA] that we can measure in different ways."* (P. 20)
3. Variability in use: knowledge, interpretation & limits of the TDAs	**Mechanisms of Impact** Implementation Context	*"A clinician has many possible diagnoses in mind and knows a wide range of clinical presentations that resemble tuberculosis. In contrast, nurses don't necessarily have that background to differentiate between TB and other differential diagnoses... If the required level of [medical] knowledge is not there, it becomes even more difficult to use the algorithm [or] to know when to assign the specific score."* (P. 14)
4. Context-specific adaptations under systemic constraints	**Implementation** **→ Adaptation** Context	*"It [the TDA] isn't adapted to some populations. It is the WHO algorithm that has been applied directly, and all SAM cases need to be scored. So operationally, this is not feasible and led to a lot of challenges, with a lot of patients being missed... Now, they are using it to decide which patient needs investigation; if the score is greater than 10, instead of starting treatment, they just do GeneXpert and CXR. And this is because of the limited resources they have, and it's their own way of adapting for their own context."* (P. 14)
5. Sustaining TDA Use: Perceptions and Preconditions	**Maintenance** Implementation Context	*"A systematic restructuring is required, human resources, supply, everything. Otherwise, once MSF steps back, I don't see the sustainability."* (P. 16)

Fig. 2

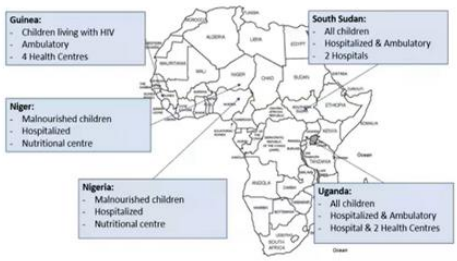

***Figure 2**. Map of the five TB-ALGO-PED study countries (Uganda, Guinea, Niger, Nigeria, and South Sudan), highlighting the specific healthcare settings and populations where the 2022 WHO TDAs were implemented.*

LBA OP 10

Safeguarding food security in Kenya – Adopting the 7-1-7 Framework to an African Swine Fever Outbreak

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Background: In June 2025, Migori County reported the sudden deaths of over 500 free-range pigs due to African Swine Fever (ASF), a highly contagious viral disease with no vaccine or cure. The outbreak raised food security concerns and economic losses. The County Public Health Emergency Operations Centre coordinated the response using the 7-1-7 performance metrics

Methods: We conducted an Early Action Review (EAR) through a desk review of outbreak reports and key informant interviews with response team members. Timeliness was assessed against the 7-1-7 benchmarks: detection within 7 days of emergence, notification within 1 day of detection, and applicable early response actions within 7 days of notification. Interviews with Veterinarians were used to adapt the 7-1-7 framework to animal health, identify response enablers, bottlenecks, and propose improvements.

Results: The outbreak was detected and reported within one day. Carcass disposal, risk communication, and stakeholder engagement began within two days(Figure 1). A One Health approach and collaboration with community health promoters enabled timely detection via event-based surveillance, mapping and disposal of carcasses, and sensitization of farmers and butcheries to avoid slaughter or sale of infected pigs and enforcing provisional quarantine. Challenges included inadequate testing capacity at the regional laboratory, delaying confirmation, a lack of funds for farmer compensation, difficulty tracing carcasses hidden in sugarcane plantations(Figure 2), informal one health coordination, and limited use of the animal-based surveillance system.

Conclusion: This event demonstrates the applicability of the 7-1-7 EAR framework to animal health events. Although ASF is non-zoonotic, it poses serious threats to food systems and rural livelihoods. Strengthening animal-based surveillance and investing in animal health preparedness, detection, and response is essential for managing future animal disease outbreaks.

Fig. 1

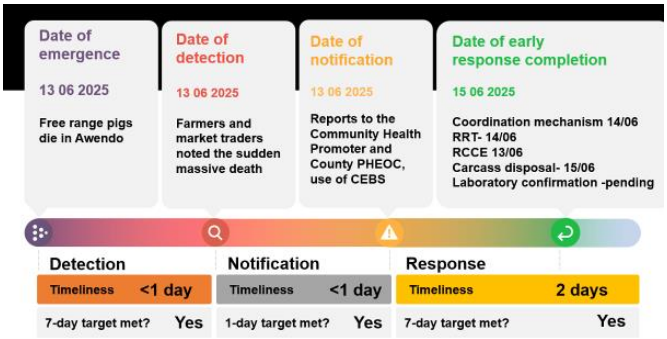

Fig. 2

LBA OP 11

Maternal Mpox Infection and adverse pregnancy outcomes – Preliminary insights from the PREGMPOX cohort study in the Democratic Republic of Congo

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Background: Mpox, a re-emerging orthopoxvirus, poses a significant global health threat. The recent emergence of Clade Ib in the Democratic Republic of Congo (DRC) alongside other viral clades amplifies this concern. Pregnant individuals are highly vulnerable due to altered immunological landscapes, yet mpox's comprehensive impact on pregnancy and neonatal health remains largely undefined. The ongoing PREGMPOX cohort study (https://pregmpox.org/) investigates these knowledge gaps by documenting maternal and neonatal health trajectories following Mpox exposure.

Methods: Started in November 2024, this prospective cohort study is underway in South Kivu, DRC. We enroll qPCR confirmed mpox-infected pregnant women (cases) and age-parity-matched uninfected controls. Participants are followed until six weeks postpartum, with newborns monitored until their first year. Clinical data and biological samples are collected at predefined time points for comparative analyses.

Results: As of July 2025, 242 pregnant women have enrolled. Preliminary pregnancy outcome data are available for 74 participants (49 mpox-infected, 25 controls). Though term live deliveries were similar (77.6% cases, 84.0% controls), the mpox-infected cohort showed significantly increased adverse outcomes: spontaneous abortion (10.2% vs. 4.0%), preterm births (8.0% vs. 0%), stillbirth (6.1% vs. 4.0%), neonatal death (12.2% vs. 4.0%), and antepartum/intrapartum bleeding (6.1% vs. 0%). Four live-born infants of infected mothers developed mpox; one resulted in neonatal fatality. Placental histology generally showed preserved morphology, though isolated cases had high viral loads and severe stromal vascular karyorrhexis.

Conclusion: Our preliminary findings indicate a high prevalence of maternal mpox infection in South Kivu, associated with increased risks of spontaneous abortion, preterm birth, and neonatal mortality. Placental involvement suggests a possible mechanism. Although vertical transmission has not been confirmed, postnatal cases point to multi-route infection (skin-to-skin/breastfeeding). These findings highlight the urgent need for strengthened surveillance, improved clinical management, and targeted interventions for pregnant women in mpox-endemic settings.

LBA OP 12

Comparative evaluation of clinical, serological, and molecular approaches for dengue diagnosis during an outbreak in the Peruvian amazon in 2023-2024

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Accurate and timely diagnosis of dengue is critical for clinical management and outbreak control, particularly in resource-limited, endemic settings where multiple arboviruses co-circulate. This study compares the performance of clinical assessment, two commercially available rapid diagnostic tests (RDTs), ELISAs, and three molecular assays for dengue detection during an outbreak in the Peruvian Amazon.

We prospectively enrolled 271 patients with acute febrile illness in Yurimaguas, Peru, during a dengue outbreak in 2023 and 2024. Each patient underwent clinical evaluation based on the WHO 2009 dengue classification, and laboratory testing including NS1 and IgM RDTs (SD Bioline, CTK) and ELISAs, a triplex RT-PCR for DENV/ZIKV/CHIKV, a newly developed multiplex RT-PCR for DENV/ZIKV/YFV/CHIKV (ZYDC-PCR), and a serotype-specific DENV RT-PCR used as reference. Diagnostic accuracy metrics (sensitivity, specificity, Cohen"s kappa) were calculated and a subset of 131 samples underwent inter-laboratory verification comparing the performance of the ZYDC-PCR in Yurimaguas to a laboratory in Lima.

Of the 271 patients enrolled as suspected dengue, only 88 (32.5%) were confirmed dengue-positive by the reference PCR. Patients clinically classified as dengue with warning signs (DwWS) were significantly more likely to test PCR-positive (OR = 3.37, 95% CI: 1.79–6.33). NS1-based RDTs and ELISA showed high specificity (≥96%) but moderate sensitivity (~72%). Combining NS1 with IgM for the RDTs, increased sensitivity (up to 88%), at the cost of reduced specificity (60% -83%). NS1 sensitivity varied by serotype and was highest for DENV-2. The ZYDC-PCR demonstrated high concordance with the reference assay (sensitivity 85%, Cohen"s kappa 0.886) and was successfully validated at both a central and regional laboratory. While NS1-based RDTs are a valuable screening tool for early dengue detection, their moderate sensitivity —especially in low-viremia or non-DENV-2 cases—highlights the importance of the implementation of molecular confirmation. The ZYDC-PCR proved suitable for decentralized implementation, supporting its use as a robust molecular diagnostic tool for integrated arboviral surveillance in endemic areas.

LBA OP 13

Incidence of Lassa fever disease in four West African countries:a prospective,multi-site, cohort study (the Enable 1.0 Study)

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Lassa fever (LF), a haemorrhagic illness caused by the Lassa fever virus, is endemic in West Africa causing an estimated 100 000 to 300 000 cases and 5 000 fatalities every year. LF is a WHO priority pathogen for vaccine development due to its pandemic potential. Vaccine trial design requires accurate incidence data, which are challenging to obtain due to asymptomatic infections and varied clinical presentations. The Enable 1.0 study aims to estimate LF disease incidence in four West African countries.

We conducted a prospective longitudinal cohort study in communities known to be LF hotspots in Benin, Liberia, Edo state - Nigeria and Sierra Leone from 2021 to 2023. Participants were followed up for between 18 and 30 months and monitored for fever through active/passive surveillance. Those with fever were asked about other symptoms (suspected case evaluations (SCEs)). Participants meeting the suspected case definition were tested for LF by RT-PCR. LF positive cases were hospitalised with hearing assessed at discharge and four months post-discharge to determine sensorineural hearing loss (SNHL).

Of 20,131 participants recruited, 8,813 SCEs were conducted. Thirty-nine cases of symptomatic LF infection were identified, corresponding to 1.27 (95%CI 0.90–1.74) cases per 1,000 person-years, excluding Sierra Leone. The adjusted incidence rate (aIRR) was significantly higher among participants in Nigeria (aIRR 13.0, 95% CI 1.6–109, p = 0.015) and Liberia (aIRR 9.2, 95% CI 1.0–84.0, p = 0.05), compared with those in Benin while no cases were reported in Sierra Leone. Children and adolescents aged 2–17 years also had a higher incidence of LF than adults (aIRR 2.0, 95% CI 1.0–3.9, p = 0.037). LF cases most commonly reported headache, muscle/joint pain, abdominal pain, sore throat, and vomiting during SCEs. Participants reporting sore throat (adjusted odds ratio (aOR) 4.2, 95% CI 1.8–9.8, p = 0.001), and contact with a LF case (aOR 20, 95% CI 3.4–120, p < 0.001) during SCEs were more likely to test positive for LF. Five cases (13%) were fatal. Nine of 28 LF cases had SNHL at discharge, increasing to 13 at four months post-discharge.

This is the first epidemiological study to measure the incidence of LF disease in West Africa. The LF incidence and symptoms data from these West African cohorts reveal critical insights into disease burden, location, and sequelae. Our results are currently being used to inform the design of future vaccine efficacy trials.

LBA OP 15

Air pollution exposure is a major risk for tuberculosis

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Question: Air pollution, aggravated by climate change, and tuberculosis (TB) are major global public health challenges. Inhalation of air pollution particulate matter (PM) may facilitate *Mycobacterium tuberculosis* (Mtb) infection and progression to disease.

Methods/Results: We have shown experimentally that urban PM and Mtb colocalize and suppress protective antimycobacterial innate and adaptive immune responses in human PBMCs and bronchoalveolar and respiratory epithelial cells. High loads of PM in alveolar macrophages from long-term urban PM–exposed persons modulate proinflammatory cytokine expression (IL-1β, TNF-α, IFN-γ) and responsiveness to Mtb. These findings provide biologic mechanisms that support epidemiologic associations between exposures to household air pollution (HAP) and outdoor air pollution (OAP) and TB incidence rates and adverse treatment outcomes.

We conducted a systematic review and meta-analysis of epidemiologic studies that examined the effect of HAP and/or OAP on TB incidence, infection, and/or treatment outcomes (mortality, drug resistance, time to sputum conversion) and estimated the TB disease burden associated with HAP from solid fuel burning and OAP (PROSPERO registry CRD42022336979). We searched PubMed, Web of Science, Scopus, Google Scholar, and Cochrane Library for all global studies published until Aug. 15, 2024.

We identified 151 studies (HAP: 60; OAP: 91) that met the inclusion criteria. We conducted a random-effects meta-analysis of those studies that reported an effect estimate and 95% confidence interval (CI), separating studies by exposure (HAP or OAP) and outcomes measured, and conducted subgroup analyses (age, sex, TB diagnosis quality level, geographic region, adjustment for confounders) to examine potential differential effects in specific populations and effect of study bias.

Solid fuel use (HAP) was associated with increased TB incidence (OR = 1.68, 95% CI 1.37–2.06). Effects were much higher among children under the age of 15. Outdoor PM2.5 (aerodynamic diameters <2.5 microns) was positively associated with TB incidence (RR = 1.09, 95% CI 1.05–1.13, per 10 μg/m³), with heterogeneity influenced by geographic and socioeconomic factors. Both HAP and OAP had negative effects on drug resistance and treatment outcomes.

Conclusion: Air pollution is a modifiable and globally important risk factor for TB highlighting the need for integrated strategies to mitigate pollution and advance global TB control.

LBA OP 16

"REACH" – Evaluation of ART services with Point-of-Care (POC) devices in rural areas of Inhambane Province

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Mozambique ranks third globally for people living with HIV (PLWH, 2.4 million). Plasma viral load (VL) is essential to monitor treatment response and identify suboptimal adherence or therapeutic failure. The standard dried blood spot (DBS) testing widely used in Mozambique is associated with long turnaround times and poor result delivery. Point-of-care (POC) VL technologies provide results within hours, enabling timely clinical decisions, but their use remains limited in Mozambique, especially in rural areas, exclusively within prevention of mother-to-child transmission (PMTCT) program. Medicus Mundi Italia (MMI), an NGO focused on international health cooperation, supports HIV care through integrated

mobile outreach brigades (BM) with PMTCT services, reaching over a hundred communities of five rural districts of Inhambane Province.

Methods. An observational study was conducted in HIV-positive patients >14 yo from rural communities reached by BM. Eligible patients for VL testing were tested using POC devices or standard DBS. Data were collected using clinical reports and informed consent. Care cascade indicators, including time from sample collection to result delivery, were compared. Statistical analysis included descriptive and comparative tests and multivariable models, with significance set at $p<0.05$.

Results: Between September 2024 and April 2025, 218 patients were enrolled (82.6% female, median age 45; 10% pregnant or breastfeeding). Mean ART duration was 5.7 years (SD 4). POC VL testing was performed in 32.1%. Among 181 patients with available results, 68.8% received their results, with a higher return rate in the POC group versus DBS (95.7% vs 53.3%, $p<0.05$). Mean turnaround time was 82.7 days for DBS. In the POC group, 86.6% CV results were available for patients on testing day, but 9 received them in mean 73.5 days. VL was >1000 cp/ml in 20% of patients. Increasing age was associated with decreased likelihood of VL>1000 copies/mL ($p=0.0083$). Visit adherence averaged 92%, lower in patients with high VL (85% vs. 94%, $p=0.002$).

Conclusions: Integrating POC VL testing within mobile ART services in rural Inhambane significantly improved result delivery and reduced turnaround times compared to DBS, enabling timely clinical decisions. Although a longer study period and an increased sample size remain necessary, scaling up POC VL testing in rural settings could overcome logistical barriers and improve HIV care outcomes in disadvantaged populations.

LBA OP 17

Phase 1b Trial of the MSP1/GLA-SE Malaria Vaccine SUM-101 in Healthy, Malaria-Exposed adults in Tanzania

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Merozoite surface protein 1 (MSP1) is a well-characterized target of humoral immunity against *Plasmodium falciparum*, with strong evidence that antibodies directed against this protein, expressed prominently on the merozoite surface, contribute to control of asexual parasite growth. A blood-stage malaria vaccine could enhance protection provided by existing pre-erythrocytic vaccines, such as RTS,S/AS01E and R21/Matrix-M. From August 2023 to April 2024, we conducted a randomized, controlled, double-blind, parallel-group, phase 1b trial in 40 healthy malaria-exposed adults aged 18–45 years in Bagamoyo, Tanzania. The aim was to evaluate the safety, reactogenicity, and immunogenicity of SUM-101, a recombinant full-length MSP1 (150 microgram/dose) antigen formulated with the GLA-SE (5 microgram/dose) adjuvant developed by the Access to Advanced Health Institute. The study demonstrated that SUM-101 was safe, well-tolerated and displays an excellent reactogenicity profile in all volunteers. Following three SUM-101 inoculations, all participants developed significant MSP1-specific IgG antibodies (mainly IgG1 and IgG3 sub-classes), which exhibited a range of Fc-receptor-mediated effector functions in a strain-transcending manner. In comparison to malaria-naïve individuals, Tanzanian volunteers with higher pre-existing anti-MSP1 antibodies before vaccination achieved peak vaccine-induced responses already after the second dose, suggesting effective boosting of naturally acquired immunity. The vaccine-induced antibodies were maintained during the three months follow up period after the last vaccine inoculation. Together, our findings support the development of SUM-101 as component of a next generation, multi-stage malaria vaccine targeting several parasite life cycle stages.

LBA OP 18

Extreme precipitation events and facility-based births – an analysis of 21 sub-Saharan African countries

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Climate change impacts on health outcomes are increasingly recognized, yet the effects of Extreme Precipitation Events (EPEs) on geographical access to and timely use of health facilities for childbirth remain underexplored. We investigated how EPEs influence giving birth in a facility in 21 sub-Saharan African (SSA) countries by combining Demographic and Health Survey data (2015-2021) with high-resolution precipitation data. Using a linear probability model with a three-day exposure window before each date of birth, we analyzed 256 101 live births from 12 948 locations, defining EPEs as daily rainfall exceeding the 85th percentile of local historical distribution. We found that each additional day of EPE exposure in the three-day window significantly reduced facility-based births by -10.753 per 1000 live births (95% CI -18.304 to -3.202), with exposure ranging from 0 to 3 days, representing a 1.886% decrease from baseline. This reduction remained consistent across varying EPE definitions (50th percentile – 95th percentile) and was less pronounced with longer exposure windows, suggesting events closer to birth date have greater impact. The effect is likely more pronounced among middle-income households (-17.212 per 1000 live births, 95% CI -32.510 to -1.913), car-owning households (-29.492 per 1000 live births, 95% CI -50.195 to -8.787) and in locations with greater geographical barriers. We estimate approximately 29 165 additional non-facility births (95% CI 13 405 to 76 634) were attributable to EPEs in 2015. Our findings emphasize the critical need to incorporate climate resilience into healthcare and road infrastructure planning across SSA. Non-facility births lack the safety net of skilled attendance and emergency obstetric resources, making continuous access to facility-based care during extreme weather events critical for safeguarding maternal and newborn health.

Fig. 1

Results
85th percentile cutoff

Table: EPEs and Facility-based birth

	Facility-based birth (per 1,000 births)			
	(1)	(2)	(3)	(4)
N of days over 85 percentiles	-17.257***	-10.867***	-11.106***	-10.753***
	(4.079)	(3.331)	(3.156)	(3.852)
DHS cluster FE		Yes	Yes	Yes
Day of birth FE			Yes	
Country-day of birth FE				Yes
Maternal and household controls	Yes	Yes	Yes	Yes
Sample mean	576.998	576.090	576.064	570.027
Observations	256,101	255,999	255,960	252,607
R^2	0.241	0.537	0.558	0.637

Notes: The estimates represent the decrease in the probability of facility-based birth (per 1000 births) for live births exposed to an additional day with extreme precipitation, compared with live births born in the same area with no or fewer extreme precipitation days. The analysis focuses on extreme precipitation events occurring within a window of three days from the day of birth and the two preceding days. All specifications include maternal and household covariates. SEs are clustered at the survey cluster level. $p < 0.01$; $p < 0.05$; $p < 0.1$

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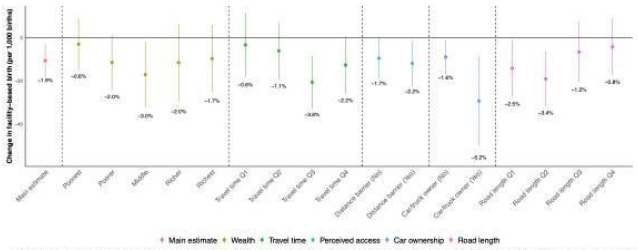
Fig. 2

Results
Additional results - Heterogeneity



Notes: The estimates represent the decrease in the probability of facility-based birth (per 1000 births) for live births exposed to an additional day with extreme precipitation. The analysis focuses on events occurring within a three-day time window from the day of birth and the two preceding days. An extreme precipitation event is defined as a daily rainfall realization over the 85th percentile of the local rainfall distribution. All specifications include maternal and household covariates as well as DHS cluster and Country-day-of-birth fixed effects. SEs are clustered at the survey cluster level. Error bars indicate 95% CIs.

regression

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P 002

Influence of age and sex on disease tolerance in *P. falciparum* malaria

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Disease tolerance allows the host to maintain tissue integrity and function despite infection. In malaria, parasite load is the main driver of inflammation, organ dysfunction, and metabolic disturbances. However, individuals with similar parasite burdens can show considerable variation in organ dysfunction, indicating that there must be variation in disease tolerance. Understanding disease tolerance mechanisms may inform therapeutic strategies.

Age and sex affect immune function, metabolism, and tissue resilience. This study examines the effects of age and sex on disease tolerance in *P. falciparum* malaria.

We analysed data from 107 subjects with imported *P. falciparum* malaria in the SCRIPT Malaria Study (NCT05149157), a prospective cohort study investigating factors associated with rate of recovery from malaria. Patients were recruited from London hospitals from August 2022 to 2024.

Participants included 24 children (22%) and 83 adults (median age: 41, IQR: 22–56); 65 (61%) were male. The majority, 97 (91%), identified as Black, Black British, Caribbean, or African.

Organ dysfunction was assessed using routinely measured laboratory markers (e.g., lactate, haemoglobin, alanine aminotransferase (ALT), albumin, creatinine, urea, platelet count), with age/sex-adjusted z-scores for haemoglobin, creatinine, urea, and platelet count. Plasma PfHRP2, a proxy for parasite load, was quantified by ELISA with sample dilutions based on parasitaemia.

The association between PfHRP2 and each marker of organ dysfunction was modelled across all samples using a cubic spline smoothing function. Disease tolerance was then quantified as organ dysfunction relative to parasite load, with greater tolerance indicating less organ dysfunction than expected for the magnitude of parasite load.

Adults had greater tolerance than children to haematological derangements (haemoglobin, p = 0.024; platelet count, p = 0.0093), but less tolerance to renal dysfunction (creatinine, p = 0.012) and systemic inflammation (CRP, p = 0.00045). Males exhibited lower tolerance than females to renal dysfunction (creatinine, p = 0.013; urea, p = 0.02), whereas females had less tolerance to hypoalbuminemia, p = 0.037) and anaemia, p = 0.043.

Our study demonstrates significant and organ-specific differences in disease tolerance related to age and sex. The mechanistic basis of these differences may hold clues for therapeutic strategies to enhance disease tolerance.

Fig. 1

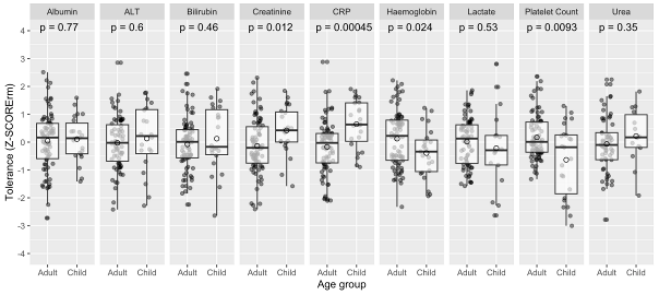
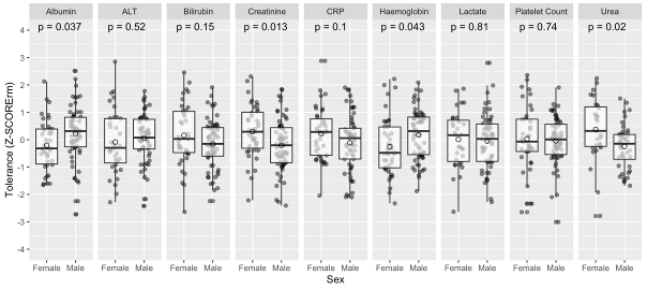


Fig. 2



P 003

The CD4⁺ T cell memory in *Plasmodium falciparum* malaria

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The development of natural immunity against *Plasmodium falciparum* (*Pf*) malaria takes many years and is primarily

mediated by antibodies and a Th1 CD4$^+$ T cell response against the blood stage. Data from endemic areas indicate that natural immunity is short-lived and requires regular exposure. In contrast, experimental *Pf* infections or vaccinations in European volunteers induce stable T and B cell responses, raising the question of whether natural *Pf* infections hinder the development of long-term immunity.

Our study aims to identify mechanisms influencing long-lived CD4$^+$ T cell memory formation in malaria. We hypothesize that the massive induction of co-inhibitory molecules during acute malaria inhibits the development of lasting T cell memory. To address this, we longitudinally study the *Pf*-specific immune response in patients with acute malaria in Hamburg over 12 months, comparing T cell responses between malaria patients with high and low expression patterns of co-inhibitory molecules. Additionally, we compare these patients to individuals from controlled human malaria infection trials.

Firstly, we perform a detailed analysis of immune responses during acute infection. For this, we designed and validated a comprehensive 36-color flow cytometry panel for deep immune phenotyping during acute infection, with a focus on T cells and immune checkpoints. Our preliminary results show strong upregulations of the checkpoint inhibitors LAG-3, TIGIT, Tim-3, PD-1, and CTLA-4 on CD4$^+$ T cells in malaria patients compared to healthy controls, alongside an upregulation of the co-stimulatory molecule ICOS. Furthermore, we observed the expansion of plasmablasts and type I regulatory T cells in the malaria patient. The upregulation of various additional activation and exhaustion markers further reflects the strong immune activation status during this infection. Using LEGENDplex analysis of plasma samples, we detected elevated cytokine levels of IL-6, IL-10, and IFNg in malaria patients compared to healthy controls.

Secondly, we will investigate *Pf*-specific T cell responses over 12 months to identify immunologic predictors of long-lasting memory responses. Subsequent analyses will explore potential correlations between acute immune phenotypes and the persistence of *Pf*-specific CD4+ T cell responses.

P 004

Impact of chronic infections on the B cell compartment of the bone marrow in malaria & TB

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Malaria and tuberculosis remain significant global health challenges, with vaccines showing limited efficacy and poor longevity. Like many other pathogens, *Plasmodium falciparum* (*Pf*) and *Mycobacterium tuberculosis* (*Mtb*) can persist in the bone marrow (BM), the environment in which B cells develop from hematopoietic stem cells. During this process, as part of central tolerance, B cells that express B cell receptors (BCRs) binding to antigens undergo additional rounds of BCR-editing, are eliminated from the repertoire via apoptosis, or become anergic. We hypothesize that chronic pathogen presence in the BM leads to alterations in B cell development, potentially inducing negative selection of high-affinity pathogen-specific B cells, thus impacting future immune responses. Using mouse models of chronic malaria, *Plasmodium chabaudi* (*Pc*), and *Mtb* infections, we are studying pathogen-B cell interactions, as well as pathogen and B cell dynamics within the BM. We are investigating potential perisinusoidal niche restructuring using multiplex imaging and developing *Pc*- and *Mtb*-specific probes to track pathogen-specific B cells, monitoring for phenotypes such as anergy, increased receptor editing, or apoptosis markers. BCR-sequencing will assess BCR repertoire diversity before and during infection. Additionally, we are studying peripheral changes indicative of alterations in the BM in PBMCs obtained from asymptomatically infected members of a longitudinal cohort in the malaria-endemic Mali, in collaboration with NIAID, NIH, and the Malaria Research and Training Center in Bamako. This study aims to enhance our understanding of the immunological impact of chronic *Plasmodium* and *Mtb* infections on B cell development and central tolerance in the BM.

P 006

Genetic association between HLA-G 14BP Polymorphisms and Malaria severity among iron fortified Ghanaian children

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Background and question: Malaria is a leading public health issue in Ghana with the highest mortality cause for children under five years. Understanding the genetic and immunological factors influencing malaria susceptibility is crucial for developing targeted interventions. One key factor is soluble Human Leukocyte Antigen-G (sHLA-G), an immune-modulatory molecule that facilitates immune evasion by *Plasmodium falciparum* and is strongly correlated with increased malaria susceptibility. Meanwhile, global malnutrition initiatives promote widespread of iron supplementation in malaria-endemic regions. While iron is essential for hematopoiesis, it has been paradoxically associated with malaria protection and increased risk. However, the interplay between genetic polymorphisms, particularly HLA-G 14bp variants and nutritional interventions remain poorly understood.

Objective: This study investigates the association between HLA-G 14bp polymorphism and malaria severity in children under five years. Also to identify gender-based differences in malaria immunity and HLA-G 14bp genotype distribution.

Methods: Blood samples were collected from malaria-infected children under five years. Parasitemia levels were assessed to determine disease severity. Genomic DNA was extracted using a double salt method and amplified via Polymerase Chain Reaction. Gel electrophoresis was employed to genotype HLA-G 14bp polymorphisms, which were then correlated with parasitemia and malaria severity.

Results: Our findings revealed that male children exhibited higher malaria immunity compared to females. Genotypic analysis indicated that the majority of males possessed the Ins/Del genotype, whereas females predominantly carried the Insertion genotype. Notably, the presence of the HLA-G 14bp deletion was associated with reduced malaria severity, whereas the insertion allele correlated with increased disease

severity. Furthermore, iron-fortified children with the insertion genotype exhibited a heightened risk of severe malaria and anemia.

Conclusion: These findings suggest that HLA-G 14bp polymorphisms play a significant role in modulating malaria susceptibility and severity, with potential implications for personalized therapeutic strategies and nutritional policies in malaria-endemic regions. Further studies are needed to elucidate the mechanistic pathways linking HLA-G polymorphisms, iron metabolism, and malaria pathogenesis.

P 007

Evaluation of untargeted nanopore sequencing assay for direct detection and differentiation of Leishmania species in culture and clinical specimens

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Leishmaniasis caused by various *Leishmania* species represents a range of mucosal and visceral pathologies with life-threatening complications in some forms if left untreated. Rapid identification and/or differentiation of *Leishmania* species is crucial for diagnosis, epidemiological studies, and treatment selection. However, implementing current molecular methods is limited by the requirement of well-equipped laboratories, cross-species variability, limited target range, and poor field applicability. We evaluated rapid PCR-free nanopore sequencing protocol using R9 and Flongle flow cells for specimens containing *Leishmania* genomic content followed by simple bioinformatic workflow comprised of mapping of a chromosomal target- internal transcribed spacer (ITS) 1 region of 18S rRNA and an extra-chromosomal target-kinetoplast minicircle DNA (kDNA) variable region, as well as genome-wide offline BLAST against curated *Leishmania* nucleotide database. The analysis pipeline was designed to assign *Leishmania* species into species complexes based on phylogenetic proximity and similarities in clinical manifestations. For the culture specimen of *Leishmania* reference strains (n=24; 7 species), mapping of the two targets from nanopore sequencing data resulted in 100% accuracy in species complex identification for 19/24 samples (each with total quality passed read number >1000), as validated by the standard Sanger targeted sequencing of ITS1. Samples with low number of passed reads (<1000; n=5) were correctly assigned to species with high query coverage, identity and E-value cut-off for hits in genome-wide offline BLAST analysis. None of the mapping or BLAST protocols cross-assigned *Leishmania* species in negative control samples (n=10) comprised of *Trypanosoma* species and PCR-negative culture and clinical specimens for *Leishmania*. In case of clinical samples of visceral leishmaniasis (n=11), genome-wide BLAST protocol generated hits for *Leishmania* at the accurate species level (*L. donovani* complex) for 7/11 samples, as indicated by real-time PCR assay specific for *L. donovani* complex. The universal *Leishmania* species differentiation protocol based on PCR-free nanopore sequencing thus holds promise for broader assessment of clinical and vector specimens to directly identify and/or differentiate *Leishmania* species for onsite implementation.

P 008

Macrophages-*Leishmania infantum* interactions – How the production of microbiocidal radicals changes in a hypoxic environment

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Question: Leishmaniasis is a neglected tropical disease caused by the obligate intracellular protozoa *Leishmania*. In the inflamed infected tissues characterized by lower oxygen tension (hypoxia), macrophages are the main host cells for the parasites, contributing to the fate of infection. Among the different killing mechanisms, nitric oxide (NO) produced by the inducible nitric oxide synthase (iNOS) and reactive oxygen species (ROS) represent the main microbiocidal molecules. Since the response of *Leishmania*-infected macrophages in a hypoxic environment is not fully understood, the aim of this study is to investigate the regulation of the oxidative stress as the main killing mechanism in an in vitro model of *Leishmania*-infected macrophages, in normoxia or hypoxia.

Methods: Murine bone marrow-derived macrophages were activated towards a proinflammatory phenotype by IFN-γ/LPS or an anti-inflammatory phenotype by IL-4+IL-13, and infected with *Leishmania infantum* (*L. infantum*) MHOM/TN/80/IPT1 promastigotes (MOI 10). Nitric Oxide Synthase 2 (NOS2) gene expression was evaluated by Real-Time PCR; NO levels were quantified in cell supernatants by Griess assay. ROS production was evaluated using the fluorescence Oxidative Stress commercial kit on the Muse® Cell Analyzer. All the experiments were performed in normoxia and hypoxia.

Results: In normoxia *L. infantum* infection significantly reduced NO levels induced by IFN-γ/LPS. Despite hypoxia induced NOS2 expression, NO production was completely abolished in all the conditions tested. Differently from NO, *L. infantum* infection increased ROS positive cells both in proinflammatory and anti-inflammatory macrophages in normoxia. Hypoxic conditions increased ROS positive cells compared to normoxia, but infection with *L. infantum* reduced the oxygen radicals in macrophages stimulated with IFN-γ/LPS.

Conclusions: In hypoxia macrophages seemed to counterbalance their inability to produce the major nitrogen radical NO with higher levels of ROS. In the presence of high levels of microbiocidal radicals produced by macrophages, the parasites tried to escape the host defence by reducing NO in normoxia and ROS positive cells in hypoxia. A better comprehension of the interplay between *Leishmania* and its main human host in a hypoxic environment is crucial for a better knowledge of the pathogenesis of leishmaniasis, also in the perspective of new possible treatments.

P 009

Gut dysbiosis – A possible mechanism for a zoonotic disease

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Human gut microbiome regulates the development and function of the immune and nervous systems; indeed, it is central to the gut- brain axis. Dysbiosis is implicated in many chronic diseases including inflammatory bowel diseases (IBD). *Mycobacterium avium* subsp. *paratuberculosis* (MAP), the causative agent of Johne"s disease in ruminants, has been implicated in IBD, suspected in irritable bowel syndrome, celiac disease and colorectal cancer. Since MAP infection causes chronic inflammation in the intestines it could cause dysbiosis. This study investigated the influence of MAP on the faecal microbiome in patients complaining from chronic gastrointestinal symptoms. Methods: Sixty-seven patients consented to participate in the study provided faecal samples and/ or tissue biopsies obtained during diagnostic coloscopy. All samples were tested for MAP by culture and real- time PCR. Faecal metagenomic analysis of the 16S rRNA was performed using Oxford Nanopore sequencing Technology. Results: In total, 27 patients were positive for MAP by culture and/ or real- time PCR. Despite the microbial diversity of the samples from MAP+ patients was higher than that from MAP- patients, some clinically important taxa were enriched. For instance, the colitogenic bacteria, *Haemophilus parainfluenzae* and *Klebsiella pneumoniae* were enriched in MAP+ patients, while the potentially probiotic *Blautia* spp. decreased in abundance. Furthermore, *Blautia wexlerae* was significantly (p=0.0325) correlated with MAP negativity. In addition, *Streptococcus* - of which some species were frequently discussed with colitis- associated colorectal cancer and adenocarcinoma - were enriched in MAP+ patients. Moreover, *Streptococcus lutetiensis* was more abundant and significantly (p=0.0393) associated with MAP positivity. Conclusions: These findings reflect a potential influence of MAP on the faecal microbiome and, hence, might contribute to the disease development. Larger investigations would provide more insights on MAP, microbiome and other dysbiosis- related diseases, namely inflammatory and autoimmune conditions.

P 010

Comparative analysis of fecal microbiota reveals elevates levels of fungi in urban-industrialized cohort – Insights from Madagascar and Germany

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Question: Intestinal eukaryotes play crucial roles in human health, affecting millions worldwide.[1] However, they are often neglected in human microbiome studies due to challenging technical implementation of high-throughput sequencing methods[2] and underrepresentation of samples from regions with high prevalence of parasitic eukaryotes.[3] Geographic location significantly influences human microbiota[4], but comparisons of fecal Eukaryota across industrialized and non-industrialized regions, and along the urbanization gradient, remain largely unexplored.

Methods: Using 18S V4V5 rRNA amplicon sequencing, we analyzed 1,394 human stool samples from Madagascar (Andina, Mahajanga, Tsiroanomandidy) and Northern Germany (Kiel), spanning a gradient of urbanization and industrialization.

Results: Our work reveals distinct regional patterns: Helminths, protists, and environmental fungi were enriched in Madagascar, while in Germany the diversity of food-associated fungi was notably higher, including a higher prevalence of S. cerevisiae. We further confirmed known geographical patterns regarding fecal bacteria composition; namely decreasing alpha-diversity with urbanization, and distinct distribution of microbial enterotypes including the predominance of the Bacteroides enterotype in Germany and the Prevotella enterotype across Madagascar.

Conclusions: In summary, this work demonstrates the importance of integrating urbanization gradients into human microbiome analysis of (non-)industrialized regions and highlights the need for deeper investigating the role of fungi within the human gut microbiota.

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P 011

The impact of maternal schistosomiasis on the offspring immune system via changes to the maternal microbiota and metabolome

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Question: Schistosomes manipulate the host immune system to ensure their prolonged survival, with bystander effects on the infected host and their progeny including reduced allergic sensitivities and impaired vaccine responses. We propose that these immune alterations in the offspring stem from specific maternal signals that are modified during chronic infection. Given that 40 million women of child-bearing age are infected in Sub-Saharan Africa, it is imperative to delve deeper into these signals. One possible mechanistic angle behind these changes is the modification of the maternal microbiota, which plays a large role in shaping the offspring immune system and has been investigated during schistosome infection, but not in a fetomaternal setting.

Methods: To disentangle pre- vs postnatal effects, we carry out a cross-foster experiment in a mouse and investigate the expression of antigen-presenting and costimulatory molecule on B cells and dendritic cells in the spleen, mesenteric lymph node and bone marrow as well as stem cell frequencies in the bone marrow. We also analyse the maternal and offspring stool microbiota from regulatory phase of infection by 16s rRNA sequencing in mice and complement this with metabolomic analysis of stool, serum and breastmilk.

Results: We show that the expression of antigen-presenting and costimulatory molecules is consistently increased in offspring suckled by an infected mother, compared to those gestated by one. We identify changes in the maternal microbiota and bile acid levels in the stool and serum due to schistosomiasis, however these changes in the microbiota are not inherited by the offspring.

Outlook: We will complement our metabolomic analysis by investigating whether offspring bile metabolism is also altered by maternal schistosomiasis and whether similar changes are seen in serum samples from our human mother-child cohort (Helmvit).

P 012

Helminthic larval stage mediates cellular apoptosis through remodeling of caspase 9-activated mitochondrial dysfunctionality

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Introduction and research question: In human neurocysticercosis (NCC), the cellular and molecular mechanisms of host-parasite interactions triggering brain inflammation and acquired epilepsy, especially in children in Sub-Saharan Africa, are poorly understood. Emerging evidence indicates that the sustained brain inflammation leading to disease severity is determined by the viability of the cyst of the tapeworm *Taenia solium*. We recently showed that decaying cysts, with pivotal role in pathogenesis, elicit brain microglia inflammation and peripheral immune cell apoptosis by yet unidentified mechanism.

Methods: We examined the specific cellular interactions and molecular mechanisms governing decaying cyst-driven regulation of apoptosis in primary immune and brain microglial cells. Guided by inhibitor-based green and red fluorescent probe targeting active caspases, we provided a comprehensive perspective of tightly regulated apoptotic signaling pathways and mitochondrial dysfunction driven by interacting parasitic molecules identified through differential mass spectrometry. We further analyzed the link between the presence of the cyst in NCC-affected patients and serum caspase activity and related mediators. Colocalization of inflammatory T cell infiltrates with caspases surrounding cysts in naturally-infected pig brain slices provided further validation.

Results: We report here that vesicular fluid from decaying cysts primarily induced apoptosis and caspase activity, in a dose-dependent manner. This effect is prominent in CD16+ monocytes, microglia, and CD3+ T cell populations, near infected brain cysts. This process is primarily mediated by small molecules (<30kDa) and involved a dynamic remodeling of the caspase-driven pathway, especially caspase 9 signaling in microglia. The upregulation of caspase 9 is accompanied by a significant loss of mitochondrial potential and a sharp decrease in Bid, Bcl2 and Ripk3 transcription, indicating a more predominant role of the intrinsic over the extrinsic pathway mechanisms of apoptosis. Accordingly, anti-helminthic treatment of confirmed symptomatic NCC patients notably reduced the caspase activity and FasL levels, an important apoptosis mediator.

Conclusions: This study identifies caspase 9-mediated apoptosis as one of the mechanisms in helminth-induced brain inflammation, offering new insights into the immunopathogenesis of NCC, and may guide future therapeutic strategies in monitoring treatment efficacy in NCC.

P 013

Bioinformatic analysis of burkholderia pseudomallei virulence gene variants detected in clinical and environmental samples

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Question: Human pathogenic bacteria of the *Burkholderia pseudomallei* complex (BpC) may cause the severe infectious disease melioidosis (*B. pseudomallei*; Bpm), a tropical disease, or the zoonotic disease glanders (*B. mallei*), mainly affecting horses, mules, and donkeys. Multi-drug resistance and a variety of virulence factors complicate efficient medical interventions. The intracellular lifestyle of BpC bacterial species involve phagosomal escape, actin-based intracellular motility, and cell-to-cell spread. Dissemination of the pathogen may result in systemic infection with fatal outcomes. Generation of actin filaments (actin tails) at the bacterial cell pole depends on the bacterial virulence factor BimA which is anchored to the bacterial outer membrane in a polarized fashion and promotes actin filament nucleation. Currently, it is not known how BimA activity is functionally regulated. Genetic variants of *bimA* and associated genes *bimB*, *bimC*, and *bimD* observed in Bpm isolates were characterised to better understand physiological impacts of these variations on the protein level.

Methods: Whole genom sequencing of clinical and environmental isolates of Bpm were analysed by bioinformatics (Cagape et al., 2024). Results were compared with data from biochemical assays conducted to study protein functions of *Burkholderia* Bim proteins.

Results: Several ciritical amino acid positions could be indirectly indentified which appear to be critical for Bpm virulence factor function during the intracellular life cycle of the pathogen. AI-based protein structure modeling and mapping of amino acid variations reveal the need for conventional protein structure analysis at least in two cases (BimA, BimD).

Conclusions: Extended biochemical studies combined with intracellular infection assays are required to better understand the interplay between Bpm virulence factors. Results from the

laboratory could contribute to improved molecular genetic epidemiological surveillance of the emerging pathogen *B. pseudomallei*.

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P 014

Exploring IFN +874T/A gene polymorphisms among suspected tuberculosis cases in Ouagadougou, Burkina Faso

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Question: Interferon-gamma (IFN-γ) plays a crucial role in resistance to mycobacterial infections, as it is a regulatory cytokine that acts as a pro-inflammatory mediator. Consequently, variants in the gene encoding this cytokine may be associated with a high risk of contracting pulmonary tuberculosis. The present study aimed to investigate the genetic susceptibility of polymorphisms in the gene coding for IFN-γ to infection by *Mycobacterium tuberculosis* in Burkina Faso.

Methods: This cross-sectional study was conducted from May 2023 to January 2024. Venous blood was collected from suspected cases. Tuberculosis was confirmed by GeneXpert (CEPHEID). Human genomic DNA was extracted using the salting-out extraction technique, followed by the amplification and genotyping of IFN-γ gene polymorphisms, through the conventional PCR. Statistical analyses were performed using the SPSS and Epi info software.

Result: A total of 168 participants were included in the study, with an average age of 38.58 ±14.88, the majority of whom were men (76.19%). In our study population, 73.2% (123/168) were confirmed positive for tuberculosis. Some 46.4% (78/168) of the previous cases were contacts. Of these contact cases, 82.05% (64/78) were GeneXpert positive. The genotypic frequencies of the IFN-γ gene were distributed as follows: 73.3% (AA), 21.8% (AT) and 4.9% (TT), with a frequency of 84.2% for the A allele versus 15.8% for the mutated T allele.

Conclusion: No statistically significant association was found between IFN-γ gene polymorphisms and *M. tuberculosis* infection in Burkina Faso. However, the TT polymorphism appears to be protective against tuberculosis [OR= 0.50; 95%IC (0.05-4.34)].

P 015

Evaluation of three Recombinase Aided Amplification (RAA) rapid molecular assays for point of care diagnosis of tuberculosis in low resource settings in Uganda

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Question: Confirmatory diagnosis of tuberculosis continues to be a challenge especially in resource limited settings (RLS) due to the high costs, low sensitivity and specificity, the long turnaround time of the available tests; and the huge costs of the infrastructure needed for testing. This means that in many RLS, only clinical diagnosis or screening tests are available, therefore many cases of both pulmonary and extra-pulmonary tuberculosis go undiagnosed.

The current report describes an evaluation of three affordable, rapid molecular assays for use as point-of-care diagnostics of TB in RLS in Uganda.

Methods: The study population comprised of health-seeking adults who visited the Tuberculosis Treatment centres in Mulago National Referral Hospital, Kirudu National Referral Hospital and Kisenyi Health Centre in Kampala, Uganda, from April to September 2024.

One hundred samples consisting of 26 Fine needle Aspirations of Cervical lymphnodes from presumptive Peripheral Lymphnode TB patients and 76 sputum samples from presumptive Pulmonary TB patients were collected and tested for *Mycobacterium tuberculosis* using Real Time PCR and three Recombinase Aided Amplification Assays. Real Time PCR was used as the Reference test. The performance of the tests were analysed by calculating the Sensitivity, Specificity, Positive Predictive Values, Negative Predictive Values and Test accuracy.

Results: The results indicated that the three assays namely RAA1_6110, RAA2_MTBC, RAA3_1081, sensitivities of 60%, 48%, 48% respectively and specificities of 100% for RAA1_6110 and RAA2_MTBC; and 98.4% for RAA3_1081. The test accuracy for the three assays were 75% for RAA1_6110 and 81% for both RAA2_MTBC and RAA3_1081. The positive predictive value (PPV) for both RAA1_6110 and RAA2_MTBC were 100% each, while it was 94.4% for RAA3_1081. The Negative Predictive value for the three tests were 81%, 68% and 78% for tests RAA1_6110, RAA2_MTBC and RAA3_1081.

Conclusions: The three novel assays had relatively low sensitivity, however, they had a very high specificity and Positive Predictive values; and therefore can be of practical

use for confirmatory testing, especially where another test has been used to screening of presumptive TB cases.

P 016

Deployment of a mobile suitcase lab using nanopore sequencing as an early warning system for vector-borne diseases

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Mosquito-borne diseases are responsible for spillover to around 700 million people each year, including many neglected tropical diseases such as Dengue fever. Case reports are rising over the last decades, as mosquito species flare-up as a result of climate change and globalization. Surveillance tools and early warning systems are essential to prevent disease spread to humans and animals. Next generation sequencing technologies offer great advantages for disease outbreak investigation. The aim of this study was to develop a field deployable sequencing platform to identify potential mosquito pathogens, species and host from blood meals. A rapid extraction reverse purification method was developed using mosquito specimens collected in the field. A total of 36 single specimens and 30 pools from Leros, Greece and Dhaka, Bangladesh, respectively, were analyzed. Nucleic acids were isolated using a rapid extraction protocol based on lysis buffer, glass beads, magnetic beads, heating and vortexing. Oxford Nanopore Technologies rapid barcoding sequencing was operated using a MinION MK1C device. A reverse transcription step was performed for RNA targets. All steps were carried out in the fully equipped suitcase lab. A specific offline BLAST database was created to semiautomatically identify mosquito species, host in blood meal and pathogens. 35 samples were identified as *Aedes aegypti* and 31 as *Culex pipiens*. Animal DNA from various species could be detected in the mosquito blood meal (Goat, sheep, turkey, horse). Mosquito-associated viruses (*Phasi Charoen-like phasivirus, Indiana vesiculovirus*) and Wolbachia Endosymbionts were detected. The sample-to-result protocol performed in the suitcase lab allows fast mosquito "footprint" analysis directly in the field, allowing an early warning for mosquito-borne diseases and on-site outbreak investigation.

P 017

Analysis of Viral RNA in cerebrospinal fluid in patients with Tick-Borne Encephalitis, southeast Sweden, 2015 to 2020

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Background: Tick-borne encephalitis (TBE), caused by the TBE virus (TBEV), is a disease involving the central nervous system. The disease can range from asymptomatic or mild infection to a more severe infection of the central nervous system with neurological symptoms, such as meningitis, meningoencephalitis and meningoencephalomyelitis. The incidence of TBE is increasing in Europe (1,2). There is to date no treatment for the infection, but effective vaccines exist (3). Diagnosis is mainly based on serology. Here we investigated if cerebrospinal fluid can be used for diagnostics.

Methods: A retrospective study was conducted in Region Stockholm and Uppsala, Sweden, including patients with TBE between 2015 and 2020 in whom cerebrospinal fluid (CSF) were analysed for TBEV RNA using qPCR.

Results: In total, CSF from 36 TBE-patients were analysed by RT-qPCR for presence of TBEV RNA. TBEV RNA was detected in twenty of the patients" CSF samples (56%). Patients positive for TBEV RNA in CSF had a more severe disease, with a higher rate of intensive care and assisted ventilation, compared to patients with no detectable TBEV RNA in CSF. Overall, the mortality was 40% in patients with detectable TBEV RNA in CSF. In the subgroup of patients with immunosuppressive treatment, 8 patients, 87.5 % had a fatal outcome.

Conclusion: TBEV-PCR can be used as a diagnostic tool in patients with underlying comorbidities involving the immune system or immunosuppressive treatment. The presence of TBEV RNA in CSF indicates a more severe infection and an increased risk of fatal outcome in immunosuppressed patients.

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Table 1.Clinical, Laboratory, and Radiological Parameters of the Acute Phase of Tick-borne Encephalitis in 36 Patients, Analysed with TBEV RNA in Cerebrospinal Fluid. Divided by TBEV RNA result.

Table 2. Immunosuppressive treatment and mortality. Divided by TBEV RNA result.

Fig. 1

	Total		TBEV RNA negative		TBEV RNA positive		P-value
	n	%	n	%	n	%	
	36	100	16	44.4	20	55.6	
Clinical Characteristic							
Biphasic course	11	30.6	6	37.5	5	25	0.483
Fever	36	100	16	100	20	100	NA
Headache	20	55.6	9	56.2	11	55	1.000
GCS (Median, IQR)	11 (5–15)		15 (13–15)		8 (4–11)		<.001*
Myelitis	10	28.6	2	13.3	8	40	0.134
Severity of disease							
Mild	3	8.3	3	18.8	0	0	
Moderate	13	36.1	9	56.2	4	20	0.002*
Severe	20	55.6	4	25	16	80	
CSF findings							
Pleocytosis**	36	100	16	100	20	100	NA
Mononuclear leukocyte count, cells/µL (Median, IQR)	86 (46–155)		76 (43–122)		108 (48–169)		0.301
Polymorphonuclear leukocyte count, cells/µL (Median, IQR)	14 (4–78)		13 (4–69)		23 (6–141)		0.425
Albumin, mg/L (Median, IQR)	428 (343–666)		372 (297–602)		564 (384–744)		0.086
Glucose, mmol/L (Median, IQR)	3.4 (3.1–4)		3.3 (3.2–3.9)		3.5 (3.2–4.2)		0.205
Lactate, mmol/L (Median, IQR)	2.5 (2.1–2.9)		2.2 (1.8–2.6)		2.7 (2.3–3.3)		0.023*
Radiology, other diagnostics							
MRI performed	32	88.9	13	81.2	19	95	0.303
Signs associated with TBE on MRI***	20	62.5	6	46.2	14	73.7	0.150
EEG performed	22	61.1	4	25	18	90	<.001*
Pathological EEG findings***	21	95.5	3	75	18	100	0.182
EEG findings associated with epileptic activity***	7	31.8	3	75	4	22.2	0.077
Inpatient care							
Hospitalised	35	97.2	15	93.8	20	100	0.444
Days in hospital (Median, IQR)	10 (3–17)		10 (5–15)		5 (3–19)		0.812
ICU admission	19	52.8	3	18.8	16	80	0.001*
Days in the ICU (Median, IQR)	16 (9–37)		31 (20–39)		16 (9–36)		0.655
Assisted ventilation	18	50	3	18.8	15	75	0.002*
Days with assisted ventilation (Median, IQR)	15 (8–33)		29 (19–38)		15 (8–30)		0.614
Rehabilitation							
Any rehabilitation****	18	50	8	50	10	50	1.000
Mortality							
Mortality	11	30.6	3	18.8	8	40	0.277

** >5 mononuclear or polymorphonuclear leukocyte count, cells/µL
*** Percentage of those who underwent the procedure
**** Inpatient care at a geriatric ward, outpatient visits to and inpatient care at a neurorehabilitation unit included
MRI - Magnetic Resonance Imaging, EEG - Electroencephalogram

Fig. 2

	TBE RNA positive		TBEV RNA negative	
	n	%	n	%
	8	100	3	100
Mortality	7	87.5	1	33
Treatment				
Corticosteroids	5	62.5	2	66
Rituximab	4	50	1	33
Methotrexate	4	50	0	0
TNF inhibitor	1	12.5	2	66
Other	3*	37.5	0	0
Combination of immunosuppressive drugs (2-4 drugs)	6	75	2	66

P 018
Identification of pan-ebolavirus reactive antibodies from rVSV-ZEBOV vaccinated individuals

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Ebolaviruses such as Ebola virus (EBOV), Sudan virus (SUDV) and Bundibugyo virus (BDBV) are highly contagious and can cause severe diseases with significant case fatality rates in humans. For EBOV disease few monoclonal antibodies (mAbs) or cocktails and three licensed vaccines are available. However, highly potent and cross-reactive neutralizing mAbs to all filovirus strains are hardly described. To identify and develop pan-filovirus reactive antibodies, we aim to leverage the humoral immune response in rVSV-ZEBOV vaccinated individuals. From these, we have already isolated highly potent EBOV-specific mAbs. We hypothesize that, despite the EBOV-specific immune response, the rVSV-ZEBOV vaccine may also induce broader neutralizing antibodies.

To gain insights into the development, duration and cross-reactivity of a filovirus-specific humoral immune response, we analyzed EBOV-specific mAbs induced by vaccination. Therefore, we collected samples of participants of a clinical phase I study vaccinated with the rVSV-ZEBOV vaccine in 2015, 24-/84-months post vaccination. Our preliminary analysis, suggests a long-lasting B cell response seven years after vaccination. To investigate cross-reactivity of the humoral immune response, we used a sorting strategy with BDBV-/SUDV-glycoprotein (GP) baits and performed single B cell sequencing, the *in vitro* production of corresponding antibodies and binding as well as neutralization studies with various filoviruses. To this end, a functional lentivirus-based pseudovirus neutralization assay was established to analyze neutralization activity of isolated mAbs. We were able to identify two pan-ebolavirus reactive mAbs neutralizing EBOV, BDBV and SUDV. Of note, they also neutralized wild-type EBOV and SUDV, of which one shows higher potency against SUDV compared to cross-reactive mAbs such as REGN3479. Moreover, investigation of the pharmacokinetic profile showed good *in vivo* stability and preliminary epitope analysis suggests an epitope in the GP2 region of the EBOV-GP.

These findings provide important insights into the development of a filovirus-specific immune response and the efficacy of the rVSV-ZEBOV vaccine, showing the development of filovirus cross-reactive antibodies induced by an EBOV-GP-specific vaccine. Additional investigation will include detailed structural analysis and testing of *in vivo* challenge using an EBOV and SUDV mouse model to further evaluate the top candidate and explore its clinical potential.

P 019
Characterization of the epitope-specific CD8+ T cell response following MVA-MERS-S vaccination

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Background: Middle East Respiratory Syndrome-Related Coronavirus (MERS-CoV) is a novel zoonotic pathogen. It is primarily transmitted via aerosols, with camels serving as the intermediate host. Human-to-human transmission through respiratory droplets is also possible. Due to its endemic nature, which is largely restricted to the Arabian Peninsula, the World Health organization (WHO) has classified MERS as a "highly prioritized" disease, showing the urgent need for research and vaccine development. Currently, there are no available vaccines against MERS.

MVA-MERS-S, a Modified Vaccinia virus Ankara (MVA)-based viral vector vaccine candidate that expresses the MERS-CoV spike protein, was tested in two phase 1 clinical trials conducted between 2017 and 2024 at the University Medical Center Hamburg-Eppendorf. The MVA vaccine candidate was shown to be safe and immunogenic, inducing a robust MERS-CoV-specific humoral and T-cell response.

Objectives: To gain a deeper understanding of vaccine-induced T-cell immunity against MERS-CoV, we aimed to identify immunogenic CD8+ T-cell epitopes and determine their HLA restriction

Methods: We used a MERS-CoV spike-specific IFN-g ELISpot assay to assess the T-cell response in participants of the phase 1 trials *ex vivo* and after 10 days of antigen-specific T-cell expansion in culture. Furthermore, we determined HLA types by isolating DNA and performing sequence-specific oligonucleotide typing. In addition, we conducted in silico epitope prediction using theNETMHC4.1 software

Results: Based on the results of the IFN-g T-cell ELISpot, we were able to divide the 87 participants into 17 high-responders, 50 responders and 20 non-responders. Of the high-responders, we selected the reoccurring HLA types to use for *in silico* epitope prediction. We found several HLA-restricted epitopes that were predicted to have a minimal Eluted Ligand Rank of 0,01%, classifying them as strong binders. After optimization of the antigen-specific T-cell expansion in culture, we were able to verify the predicted epitopes experimentally. Due to the constant emergence of new and imminent viruses, the need for safe vaccines becomes more salient. T-cell epitope mapping demonstrates an effective way to support vaccine development.

P 021

Exploring the adaptive immunity of RSV infection and vaccination in a human tonsil organoid system

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Introduction: The respiratory syncytial virus (RSV) continues to be a major global health threat, causing high mortality in infants and elderly people. In recent years, the efforts to develop vaccines have increased and to date three vaccines against RSV are approved, two protein vaccines and a mRNA vaccine. However, the differential immune responses towards the different RSV vaccines have not yet been compared side-by-side. Our understanding of immune responses mostly relies on ex-vivo analysis of peripheral blood cells and animal models, which often fail to fully capture the adaptive immune response within lymphoid tissues. To this end, we investigated adaptive immune responses to RSV infection and vaccination in human tonsil-derived immune organoids. Understanding the underlying mechanisms of immune responses to different antigen formats is critical for rational vaccine design. We therefore aimed at identifying distinct cellular and humoral dynamics following RSV infection and vaccination.

Methods and Results: We established a co-culture system of the tonsil-derived lymphoid organoid model and the human lung cell line A549, enabling virus replication and therefore allowing us to investigate both, virus infection and vaccination. Accumulation of immune cells to form lymphoid organoids was enhanced when stimulated with all three currently approved RSV vaccines (Arexvy, Abrysvo, mResvia), as well as the full-length RSV-A. Flow cytometry and cytokine profiling revealed distinct immune signatures for each vaccine type. Viral infection resulted in an increase in plasmablast counts after seven days, whereas the different vaccines showed differences in their immune cell population compositions.

Conclusion: Our findings suggest that the stimulated tonsil organoids lead to a shift in B-cell and T-cell population development. Interestingly, this observation is comparable to *in vivo* studies, which increases the reliability of tonsil immune organoids as a potential early predictor for the outcome of future vaccine trials, not only within the context of RSV but also other respiratory infectious diseases[1].

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P 022

Productive infection of primary human hepatocytes with different MPXV clades

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Mpox virus (MPXV) is a zoonotic orthopoxvirus endemic to Central and West Africa, with rodents serving as the primary reservoirs. MPXV has traditionally been divided into two major genetic clades: clade I and clade II. Clade I has historically been associated with more severe disease, whereas clade II generally causes milder infections with lower case fatality rates. Within both clades, further phylogenetic divergence has been observed, leading to the classification of clade I and II into subclades. Clades Ia and IIa encompass older African strains primarily responsible for sporadic outbreaks in endemic regions, while clades Ib and IIb include strains responsible for global outbreaks in 2024 and 2022, respectively. Clinically, MPXV infections present with a broad spectrum of symptoms, ranging from mild fever to severe systemic disease. While the characteristic skin lesions remain the primary feature of MPXV infection, growing evidence suggests that the virus can disseminate to multiple organ systems, including the lungs and liver. However, the mechanisms underlying MPXV tropism to these organs remain largely unknown. Here, we aim to investigate the determinants of MPXV liver tropism, examining differences in infection dynamics among clades Ia, Ib, and IIb to gain deeper insights into viral pathogenesis and host interactions.

To assess hepatic infection dynamics, we infected liver cell lines Huh7 and HepG2 with different MPXV isolates from clade Ia, Ib, and IIb. Productive infection was established within 48 hours, with viral production comparable to VeroE6 cells. However, clade IIb exhibited inefficient infection in these cell lines. Similar results were obtained in primary human hepatocytes (PHH), but when extending the infection period to 72 hours, we observed that IIb could indeed infect PHH, suggesting a delayed replication kinetic. This finding is in line with clinical observations, as strain IIb has been associated with less severe disease compared to Ib. Additionally, treatment with interferon-alpha 2 significantly reduced infectious viral loads for all isolates, indicating a role of innate immune responses in restricting MPXV replication.

Ongoing transcriptomic analyses of the different isolates at multiple time points in PHH aim to reveal strain-specific differences in immune response activation and replication efficiency. These insights will improve our understanding of MPXV liver involvement.

P 023
Strengthening pandemic preparedness – Enabling access through hybrid care models – Project RAPIDE
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During health emergencies, healthcare systems can quickly become overwhelmed, as seen during the COVID-19 pandemic, when services were often suspended or postponed. Defining new models and pathways for healthcare delivery is therefore essential in building preparedness and enabling access to care for all during emergency situations.

Active from 2024 to 2027, the RAPIDE project seeks to develop and demonstrate a portfolio of powerful tools to build resilience in healthcare provision and enable access to equitable quality care during health emergencies in the European context, with lessons to be applied across the globe.

A key step is to build on lessons learned from the COVID-19 pandemic. A scoping review on the delivery of regular care during the pandemic has shown how hybrid models of care, incorporating digital innovations, can sustain key care pathways and ensure continued access to care. Data spanning 23 countries across a wide range of health disciplines and settings, shows hybrid care pathways served as a cornerstone in maintaining regular service provision during the pandemic. The inclusion of digital interventions facilitated continuity of care with telehealth solutions such as remote monitoring, video and phone consultations playing a crucial role in mitigating disruptions while keeping patients engaged. Additionally, identified in-person components of care highlight areas requiring greater attention to minimize the impact on regular health services during crisis situations.

Moreover, essential competencies for healthcare providers to strengthen local resilience have been explored using a participatory qualitative approach engaging providers across primary and tertiary care levels. Key themes including knowledge sharing, interprofessional collaboration, and organizational support emerged as critical factors for effective implementation of hybrid models during emergency situations.

Hybrid models of care present a unique way in which digital and non-digital approaches are incorporated to enable access to essential care during crisis situations such as a pandemic. Findings from this project underscore the need for integrating hybrid innovations in pandemic response while ensuring interprofessional collaboration stays central in preparedness strategies in order to support equitable access to essential care during emergency situations.

P 025
Pandemic preparedness - Response and health system resilience in Haiti – A band-aid on a wooden leg if public (dis)trust is not addressed?
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Background: Trust in health systems (HS) constitutes key ingredients fostering stakeholder interaction, public participation and service use. It further reflects effective governance, responsive to community needs. In fragile contexts like Haiti, evidence reveals lack of trust, accountability and endemic corruption as barriers to HS governance. Haiti's population, more than 50% of whom subsist below poverty line, faces escalating violence inflicted by armed gangs, provoking massive displacement and virtual HS" collapse. Reinforcing governance, pandemic preparedness - response (PPR) and health system resilience (HSR) thus emerge as priorities, while social cohesion erodes and trust wanes within society. This study explores stakeholders' perceptions of HS governance and its societal interdependencies, to identify and propose appropriate solutions.

Methods: A qualitative study whose data was collected through semi-structured interviews based on the HSR index of Kruk et al. (2017). Fifteen interviews were conducted with five operational actors and ten decision-makers, from 9 to 20 July 2022. With respondents' prior consent, the interviews were recorded, then transcribed on Word and analysed using Nvivo 14. A two-cycle coding process was used, with an initial deductive round based on the interview guide, followed by an inductive one to identify and recategorize emerging themes in relation to Siddiqi & al. (2009) governance principles.

Results: Respondents described a pattern of collective alienation at of the social fabric"s levels: citizen-citizen, strategic-operational, state-citizen, state-international actors etc. Failure to recognise and appreciate mutual efforts emerged as a pervasive major hindrance to effectiveness and accountability across all levels. Citizens" and decision-makers" sense of worthlessness often leads to inaction, reinforcing distrust of public institutions and undermining the HS' resilience capacity-building.

Conclusion: Proposed solutions include systemic, sustainable initiatives to bolster Haiti's human capital, and nurturing shared community values that foster identity congruence in pursuit of common interests. Dispersed and siloed health interventions that neglect basic human rights and dignity will hardly be conducive to effective governance, PPR or HSR in Haiti. Further exploration of political and social dynamics underlying governance failures in Haiti is essential to understand their root causes and devise viable alternatives.

P 026

Haiti's health system resilience and preparedness for the next crisis as perceived by strategic and operational stakeholders

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Background: Literature highlights interdependencies between prevention preparedness & response (PPR) and health system (HS) strengthening & resilience. In limited-resource settings grappling to enhance HS performance and outcomes, these interdependencies hold paramount significance. Haiti ranks amidst the most fragile nations worldwide. Social unrest, protracted violence and a donor-dependent HS further compound those challenges, hindering the HS's ability to provide sustainable, high-quality care and services. This study examines Haiti's HS efforts to prevent, prepare for and respond to emergencies - pandemics - epidemics, and foster health system resilience (HSR). It draws on operational and decision-making stakeholders' perceptions to propose avenues for improvement.

Methods: This mixed-methods case study combined World Health Organization (WHO) HSR indicators (2024) with qualitative semi-structured interviews. A purposive snowball sample of 10 decision-makers and 5 operational actors was interviewed. Data collection followed an interview guide, based on Kruk et al (2017) and WHO emergency preparedness framework. Thematic, inductive-deductive analysis was conducted using Nvivo 14.

Results: Haiti laid basic PPR and HSR foundations, notably emergency management plans and bolstered epidemiological surveillance. Nevertheless, ongoing violence and subsequent transportation constraints impeded vital humanitarian aid"s (HA) delivery, leading to inefficiencies. Despite efforts to devise cross-sectoral contingency plans and resource inventories, operational actors often unaware of them rely on ad hoc responses. These lapses mirror broader governance gaps in coordination, participation and responsiveness to public needs, which, as reported during COVID-19, fuel distrust. Moreover, limited funding and donors' focus on short-term interventions exacerbate these challenges. Ethical concerns linked to HA's organisation and resource stockpiling in a system struggling to meet daily needs also arose. A respondent highlighting HA's ethical quandary said: "Fire prevention should not appertain to anyone living from ashes".

Conclusion: PPR and HSR in conflict-affected settings require responsiveness, trust and equity as robust governance principles, whilst addressing ethical concerns and ensuring emergency and recovery measures' continuity. Without addressing these key areas, promoting initiatives for human, economic and social development, PPR and HSR remain mere pious hopes.

P 027

Utilizing predictive models to improve surveillance and pandemic readiness of national public health institutions in Nigeria

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Background: Nigeria reported 20 public health emergencies between 2016-2018, making it one of only five WHO African Region members to report five or more annually. To harness the potential of epidemiological models for improved response to disease outbreaks, DRASA, in partnership with UNDP and the European Union (EU), implemented a capacity-building project on the use of R for pandemic modeling and surveillance for two national public health institutions: the Nigeria Centre for Disease Control and Prevention (NCDC) and Nigerian Institute for Medical Research (NIMR).

Description: Between July and December 2023, DRASA collaborated with NCDC and NIMR to conduct a needs assessment, establishing the relevance of modeling skills with Nigeria"s priority for pandemic preparedness and response. The results informed the development of a customized training curriculum featuring statistical analysis, R software, epidemic modeling, and spatial epidemiology. A 9-day training workshop was held for 24 staff selected from surveillance, epidemiology, data processing, and research departments. The workshop included lectures, hands-on sessions, and practicals with recent outbreak data on COVID-19, Mpox and measles.

Lessons: An increase in knowledge of R and modeling was recorded with a significant change from a pre-test score of 50% to a post-test score of 75%. Participants gained skills that translated to improved data reporting and analysis capabilities. Participants were able to utilize R statistical software to generate a backlog of Mpox situation reports which were instrumental in informing a review of the previous guidelines and sharing Mpox information with the public. R was also used to calculate proportion incidence and time series analysis, which is valuable in identifying hotspots that need to be prioritized when responding to emerging public health threats.

Conclusion: The training underscored the importance of using innovative data analysis tools like the R software for enhanced pandemic preparedness and response during disease outbreaks, especially for epidemiologists in resource-constrained settings.

P 028

Acceptance of a smartphone-based clinical decision support application for Dengue Detection among clinicians in Tanzania – A mobile health approach to

strengthening infectious disease surveillance in Sub-Saharan Africa

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Question: How do Tanzanian clinicians perceive the acceptability of a smartphone-based clinical decision support system (CDSS) designed to enhance infectious disease outbreak detection, and what are the key facilitators and barriers influencing its adoption?

Methods: A qualitative study was conducted to explore clinician perspectives on a proposed mobile health (mHealth) tool—the ESIDA app—designed to assist in diagnosing and reporting dengue suspect cases and to serve as an early warning system during non-outbreak periods. In-depth interviews were conducted with 21 clinicians (medical doctors and clinical officers) across public and private health facilities in Dar es Salaam, Tanzania. The Unified Theory of Acceptance and Use of Technology (UTAUT) framework guided the exploration of perceived usefulness, ease of use, and external conditions affecting adoption. Interviews were transcribed, coded, and analyzed thematically.

Results: Clinicians showed high willingness to adopt the ESIDA app, with 95% expressing favorable views. Reported facilitators included perceived clinical usefulness, diagnostic support, improved disease understanding, government endorsement, and potential for time-saving and on-the-job learning. The app was seen as a valuable addition to dengue surveillance, especially during inter-epidemic periods. Key barriers included limited prior exposure to mobile health technologies, potential technical challenges, and concerns about integration into clinical workflows. Clinicians stressed the need for adequate training and supportive infrastructure.

Conclusions: Clinicians in Tanzania perceive the ESIDA app as a promising innovation to support dengue surveillance and outbreak preparedness. Acceptance is influenced by practical utility, ease of use, and integration into existing systems. Successful implementation will require iterative co-design with end-users, technical refinement, health system alignment, and strong policy backing. The ESIDA framework offers a model for developing locally adapted early warning and decision support systems in low-resource settings.

Fig. 1

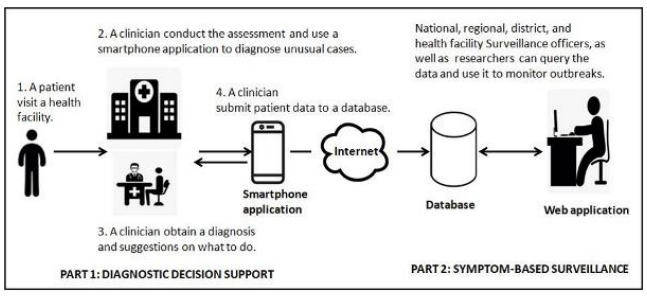
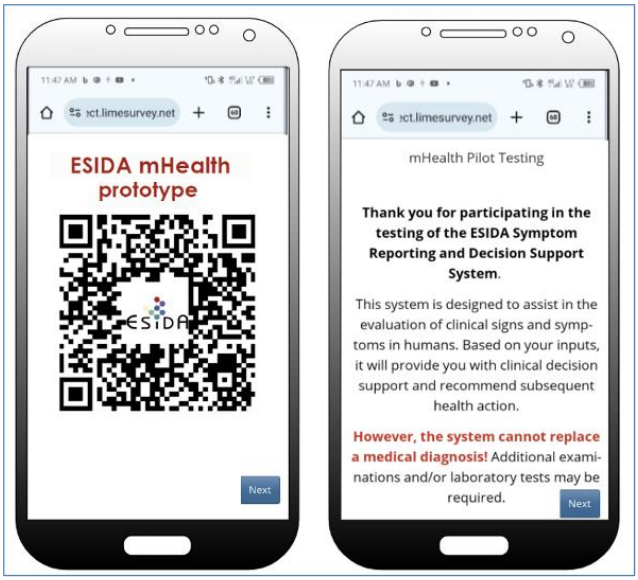


Fig. 2



P 029

Enhancing Mpox Outbreak Response through integrated, cross-institutional collaboration

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Infectious disease outbreaks continue to challenge health systems across Africa. Effective preparedness and response require coordinated, cross-sectoral collaboration among international, regional and national stakeholders. Recent funding cuts in development cooperation including the withdrawal of USAID further highlight the need of joint forces to tackle such outbreaks.

The German Epidemic Preparedness Team (SEEG), jointly implemented by the Deutsche Gesellschaft für Internationale Zusammenarbeit via the Global Program for Pandemic Resilience, One Health, the Robert Koch Institute, Bernhard Nocht Institute for Tropical Medicine, Charité Universitätsmedizin Berlin and Friedrich-Loeffler-Institut on behalf of the German Federal Ministry for Economic Cooperation and Development, provides rapid, needs-based advisory and technical support to partner countries facing infectious disease outbreaks. A key aspect of SEEG"s approach is close collaboration with regional and national actors to strengthen existing structures and promote sustainable and context-specific capacity building.

SEEG-supported Mpox outbreak response efforts in the Democratic Republic of Congo, Tanzania and Sierra Leone will be presented to showcase the collaboration with a broad alliance of continental, regional, and national partners such as Africa CDC, specifically the African Volunteers Health Corps (AVoHC), WHO, the Rapidly Deployable Expert pool of the East African Community Secretariat as well as other regional partners. Activities focused on Infection Prevention and Control and Risk Communication and Community Engagement, tailored to local priorities and implemented through joint missions. The workshops engaged healthcare workers and community leaders to strengthen Mpox case management through a training-of-trainers approach, combining clinical content with communication skills in a participatory and practical format.

The interventions demonstrate how cross-organizational collaboration across mandates, funding streams, and

institutional levels can strengthen outbreak preparedness and response. Drawing on regional cooperation and shared expertise, the activities enabled rapid, context-specific support aligned with national priorities and facilitated effective exchange of knowledge and experiences. These complementary efforts highlight the importance of adaptable, interoperable coordination models and partnerships - guided by a One Health perspective - for effective epidemic response.

P 031

Communicate! Increasing vaccination readiness through targeted risk communication in Lambaréné, Gabon

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Effective health communication interventions are critical for addressing planetary health challenges, such as infectious disease outbreaks. Psychological research underlying these interventions predominantly originates from the Global North, leading to uncertainties regarding potential effectiveness and applicability in different cultural and regional contexts. Also, replications are particularly important given the ongoing replication and universality crises in psychology, where findings often fail to generalize across cultures and contexts. Taken together, cross-cultural validations are urgently needed.

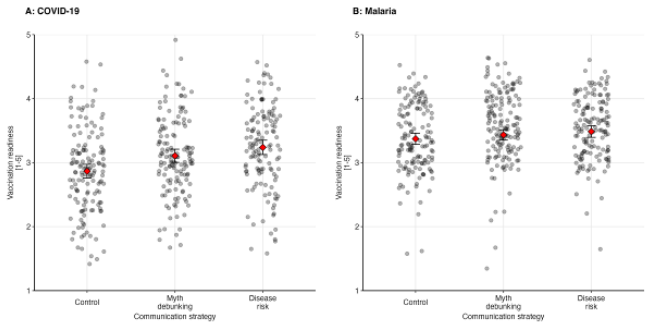
The presented randomized controlled trial addressed these gaps by conceptually replicating a health communication intervention that has proven successful in the Global North, namely communicating risks and debunking myths to increase vaccination readiness (Horne et al., 2015). The study took place in Lambaréné (Gabon) and was selected due to a) its distinct cultural context compared to the original setting and b) high disease burden, i.e., Malaria, where testing communication interventions provides evidence with clear practical implications.

Using a 2 (Disease: COVID-19 vs. Malaria) x 2 (Type: Risk communication vs. Myth Debunking) + 1 (Control) nested factorial design, 720 adults from Lambaréné, Gabon, received video interventions explaining the risks and benefits of vaccination against COVID-19 or Malaria, debunked myths about the vaccines, or explained climate change (control condition). Subsequently, we assessed vaccination readiness.

Results indicate that both disease risk communication and myth debunking significantly increased vaccination readiness for COVID-19 as well as Malaria compared to the control condition (Fig.1, COVID-19: $F(2,276) = 11.70$, $p < .001$, $d_{control\text{-}risk} = 0.581$, $d_{control\text{-}myth} = 0.376$; Malaria: $F(2,295) = 5.51$, $p = .004$, $d_{control\text{-}risk} = 0.307$, $d_{control\text{-}myth} = 0.368$).

The study partially replicated the findings from the US. In contrast to the original study, both communication types increased vaccination readiness, whereas in the original study, debunking myths failed to be effective. The findings highlight the need for conducting replication studies in the context in which the interventions are to be used to ensure health interventions are appropriately adapted and effective. Practitioners should consider that findings from studies conducted in the Global North may not fully generalize.

Fig. 1



P 033

Post-pandemic questions on vaccine usage – Two qualitative analyses of open-ended responses comparing hypothetical and novel vaccines

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Background: During the COVID-19 pandemic detailed information about vaccinations were published and discussed. Our studies examine what patients expect from doctor-patient communication after having lived through a pandemic and how their knowledge applies to other vaccinations (i.e. a hypothetical future vaccine, or respiratory syncytial virus (RSV) vaccine).

Methods: Responses to an open-ended question were collected as part of cross-sectional surveys of the German population. In two studies participants were asked what questions they would ask their doctor about vaccinations and their recommendation. For Study 1 (14/09/2023-7/10/2023), data from 842 participants were collected (50% female, range 18-86y). Participants read a scenario about a fictitious disease, dysomeria, and were informed about symptoms, contagion and vaccination. In Study 2 (11/07/2024-21/07/2024), 1076 individuals provided text responses (50% female, range 60-83y). This study replicated aspects of Study 1, focusing on RSV and the respective vaccination. Qualitative analyses and categorization of the answers were performed.

Results: In Study 1, participants raised concerns about vaccine safety, including side effects and long-term risks. Contraindications related to other medical conditions were frequently mentioned, as well as the importance of doctor"s recommendations and official guidelines. Participants also asked about immunisation schedules, vaccine types, duration of protection, boosters, as well as efficacy and disease incidence rates. In Study 2, similar concerns were found, especially regarding safety. Contraindications were particularly mentioned by participants with preexisting conditions. Trust in doctor's recommendations remained central, and participants sought clarity on vaccine efficacy and the schedule. Practical concerns about vaccine logistics and doctor's vaccination status were also raised.

Conclusions: Both studies emphasise that trust in doctors and concerns about safety, efficacy, and individual health conditions shape post-pandemic vaccination decisions. Patients seem to be immersed in more detailed knowledge

than in other cases of vaccine preventable diseases. Future research should explore the impact of pandemic knowledge on vaccination choices and identify key information for doctors. Healthcare providers should adapt communication strategies, focusing on shared decision-making and personalised vaccination decisions.

P 034

The data hub – Enhancing infectious disease research and global health action through data collaboration

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Problem Statement: Infectious disease research and public health action rely on cross-disciplinary collaboration and timely data integration (1). However, fragmented data sources, siloed repositories, and inconsistent formats hinder efficient analysis and evidence-based decision-making. The Data Hub, an open-source, self-hostable software framework (2), addresses these challenges by enabling reproducible data harmonization, dataset creation, and visualization to support both research collaboration and applied public health.

Methods: Developed using Python and Django, the Data Hub features a PostGIS database, a data fusion engine, and an interactive dashboard. It adheres to FAIR data principles (3) and encodes each stage of data processing, ensuring transparency, reproducibility, and verifiable workflows. The framework was designed in consultation with researchers and public health professionals, aligning with their data practices, community standards, and needs.

Results: A demonstration hub using Ghana as a case study (2) showcases how the Data Hub facilitates cross-disciplinary data collaboration. In research, it streamlines multi-source data integration, ensures interoperable data sharing, and enables reproducible workflows, supporting interdisciplinary studies and advanced analytics. In public health, it enhances real-time intelligence, strengthens risk assessment models, and supports real-time simulations for outbreak response and decision-making. Through an interactive (live) demonstration, we highlight how harmonized data improve both research and public health decision-making - from data integration and fusion to visualization and analytics.

Conclusion: The Data Hub fosters collaborative intelligence to tackle current and emerging challenges in infectious disease research and global health. Now in beta, it is openly available for testing, with ongoing refinements to enhance usability, streamline deployment, and expand analytical features. Future development will focus on simplifying setup, improving usability in low-resource settings, and strengthening dataset management and visualization capabilities.

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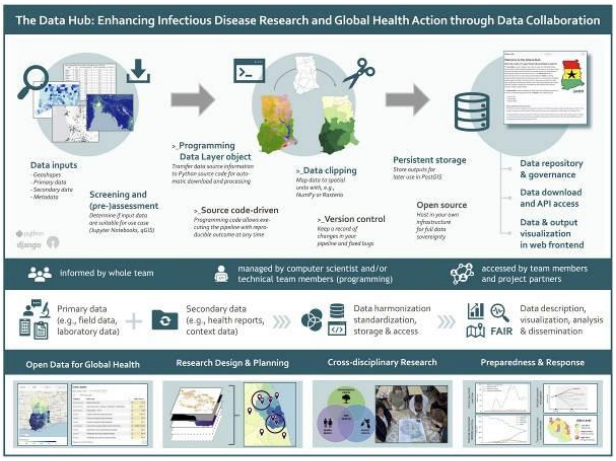
Figure: The Data Hub framework

Fig. 1



Flow diagram depicting the Data Hub framework's pipeline from input through processing to storage and access. The framework facilitates collaboration between field research, technical and analytical teams through standardized data processing (data fusion engine), interactive data exploration (web dashboard), and flexible analysis options (e.g., Excel, R, Python).

P 035

Driving health inequity? The gap between evidence and claims of risk driving pandemic preparedness

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Recent years have seen a rapid increase in focus on pandemic preparedness and response (PPR). To better understand urgency, we systematically reviewed the underlying data and citations supporting major reports of the World Health Organization (WHO), World Bank, G20 High Level independent Panel and related reports supporting claims of rapidly increasing pandemic risk and high annualized pandemic mortality.

The research found a major gap between claims of magnitude of risk within these reports, and the underlying evidence and citations on which these claims rely. These claims in turn are being built into global and national pandemic policy. Whilst natural acute outbreaks continue to occur, major sources for these reports demonstrate a reduction in mortality from confirmed naturally occurring outbreaks over the past one to two decades. Estimates of pandemic risk have consistently failed to consider the technological revolution in pathogen detection, identification and reporting associated with the increase in reported outbreaks since the 1960s. Annualized mortality estimates are heavily reliant on historical data from the pre-antibiotic era, including the Spanish Flu and major Medieval events. Whilst certain drivers of pandemic risk are increasing, others reflected in a consistent reduction in overall infectious disease mortality are poorly considered.

We argue there is urgent need to re-assess pandemic risk in the context of other major health burdens, particularly in LMICs. Modeling must account for major changes in capacity to distinguish outbreaks from background disease burden, and account for a consistent improvement in human resilience to infectious disease and improving medical management over the past century. Current claims of urgency and risk, whilst understandable, are poorly backed by data. Failure to achieve an appropriate balance in an increasingly challenging funding environment has major implications for overall health equity, and global disease burden.

P 037

Molecular xenomonitoring and blood meal sources detection – An implication for malaria control in south Ethiopia

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Questions: Detecting human blood meals and Plasmodium parasites in freshly fed mosquitoes is a key indicator of human infection, facilitating timely malaria control decisions. This study focused on identifying blood meal sources and Plasmodium infections in Anopheles mosquitoes in southern Ethiopia.

Methods: Entomological sampling was conducted in 12 malaria-endemic *Kebeles* near the southern Rift Valley Lakes, Abaya and Chamo, as a baseline for a trial evaluating house screening and ivermectin treatment for domestic animals for malaria control. Four hundred sixteen houses were selected across all trial sites for the Centers for Disease Control and Prevention (CDC) light trap collections. *Anopheles* mosquitoes were identified using morphological keys and molecular methods. Polymerase chain reaction technique was employed to identify blood sources and detect *Plasmodium* parasites among the freshly fed *Anopheles* mosquitoes.

Results: *Anopheles arabiensis* was the most prevalent species, comprising 86% of the nine *Anopheles* species identified, followed by *An. pharoensis* (8%) and *An. tenebrosus* (3%). Out of 446 tested *Anopheles* specimens, 85% were fed on six vertebrate hosts, while 15% tested negative for these hosts. Goat blood was the most common, accounting for 67% of the samples, followed by human blood at 23%. Cow blood comprised 19%, while dog blood was present in 13% of the samples. Additionally, chicken and pig blood were detected. Overall human blood meal index was 23%, including the mixed blood meal sources. *Plasmodium vivax* (1.9%; 9/446) and *P. falciparum* (0.2%; 1/446) were detected in blood collected from mosquito abdomens.

Conclusions: *Anopheles* mosquitoes feed on diversified sources of blood, with goats being the most common blood meal source, followed by humans. Implementing animal-based interventions could effectively target these mosquitoes. Early detection of parasites in their abdomens may enhance preparedness for malaria control.

Keywords: Human blood meal index, Blood meal sources, Xenomonitoring, Plasmodium parasite detection

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P 038

Potentials of plant extracts as larvicides for malaria vector control in endemic rural communities of Nigeria

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Background and Question: Mosquito-borne diseases remain a global public health challenge. In Nigeria, vector control is primarily through long-lasting insecticidal nets (LLINs) usage and larval source management (LSM) with larvicides. Concerns over the environmental and health impacts of chemical larvicides have led to the exploration of eco-friendly bio-larvicides. Can crude aqueous extracts of P*olyseias balfouriana*, *Bougainvillea x buttiana, Acalypha wilkesiana* [tricolor], *Acalypha wilkesiana* [marginata], *Codiaeum variegatum*, and *Duranta variegata* be used as biolarvicides against malaria vector in rural communities?

Method: In an initial laboratory setup, two doses (0.25 g/ml and 0.50 g/ml) of the plant extracts were tested on third and fourth instars of wild Anopheles larvae collected from communities in Ogun State, Nigeria. Mortality was recorded after 24 hours, following WHO guidelines.

Result:The findings showed that aqueous extracts of *P. balfouriana* and *D. variegata* achieved 100% and 98% mortality, respectively, against wild *Anopheles* mosquito larvae. Other plant extracts recorded lower mortality rates. Extracts of *P. balfouriana* and *D. variegata* were later deployed as biolarvicides in five mosquito breeding sites in a demonstration community. The extracts displayed significant larvicidal efficacy, reducing larval density by various percentages. *Duranta variegata* exhibited a wider range of effectiveness with an average larvae reduction of 66.2%. Likewise, *Polyscias balfourina* demonstrated consistent performance across sites, with an average larvae reduction of 50.9%.

Conclusion:These results suggest that *Polyscias balfourina* and *Duranta variegata* plants possess significant larvicidal properties, therefore warranting further investigation on potential use in integrated mosquito management strategies.

P 039

Contribution of larviciding with biological compounds to the management of pyrethroid resistance in a population of *Anopheles gambiae* s.l. expressing high resistance intensity in Yaoundé, Cameroon

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Larviciding using non-insecticide compounds is considered appropriate for controlling outdoor biting mosquitoes. However, there is still not enough information on the influence of larviciding in managing pyrethroid resistance. This study checked whether using the biolarvicide VectoMax G contributed to restoring the susceptibility of Anopheles coluzzii populations to pyrethroids. To achieve this, the susceptibility status of field An. coluzzii population was evaluated at different time points before and during larviciding treatments. An. coluzzii larvae collected in the city of Yaoundé were split into four groups and exposed to different selection regimes for 21 generations as follows, yielding four colonies (deltamethrin_only, VectoMax_only, VectoMax+deltamethrin, VectoMax+deltamethrin+susceptible). Life traits parameters were measured in the progeny. Kdr allele frequency and the profile of expression of different detoxification genes and oxidative stress genes were checked using qPCR analysis. The gene expression was compared between the first and the last generation of each colony and in field populations collected before and during larviciding. A susceptible laboratory strain was the control. Findings show a decrease in resistance intensity to deltamethrin in field populations. The colony vectomax+deltametrin+susceptible presented a high susceptibility to deltamethrin after 21 generations of selection (Fig 1). Calculation of the Hardy-Weinberg equilibrium for the kdr gene revealed that each of the colonies was subject to selective forces contributing to disrupting their equilibrium, while allelic frequencies showed a slight decrease in the frequency of the resistant allele in colonies selected with VectoMax G. A significant decrease in the overexpression profile of Gste2 was detected in the field population after

larviciding implementation (fig 2). Other genes showing a similar pattern though not significant were Cyp6z1, Cyp6p1 and Cyp6g16. Concerning fitness, only the colony vectomax+deltametrin+susceptible was found to display a fitness profile similar to the susceptible colony with high fecundity, high hatching rate, short development time, and a long adult survival rate. This work revealed that the profile of the field population supported reversal of phenotypic resistance to pyrethroids suggesting that reversal may take longer to achieve in a population expressing a very high resistance profile and under continuous insecticide selection pressure.

Fig. 1

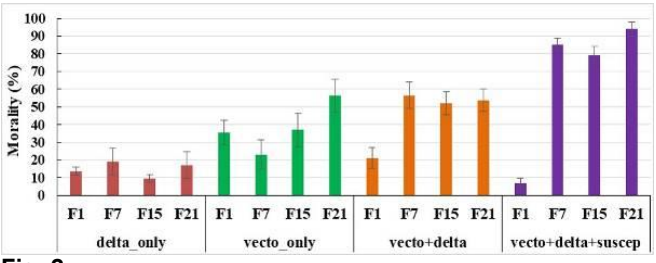
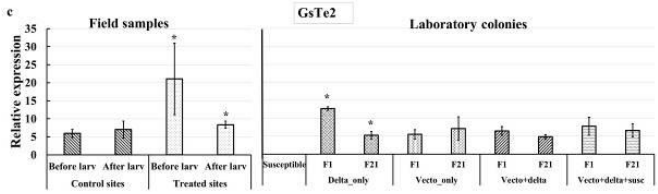


Fig. 2



P 041

Can introduction of Wolbachia mosquitos reduce dengue fever rates in South America?

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Dengue fever (DF) is a mosquito-borne virus, which affected 12669716 people in South America from January to November 2024.(1) There is no specific treatment for DF, therefore prevention is vital. We aim to evaluate the long-term effectiveness of the Wolbachia method in decreasing DF. A literature search was conducted on Embase (Ovid), PubMed, SciELO. We used the search terms "Colombia" and "Wolbachia" and "dengue" OR "dengue fever" OR "arbovirus". Studies from the last 5 years in which Wolbachia was used in Colombia to track DF incidents were included. Studies researching other arboviruses, such as Zika virus, as well as those without full text access were excluded. Due to limited literature, cRCTs were also excluded with 1 completed with 2 in progress. 2 studies fit the inclusion criteria and have been synthesised. The Wolbachia method has shown a 95% reduction in two cities and a 97% reduction in one in DF. The same study also found a 45% reduction in Virology confirmed DF including presumed DF between treated and untreated areas.(2) In Brazil, interrupted time series showed a 65% decrease in incidents post Wolbachia. Also, severe cases decreased, with only 3 cases since the intervention in 2017, compared to 897 cases from 2007 to 2020.(3) Across an average of 24 months, prevalence of Wolbachia at ≥60% (fully treated) was maintained in 24 of 33 regions, with the rest partially treated.(2,3) Wolbachia has potential as a long-term, cost-effective method of DF prevention and alternative for conventional control (insecticides). However, research inconsistencies and a lack of large, high-quality evidence means further research should be completed before wider implementation. Going forwards, more areas should be considered with cRCT to be conducted during interventions.

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P 042

Advancing vector surveillance – Potential and challenges of AI-based mosquito identification

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Mosquito-borne diseases pose a significant global health challenge, particularly in resource-limited regions where effective vector surveillance is difficult to implement. Yet, accurate and timely species identification is crucial for detecting emerging threats and guiding targeted interventions. Traditional identification methods rely on expert entomologists and specialized equipment, limiting scalability and rapid response, especially in regions with constrained resources.

To address these challenges, we developed an AI-based classification system utilizing a large and diverse dataset of mosquito wing images from 21 taxa, captured using three different imaging devices. Our tailored preprocessing pipeline standardizes images and minimizes artifacts, enabling our convolutional neural network models to achieve a balanced accuracy of 98.3%. Notably, the system reliably differentiates morphologically similar species and maintains robust performance even when processing images from previously unencountered devices.

Beyond its technical achievements, this study explores the practical implications and limitations of AI-based vector surveillance. In a feasibility study, the system demonstrated high inter-rater reliability, highlighting its usability and potential for deployment in diverse environments by non-expert users. However, challenges such as device-related variability must be addressed to ensure seamless integration into routine public health practice. Our findings underscore the promise of AI-based vector surveillance while emphasizing the need for continued refinement to bridge the gap between laboratory performance and real-world applicability.P

043

Metagenomic next-generation sequencing protocol using oxford nanopore's MinION for viral community analysis in Aedes Mosquitoes in Tanzania

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Aedes mosquitoes are key vectors of arboviruses that cause significant public health threats, including dengue, chikungunya, and Zika viruses. However, endosymbionts like Wolbachia and Microsporidia MB present novel biological control strategies that could help mitigate disease transmission. Understanding the interactions between Aedes mosquitoes, pathogens, and their microbiota is essential for developing effective vector control programs. Traditional virus surveillance methods, such as PCR and viral culture, are often limited to detecting known pathogens, potentially overlooking novel or emerging viruses. Metagenomic Next-Generation Sequencing (mNGS) provides a powerful, unbiased approach for detecting and characterizing a broad range of viral species in vector populations.

In this study, we established a protocol for mNGS using the Oxford"s MinION (MKB1) to analyse viral communities in *Aedes* mosquitoes in Tanzania. Mosquitoes were collected from three districts in Dar es Salaam, Tanzania. Mosquito pools were processed for total RNA extraction using the RNAzol (Sigma-Aldrich, USA), followed by Sequence-independent Single Primer Amplification (SISPA) for cDNA and double-stranded DNA (dsDNA) synthesis. Purified amplicons were used to prepare sequencing libraries according to the manufacturer"s protocol. The prepared libraries were loaded into a MinION GRIDION flow cell and sequenced using an ONT MinION Mk1B device (Oxford, UK). Specific bioinformatics tools and pipelines will be used for sequence taxonomic classification, genome assembly, and assessment of genome assembly completeness. The tools will also be used to identify known arboviruses and novel viral sequences of potential importance for public health.

Analysis of sequences is still ongoing, and soon, data on common known and novel viruses will be revealed. Also, the prevalence and comparative analysis across different mosquito collection sites provide insights into viral diversity, distribution, and potential transmission risks.

Our findings will demonstrate the utility of mNGS for high-throughput, unbiased arbovirus surveillance in *Aedes* mosquitoes, allowing early detection of emerging viral threats. This study underscores the importance of metagenomics in strengthening vector-borne disease monitoring for guiding targeted control measures to mitigate outbreaks in Tanzania.

P 044

Understanding the spatial distribution of tick species and diseases present in Kenya – A systematic review

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Introduction: Tick-borne diseases (TBDs) are infections transmitted to humans and animals through the bite of infected ticks or by contact with contaminated bodily fluids. TBDs transmissions like other vector-borne diseases exact a significant public health burden and economic losses in affected communities. Whereas TBDs of animals such as theileriosis and babesiosis dominate in Africa, zoonotic tick infections are also common but underdiagnosed including Tick-borne relapsing fever, Q-fever, and Crimean. Global economic loss due to tick-borne diseases has been estimated at $14,000 - $18,000 million. In Kenya, the occurrence of tick-borne diseases in humans, livestock and wildlife is on the rise, and there is an urgent need to update the distribution maps for these diseases and their tick vectors. This work aims to understand the spatial distribution of tick species and pathogens associated with them in Kenya.

Methods: We conducted a systematic review to (i) understand the known distribution of tick species and pathogens in Kenya. From the selected studies, we deduced information on tick species, geographical location, and pathogen-detection data and overlaid these in the respective counties.

Results: Several tick species and pathogens were found prevalent in the Southern and Coastal counties of Kenya. These included *Amblyomma variegatum* for ehrlichiosis and *rickettsia africae*; *Rhipicephalus pulchellus*; *Rhipicephalus appendiculatus* a vector of *Theileria parva* and Nairobi sheep Disease Virus (NSDV).

Conclusion: By mapping the distribution of ticks and the pathogens, we were able to identify focal areas where TBDs are emerging or re-emerging. This report provides further evidence for the need to prioritise one health in national diseases control policies.

Keywords: Spatial distribution, tick species, tick-borne diseases, Kenya, systematic review

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P 045

Urban vs. Hospital settings – Which environment poses a higher risk of vector-borne diseases? Mosquito monitoring and species identification in Bissau, Guinea-Bissau

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Question: How do *Aedes spp*. vary between hospital and urban settings in Guinea-Bissau, in relation to vector control and healthcare staff knowledge?

Methods: A mosquito monitoring study with BG-Pro traps (Biogents AG; Germany) and the attractant Mozzibait (Biogents AG; Germany) was conducted in Bissau, Guinea-Bissau. The traps were placed at the campus of the Hospital Nacional Simão Mendes (ICU and Telemedicine) and in the urban area of the capital. Every 24 hours, captured mosquitoes were immediately frozen in a portable cooler at -20°C. Species identification was performed with the Vectech IDX AI microscope (Vectech; USA). A site visit was made to the hospital to assess mosquito control measures. An interprofessional standardized interview with health care workers was done to assess knowledge of vector borne diseases with a focus on dengue.

Results: A total of 894 mosquitoes were captured, with 177 (19.8%) in the urban and 717 (80.2%) in the hospital setting. 46.2% (n=331) from the clinical and 23.2% (n=41) from the urban setting could not be identified with high probability. In urban setting 37 (27.2% / 136) were classified as highly relevant vectors for human pathogens (*Aedes and Anopheles* spp.*),* whereas in the clinical setting, 65 (16.8% / 386) were classified as high-risk vectors. Further molecular biologic diagnostic is currently underway to match the IDX results and analyze the uncertain mosquitos.

The hospital inspection identified several potential mosquito breeding sites, open windows/ doors, and damaged mosquito screens on the campus. Three physicians and seven nurses were interviewed in the survey. Of note, just one respondent recognized the mosquito species responsible for transmission and 30% knew that dengue is mainly transmitted by daytime or that there is the need of prevention measures to reduce the spread of the disease.

Conclusions: A notable difference in the number of mosquitoes was observed between the urban and hospital environments. Furthermore, it was determined that measures to prevent mosquito-borne diseases in hospitals were found to be inadequate, and that there was a paucity of knowledge about these diseases among the health care workers in the interviews. Limitations in diagnostics using IDX analysis were identified. Whether this is due to the cold chain used is currently being investigated in comparison with molecular biology.

Fig. 1

Vectech IDX	Clinical setting	Urban setting
Culex spp.	321 (44.8%)	99 (55.9%)
Aedes spp.	52 (7.3%)	36 (20.3%)
Anopheles spp.	13 (1.8%)	1 (0.6%)
Uncertain	331 (46.2%)	41 (23.2%)
Total of certain identified	386	136
Total	717	177

P 046

Establishment of vector populations of major vector-borne diseases in contrasting geo-ecological regions in eastern Nepal – An impact of climate change

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Background: One key challenge in controlling major vector-borne diseases (VBDs); malaria, visceral leishmaniasis (VL), lymphatic filariasis (LF), Japanese encephalitis (JE) and dengue is their expansion in diverse geo-ecological regions in Nepal. Following an integrated approach, we assessed the distribution, diversity, and association of vectors to geo-ecological and climatic variances to understand and alleviate the risk of VBDs transmission in Nepal.

Methodology: A descriptive cross-sectional survey was conducted in five districts of eastern Nepal representing three distinct geo-ecological regions: mountain, hills and lowland in 2023. Vectors were collected using light traps, BG sentinel traps and manual aspirators. Daily records of rainfall, relative humidity, and temperature were collected from the nearest meteorological stations of the survey villages. The regression analysis was performed in two vector species (*Culex quinquefasciatus* and *Phlebotomus argentipes*) collected in abundance.

Results: The malaria vector *Anopheles annularis*, the LF vector *Cu. quinquefasciatus* and VL vector *P. argentipes* were present in all three geo-ecological regions. The other malaria vectors, *An. pseudowillmori* and *An. willmori*, and JE vector *Cu. tritaeniorhynchus* were recorded from hilly districts. Dengue vector *Aedes aegypti* was found in one lowland district (323m asl). Suspected vectors of VL, *P. major* and *P. (Adlerius)* spp. were present in high-altitude districts. Density of *Cu. quinquefasciatus* and *P. argentipes* were higher in hills (IRR = 1.23, CI at 95% = 0.53 – 2.87 and IRR = 13.00, CI at 95% = 5.06 – 34.04 respectively) and mountain (IRR = 1.96, CI at 95% = 0.73 – 5.91 and IRR = 4.00, CI at 95% = 1.31 – 13.38 respectively) than lowland. Mean temperature and rainfall had a positive effect on *Cu. quinquefasciatus* density while seemed not to affect *P. argentipes* density.

Conclusion: The presence of vectors in higher altitudes could be attributed to changes in climatic variables that are suitable for the survival, distribution, and growth of vector populations and pathogen transmission. These findings suggest strengthening the existing disease and vector surveillance and timely implementation of control interventions in wider geo-ecological regions for the interruption of VBDs transmission.

Fig. 1

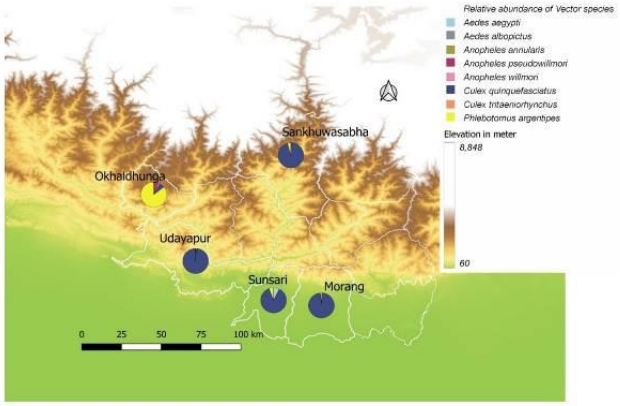
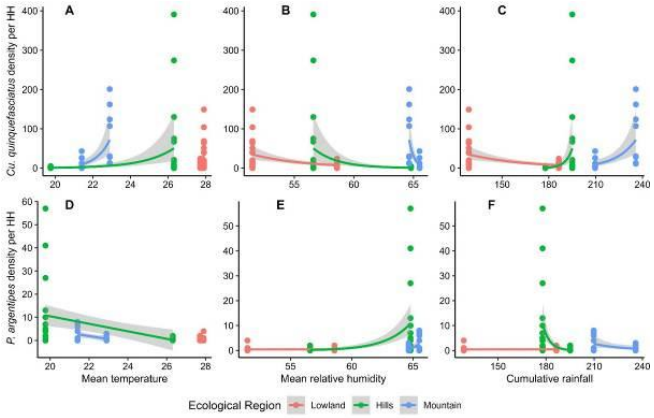


Fig. 2



P 049

Evaluating a connection between the olfactory system and vector competence for Zika and dengue viruses in *Aedes aegypti* mosquitoes

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Human-preferring mosquitoes use olfaction — their sense of smell — to locate human hosts. *Aedes aegypti* mosquitoes are major vectors for several important human viruses, such as dengue and Zika, which cause millions of infections worldwide. The reason why this species is so effective at transmitting these viruses remains unclear. Due to global change processes such as globalization, land use changes, and climate warming, the spread of *Aedes aegypti* in Europe could become a significant public health concern in the coming years. It is therefore of interest to better understand the biology of *Aedes aegypti*.

One important aspect is the olfactory system, which enables mosquitoes to locate humans, take a blood meal, and transmit viruses. Three main gene families have been identified in the mosquito olfactory system: gustatory receptors (GRs), which detect CO_2; odorant receptors (ORs), which sense human odors; and ionotropic receptors (IRs), which are more human-specific and involved in detecting lactate acids upon direct contact with human skin.

In this Ph.D. thesis, we focus on the molecular mechanisms and genes involved in host-seeking behavior, particularly those specific to human attraction that may influence viral infection. It is likely that infected mosquitoes adopt different or more efficient strategies to locate new hosts. However, how viral infection affects host-seeking behavior and enhances mosquitoes' ability to detect human odors has not yet been fully described.

To investigate the relationship between the olfactory system and vector competence, we used genetically modified mosquito lines deficient in host-seeking and host-sensing abilities. We applied a combination of genetic approaches, behavioral bioassays, and viral infection experiments. For odor exposure assays, we designed a setup using Whatman filter paper to deliver volatile compounds to mosquito lines at different time points.

So far, we have not observed differences in vector competence among mosquito lines deficient in host-sensing and host-seeking. These findings suggest that there may be no direct connection between vector competence and the olfactory system. Nevertheless, we observed that odor exposure responses are mosquito age-dependent, with high responsiveness detected only in mosquitoes aged 1–2 days.

This study contributes to the development of novel olfactory system–based and innovative vector control strategies, which are urgently needed to fight against mosquito-borne diseases.

P 050

Yellow Fever outbreak in Ngora District, Eastern Uganda, April-July 2024 – a cross-sectional investigation

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Background: Uganda has reported numerous yellow fever outbreaks in the past decade. Despite the roll-out of control interventions such as vaccination, recurrent outbreaks continue to occur. This paper describes the yellow fever outbreak investigation in Ngora district, Uganda.

Methods: This was a cross-sectional study. We defined a suspected case as a resident or visitor of Ngora who reported onset of unexplained fever, plus two or more signs of unexplained jaundice or abdominal pain. A confirmed case was a suspected case with positive IgM or PCR tests. A standardized case investigation form was used to collect information on exposures. We computed proportions to describe characteristics of the cases, and reviewed records to determine vaccination coverage in the district. Data were analyzed using STATA v16. We evaluated the outbreak detection, notification and response using the 7-1-7 global metric.

Results: Five confirmed cases of yellow fever were identified. Of these, four were female, with an age range of 5-49 years. The fifth case resulted in a fatality; thus, no data was collected. One case had a previous history of vaccination. Fatigue (75%, n=3), muscle and joint pain (75%, n=3) and headache (75%, n=3) were the most commonly reported signs and symptoms. With the 7-1-7 matrix, there was a delay in outbreak detection (9 days), notification (58 days) and response (14 days).

Conclusion: This yellow fever outbreak was likely due to a zoonotic spillover, but there were delays in detection, notification, and response. These data suggest an urgent need for targeted interventions such as integrated vector control, aimed at controlling re-emergence of yellow fever within the district, and need to improve the diagnostic capacity for yellow fever detection within the district, as well as build capacity of health workers to identify, report and respond to potential outbreaks.

Fig. 1

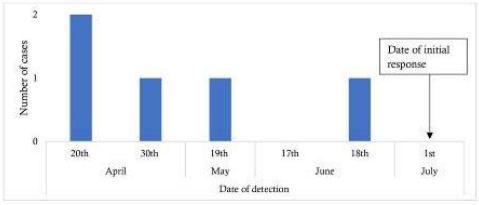

Figure 1. Distribution of yellow fever cases in Ngora, by date of detection

Fig. 2

Figure 4. 7-1-7 metrics for the yellow fever response in Ngora district

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P 051

Genomic surveillance of Dengue, yellow fever and mpox viruses in Guinea

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Introduction: Infectious diseases continue to be a leading cause of death globally. Emerging viruses with epidemic potential, such as viral hemorrhagic fevers (VHFs) and mpox virus, pose a growing threat to global health, rapidly spreading and evolving to challenge existing control measures. Genomic sequencing is an essential public health tool for identifying and monitoring infectious pathogens with epidemic potential. The implementation of a sequencing capacity at the "Centre de Recherche en Virologie - Laboratoire des Fièvres Hémorragiques Virales de Guinée" (CRV-LFHVG) in Guinea began in 2021 in response to the Ebola resurgence and COVID-19 pandemic, aiming to enhance the country"s ability to monitor and respond to viral infectious diseases. Since then, this capacity laid the foundation for broader genomic surveillance to include a metagenomic approach for virus characterization. The goal was to create a robust in-country framework that leverages on pre-existing laboratory diagnostic capabilities and offers state-of-the-art use of genomics and bioinformatics for rapid monitoring of public health threats.

Methods: Samples collected from patients with suspected VHFs or mpox virus, tested positive for dengue virus, yellow fever virus or mpox virus at CRV-LFVHG or at partner laboratories for VHFs surveillance in Gueckédou and N"Zérékoré, were sequenced using MinION technology (Oxford Nanopore) at CRV-LFHVG using a metagenomic approach. The consensus sequences generated were used for variants identification and phylogenetic analysis.

Results: From January 2024 to March 2025, the laboratory generated two mpox virus consensus sequences with a genomic recovery up to 99%, one yellow fever virus consensus sequence with a genomic recovery of 99%, and four sequences of dengue virus with genomic recovery up to 96%. These sequences allowed the identification of respectively: clade IIa mpox; clade V for yellow fever virus, and the dengue serotype of DEN-1, DEN-2 and DEN-3. All the clades, identified in Guinea and characterized through phylogeny, have been previously shown to be circulating in West Africa.

Conclusion: In conclusion, the implementation of metagenomic sequencing capacity in Guinea has greatly enhanced genomic surveillance for dengue, yellow fever, and mpox viruses in-country. This advancement enables more comprehensive monitoring, early detection, and rapid response to these diseases, strengthening the country's capacity to manage emerging public health threats.

P 052

Half-Genome, full Insight – An alignment-free approach for classifying Dengue Virus Serotypes

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Dengue virus, a major arboviral pathogen responsible for infecting approximately 400 million people worldwide, is one of the fastest emerging vector-borne viral infections in Europe in the last decades. It is classified into four distinct serotypes, each with its own implications for disease severity, immune response, and epidemiology. Infection with one serotype provides lifelong immunity to that specific serotype, but only partial and temporary protection against the other three. Individuals can hence be infected with dengue multiple times. Subsequent infections with a different serotype are often associated with an increased risk of severe dengue disease. Classification of dengue serotypes/genotypes is essential for effective outbreak monitoring, vaccine strategy optimization, and pandemic preparedness. Current machine learning and AI-driven genomic classification methods are based on whole-genome sequences for robust classification which demands high-quality, near-complete genomic data along with considerable computational resources. However, in many real-world scenarios, such as during outbreaks or in resource-limited settings, obtaining full genomic coverage is challenging, which causes hinderance in rapid and accurate classification.

To address this problem, we developed a novel approach based on k-mers for classifying dengue virus serotypes using unaligned genomic data with as low as 50% coverage. This approach bypasses the need for multiple sequence alignment (MSA) by finding the unique patterns of 5, 6, 7, 8, 9 and 10-mers directly from genomic sequences. Our convolutional neural network (CNN) robustly classified the four dengue serotypes with high accuracy, even when significant portions of the virus genome were missing.

The model was evaluated on diverse datasets representing different geographic regions, variable genomic coverage and sequencing platforms, demonstrating consistent performance and scalability while offering a fast, resource-efficient alternative for serotype identification, particularly advantageous in outbreak scenarios where rapid decision making is critical. This k-mer based classification model provides a practical solution for timely dengue serotype surveillance by using less genomic data amid emerging infections.

P 053

The use of routine data for early detection of arbovirus epidemics in a changing world – Evidence from Cuban research

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Background: Early detection of arbovirus outbreak is becoming increasingly important for quick response and containment. In this way, timely analysis of routine surveillance data could alert new pathogen circulation. We describe the analysis of the oropouche outbreak in Abreus municipality, Cienfuegos.

Methods: A descriptive analysis in space, time and person of the cases of oropouche in Abreus at the start of the outbreak 2024. Routine data from the provincial surveillance system were retrieved on: weekly number of cases, Place of residency of cases, clinical signs and symptoms of the cases, diagnostic tests performed. Additionally, outbreak alert generation, data collection process, case definition and laboratory confirmation was described.

Results: On May 27 2024, the Cuban Ministry of Public Health reported the first outbreak ever on the island of oropouche fever .Cienfuegos was one of the first provinces reporting cases. The existing acute fever surveillance system, which is indicator- and event-based, aims for the early detection of dengue, and was alerted early May 2024 (statistical week 19) by an unexpected increase of reports of Acute Febrile Syndromes. . Between weeks 19 and 3477.1 – 100% of these cases tested negative for dengue and were suspect oropouche cases . All samples tested positive for the oropouche virus.

In the week 21 and 24, 6 and 7 acute fever cases were randomly selected, respectively, (2 days between the onset of symptoms and sample collection) for PCR-RT testing for Oropouche virus;

The predominant clinical picture were fever (95.2%), headache (84.4%), myalgia (67.1%), urticarial rash (34.5%), angioedema (34.4%) and vomiting (34.5%). It is noted that 83.7% of these clinical cases presented a recurrence of "sickness" 9-10 days after the first episode, with more severe signs/symptoms. Additionally, 42.9% of the cases presented a third recurrence of the disease 16 to 17 days after the onset with very similar signs and symptoms as in the first episode. There was no statistical difference among sex. The most affected age groups were 10-24 years and more than 55 years old.

Conclusions: Routine data analysis result useful to generate alerts about outbreak or circulation of new pathogen. New

mechanisms of surveillance and response within strengthened health systems are required, using new and integrated

P 054

Tick-borne encephalitis virus (TBEV) in a low prevalence territory – The contribute of goat sera and milk testing for surveillance purposes

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Keywords: Tick-borne Encephalitis (TBE), diagnostics, surveillance, prevention measures

Question: Tick-borne encephalitis (TBE) is increasingly recognized as a public health issue, and endemic areas are expanding at higher altitudes. Although this arbovirosis does not represent a risk to animal health, the "sentinel" role of small ruminants, wildlife, and rodents has been acknowledged (1,2). In South Tyrol (Italy), human cases related to tick bites have been regularly confirmed since 2020. Even if food-borne infection has not been notified so far, mild infections may remain undetected, potentially leading to an underestimation of the overall public health risk.

Methods: To gather evidence regarding the role of goats as sentinels and to assess if goat milk analysis is useful for surveillance purposes in a low prevalence, goat sera and milk samples were collected in two sampling campaigns (pre and post alpine grazing) and tested for the presence of anti-TBEV antibodies and viral RNA, respectively.

Results: A total of 148 goat serum samples were tested. Among those collected before the grazing period, 1.2% (C.I.95%: <0.0001%-7.3%) tested positive for TBEV Ab; seroprevalence increased to 3.0% (C.I.95%: 0.2%-10.9%. after the grazing period. Some animals displayed borderline results. Of the 123 goat milk samples, one sample showed the presence of TBEV RNA. This sample was collected after the grazing period from a goat displaying borderline results for TBEV Ab. The overall prevalence of TBEV RNA in milk samples was 0.8% (C.I.95%: <0.0001–4.9%).

Conclusions: This area is not endemic for TBE. However, the vectors" distribution and abundance in the area may change according to ongoing climatic changes, facilitating also the TBEV spread. Testing of goat milk can help in the detection of TBEV circulation improving the surveillance and early warning of the disease.

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P 055

Stigma among patients with Mpox in Burundi – Findings from a qualitative study

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Background: Clade Ib mpox has caused substantial outbreaks in Central Africa, with children disproportionately affected. This study aimed to assess the existence and understand how stigma related to mpox manifests itself among patients with mpox in Burundi, with a focus on the school environment.

Methods: We conducted a qualitative study in two health districts in Burundi in January 2025

Findings: The emergence of MPOX in schools raises crucial issues regarding public health, school organization, and educational continuity.Analysis of data collected from various stakeholders, highlights a management approach still largely based on the exclusion of sick students, in a context where institutional arrangements remain limited. Preventive Isolation is the first health response In the majority of reported cases. This response, while understandable given the risks of transmission, is rarely accompanied by structured medical or educational support.Some schools, have implemented delay examinations for students unable to attend, in order to limit the consequences of their temporary exclusion.This practice was found to be common but key informants proposed the establishment of school health services that would allow students to be cared for without compromising their educational progress.

Classmates' reactions to cases of MPOX (monkey pox) among students reveal a diversity of attitudes ranging from moderate solidarity to ignorance and discriminatory, sometimes violent, behavior.Analysis of the comments collected suggests a complex relationship with the disease, shaped by fear, ignorance, and the social dynamics specific to schools and local communities. The most frequently reported reaction is rejection.Several respondents mention the exclusion of infected children by their peers.Classmates keep their distance, refuse to play or interact with them, in a logic of avoidance that seems dictated by the fear of contamination.

Conclusion: Given the above findings, it is essential to Initiate collaboration between school administrators, health services, and parents to more coherently structure the response to MPOx in schools and make prevention measures available in schools to limit the spread of MPOx and thereafter avoid stigma.

P 056

Spatiotemporal analysis of confirmed Mpox cases in the Republic of Congo – Before and during the 2023–2024 floods

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Background: Mpox is endemic in the Republic of Congo, particularly in the highly isolated Likouala department, necessitating continuous epidemiological surveillance. Following the floods that occurred between December 2023 and January 2024, which led to population displacement, a resurgence of Mpox cases was observed. This study aims to analyze the spatiotemporal evolution of Mpox cases in the Republic of Congo before and during the floods.

Methods: A retrospective spatiotemporal analysis was conducted on Mpox cases confirmed by PCR in the Republic of Congo before the floods (August to September 2023) and during the floods (January to March 2024). Data were extracted from Mpox SITREPs (Situation Reports) and line lists of positive Mpox cases provided by the Ministry of Health. A spatial cluster detection technique incorporating spatial distribution indicators of positive Mpox cases was performed using the spatial scan statistic of the Poisson discrete model implemented in SatScan® (Kulldorff).

Results: A total of 40 cases were confirmed between August 2023 and May 2024, with 21 and 19 cases identified before and during the floods, respectively. Two primary clusters were identified: the first cluster occurred before the floods in Likouala department, within a radius of 167.78 km encompassing Betou, Dongou, and Impfondo, during the period from August 18 to August 24, 2023, with 10 confirmed cases ($p = 0.0031$). The second cluster was identified during the floods in the Cuvette department, within a 75 km radius including Loukolela, Bokoma, and Liranga, from February 14 to May 3, 2024, with 12 confirmed cases ($p = 3.91 \times 10^{-13}$). Additional clusters were detected in Mossaka and Bouemba (Plateaux department) during the same period.

Discussion and Conclusion: During the floods, all urban communities along the Congo River reported confirmed Mpox cases. Forced population displacements and commercial exchanges with cross-border populations from the Democratic Republic of Congo likely contributed to the emergence of new epidemic foci outside the Likouala department.

P 057

Durability of humoral immunity following Monkeypox virus infection and MVA-BN vaccination – A 24-month cohort study

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Questions: The durability of protection following monkeypox virus (MPXV) infection or Modified Vaccinia Ankara–Bavarian Nordic (MVA-BN) vaccination remains uncertain. Long-term serological data, particularly regarding neutralizing antibodies and antibody kinetics, are limited.

Methods: We conducted a prospective cohort study at the Institute of Tropical Medicine Antwerp, following individuals diagnosed with mpox or vaccinated with MVA-BN up to 24 months post-infection or vaccination. Antibody dynamics were assessed using a Luminex-based multi-antigen IgG assay and MPXV-specific plaque reduction neutralization tests (PRNT). Data were stratified by smallpox vaccination history, HIV status, and route of MVA-BN administration.

Findings: Among 447 participants (237 mpox patients and 210 vaccinees), antibody titres against the binding antibodies peaked shortly after infection or vaccination and declined over time in all groups. Titres were consistently highest in individuals with prior smallpox vaccination and lowest in vaccinees born after 1976. At 24 months, binding IgG titres fell below the positivity threshold in 30% of mpox patients and in 75.6% of vaccinees born after 1976. Neutralizing antibodies remained detectable in over 50% of mpox patients up to 24 months post-infection but in less than 10% of vaccinees born after 1976. Subcutaneous vaccination elicited higher binding IgG titres than intradermal vaccination, though neutralizing responses remained low across all routes.

Interpretation: MPXV infection induces stronger and more durable humoral immunity than MVA-BN vaccination. The limited and waning neutralizing antibody responses following vaccination, particularly in vaccine-naive individuals, highlight the potential need for booster vaccination strategies.

Fig. 1

P 058

The Mpox Surge in Uganda – Navigating a public health crisis amidst a sea of challenges

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Question: What is the current epidemiological status of the mpox outbreak in Uganda? Methods: This abstract synthesizes information from publicly available reports and articles published by international health organizations and research institutions. Data sources include situation reports from the World Health Organization (WHO) Regional Office for Africa and the Centers for Disease Control and Prevention (CDC), as well as news articles and research updates from various sources. Results: As of February 2025, Uganda is experiencing a significant mpox outbreak, with a high number of suspected and confirmed cases. The outbreak is primarily driven by the clade Ib monkeypox virus (MPXV) 1, which is predominantly circulating in Central and Eastern Africa. Clade

Ib is associated with lower case fatality rates than clade Ia 1. Uganda is one of the primary countries affected by this outbreak, alongside the Democratic Republic of the Congo and Burundi 2. While there has been a plateauing trend in new cases, potentially influenced by reduced surveillance during the December holiday season 2, the situation remains concerning. Uganda has recorded a high test positivity rate of 60% among suspected cases 3. Young adults aged 18–39 account for 80% of cases, with urban centers like Kampala and Wakiso identified as key transmission zones 3. There is also growing concern about an increase in deaths, especially among individuals with underlying health conditions 4. Although the exact number of confirmed cases varies depending on the source and reporting date, recent reports indicate approximately 2,896 confirmed cases and 19 deaths as of February 11th, 2025 5. Conclusions: Given the ongoing public health challenge posed by the mpox outbreak in Uganda, continued surveillance, public health interventions, and vaccination efforts are crucial to control the spread of the disease and mitigate its impact on affected communities. Public health interventions should include contact tracing, isolation of infected individuals, and public health education campaigns to raise awareness about mpox transmission and prevention. Vaccination efforts should prioritize high-risk groups, such as healthcare workers, close contacts of infected individuals, and young adults in urban centers. The risk of international spread due to travel-associated cases 2 necessitates strengthened surveillance and timely reporting to improve global monitoring and prevent further outbreaks. Further research should focus on evaluating the effectiveness of different public health interventions, assessing the impact of vaccination campaigns, and identifying specific risk factors associated with severe outcomes and mortality.

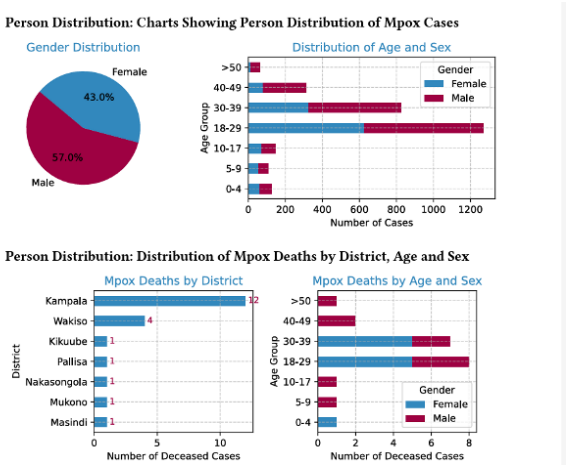
Fig. 1

National Mpox Situation Report — Sitrep

Table Showing Percentage by Sex and Age for Districts with >50 Cases

	Age	0–4	5-9	10-17	18-29	30-39	40-49	>50
District	Gender							
Kampala	Female	15 (1.0%)	10 (0.6%)	27 (1.7%)	337 (21.7%)	215 (13.9%)	45 (2.9%)	6 (0.4%)
	Male	18 (1.2%)	14 (0.9%)	16 (1.0%)	385 (24.8%)	298 (19.2%)	136 (8.8%)	29 (1.9%)
Luwero	Female	2 (3.3%)	5 (8.3%)	5 (8.3%)	8 (13.3%)	6 (10.0%)	0 (0.0%)	2 (3.3%)
	Male	0 (0.0%)	3 (5.0%)	1 (1.7%)	12 (20.0%)	13 (21.7%)	2 (3.3%)	1 (1.7%)
Mbarara City	Female	1 (0.8%)	0 (0.0%)	0 (0.0%)	22 (17.7%)	14 (11.3%)	10 (8.1%)	0 (0.0%)
	Male	0 (0.0%)	0 (0.0%)	1 (0.8%)	28 (22.6%)	29 (23.4%)	16 (12.9%)	3 (2.4%)
Mukono	Female	6 (6.4%)	3 (3.2%)	0 (0.0%)	24 (25.5%)	7 (7.4%)	2 (2.1%)	0 (0.0%)
	Male	4 (4.3%)	2 (2.1%)	4 (4.3%)	23 (24.5%)	13 (13.8%)	3 (3.2%)	3 (3.2%)
Nakasongola	Female	5 (5.9%)	1 (1.2%)	4 (4.7%)	17 (20.0%)	11 (12.9%)	2 (2.4%)	0 (0.0%)
	Male	0 (0.0%)	3 (3.5%)	7 (8.2%)	16 (18.8%)	11 (12.9%)	7 (8.2%)	1 (1.2%)
Wakiso	Female	11 (2.5%)	8 (1.8%)	12 (2.7%)	105 (23.9%)	43 (9.8%)	10 (2.3%)	2 (0.5%)
	Male	20 (4.6%)	9 (2.1%)	16 (3.6%)	96 (21.9%)	63 (14.4%)	36 (8.2%)	8 (1.8%)

Fig. 2



P 059

Aggregated summary of immunogenicity and safety for the chikungunya virus virus-like particle (VLP) vaccine development programme

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Question: Chikungunya virus (CHIKV) is a threat to public health and a risk for travellers to endemic countries. Typical acute symptoms include fever, arthralgia, myalgia, fatigue, and headache. Debilitating arthralgias may persist for months or years. We report aggregated safety and immunogenicity data from five clinical trials for a CHIKV virus-like particle (VLP) vaccine.

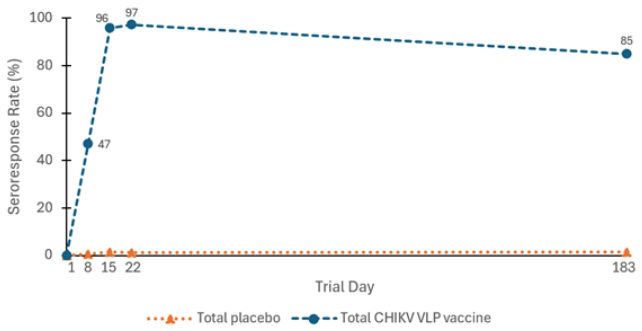
Methods: To date, the CHIKV VLP vaccine development programme has included three phase 2 and two phase 3 trials across multiple sites in the US, which enrolled participants 12 to 95 years of age. Participants received a single dose of CHIKV VLP vaccine or placebo. The safety population included 3141 vaccinated and 675 placebo participants from five trials and the immunogenicity evaluable population included 2829 vaccinated and 607 placebo participants from four trials. Immunogenicity was assessed by measuring CHIKV serum neutralising antibody (SNA) titres (NT80) at selected time points; SNA NT80 ≥100 is the surrogate marker likely to predict protection. Immunogenicity and safety were assessed through Day 183 postvaccination.

Results: Immunogenicity findings showed robust responses, with a seroresponse (SNA NT80 ≥100) as early as Day 8 (47%), peaking at Day 15 (96%) and Day 22 (97%; primary endpoint), and lasting through Day 183 (85%). In phase 3 trials, the seroresponse rate and geometric mean titre was significantly higher in the vaccine group than the placebo group at all time points. CHIKV VLP vaccine demonstrated a favourable safety profile across trials. Most AEs were mild or moderate; events primarily consisted of injection site pain, headache, fatigue, and myalgia. Solicited and unsolicited events of arthralgia were reported at similar rates between vaccinated and placebo participants. SAEs occurred in <1% of participants, with no vaccine-related deaths. Overall, no safety signals were detected.

Conclusions: CHIKV VLP vaccine offers a VLP-based vaccine option for immunisation against CHIKV disease. The data analysed demonstrate the strong immunogenicity and favourable safety profile of CHIKV VLP vaccine; rapid and durable SNA NT80 responses support the potential for this vaccine to protect individuals ≥12 years of age from disease caused by CHIKV.

Figure 1. CHIKV SNA seroresponse rate by trial visit.

Fig. 1



P 060

Perceptions of disease, vaccine acceptance, and attitudes towards clinical trials in acute patients and survivors of Lassa Fever – A mixed-methods study in Edo State, Nigeria

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Introduction: Lassa fever (LF) is a high consequence infectious disease with a case fatality rate of up to 30%, posing a substantial burden on local health systems in Nigeria due to its recurrent seasonal outbreaks. While there is no approved drug or vaccine available, several vaccine and treatment candidates are currently in development. Yet, little is known about the perceptions, beliefs and attitudes towards LF in affected communities. Understanding disease perception and health seeking behaviour is crucial for guiding effective public health interventions. Fear and misconceptions surrounding infectious diseases can promote stigma, delay healthcare access, and impact vaccine uptake.

Methods: In this mixed-methods study, we assessed perceptions and attitudes towards LF in 105 acute patients with mild disease admitted to an isolation ward in Edo State, Nigeria, using a structured 29-item questionnaire based on a 5-point Likert scale. Additionally, we conducted 8 focus group discussions with LF survivors to gain deeper insights into the concepts identified in the survey and explore beliefs, experiences, and challenges related to the disease.

Results: Most participants perceived Lassa fever as a severe and potentially fatal disease requiring treatment in a hospital. Intense fear of death during hospitalization was commonly reported, alongside concerns about stigma from the community. Treatment costs for LF posed a substantial financial challenge for most patients. Most respondents believed that a vaccine could be efficacious against LF and would have themselves and their children vaccinated against LF if an approved vaccine were available. However, only 60% indicated willingness to participate in a vaccine trial and 50% would participate in a trial for a potential new drug.

Conclusion: Our findings suggest that LF causes a considerable psychosocial burden for patients, driven by profound fears and concerns about stigmatization. Additionally, the economic burden associated with LF treatment presents a significant challenge for affected individuals and their families. Understanding these aspects is crucial for identifying barriers to healthcare access and informing public health strategies. While vaccine acceptance was found to be high in this study, reluctance to participate in clinical trials suggests the need for targeted community engagement and education efforts for future vaccine and drug development initiatives.

P 061

Vaccination intentions, readiness, and preferred attributes of a future Lassa fever vaccine among staff at a tertiary hospital in Edo State, Nigeria – a cross-sectional survey

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Background: Lassa fever (LF), a viral hemorrhagic disease endemic to West Africa, presents a major public health challenge in Nigeria with a case fatality rate of around 18% in the 2025 outbreak. Healthcare workers face elevated infection risk and are therefore a priority group for the Lassa fever vaccine currently in development. However, vaccine hesitancy may impede uptake. This study assessed vaccination readiness, intentions and product preferences for a prospective LF vaccine among staff at Irrua Specialist Teaching Hospital.

Methods: A cross-sectional survey was conducted between February and May 2025 among clinical and non-clinical staff. Participants were selected using multistage sampling with proportional representation from all hospital departments. Ethical approval was obtained from the relevant institutional review board, and all study procedures adhered to established ethical standards. Data was collected through interviewer-administered questionnaires capturing sociodemographics, risk perception, vaccination intention, preferred vaccine attributes, and the 7C vaccination readiness scale. Primary outcomes were LF vaccination readiness and vaccine intention.

Results: A total of 485 participated (median age 41; IQR 35–48), with 52.0% female. The mean overall 7C vaccination readiness score was 3.35 (SD 0.42) on a 5-point scale (higher scores equal higher readiness). 70.1% expressed intention to receive a future LF vaccine, 20.6% were uncertain, and 9.3% were unwilling. Intention was highest among nurses (81.9%) and declined slightly with age. Higher vaccination readiness, greater perceived risk (lower complacency), stronger compliance, and lower belief in conspiracies were positively associated with intention. More than half were willing to accept a vaccine with at least 80% effectiveness. Multidose schedules and vaccines without lifetime protection were less preferred compared to products with unspecified dosing or duration information. An oral vaccine was favored over an injectable formulation. Free access to the vaccine was a major concern. The most trusted sources of vaccine recommendations were doctors, the WHO, and the NCDC.

Conclusion: Effective LF vaccine roll-out among hospital staff will require targeted strategies to reduce complacency, ensure free and equitable access and endorsement by trusted sources, and tailor vaccine product characteristics and communication strategies to the preferences and concerns of specific staff groups.

P 062

Knowledge attitude and practice on infection prevention and control of COVID-19 and ebola disease – Among healthcare workers in public health facilities in Rwanda, 2021– A cross-sectional survey in the districts Rubavu and Nyamagabe and of Kigali (Kicukiro, Nyarugenge, Gasabo)

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Question: In addition to the Covid-19 pandemic, Rwanda is regularly confronted with outbreaks of Ebola Disease (EBOD) and Marburg Disease in-country and in neighboring countries: Uganda, DRC, Tanzania. To better target support of preparedness activities, competence of health care workers (HCW) was assessed in a knowledge, attitude & practice survey.

Methods: In September 2021, 215 randomly selected HCWs in 28 Health Centers and 6 Hospitals in Kigali and the districts Rubavu and Nyamagabe participated in a cross-sectional study. They answered 84 multiple-choice and Likert-Scale-Questions about clinical and IPC aspects of Covid-19 and ED and availability of IPC material. Competence was assessed as weighted scores (proportion of achieved points) and association with demographic and occupational factors by univariable analysis using stata® and IBM SPSS®V.28.

Results: Of 215 participants, 22 (10%) were physicians and 193 (90%) paramedical professionals, 134 (62%) employed in district hospitals and 81 (38%) in health centers. Participation in IPC trainings was reported by 133 (62%) participants, more frequently by males (48/65, 74%) than females (85/150, 57%; OR 2.16, 95CI 1.1-4.1). Most frequently mentioned sources for health information were social media (29%) and TV&Radio (27%). Participants achieved a mean total knowledge score of 61.06% (SD 7.16), neither profession, IPC training nor level of care were associated with knowledge score. However, mean knowledge scores were higher in Kigali (62.4%, SD 7.1) vs. outside Kigali (57.9, SD 6.4) – p<0.001. Mean knowledge scores were higher for the Covid-19-related questions (62.5%, SD 8.2) vs. EVD-related questions (59.1%, SD 9.6) and for questions on practical IPC implementation (75.6%, SD 10.4) vs. theoretical knowledge (55,2%, SD 7.9). Regarding COVID-19, 183/215 (85%) rated their IPC knowledge as good or very good while only 95/215 (44%) stated this for EVD. Mean individual practice score was 88,6 (SD 11,1). Over 80% reported having the needed IPC material.

Conclusion: Results suggest that 18 months in the Covid-19 response in Rwanda, HCWs have sufficient IPC competence, independently from demographic and professional factors. However, competence is higher regarding practical and more recent experiences supporting regular refresher trainings. Health information activities should more exploit digital channels and further evaluate gender-related access to training.

P 064

Ebola in the eastern Democratic Republic of Congo – One Health approach to infectious disease control

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The Democratic Republic of Congo (DRC) is facing its tenth outbreak of Ebola virus disease (EVD), in North-Kivu and Ituri provinces. This is the second most deadly EVD outbreak in history, after the one that occurred in West Africa in 2014. The DRC Ministry of Health (MoH), supported by the World Health Organization (WHO) and a range of regional and international partners, are implementing EVD response plans in these affected areas such as screening of suspect cases at points of entry, case detection, contact tracing, laboratory testing, case management and infection prevention and control, safe and dignified burials, ring vaccination (this involves vaccination of infected individuals, direct contacts of infected individuals and contacts of their contacts), and therapeutics, community mobilization and free access to healthcare services. Despite these efforts, there has been a sharp rise in the number of confirmed cases within the identified affected areas, and due to a number of challenges unique to DRC, there has been an expansion in the geographical extent of transmission. The significance of the proximity of these regions to wildlife and the Virunga National Park is questionable in the EVD transmission dynamics. The close interaction between human, animal, and environmental factors, in combination with high population movement due to regular rebel attacks in these regions, suggest the need for the integration of the One Health approach in the holistic response plans for control and prevention of EVD. This paper seeks to highlight the implications and importance of a One Health–based approach into the infectious diseases control program implementation in DRC.

P 065

Biological factors associated with mortality in Ebola virus disease during the tenth epidemic in the Beni health zone, Democratic Republic of the Congo

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Background: Ebola Virus Disease (EVD) is associated with high mortality due to multiorgan failure in infected patients, characterized by disruptions in biological parameters. Effective management of these patients should include specific treatment combined with intensive resuscitation and appropriate supportive care aimed at correcting altered biological parameters to reduce mortality.

Objectives: To determine the biological parameters associated with mortality in confirmed Ebola patients during the 10th EVD outbreak.

Methodology: We conducted a retrospective analytical study from November 20, 2018, to April 27, 2020, in the Beni Health Zone.
Diagnosis, biochemical monitoring, and virological follow-up of

confirmed EVD patients were performed at the mobile laboratory of the National Institute of Biomedical Research (INRB) in Beni, using the Cepheid GeneXpert® platform (for diagnosis and virological follow-up) and the Abaxis Piccolo® Analyzer (for biochemical monitoring).

Results: We analyzed 134 samples from confirmed EVD cases, with nucleoprotein (NP) Cycle Threshold (Ct) values ranging between 20 and 30 in 61.2% (82/134) of cases, and <20 in 24.6% (33/134). We observed pancreatic dysfunction [hypoglycemia (27–72 mg/dl) in 14.2% (19/134) of cases, and hyperamylasemia (98–807 U/L) in 70.1% (94/134) of cases]; renal dysfunction [elevated creatinine levels (1.3–14.4 mg/dl)]; and hepatic dysfunction [elevated aspartate aminotransferase (AST) (48–2000 U/L) in 95.7% (90/94) of cases, and alanine aminotransferase (ALT) (75–2000 U/L) in 69.7% (92/132) of cases]. Creatine kinase (CK) (384–5000 U/L) and C-reactive protein (CRP) (8–200 mg/dl) were also elevated in 49.3% (66/134) and 66.37% (66/113) of cases, respectively. When combining Ct values <20 with pancreatic (amylase, hypoglycemia), hepatic (AST, ALT), muscular (CK), and inflammatory dysfunctions, mortality was associated with an odds ratio (OR) of 11.41 (95% CI: 1.29–100.92).

Conclusion: This study demonstrated that high viral load, along with multiorgan dysfunction, was associated with increased mortality in confirmed EVD cases during the 10th outbreak in Beni. These findings highlight the need for targeted patient management based on antiviral therapy, correction of biological abnormalities, and appropriate supportive care.

Keywords: EVD, biological parameters, confirmed case, mortality, Beni

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P 066

Lessons from a rapid mobile laboratory deployment to Lassa Fever outbreak in Kaduna State, Nigeria, February 2024

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Lassa fever (LF) is a viral hemorrhagic fever (VHF) endemic to West Africa including Nigeria. Transmission occurs via contact with contaminated food or items from the rodent reservoir, or human-to-human in healthcare settings. With a case fatality rate up to 20%, LF poses a major public health concern. Specialized laboratories are central to VHF outbreak management and, in their absence, mobile laboratories prove essential. The Irrua Specialist Teaching Hospital (ISTH) mobile laboratory offers state-of-the-art diagnostics support in epidemic situations with pathogens up to risk group 4 and we report here its latest deployment in the context of LF.

In response to a LF outbreak in February 2024 at the 44 Nigerian Army Reference Hospital Kaduna (44 NARHK), the Nigerian Ministry of Health urgently requested mobile laboratory support. With support from the European Mobile Laboratory (EMLab), the ISTH mobile laboratory deployed to Kaduna within a period of 24 hours. Prior to its arrival, diagnostic turnaround times (TaT) ranged from 8 to 12 days, delaying timely care. Within 24 hours of laboratory setup, validated results were provided to the clinical teams with a TaT of 24 hours, improving patient management. It enabled effective and timely triage of LF-confirmed cases and discharge of negative patients. Over 40 days of deployment, the mobile lab processed 248 blood samples confirming eight LF cases. The institutional response team, which consisted of the mobile laboratory team as well as infectious disease physicians, provided onsite treatment of positive patients. Training of the military staff on case management and Infection Prevention and Control (IPC) was provided. Additional testing, including urine and malaria, was performed following clinician requests. Rapid and reliable diagnostics reassured healthcare workers with limited training in handling VHF patients, which helped reduce hesitation in attending to patients and improve patient care.

This response underscores the critical role of rapid diagnostics in patient care, the importance of strategic partnerships in enabling swift mobilization, and the necessity of mobile laboratories for outbreak response in VHF endemic regions. Strengthening mobile lab capacity in Sub-Saharan Africa remains essential for global health security, ensuring timely containment of emerging infectious diseases in resource-limited settings.

Fig. 1

Fig. 2

P 067

A day in the life of Ebola virus disease survivors – A 2022 cross-sectional study of Ebola virus disease survivors and close contacts in Sierra Leone focusing on somatic symptoms, mental health and stigma

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The West African Ebola virus disease (EVD) epidemic resulted in >28,000 disease cases and >11,000 fatalities. The unprecedented number of survivors from this epidemic have raised questions about the long-term mental health impacts of EVD survivorship and the capacity to meet these needs. Here, the long term health impacts of Ebola virus disease (EVD) were assessed in a cross-sectional study of 595 EVD survivors and 403 close contacts (n=998) from Sierra Leone via an in-person survey between November 2021 to March 2022. The survey covered health issues in relation to disease recovery, lived experience of stigma and assessment with validated screening tools relevant to mental health (PHQ-9, PCL-5), alcohol (AUDIT) and substance use (DAST-20). The results in relation to somatic symptomology reported by survivors and close contacts that there continues to be some persistent symptomology related to Ebola, however greatly reduced from earlier reports of symptomology. Specifically symptomology related to eye pain (OR 26.9, q-value <0.001) eye itchiness (OR 7.6, q-value <0.001), ear pain (OR 11.8, q-value 0.025) and frequent urination (OR 2.7, q-value <0.001) continue to be significantly over represented among EVD survivors. EVD-associated posttraumatic stress disorder (PTSD) was reported by 45.7% (n=257) of EVD survivors and was associated with acute EVD duration of ≥21 days (AOR: 2.24, 95% CI: 1.16-4.43), 35-44 years of age (AOR: 3.31, 95% CI: 1.33-8.24; AOR: 2.99, 95% CI: 1.09-8.24), and residential mobility (AOR: 4.16, CI 95%: 2.35-7.35). While 3.9% (n=22) and 12.0% (n=67) of EVD survivors also reported major depression (MD) and substance use, respectively. In terms of stigma, 50·6% (n = 301) of EVD survivors reported that they continued to experience at least one aspect of stigma in their day to day life. Females, participants aged 40-44, living rurally, and reporting an acute EVD duration of >7 days were all disproportionately associated with stigma. These data suggest Ebola virus has serious and long-lasting effects in survivor populations and the information provided by our survey at this extended time scale will help guide long-term supports and advocacy for EVD survivor populations.

Fig. 1

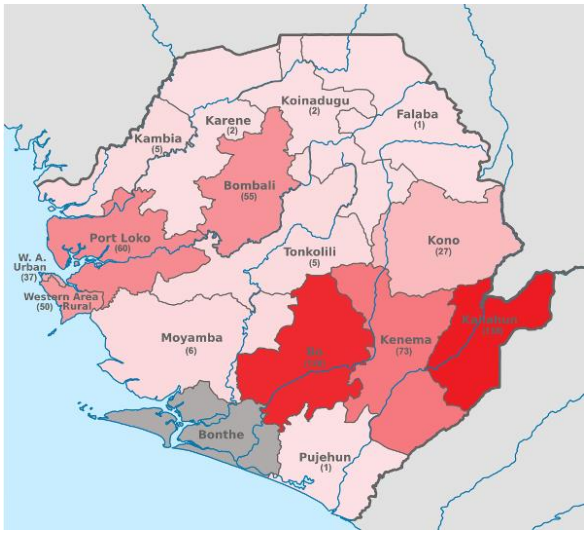
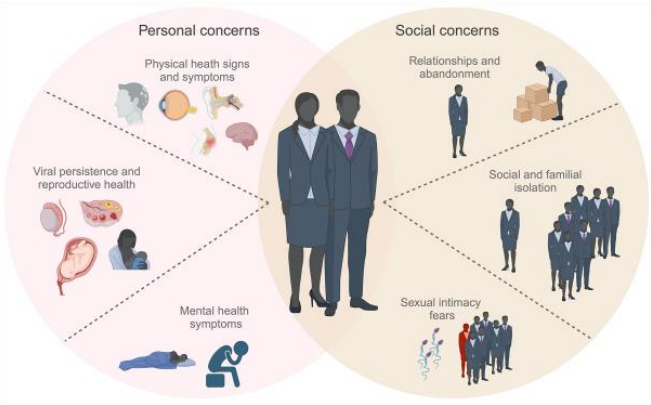


Fig. 2



P 068

Adaptation of the 7-1-7 approach for detection, notification, and response to Crimean-Congo hemorrhagic fever outbreaks in Pakistan – A retrospective, observational study, 2024

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Background: Outbreak like COVID-19, Mpox, Ebola, and H1N1 have exposed the insufficient preparedness and response capacity of countries worldwide. In the compliance of International-Health-Regulation 2005 all countries need to develop capacities for timely detection, notification and response against public health importance diseases. We applied 7-1-7 approach to evaluate the timeliness of detection, notification, and response to Crimean-Congo Hemorrhagic Fever (CCHF) outbreaks in Sindh-Pakistan

Methods: In this retrospective, observational study, we conducted review of CCHF case data reported in Sindh-Pakistan from January 1, 2016, to December 31, 2023. We measures the date of emergence, detection (target of ≤7 days from emergence), notification (target of ≤1 day from detection) and dates of each of seven early response actions (target of ≤7 days from notification). In-addition we evaluate the bottlenecks of each component. By using EpiInfo we calculate the median timeliness and calculate the proportion of events meeting targets for timely detection, notification, and early response.

Results: Among the 101 events of CCHF, 59% (n=60) met the target of 7 days to detect (median 5 days, range 1–11), 28% (n=29) achieved the target of 1 day notification (0 days: range: 0–3), and 39.6% (n=40) attained target of 7 days to complete all early response actions (median 8 days: range 1–15). 19.8% (n=20) events completed the 7-1-7 target. Bottlenecks in detection were inadequate capacity of healthcare provider to recognizing the signs and symptoms of CCHF, limited diagnostic capacity (n=01) and limited surveillance coverage of private healthcare facilities. Notification bottlenecks include absence of guidelines on notification and data sharing by private sectors with provincial health department and waiting for laboratory confirmation of suspected CCHF cases. Key response bottlenecks were insufficient financial and human resources, coordination gaps between health and veterinary sectors

Conclusion: The 7:1: 7 approach evaluate that health system was efficient in detection while notification and response component showed substantial delays. Urgent need to implement the intervention to improve the capacity of healthcare provider for identification of cases, strengthen the

lab to improve diagnostic point, and develop a comprehensive notification guidelines for the private sector.

P 069

Spatial and temporal distribution of emerging infectious disease – An epidemiological assessment of primary amoebic meningoencephalitis in Sindh-Pakistan, 2024

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Background: Rising environmental temperature favour the growth of "brain-eating amoeba", *Naegleria fowleri*. It causes primary-amoebic-meningoencephalitis (PAM), a fulminating infection that may lead to death in 7 to 10 days among 98% cases. In Pakistan, PAM cases have been reported since 2008 and Health department of Province-Sindh established a surveillance system to identify the disease pattern. We analyzed monthly and yearly spatial and temporal distributions of PAM to understand the epidemiology of the disease.

Methods: PAM surveillance data (2011 to 2023) was extracted from the database of Sindh health department. Only the lab confirmed cases were included. Case was defined as a person with clinical features of meningoencephalitis and presence of Naegleria fowleri in cerebrospinal-fluid on PCR. Information regarding time and location of the event with the number of PAM cases and deaths was pull-out. We examined the temporal and spatial distribution characteristics of PAM cases by using time series, spatial autocorrelation and space-time scan analysis.

Results: From 2011 to 2023, total 102 PAM cases were reported, all died except one (CFR: 98%) The average annual incidence rate was 0.17 /million (range 0.02- 0.30/million). Highest population incidence rate 0.30/million was observed in 2014 followed by 0.28 /million in 2019. PAM cases were reported most frequently in the summer season in May, June and July (temperature range 350C to 390C). Since the start, eleven out of thirty districts reported PAM incidence, cluster of cases detected in district East-Karachi (n=29 AR, 8/million) followed by the Central-Karachi (n=25 AR, 7.4/million). The mean age of PAM cases was 29 years (range 0.6 month-67 years). Age group 40-44 years (AR, 4/million) and male gender (3.1/ million) were highly affected. Storage of water in overhead tanks, and use of poor chlorinated water for nasal ablution, daily bath and swimming were the most frequent risk factors.

Conclusion: PAM incidence in Sindh-Province increased from 2011 to 2023. The most likely clustering time and area was summer and Karachi-East respectively. Study suggest use of poor level of chlorinated water for ablution, bathing and swimming are related to the high prevalence of PAM cases. It is recommended to improve the chlorine level of domestic water supply and swimming pools with the support of relevant departments. Further health education needs to be raised in community against PAM infection

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P 071

Change in maternal postpartum length of stay in health facilities during COVID-19 – Analysis of population representative data from 33 countries with six nested comparative case studies

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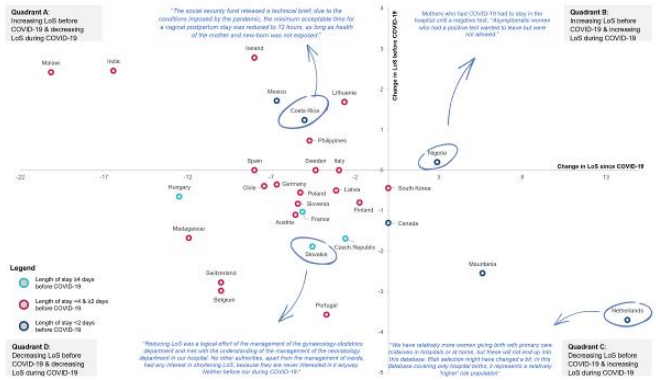
Background: The immediate postpartum period is critical for the health of women and newborns and the WHO recommends a minimum 24-hours stay in healthcare facilities after vaginal birth. During the COVID-19 pandemic, provision, use and quality of healthcare to women and newborns was disrupted. We aim to assess change in postpartum length-of-stay during COVID-19 compared to secular trends before the pandemic in 33 countries, and provide a contextual understanding of adaptations made to length-of-stay during COVID-19 in six comparative country cases.

Methods: We used an explanatory sequential mixed-methods approach: 1) secondary analysis of publicly-available quantitative longitudinal data from 33 countries, comparing percentage annual change in length-of-stay before (2010-2019) to percentage change during COVID-19; 2) qualitative expert consultations in six countries (Belgium, Costa Rica, Malawi, the Netherlands, Nigeria, and Slovakia) to explain quantitative trends with contextual insights.

Results: In 27/33 countries, the time women and newborns spent in healthcare facilities declined during COVID-19, ranging from -1.7% (-3 hours) in Finland to -17% (-15 hours) in India. In Canada and South Korea postpartum length-of-stay was unchanged during the pandemic, whereas it increased in Nigeria, Mauritania and the Netherlands. Qualitative analysis showed that these changes were commonly a result of two factors: 1) decisions to enable earlier discharge made by health authorities, healthcare facility managers or healthcare providers, and 2) increase in complexity of case-mix in healthcare facilities, including due to COVID-19 infection among pregnant/postpartum women. Adaptations to compensate for shorter stays included intensifying pre-discharge education, task-shifting postnatal care to community health-workers, and upscaling midwifery home-visits and telemedicine.

Conclusion: With or without the pandemic, our study shows an overall historical trend of decreasing postpartum length-of-stay. In the context of a pandemic, this could have potential implications on quality of care, particularly in situations with pre-existing challenges such as shortages in healthcare providers.

Fig. 1



P 072

Leveraging digital solutions for epidemic üreparedness in Africa – Insights from mobile-based epidemic preparedness tools during COVID-19

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Question: How can digital tools improve pandemic preparedness and surveillance in healthcare facilities across Africa? The COVID-19 pandemic exposed gaps in epidemic preparedness, particularly in resource-limited settings. This study examines the effectiveness of digital tools SafeCare4Covid and COVID-Dx Hospital Capacity in identifying and addressing such gaps. Additionally, it explores the potential for integrating digital health technologies into an Africa Epidemic Preparedness Toolkit to enhance real-time data collection, surveillance, and response mechanisms.

Methods: Between May–November 2020, a digital self-assessment tool, SafeCare4Covid, was used by 471 healthcare facilities across 11 African countries to evaluate and improve their COVID-19 pandemic preparedness. The tool assessed capabilities across clinical management, infection prevention and control, infrastructure, supplies, and staff capacity and provided customized improvement plans and supporting materials to healthcare providers. In addition, 33 healthcare facilities in West Kenya were digitally connected to share data about the availability of hospital beds, ambulances, oxygen and COVID-19 diagnostic tests.

Results: Findings indicate that many African healthcare facilities lacked fundamental pandemic preparedness capabilities. The average capability score was 58 (out of 100), with rural and public facilities scoring significantly lower than urban and private counterparts. Critical gaps included the absence of personal protective equipment, inadequate triage and isolation protocols, and shortages of oxygen supply. Frequently missing items were COVID-19 specimen collection materials (71%), N95 respirators (43%), and medical masks (19%) (Fig.1). Additionally, 56% had incomplete or missing guidelines for managing suspected COVID-19 patients. COVID-Dx Hospital Capacity found that facilities provided oxygen mainly by cylinders (n=28), few had their own oxygen plant (n=9), and there were important differences in testing capacity (Fig.2).

Conclusions: These decentralized digital tools played a crucial role in identifying gaps, tracking resources, and providing real-time data to policymakers enabling targeted interventions. We propose that a Digital-Based Pandemic Preparedness Toolkit should be integrated into Africa"s surveillance frameworks to enhance future epidemic preparedness and to connect healthcare providers directly, especially in hard-to-reach areas, with health authorities and policymakers.

Fig. 1

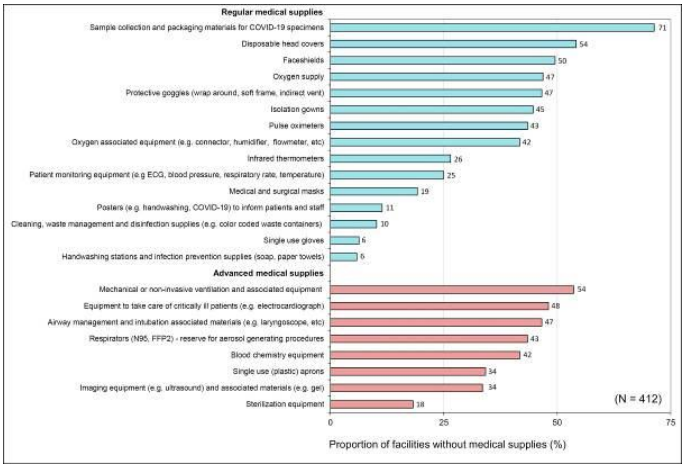
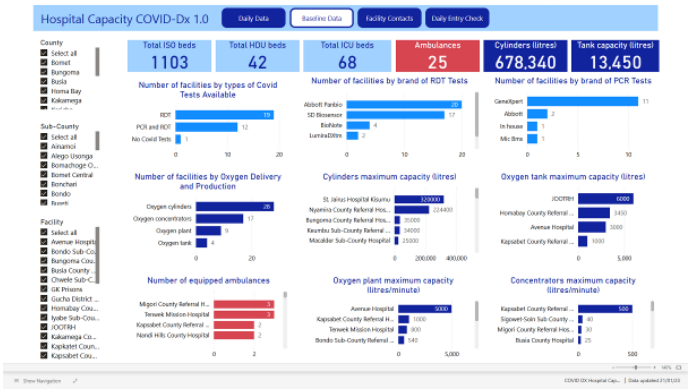


Fig. 2



P 073

Evaluating the effects of a multisectoral dialogue-based COVID-19 awareness-raising intervention in a limited-resource setting – A quasi-experimental study in Senegal

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Background: Sustainable and effective strategies to increase disease awareness and vaccination willingness are crucial in limited-resource settings for the prevention of infectious diseases such as COVID-19. Yet, in the sub-Saharan Africa region COVID-19 vaccination rates remain considerably lower than in other world regions. This study aims to assess the effects of a multisectoral dialogue-based COVID-19 awareness-raising intervention implemented in the *Jaxaay-Parcelles* commune in Dakar Metropolitan Area, Senegal on the perceived population's knowledge and attitudes towards COVID-19 and COVID-19 vaccination.

Methods: This study adopted a quasi-experimental design. The STOP COVID-19 intervention was developed through a multisectoral collaboration involving academia, non-governmental organisations, local authorities and active community engagement initiatives. Community volunteers delivered the awareness-raising sessions through household visits. Data on the outcomes were collected through population-based repeated cross-sectional surveys, prior to the intervention (n=863) and post-intervention (n=737). A difference-in-difference analysis (DID) with propensity score weighting was used to explore changes in community awareness and attitudes towards COVID-19 and vaccination against the disease between the intervention and control groups before and after the STOP COVID-19 campaign.

Results:From August to November 2021, 124 awareness-raising sessions were organized. Difference-in-difference analysis showed a significant relative decrease in the proportion of insufficiently informed individuals about COVID-19 vaccination in the intervention site (DID=-0.10, CI 95%: -0.21, -0.003). The intervention was associated with a less pronounced increase in COVID-19 vaccine hesitancy (DID=-0.11, CI 95%: -0.21, -0.01) and did not affect the attitudes toward paediatric vaccination (DID=0.02, CI 95%: -0.07, 0.11).

Conclusions: Our results suggest that our multisectoral dialogue-based intervention conceptualised and implemented through active community engagement can be effective in limited-resource settings to enhance population awareness about COVID-19 and vaccination against the disease. The insights gained from the intervention can be used to inform future vaccination campaigns and other public health interventions in similar settings.

P 075

Evaluation des strategies de financement dans le processus d'elimination de la rougeole en rdc de 2002-2015

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Introduction: La rougeole est une maladie virale extrêmement contagieuse (Lacroix et al., 2008),une de maladie meurtrière de l"enfance que le programme élargi de vaccination de chaque pays vise à eliminer (Santoni, 2001) ; (Fourn et al., 1998). En RDC, on lui attribue 20% de décès des Enfants de moins de cinq ans (DLM, 2012). La République Démocratique du Congo a souscrit à L"objectif d"élimination de la rougeole de son territoire depuis 2002 et un plan stratégique D"élimination pour l"horizon 2012-2020 a été élaboré dont le renforcement du PEV de routine, le Renforcement de la surveillance, l"organisation d"une seconde opportunité de vaccination sous Forme des campagnes, l"amélioration de la prise en charge des cas comprenant la Supplémentation en vitamine et la communication. L"élimination est donc vaccination Dépendante et la vaccination est elle-même ressources financières dépendante (Michal-Teitelbaum, 2012).Est-ce que la politique du financement actuelle en RDC permettra d"atteindre l"objectif d"élimination en 2024?

But: évaluer les financements alloués au processus d"élimination de la rougeole en RDC

Methode: Revue documentaire sur Données épidémiologiques (DLM), Données de Couverture vaccinale (PEV), Données sur le financement (PEV) ; Analyse des données avec le logiciel Excel

Resultat: De 2010 à 2015 la plus grande part du financement de la lutte contre la rougeole provient de Partenaires. Les périodes de flambées de la maladie correspondent aux périodes où il y a eu moins de Financement. Très souvent le montant réalisé n"est pas celui planifié. La tendance est au décaissement de fonds moins que prévu

Conclusion: le financement de la vaccination antirougeoleuse à l"instar de beaucoup d"autres maladies en RDC comme dans la plupart de pays africains est multi-bailleur (G Head et al., 2017) . le plus gros du financement est essentiellement extraverti.La maladie évolue dans le même sens que les fonds. Les années où les financements ont été Conséquents correspondent à celles où il y a eu moins de cas et inversement les années où il y a eu moins de financements, il y a eu beaucoup plus de cas comme en 2011 et 2013. Enfin l"analyse des estimations budgétaires pour les activités de lutte contre la rougeole dans la perspective d"élimination, il est à remarquer qu"il existe presque toujours des écarts entre les fonds demandés et ceux réellement déboursés avec les conséquences que l"on peut imaginer. L"élimination de la rougeole en RDC impose de gros moyens. Le programme de vaccination en vue de l"élimination de la rougeole en RDC ne peut être mené sans financement viable d"autant plus qu"il faut atteindre et maintenir la couverture vaccinale à au moins 90% et assurer une bonne surveillance.

Fig. 1

Fig. 2

P 076

RSV knowledge, attitudes and intention to vaccinate – Evidence from three online experiments in Germany, Canada and the UK

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Background: Respiratory Syncytial Virus (RSV) causes diseases that are dangerous for people over 75 years of age. Following the approval of two vaccines by the European Medicines Agency and the Health Canada institution in the previous fall, the question now arises as to how much knowledge about RSV exists in the populations.

Purpose: The study aims to explore knowledge and misconceptions about RSV and identify socio-demographic determinants that are associated with higher vs. lower knowledge in three samples including people over 50 years of age from Canada, the UK, and Germany.

Method: We collected data from three samples (*GER*: n = 565; *UK*: n = 556; *CA*: n= 372). RSV awareness was collected first. A pre-tested RSV knowledge scale used questions about disease, vaccines, infectiousness of children, and risk groups, among other facts. We asked about participants' RSV-specific 5C vaccination antecedents (confidence, constraints, collective responsibility, complacency, calculation; Betsch et al., 2018) and RSV vaccination intention at the end of the study.

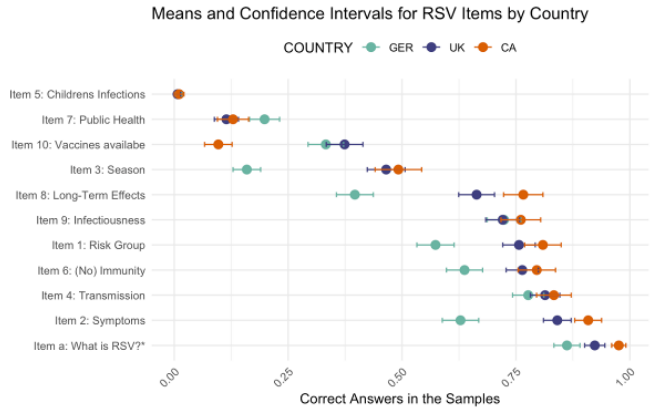
Results: Awareness was very different in the samples. In German and UK data sets, 49.2% and 41.3% stated that they had never heard of RSV, in the Canadian sample only 14.8% reported being completely unaware. Knowledge scores were lowest in the German cohort (M_{GER} = .444, 95%-CI [.428;.460]), while the UK (M_{UK} = .542, 95%-CI [.528;.556]) and Canadian(M_{CA} = .544, 95%-CI [.530;.557]) cohorts were equally informed. Intention and Knowledge were significantly correlated in all samples (GER: r(565)=.13[.05;.21]; UK: r(559) =.13[.05;.21]; CA: r (372) =.11[.01;.21]). 5C vaccination antecedents mediated the relation between knowledge and intentions in the German and UK based sample, but not in the Canadian sample.

Conclusion: Educational interventions should be conducted regarding RSV and respective vaccines, as awareness, particularly regarding the infectiousness of children and the availability of a vaccine, is low within the target group.

References: Betsch, C., Schmid, P., Heinemeier, D., Korn, L., Holtmann, C., & Böhm, R. (2018). Beyond confidence: Development of a measure assessing the 5C psychological antecedents of vaccination. *PloS one*, *13*(12), e0208601.

Figure 1. Average correct answers per Item of the RSV Knowledge Scale in Canada, UK and Germany. *Means and 95%-Confidence Intervals*

Fig. 1



P 077

A case study of human metapneumovirus pandemic

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Introduction: Newly identified pathogen diseases continue to be a constant concern in public health since pandemics threaten the stability of the health care systems across the world. Human Metapneumovirus (HMPV) is a recently identified, emerging respiratory pathogen that was first described in 2001. In particular, while HMPV has clinical and epidemiological features very similar to those of RSV, there are no specific antiviral treatments or vaccines for HMPV, indicating that the pandemic potential of HMPV and ways to contain this virus deserve further study.

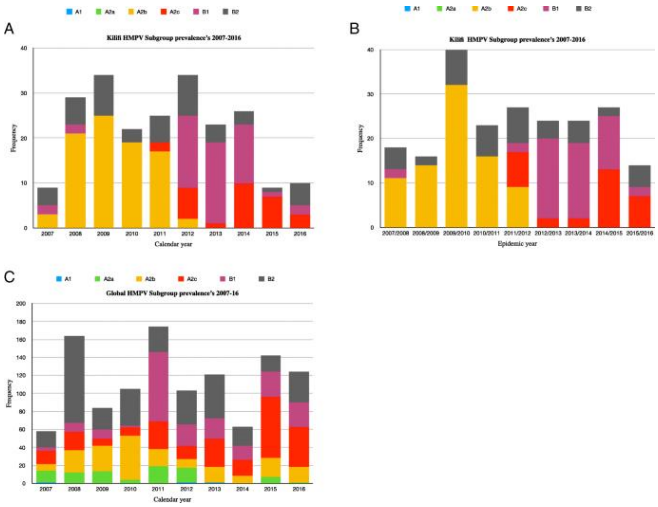
Objective: The main objective this study is to periodically access the pandemic potential of HMPV and reviews contingency, mitigation and prevention measures taken to control the disease; in particular, it assesses non-pharmacologic interventions, vaccines development, and combating AMR.

Method: The data accumulated in the existing cohort of literature and surveillance systems concerning the occurrences of HMPV outbreaks and their dynamic trends were analyzed. Non Pharmaceutical Interventions (NPIs) and new and innovative vaccines as the mRNA vaccines were also considered in the study. This study also used case scenarios from the HMPV infections that were evolving in recent past to assess some of the steps taken.

Results: Survey results reveal that HMPV epidemics are on the rise and are becoming more severe especially in developing countries. Other prevention measures including wearing of masks, and physical distancing was confirmed efficient during outbreak. Genomic sequencing formed part of the early diagnosis and AI-based models formed part of outbreak prediction. There is ongoing work in vaccine development, new steps have been taken with mRNA platforms. However, the inequalities in accessing healthcare, what with the increasing threat of AMR makes HMPV a burden that cannot wait for any country to handle alone hence the necessity of the WHO call for increased funding and preparedness for pandemics.

Conclusion: HMPV disease is new and hence the various governments are advised to improve their health infrastructure to fight the disease and other new diseases that may arise in the future. Better identification, universal health care, and randomized immunization are critical in preventing the future pandemic. HMPV will be used to illustrate the links between pandemic planning, Antimicrobial Resistance(AMR), and health inequity.

Fig. 1



P 078

Systems biology approaches to dissect immune responses to an MVA-vectored vaccine against MERS-CoV in humans

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The MVA-MERS-S vaccine candidate against the Middle East respiratory syndrome coronavirus (MERS-CoV) is based on the Modified Vaccinia virus Ankara (MVA) viral vector, encoding the MERS-CoV-spike protein. The vaccine revealed to be safe and immunogenic in a phase 1a clinical trial testing two vaccinations 28 days apart and an additional late booster immunization administered 12±4 months after prime. While immunogenicity assessment in clinical vaccine trials is often limited to the analysis of binding and neutralizing antibodies, other immune parameters can importantly contribute to vaccine-induced immunity.

In the present study, we applied systems serology and systems vaccinology approaches, aiming at a deep profiling of immune responses induced by three vaccinations with MVA-MERS-S, based on blood samples collected longitudinally from each study participant. Using whole blood transcriptomics, plasma cytokine profiling and flow cytometry, we analyzed innate, T and B cell responses. In addition, we used bead-based immunoassays, mass spectrometry and different functional assays to analyze antibody subclasses and *N*-linked Fc glycans, as well as neutralizing and Fc-mediated antibody functionality.

Compared to the primary vaccination series, a late third vaccination induced faster responses of intermediate monocytes, CD16+ dendritic cells and TFH1 cells, as well as a stronger increase in the plasma levels of TNFα, IL-6, CCL3 and CCL4. Several of these parameters correlated positively with humoral immune responses that were strongly boosted upon late third vaccination in terms of magnitude, functionality and persistence. Our analysis revealed distinct characteristics of antibodies directed against the spike S1 and S2 subunits, regarding their longitudinal dynamics, subclass and *N*-linked glycan composition, as well as Fc functionality.

Collectively, our data provide detailed insight into the different components of the immune system involved in the response to MVA-MERS-S vaccination. Our study underlines the potential of a late booster vaccination with MVA-MERS-S to enhance not only titers and persistence but also functionality of antibodies, and suggests a contribution of innate and TFH cell responses to the improved humoral immunity after the late boost. Our differential findings on spike S1- and S2-specific antibody characteristics may be of interest for the future design of coronavirus vaccines.

P 079

The present value of human life losses associated with covid-19 and likely productivity losses averted through covid-19 vaccination in Madagascar

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Question: As of 3 March 2023, Madagascar had conducted 525,461 COVID-19 tests, which revealed a total of 67,865 cases, comprising 66,433 recovered cases, ten active cases, and 1,422 deaths. To date, no study has attempted to estimate the total present value of human lives lost , productivity losses, and potential total productivity losses (or indirect costs)

averted through COVID-19 vaccination for use in advocacy. The study reported in this paper attempted to bridge those information gaps.

Methods: A human capital model (HCM) was used to estimate the , i.e., the sum of the discounted value of human life losses among persons in seven age groups : 1=under 5 years, 2=5 to 14 years, 3=15 to 24 years, 4=25 to 34 years, 5=35 to 44 years, 6=45 to 59 years, and 7=60 years and older. Each age group was obtained through the multiplication of discount factor, undiscounted year of life, non-health gross domestic product (GDP) per capita, and age group"s number of COVID-19 deaths. To test the robustness of the results, the HCM was re-run five times, assuming (i) a 5% discount rate, (ii) a 10% discount rate, (iii) Africa"s highest average life expectancy at birth of 78.76 years (Algeria females), (iv) the world highest life expectancy of 88.17 years (Hong Kong females), and (v) projected excess COVID-19 mortality of 11,418.66. The projections of productivity losses averted through COVID-19 vaccination were done assuming 100%, 70%, 52.4%, and 8.266% coverage.

Results: The 1,422 human lives lost due to COVID-19 had a of Int$ 46,485,587.15; and a mean of Int$ 32,690.28 per human life. A re-estimation of the model with (i) discount rates of 5% and 10% reduced by 23.26% and 53%, respectively; (ii) average life expectancies of 78.76 years and 88.17 years grew by 23.72% and 39.49%, respectively; (iii) projected excess COVID-19 mortality of 11,418.66 augmented by 703%. Vaccinating 70% of the target population could potentially save the country Int$ 965,088,931 (1.71% of GDP).

Conclusions: COVID-19 pandemic has cost Madagascar substantive health and productivity losses. Potentially, the losses could be significantly reduced by optimizing COVID-19 vaccination coverage of the target population.

P 080

Best practices and challenges of infection prevention and control during the 2017 plague outbreak in Madagascar

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Question: Madagascar is a plague-endemic country, with around 300 annual cases of the bubonic form. In 2017, the country responded to a pulmonary plague outbreak. Infection Prevention and Control (IPC) is a main of control strategies to reduce the risk of disease transmission.

Methods: Multi-sectoral and After-Action reviews of IPC interventions were organized for the 2017 plague outbreak in Madagascar. The World Health Organization (WHO) methodology was adopted, identifying best practices, lessons learned, challenges and recommendations for IPC.

Results: Good practices include: the deployment of national and international IPC experts; the development of national IPC guidelines, particularly for dead body management; the IPC capacity-building at all levels; disinfection, and environmental sanitation; the installation of community tents as isolation rooms; vector and reservoir control. However, the main difficulties are the implementation of IPC protocols facing to socio-cultural aspects, rumours and social stigmatization; the management of healthcare-associated infections; and the low level of technical facilities in healthcare establishments.

Conclusions: The institutionalization of a national IPC program with the minimum components recommended by WHO would be crucial in helping to fight infections and prevent outbreak.

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P 081

Ongoing outbreak of invasive *Haemophilus influenzae* type b in people experiencing homelessness and using illicit drugs in northern Germany since September 2024

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Background: *Haemophilus influenzae* type b (Hib) can cause severe invasive disease (IHibD), primarily affecting young children, the elderly, and individuals with weakened immune systems. Outbreaks among adults are rare. In January 2025, three adult IHibD cases were reported in Hamburg within a two-week period, suggesting an outbreak. Our objective was to describe the outbreak, identify its source, and implement appropriate control measures.

Methods: Possible cases were defined as adults (18–65y) diagnosed with IHibD since September 1, 2024, who were either residing in or visiting Hamburg. We carried out trace-back investigations and enhanced surveillance, collecting information on housing status, illicit drug use (IDU), co-existing medical conditions, and vaccination status.

Microbiological investigations conducted at the National Reference Laboratory and the Robert Koch Institute included serotyping and whole-genome sequencing of available Hib isolates potentially linked to the outbreak, and other nationally reported cases.

Results: Between September 1, 2024, and July 15, 2025, we identified 15 cases (including three deaths) in Hamburg and neighboring states in Northern Germany. Of these, 40% were female; ages ranged from 26 to 61 years (median: 50y). All but two cases reported IDU, 53% experienced homelessness, and 53% had known co-morbidities. No case had a documented Hib vaccination.

Phylogenetic analysis of all available outbreak isolates (15 out of 16 cases) revealed a genetic cluster, with a maximum difference of one single nucleotide polymorphism (SNP). Other Hib isolates from Germany and Europe differed genetically by at least 144 SNPs.

Conclusions: This represents the first documented outbreak of IHibD in adults aged ≤65 years in Germany. Phylogenetic analysis confirmed that, as of July 15, 2025, the majority of the outbreak was confined to individuals with IDU/ homelessness. Co-morbidities and poor health may have contributed to increased susceptibility and disease severity. We recommended post-exposure chemoprophylaxis for close contacts, awareness campaigns in shelters/drug consumption facilities, and Hib vaccination.

P 082

Prevalence of *Clostridioides difficile* infections among hospitalized patients in central Ethiopia with diarrhea following antibiotic therapy – Interim Results

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Question: *Clostridioides difficile* infection (CDI) is a complication of antibiotic therapy, primarily affecting the colon and causing diarrhea. In advanced stages, it can lead to pseudomembranous colitis with potentially severe clinical consequences. CDI has been well studied in high-income countries over the past 50 years whereas only limited epidemiological data on CDI exists in low- and middle-income countries including Ethiopia. Therefore, we conducted a pilot study to assess the prevalence of CDI among hospitalized patients with diarrhea at Asella Referral and Teaching Hospital (ARTH).

Methods: From August 2019 to February 2025, stool samples were collected from hospitalized patients with diarrhea within the first three days after initiation of systemic antibiotic therapy. These samples were tested using a point-of-care immuno-chromatographic lateral flow assay for *C. difficile* (C. DIFF QUIK CHEK COMPLETE test, TECHLAB® Diagnostics, USA) screening for glutamate dehydrogenase, and the toxins A and B. Additionally, wet mount microscopic testing was performed for all participants as well as modified Ziehl-Neelsen staining if coccidian parasites were suspected clinically.

Results: In total 172 participants were included in the study. The median age was 26,8 years (IQR: 3-40) and 51,7% (89/ 172) of the participants were female. The mean duration of antibiotic therapy was 7,6 days at the time of inclusion. The overall prevalence of *C. difficile* colonization was 15,7% (27/172) (n=11 positive for both toxin and antigen, n=6 positive for toxin only, n=10 positive for antigen only). A comparison of the mean duration of antibiotic use between *C. difficile*-positive and *C. difficile*-negative patients showed no significant difference (7,8 vs. 7,5 days, p-value = 0,54).

The wet mount microscopy and Modified Ziehl-Neelsen staining examinations revealed that 22,7% (39/172) of patients were infected with intestinal parasites, including 18 *Entamoeba histolytica/dispar* (46%), 16 *Giardia lamblia* (41%), 3 *Cystoisospora belli* (7,8%), 2 *Ascaris lumbricoides* (5%) and 2 *Cryptosporodium* species (5%).

Conclusions: Our study found a CDI prevalence of 9,9% and a *C. difficile* colonization prevalence of 5,8% among hospitalized patients with diarrhea following antibiotic therapy. Intestinal parasitic infections were found in 22.7% of the patients, highlighting the diagnostic value of stool microscopy alongside CDI point-of-care testing in resource-limited settings like Ethiopia.

P 083

***Fusobacterium necrophorum* was commonly found among pre-adolescent children with pharyngotonsillitis in The Gambia**

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Background: *Fusobacterium necrophorum* is established as a main pathogen in pharyngotonsillitis (1) yet has never been investigated as a cause of throat infections in any low-middle income country. Although, it has been implicated as a cause of noma (2), and its presence in asymptomatic tonsillar carriage have been investigated in Zambia, and found to be rare (3). We aimed to describe its role in children presenting with pharyngotonsillitis in The Gambia, in addition to *Streptococcus pyogenes* (GAS) and *S. dysgalactiae* subsp. *equisimilis* (SDSE).

Methods: Patients aged 0-15 years presenting with pharyngotonsillitis were eligible and enrolled between Jun 2021 and Sep 2022 in Sukuta, The Gambia. Tonsillar samples were taken and analysed with multiplex PCR, and history, signs and symptoms were registered, described and compared by pathogens identified by the multiplex-PCR (GAS, SDSE and *F. necrophorum*). Performance of commonly used clinical scores to predict *F. necrophorum* or any of the pathogens were evaluated.

Results: A total of 376 children (median age 4 (range 0-15)) were enrolled. GAS was the most common finding (31%), followed by *F. necrophorum* (16%) and SDSE (10%) with co-infections common (Table 1). Among children aged 5-11 years, *F. necrophorum*-positivity was 28%. Clinical scores had poor performance in predicting any of the pathogens. Signs and symptoms were similar between pathogens (Table 1, Figure 1).

Conclusions: For the first time, *F. necrophorum* as a cause of pharyngotonsillitis was investigated in a low-middle income country. It was found to be both more common and affecting younger children than previously described in high-income settings. Clinical criteria to guide testing or treatment had poor accuracy when used to predict any pathogen or *F. necrophorum* specifically.

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Fig. 1

Table 1	*F. necrophorum*[a] n=60	*S. pyogenes*[a] n=97	SDSE[a] n=22	Negative n=196
Age, median (IQR), years	5 (4-8.5)	4 (2-8)	3 (1-4)	3 (1-5)
Female, n (%)	24 (40%)	48 (49%)	10 (45%)	86 (44%)
Co-infection with S. pyogenes, n (%)	18 (30%)	-	-	-
Co-infection with SDSE, n (%)	12 (20%)	4 (4%)	-	-
Symptom duration of 3 days or fewer, n/tot (%)	52 (87%)	69/90 (77%)	16/21 (76%)	155/193 (80%)
Anamnestic fever, n (%)	58 (97%)	95 (98%)	19 (86%)	180 (92%)
Lack of viral symptoms (e.g. cough, coryza and conjunctivitis), n (%)	17 (28%)	29 (30%)	5 (22%)	47 (24%)
Presence of lymphadenitis, n (%)	59 (98%)	91 (94%)	21 (95%)	192 (98%)
Tonsillar exudate/swelling, n (%)	58 (97%)	94 (97%)	22 (100%)	188 (96%)
Purulent tonsils, n (%)	0 (0%)	8 (8%)	1 (5%)	10 (5%)
Petechia on the palate, n (%)	30 (50%)	40 (41%)	6 (27%)	68 (35%)
Abdominal pain, n (%)	18 (30%)	37 (38%)	8 (36%)	57 (29%)
Diarrhea, n (%)	10 (17%)	18 (19%)	3 (14%)	46 (23%)
Headache, n (%)	41 (68%)	51 (53%)	11 (50%)	94 (48%)

[a] Cases with coinfection were defined as *F. necrophorum* if present and as GAS if other β-hemolytic streptococci were present.

Fig. 2

Figure 1a-b

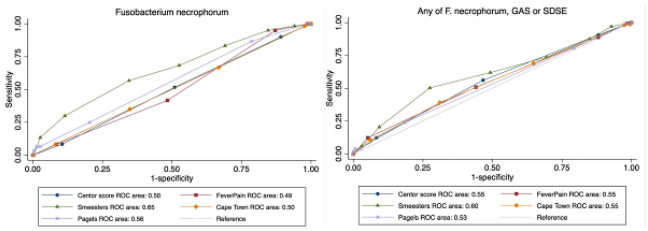

Figure 1c

Sensitivity and specificity at commonly used cut-offs		*Centor* ≥3p	*Modified Centor* ≥4p	*FeverPain* ≥4p	Cape Town ≥3p	Smeesters ≥4p	Pagels[a] ≥5p
F. necrophorum	Sensitivity	52%	45%	42%	67%	68%	7%
	Specificity	48%	53%	51%	33%	47%	97%
Any pathogen (GAS, SDSE or F. necrophorum)	Sensitivity	58%	49%	51%	70%	63%	4%
	Specificity	53%	57%	56%	35%	51%	97%

[a] *Previously suggested cut-off for the Pagels et al. score to guide testing of F. necrophorum was ≥6 of 8points, yet a CRP≥50 mg/L equaled 1 point and CRP was not available, why the cut-off was lowered. In the score by Pagels et al, an age criterion of 13-30 years equaled 3 points. Few children (0-15 years) in this study reached the threshold of 13 years of, with low sensitivity in effect.*

P 085

Transmission and genetic profiling of multidrug-resistant *Enterobacter cloacae* complex in neonatal care units in Tanzania

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Question: The *Enterobacter cloacae* complex (ECC) is an emerging healthcare-associated pathogen and a growing contributor to infections in neonatal intensive care units. Its clinical significance is heightened by its ability to develop multidrug resistance (MDR), particularly against extended-spectrum beta-lactams and carbapenems, posing significant treatment challenges. This study aimed to examine the transmission patterns and genomic diversity of MDR ECC in two hospitals in Tanzania.

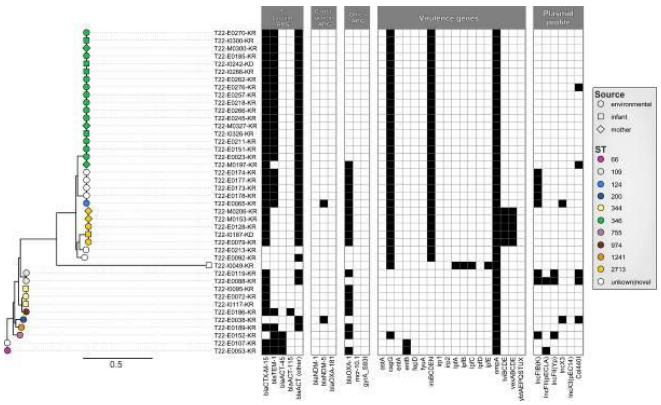
Methods: A cross-sectional study was conducted from April 2022 to March 2023 at Tanga Regional Referral Hospital and Korogwe Township Council Hospital. Samples were collected from neonates, pregnant mothers, healthcare workers, and hospital environments. ECC isolates were identified using chromogenic agar, API 20E, and Vitek 2, while antimicrobial susceptibility testing was performed following EUCAST guidelines. Whole-genome sequencing and phylogenetic analysis were employed to characterize sequence types (STs), resistance genes, virulence factors, and plasmid content, as well as to track potential transmission events.

Results: A total of 132 ESBL-producing ECC isolates were identified, with 63% (84/132) from hospital surfaces and 37% (48/132) from human sources. Among neonates, 68% (17/25) acquired ESBL-producing ECC after 48 hours of hospitalization. The MDR prevalence was 73% (96/132), with environmental isolates exhibiting higher resistance rates than those from human samples. Genomic analysis of 124 ECC isolates resulted in 29 distinct STs, including high-risk clones such as ST346, ST124, and ST1518. The *bla*CTX-M-15 gene (88%, 109/124) was the predominant resistance determinant, while *bla*NDM, associated with the IncX3 type plasmid, was detected in 13 isolates, indicating a high potential for horizontal gene transfer. A total of 36 virulence genes were detected, with *ompA* (81%, 101/124) being the most prevalent. Phylogenetic analysis revealed only one maternal-neonate transmission event, suggesting that the hospital environment is the primary reservoir for MDR ECC.

Conclusions: This study highlights the hospital environment as a key reservoir for MDR ECC in neonatal units. The high burden on surfaces underscores the need for stronger infection control measures, genomic surveillance, and targeted interventions to protect vulnerable neonates. Further research on genomic epidemiology and IPC compliance will improve control strategies in healthcare settings.

Fig. 1

Fig. 2



P 086

Extended-spectrum beta-lactamase producing Enterobacteriaceae and associated factors among adult diabetic patients presumptive for urinary tract infections in southwestern Oromia, Ethiopia

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Background: Urinary tract infections (UTIs) are among the most common bacterial infections, and they tend to be more severe in diabetic patients. The impaired immune system due to poor blood sugar control and other diabetes-related complications has been linked to a higher incidence of UTIs in individuals with diabetes. This study aimed to assess the prevalence and associated factors of extended beta-lactamase (ESBL)-producing Enterobacteriaceae in diabetic patients suspected of having UTIs in Southwestern Oromia, Ethiopia.

Methods: A hospital-based cross-sectional study was conducted prospectively from July to December 2023 at Shanan Gibe General Hospital on 272 diabetic patients suspected of having urinary tract infection. Urine samples were collected from these patients and cultured on MacConkey agar. A series of biochemical tests were used to identify Enterobacteriaceae. Antibiotic susceptibility testing was performed by the Kirby-Bauer disk diffusion method. The double disk synergy method was used for the confirmation of ESBL-producing Enterobacteriaceae. Fisher's exact test was used to investigate the association between risk factors and infection with ESBL-producing Enterobacteriaceae.

Results: Out of 272 participants, 29 (10.7%) patients were culture-positive for Enterobacteriaceae species. The overall prevalence of ESBL-producing Enterobacteriaceae was 34.5% (10/29) in diabetic patients suspected of urinary tract infections. Escherichia coli (13.8%, 4/29) and Klebsiella pneumoniae (13.8%, 4/29) were the most common ESBL producers, followed by Proteus species (3.4%, 1/29) and Citrobacter species (3.4%, 1/29). A history of prior hospital admission (P-value = 0.016) and recent antibiotic use within the past three months (P-value = 0.001) were significantly associated with UTIs caused by ESBL-producing Enterobacteriaceae. Conclusion: The ESBL-producing Enterobacteriaceae are the important causes of UTIs in diabetic patients. Diabetic patients with a history of prior hospital admission and recent antibiotic use within the past three months require special consideration when treating UTIs in diabetic patients.

P 087

Methicillin resistant Staphylococcus aureus Sudanese clinical isolates – Phenotypic and genotypic characterization by whole genome sequencing

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We reported that all *Staphylococcus aureus* Sudanese clinical isolates were methicillin- resistant (MRSA) by the disc diffusion (phenotypically MRSA), but most of them were negative to the methicillin resistance genes (*mecA* and *mecC*), i.e., genotypically methicillin- susceptible (MSSA).

Objective: This study aimed at comparing between the phenotypic and genotypic antimicrobial susceptibility profiles of two *S. aureus* clinical isolates: *S. aureus* 4H (phenotypically MRSA, genotypically MSSA) and 88H *S. aureus* (phenotypically and genotypically MRSA).

Methods: The isolates were tested for susceptibility to 12 antimicrobials by the disc diffusion method and then subjected to whole genome sequencing (WGS) using Oxford Nanopore Sequencing Technology.

Results: *S. aureus* 88H was resistant to all tested antimicrobials (cefixime, cefuroxime, penicillin, methicillin, oxacillin, azithromycin, nitrofurantoin, ciprofloxacin, ofloxacin, erythromycin, doxycycline, and vancomycin), while *S. aureus* 4H was susceptible to only four of them (doxycycline, ofloxacin, ciprofloxacin and erythromycin). By WGS analysis, 16 genes conferring resistance to different antimicrobials were identified; these were *tet(k)*, *tet(38)*, *mepR*, *mepA*, *Pc1* beta lactamase, *mecR1*, *mecA*, *mgrA*, *gyrA*, *ArlS*, *ermc*, *rpoB*,

mprf, *pgsA*, *rpoC*, and *parE*. Except *parE*, *S. aureus* 88H harboured all of these genes, while *S. aureus* 4H did not harbour 6 of these genes (*mecR1, mecA*, *gyrA*, *ArlS*, e*rmc* and *rpoB*). **Conclusion**: The presence of the *Pc1* beta-lactamase (BlaZ gene) reveals the genetic basis of resistance to methicillin in *S. aureus* 4H and possibly in other Sudanese *S. aureus* that were reported as phenotypically- MRSA but genotypically- MSSA based on absence of *mecA* and *mecC* genes.

Keywords: MRSA, Nanopore sequencing, WGS, *mecA*, *mecC*, *BlaZ*

P 088

Increase in imported mupirocin-resistant *Staphylococcus aureus* among returning travellers with skin and soft tissue infections in Berlin, Germany

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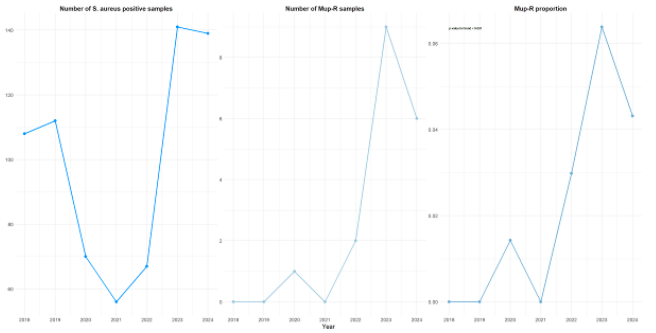
Background: Mupirocin is widely used as an antibiotic nasal ointment for *Staphylococcus (S.) aureus* decolonization. However, mupirocin resistance (Mup-R) is increasingly being reported, which may limit its effectiveness. Our goal was to describe the resistance proportion of Mup-R S. aureus over time among returning travellers presenting at our institution.

Methods: Retrospective observational study of the proportion of S. aureus Mup-R in isolates obtained from patients with purulent skin and soft tissue infections (SSTIs) evaluated at the Institute of International Health in Berlin, Germany, 2018-2024. Mup-R was determined using a VITEK® 2 automated system classifying Mup-R at a minimum inhibitory concentration (MIC) > 512 mg/mL at the central hospital laboratory (Labor Berlin). The four most recent samples were submitted to the StaphTrav central study lab in Lübeck—a European surveillance network for imported S. aureus-positive purulent SSTIs—for analysis using broth microdilution (BMD) and genotyping of the Mup-R associated mupA gene. A Cochran-Armitage test was performed to evaluate for trend. Analyses were conducted using R v.4.3.1.

Results: Between 2018 and 2024, a total of 693 *S. aureus* isolates were detected. Laboratory data using the VITEK® 2 indicated Mup-R in 18 samples, occurring from 2020 onward (1/70; 1.4%), with the higher proportions in 2023 (9/141; 6.4%) and 2024 (6/139; 4.3%). A significant increasing trend in resistance was observed over the years ($Z = 3.6$, $p < 0.001$); see graph. Using BMD, 3 of the 4 most recent samples exhibited a MIC of > 1024 mg/mL, indicating the potential presence of the mupA gene. Whether the strains belong to a particular clonal lineage will be further determined. **Conclusions**: Mup-R has been on the rise in the past years at our centre. Clinicians should be aware of the emergence of Mup-R and the availability of alternative disinfectant nasal ointments. Standard MUP susceptibility testing may be necessary, especially in patients with a previous decolonisation failure. Further research should focus on molecular surveillance of the clonal lineages, as well as on the clinical implications, e.g., nasal decolonization failure with SSTI recurrence in patients with Panton-valentine leucocidin (PVL)-positive strains.

Fig. 1



P 089

Clinical characteristics of 6,578 adult cholera patients admitted to community and referral cholera treatment centers in Lusaka, Zambia, October 2023- April 2024

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Background: Zambia experienced the largest cholera outbreak in the country history in 2023-24 in the capital Lusaka. This study aimed at determining the clinical characteristics of the adult patients hospitalized at the community and referral cholera treatment centers (CTCs) to determine factors associated with their severe clinical outcomes during the outbreak.

Methods: Clinical information of the adult cholera patients in the community and referral CTCs were retrospectively analyzed. Clinical factors associated with the fatal outcome was explored by multivariate analysis using the Firth"s penalized logistic regression.

Results: A total of 6,578 adult cases were identified. The overall case fatality rate (CFR) was 1.0% (51/5,020), and it was highest in a referral CTC specialized for patients with underlying conditions (4.1%, 32/772). In the multivariate analysis, age (odds ratio; OR 1.05, 95% confidence interval; CI 1.02-1.09), human immunodeficiency virus infections (OR 5.68, 95% CI 2.12-15.30), diabetes mellitus (OR 8.21, 95% CI 1.38-34.00), and severe dehydration at admission (OR 5.97, 95% CI 1.29-56.94) were independently correlated with the fatal outcomes.

Conclusions: Clinical factors including the age, underlying conditions, and disease severity at admission were shown to be associated with severe clinical outcomes of adult cholera patients. Enhanced case management strategies targeted for such high-risk groups might be beneficial in reducing the CFR during cholera outbreaks.

Fig. 1

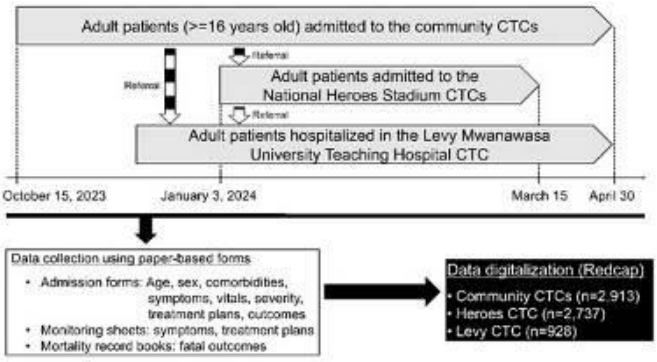
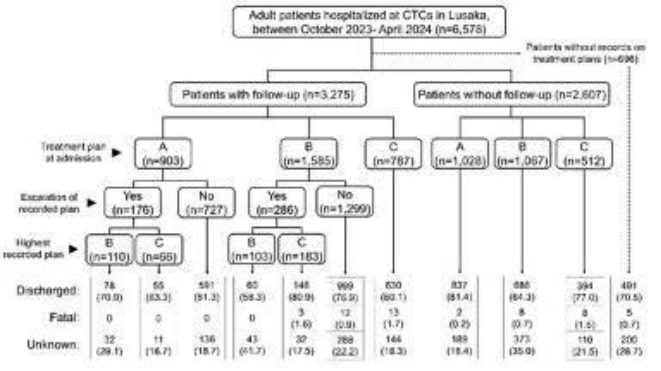


Fig. 2



P 091

Nanopore sequencing driven mapping of the antimicrobial resistance genes in Escherichia coli from pigs and poultry layers in Nigeria

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Despite the huge burden of deaths associated or attributable to antimicrobial resistance, studies on antimicrobial resistance (AMR) monitoring in Africa are scarce, specifically in the animal sector. With a view to rapid AMR monitoring through maneuvering the advanced technologies, in the current study, nanopore sequencing was performed with 10 *E. coli* strains isolated from rectal swabs of pigs and poultry layers in Nigeria. Two sequence analysis methods including command line where bacterial genomes were assembled and subsequently antimicrobial resistance genes (ARGs) were detected through the online databases, and EPI2ME, an integrated cloud-based data-analysis platform with MinION were used to detect ARGs. A total of 94 ARGs were identified where most of the genes are known to be expressed in the chromosome. Interestingly, few genes including *qnrS1, qnrS15, qnrS10, kdpE, cmlA1, MIR-14, Sul3, dfrA12* were identified which were reported previously as transferred through MGEs. The antibiotic susceptibility assay explored that the E coli isolates were resistant to Penicillin (100%), Ciprofloxacin (70%), Tetracycline (50%) and Ampicillin (40%). The accuracies of the command line and EPI2ME have been found to be 57.14% and 32.14% respectively, in predicting the AMR. Moreover, the analysis methods showed 62.5% agreement in predicting AMR for the *E coli* isolates. Considering the multiple advantages of nanopore sequencing, application of this rapid and field-feasible sequencing technique has the promises for rapid AMR monitoring in LMICs including Nigeria. However, development of robust sequence analysis pipeline and optimization of the existing analysis tools are crucial to streamline the deployment of nanopore sequencing in LMICs for AMR monitoring both in animal and human sectors.

P 092

Multifunctional Properties of Kaempferol, Apigenin, and Quercetin Against *Streptococcus pneumoniae* D39 – Antioxidant, Antimicrobial, and Antibiofilm Potential

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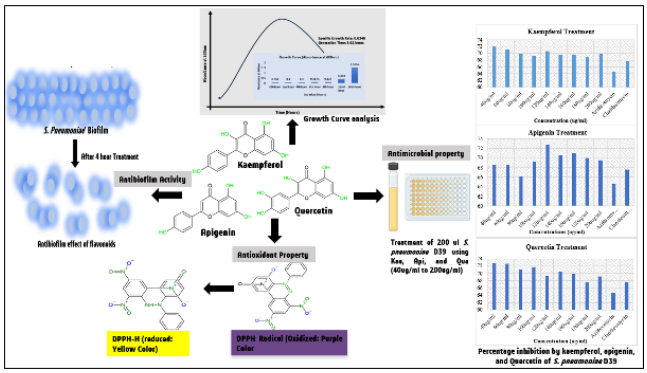
The growing multi-drug resistance (MDR) of *Streptococcus pneumoniae* D39 has significantly reduced the effectiveness of third-line antibiotics. This study explores the potential of three flavonoids—kaempferol, apigenin, and quercetin—which possess polyhydroxylated structures, as alternative antimicrobial agents against *S. pneumoniae* D39. Their antibacterial, antioxidant, and antibiofilm activities were systematically evaluated. The antimicrobial efficacy was assessed using growth curve analysis and cytotoxicity through broth dilution assays, while antioxidant potential was determined via the DPPH radical scavenging assay. Antibiofilm activity was measured using the crystal violet staining method. Among the tested flavonoids, kaempferol exhibited the highest antioxidant activity (90.5% at 180 µg/mL), outperforming apigenin (42.7% at 160ug/ml) and quercetin (79% at 180ug/ml). All compounds showed substantial cytotoxicity, with kaempferol demonstrating 83.9 % cytotoxicity at 40 µg/ml and effectively inhibiting pneumococcal growth for up to 36 hours. Although apigenin and quercetin showed cytotoxicity percentage of 81.9%, and 79.2%, respectively, but bacterial regrowth (reaching mid log phase) was observed by the 36th hour. The flavonoid formulation (kaempferol (40ug/ml) + apigenin (120ug/ml) + quercetin (40ug/ml)) treatment displayed cytotoxicity of 86.1% against *S. pneumoniae* D39. Additionally, cytotoxicity percentage of azithromycin (positive control) was only 65.0%. In terms of antibiofilm action, kaempferol achieved inhibition rates of 78.8% at concentrations of 40 µg/ml. The quercetin and apigenin displayed biofilm inhibition rate of 58.5% and 75.7% at 40ug/ml and 120ug/ml, respectively. The combination of flavonoids resulted in 83.3% *S. pneumoniae* D39 biofilm inhibition. Azithromycin used as positive control inhibited *S. pneumoniae* D39 biofilm with 61.8% only. Overall, the findings suggest that kaempferol, quercetin, and apigenin possess significant antibacterial, antioxidant, and antibiofilm properties, with combination of all three flavonoids being the most potent against *S. pneumoniae* D39. These results support flavonoids" potential as alternative therapeutics for addressing MDR pneumococcal infections even to sterile sites of human host and warrant further investigation for clinical development.

Fig. 1



P 093

Fluoroquinolone-resistant and extended-spectrum β-lactamase producing *Escherichia coli* and *Klebsiella pneumoniae* isolated from patients with sepsis and urinary-tract infections at the Asante Akyem Agogo Presbyterian Hospital, Ghana

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ESBL-producing *E. coli* and *K. pneumoniae* have become more prevalent in recent years, presenting significant challenges for infection control and antibiotic treatment. Research suggests ESBL-producing *Enterobacterales* may also carry genes conferring resistance to fluoroquinolones, limiting treatment options and potentially necessitating more expensive therapies. Therefore, this study aimed to identify and describe fluoroquinolone-resistant and ESBL-producing *E. coli* and *K. pneumoniae* strains associated with cases of sepsis and urinary tract infections (UTI) in patients at the Asante-Akyem Agogo Presbyterian Hospital (APH). Blood and urine samples were collected from symptomatic patients, and biochemical methods identified Gram-negative bacteria. Antimicrobial susceptibility testing and PCR were employed to detect fluoroquinolone-resistant and ESBL genes. Of the 1,334 patients sampled, 56.7% (n/N=785/1383) provided blood samples and 43.3% (n/N=598/1383) provided urine samples, with 49 individuals contributing both types. The study found sepsis and UTI frequencies of 7.4% (n/N=59/785) and 32.9% (n/N=197/598) respectively. *E. coli* and *K. pneumoniae* were the most commonly isolated Gram-negative bacteria, with a respective prevalence of 1.7% (n/N=/785) and 1.0% (n/N=7/60) in sepsis, and 15.0% (n/N=90/598) and 4.6% (n/N=28/598) in UTI cases. Resistance against commonly used antibiotics was observed, with 91.3% (n/N=127/139) of isolates displaying multidrug resistance. The *blaCTX-M* gene (78.4%, n/N=109/139) was the most commonly detected ESBL gene, while fluoroquinolone resistance was primarily attributed to *gyrA* gene mutations (81.3%, n/N=113/139). Alarmingly, 72.0% (n/N=100/139) of isolates carried ESBL and fluoroquinolone-resistant genes, highlighting the urgent need for effective antimicrobial stewardship and infection control measures to address the escalating threat of antibiotic resistance.

Figure 1: Antibiotic susceptibility profiles of *E. coli* and *K. pneumoniae* (columns) isolated from urine and blood

Figure 2: Carriage of ESBL and fluoroquinolone-resistant genes

Fig. 1

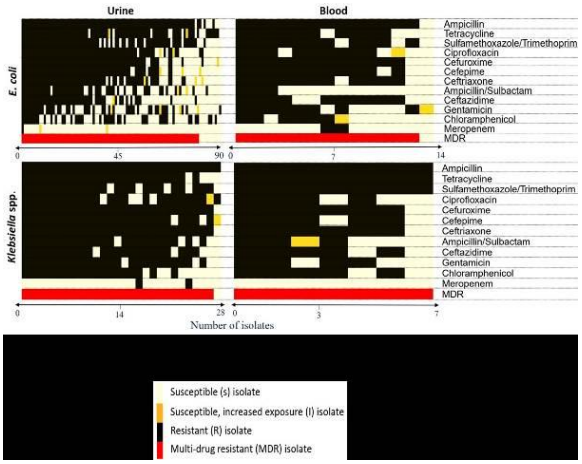
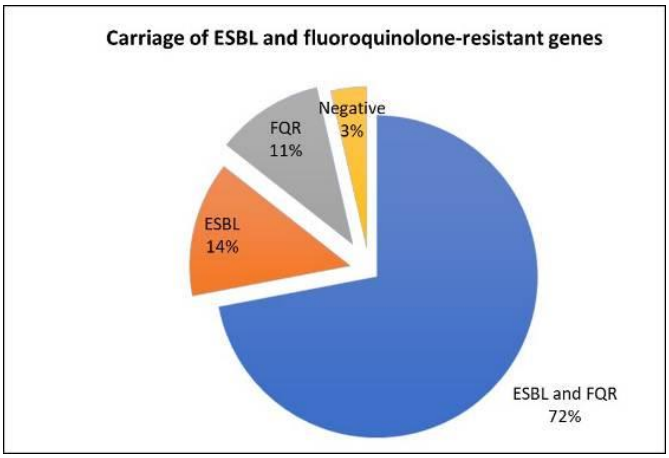


Fig. 2



P 094

Bloodstream infections in The Gambia – A prospective one-year study

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Background: Bacterial antimicrobial resistance is a global health threat with West Africa particularly affected. A recent retrospective analysis at the tertiary hospital in The Gambia, Edward Francis Small Teaching Hospital (EFSTH), found alarming rates of methicillin-resistant *Staphylococcus aureus* (MRSA) and extended-spectrum beta-lactamases (ESBL)[1], yet critically ill and hospital-acquired infections were overrepresented. To better understand the clinical impact of antimicrobial resistance, a prospective study was designed to describe species distribution, resistance patterns and their

association on patient outcome among patients with suspected bacterial infections presenting to the EFSTH.

Methods: Patients were prospectively enrolled if an indication for intravenous antibiotics was present on presentation to the EFSTH, with two aerobic blood culture bottles drawn. Enrolment occurred from Sept 2024 – Aug 2025, yet at the time of this interim analysis (Feb 2025), only paediatric patients had successfully been enrolled. The sole exclusion criterion was prior intravenous antibiotic treatment at the EFSTH. Demographics, symptoms, diagnosis, antibiotic therapy, blood culture findings, antibiotic susceptibility testing (AST) results and follow-up data on 30 days were registered. Manual biochemical methods were used for species identification and disk diffusion for AST.

Results: Thus far, 150 patients have been enrolled, with a median age of 3 years. 34 (23%) had a bloodstream infection. *S. aureus* (n=17) was the most common pathogen identified, followed by pathogens of the Enterobacterales group (n=9). No (0%) MRSA was observed, and ESBL was seen in 4/9 (44%) of Enterobacterales. In patients with available 30-day follow-up data, 30-day mortality was 9/32 (28%) in patients with bloodstream infection compared to 20/85 (24%, p=0.64) in those without.

Conclusion: *S. aureus* was the most common cause of bacteraemia. Resistance rates were lower than in previous retrospective data from EFSTH. Yet, mortality rates were high, highlighting a severely ill paediatric population enrolled. The study is ongoing and aims to enrol adult patients in the coming six months with complete study results available in Sept 2025.

References:

1. Rahden P, Barrow E, Bah H, Bittaye SO, Nygren D, Badjan A. Bloodstream infections at a tertiary hospital in the Gambia - a one-year retrospective study. BMC infectious diseases. Feb 5 2025;25(1):170. doi:10.1186/s12879-025-10533-1

P 095

Tracking antimicrobial resistance in the Gambia – Infection patterns and clinical impact

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Introduction: Antimicrobial resistance (AMR) is a global concern, with Western sub-Saharan Africa bearing the highest burden of associated outcomes. National action plans and surveillance systems in the region are at varying stages of development. In The Gambia, reported rates of methicillin resistant *Staphylococcus. aureus* (MRSA) and extended spectrum beta-lactamase (ESBL)-producing bacteria have been low to moderate, yet clinical perception has suggested higher AMR prevalence at the Edward Francis Small Teaching Hospital (EFSTH), the country"s sole tertiary care centre. We initiated continuous microbiological surveillance at EFSTH to evaluate AMR's clinical impact.

Methods: We assessed pathogens and resistance patterns in bloodstream infections at EFSTH from 09/2022 to 08/2024. Additionally, a six-month quality improvement project assessed cerebrospinal fluid, urine, stool, blood, sputum and swab cultures. An ongoing prospective study investigates associations between clinical presentation, treatment, microbiological findings and outcomes in patients with suspected infections requiring intravenous antibiotics.

Results: Retrospective data on blood cultures from 2022-4 showed 35% (574/1655) positivity. The most common pathogens were *S. aureus* (261/574, 45%), *Klebsiella* spp. (76/574, 13%), and *Pseudomonas* spp. (55/574, 10%). MRSA was detected in 32% (68/210). Among Enterobacterales, 82% (136/165) exhibited ESBL production. In the quality improvement project, Enterobacterales were more frequently identified in positive cultures (113/208, 54%) than *S. aureus* (62/208, 30%), while rates of MRSA (17/62, 27 %), and ESBL (86/113, 76%) were similar. To date, 150 paediatric patients (median age: 3 years) have been enrolled in our prospective study. Common clinical diagnoses among patients with positive cultures were sepsis (11/34, 32%), brain infections (5/34, 15%) and pneumonia (4/34, 12%). *S. aureus* (17/34, 50%) and Enterobacterales (9/34, 26%) were frequently isolated though ESBL prevalence was lower (4/9, 44%) and no MRSA has been detected so far. However, 30-day mortality rates were high overall (29/117, 25%).

Conclusion: AMR at EFSTH is a significant concern with differences in AMR distribution suggesting an overrepresentation of nosocomial infections in retrospectively data presented. Ongoing data collection highlights challenges in managing severely ill patients, particularly reflected in the high paediatric mortality rates.

P 096

Tackling overprescription, underresourcing and antibiotic resistance in rural Zambia – a QIP

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Background: Antibiotic resistance is rapidly becoming a threat to global healthcare. Whilst this often makes front pages in western medicine, developing countries are just as at risk, with adequate stocking of medication another important factor in rural healthcare systems.

Unnecessary and over-prescription of antibiotics contribute to resistance and stock issues. Kanyanga Rural Health Post (Zambia) consistently over-prescribed antibiotics, especially for suspected viral Upper Respiratory Tract Infections (URTIs)- for which, unless in justifiable cases, antibiotics are not indicated. As a result the clinic was left with little to no antibiotics whilst awaiting a restock.

SMART AIM: To decrease the percentage of unnecessary antibiotic prescriptions for Upper Respiratory tract Infections (URTIs) to 0% in Kanyanga Rural Health Post from October 2023 to December 2023

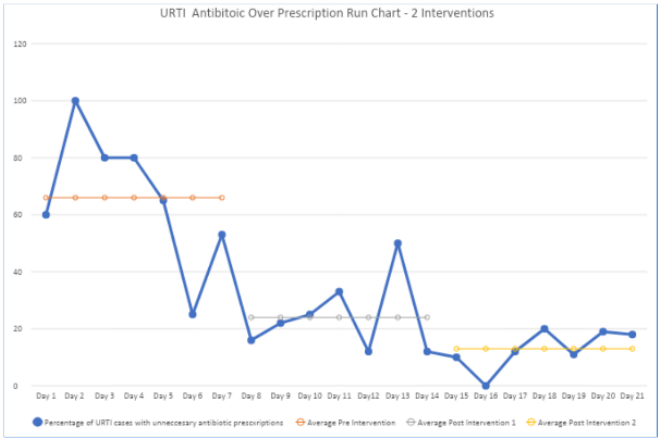
Methods: Clinic notes were reviewed and patients were given a retrospective diagnosis of "suspected viral URTI" or not. These cases were then further reviewed and noted whether antibiotics were prescribed and if there were any other factors that contributed to the decision to prescribe antibiotics. Following the initial round various interventions

were implemented at different times: an educational poster, teaching sessions and then more focused individual teaching with prescribers. Data was plotted on a run chart created to track prescriptions pre, during and post interventions.

Outcome: Overall the QIP was successful with a decrease in percentage of unnecessary antibiotic prescriptions for URTIs from an average of 66% pre interventions to 13% post.

Learning Outcomes: Rural healthcare is challenging. Supply chain issues, storage and lack of resources are all contributing factors. Decreasing unnecessary prescriptions of antibiotics had huge benefits: saving limited resources for those who truly needed them, reducing unnecessary side effects in patients, reducing costs for patients and health services and on a larger scale, playing a key role in the role of antibiotic stewardship. An indirect finding from this project was an awareness of how limited healthcare resources affect patient expectation; patients would often travel by foot for hours to visit the health centre and so to be sent home only without medication was understandably frustrating. In such cases, we found that giving a prescription for paracetamol, ibuprofen and vitamin supplements served as an excellent mediator.

Fig. 1



P 097

Establishing antimicrobial resistance surveillance network in Zanzibar

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Background: Antimicrobial resistance (AMR) is a growing global health crisis, especially affecting low-resource settings. In Zanzibar, there was no operational AMR surveillance or antimicrobial susceptibility testing available in hospitals. Establishing these is crucial for informing clinical management, treatment guidelines and antimicrobial stewardship (AMS) interventions.

Methods: In partnership with the Ministry of Health Zanzibar, this implementation research project established Zanzibar"s only microbiology laboratory within public hospitals and a sample referral system covering ten hospitals across Zanzibar with a catchment population of 1,500,000. AMR Focal Persons were appointed in each hospital to strengthen local ownership and foster AMS interventions. Clinicians receive ongoing training in aseptic sample collection and rational antibiotic use. For reliable results we follow the European Committee on Antimicrobial Susceptibility Testing standards, using an automated machine for blood samples and supervise lab staff to maintain microbiological standards.

Results: So far, we have processed 1193 blood and 428 urine samples from adults and children significantly improving patient management. The most common pathogens isolated are Staphylococcus aureus, Pseudomonas aeruginosa, and Klebsiella species in blood, and Escherichia coli, Klebsiella pneumoniae, and Pseudomonas aeruginosa in urine. Majority of the Enterobacteriaceae showed resistance to Extended-Spectrum Beta-Lactamase. Methicillin-resistant Staphylococcus aureus and carbapenem resistant isolates were also detected.

Preliminary results are shared within 24 hours for urine and 48 hours for blood cultures, enabling timely treatment. To enhance clinician-laboratory communication, we are integrating Electronic Medical Records with the Laboratory Information Management System. We are collaborating with the Technical Working Groups for Surveillance and AMS to develop antibiograms, update treatment guidelines, and establish an AMS framework. We aim to include more sample types , report to the Global Antimicrobial Resistance and Use Surveillance System and integrate services into Zanzibar"s universal health insurance scheme for sustainability.

Conclusions: This initiative is enabling further research, reduce morbidity, mortality, and economic losses. While serving as a model of health system strengthening through partnership between government, NGO and research institutions.

P 098

Point prevalence survey on the use of antibiotics in two reference hospitals in Antananarivo, Madagascar

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Background and rationale: Antimicrobial resistance (AMR) poses a global public health threat. Madagascar is committed to combating AMR, has develloped a national action plan to optimize antimicrobial use. The limited data on antibiotic use in Madagascar made this study necessary, which aims to assess the quantity and quality of antibiotic prescribing in two large hospitals.

Method: A survey of antibiotic prescribing was conducted using a WHO-approved questionnaire. The data was stored in DHIS2. All hospitalized patients present at 11:00 am on the survey day were included, regardless of antibiotic treatment status, along with newborns in neonatology/maternity.

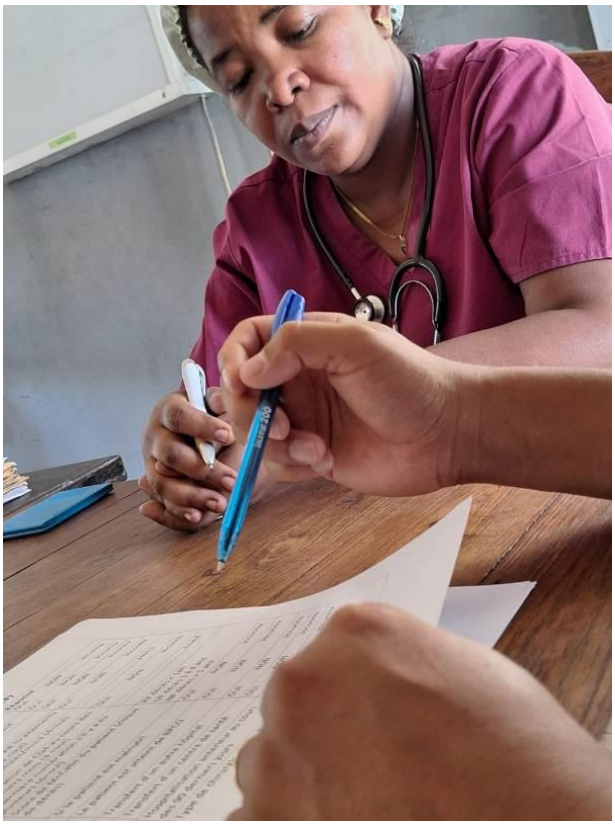
Results: Of 288 patients included, 158 (54.86%) were receiving antibiotics. The most common indications for antibiotic therapy were community-acquired infections 133 (54.84%), surgical prophylaxis 45 (18.21%), and medical prophylaxis 18 (7.28%), while in 25 (15.82%) of cases, antibiotics were prescribed without documented infections. CEFTRIAXONE (32.38%), a WHO "WATCH" antibiotic, was most frequently prescribed, followed by METRONIDAZOLE

(24.29%) and AMOXICILLIN (15.38%). The average number of antibiotic treatments justified in hospitals was 121 (76.92%), of which more than 90% was probabilistic. Furthermore 68 (46.04%) of the antibiotic therapy was consistent in the molecule, 40 (32.04%) consistent in the dosage, and 59 (50.52%) in the route of administration.

Conclusion: These results reflect antibiotic consumption and point prevalence use in Madagascar, with a predominance of CEFTRIAXONE. The high rate of probabilistic antibiotic therapy (90%) is alarming and calls for a performance tool compliant with standards, such as guidelines for prescribing anti-infectious agents.

Keywords: Point Prevalence Survey, Antibiotics, Ceftriaxone, Madagascar.

Fig. 1



P 099

The prevalence and clinical context of antimicrobial resistance amongst medical inpatients at the University Teaching Hospital of Kigali (CHUK)a referral hospital in Rwanda – A Cohort Study

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Background: Antimicrobial resistance (AMR) is a growing global concern. AMR surveillance is a crucial component of the international response; however, passive surveillance of laboratory data alone is limited without the corresponding patient-level clinical data to understand the context of the results.

Methods*:* This cohort study was conducted over a 9-month period at a tertiary referral hospital in Kigali, Rwanda. We enrolled 122 adult medical inpatients with a history of fever and a positive microbiological culture result. Data were collected regarding the clinical and microbiological aspects of their admission.

Results: The most common diagnoses were urinary tract infection (n=36, 30%), followed by pneumonia (n=30, 25%) and bacteraemia (11 primary [9%] and 10 catheter-related [8%]). The most common pathogens were E. coli (n=40, 33%) and Klebsiella pneumonia (n=36, 30%). The cohort were heavily antibiotic-exposed at the time of culture with 98% of patients (n=119) having received an antibiotic prior to culture, with a median exposure of 3 days (IQR 2–4 days). Eighty patients (66%) were specifcally prescribed ceftriaxone at the time of culture. Gram-negative organisms predominated (82% [100/122]) and exhibited high rates of resistance, with only 27% (21/77) being susceptible to ceftriaxone, 2.4% (2/82) susceptible to co-amoxiclav and 44% (8/18) susceptible to ciprofoxacin. Susceptibility amongst Gram-negatives was relatively preserved to amikacin (91%, 79/87) and imipenem (85%, 70/82). There were no cases of methicillin-resistant Staphylococcus aureus (0/12) or vancomycin-resistant enterococci (0/2). Discordant antibiotic therapy was significantly associated with in-hospital mortality (OR 6.87, 95%CI 1.80–45.1, p=0.014).

Conclusions: This cohort highlights high rates of resistance amongst Gram-negative organisms in Rwanda, including the presence of carbapenem resistance. Nonetheless, the detailed prescribing data also highlight the challenges of using routine laboratory data to infer broader AMR prevalence. The significant exposure to empiric broad-spectrum antibiotic therapy prior to culturing introduces a selection bias and risks over-estimating the burden of resistant organisms. Broadening access to microbiological services and active surveillance outside of teaching hospitals are essential to support national and international efforts to curb the growth of AMR in low-resource settings.

P 100

Evaluation of infection prevention and antibiotic stewardship programs at a tertiary-care hospital in southwest Ethiopia – An opportunity to leverage the synergy

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Background: Effective infection prevention and control practices (IPC) and antimicrobial stewardship programs (ASPs) are essential to restrain hospital-acquired infections (HAIs) and antimicrobial resistance (AMR). This study is, therefore, aimed to evaluate the status of IPC and ASPs at Jimma University Medical Center (JUMC), a tertiary care hospital, in Southwest Ethiopia.

Methods: A facility-based cross-sectional study was conducted at Jimma University Medical Center from July to October 2023 in two phases. In the first phase, the WHO Infection Prevention and Control Assessment Framework tool was used to collect data on the core components of IPC. Based on the total scores of IPC core components, the IPC level of the hospital was categorized as inadequate, basic, intermediate or advanced. In the second phase, using the CDC ASPs assessment tool, data on the implementation of core elements of ASPs were collected. The ASP status of the

hospital was determined as poor, moderate, good or advanced based on the scores.

Results: The overall IPC score of JUMC was 460 which corresponded to an intermediate level of IPC. The highest scores were in the core component of the IPC programme (72.5/100) and multimodal strategies (70/100). In contrast, the lowest scores were found in HAIs surveillance (25/100) and IPC education and training (50/100). Regarding ASPs, JUMC achieved a moderate level of ASPs (total score 44), with significant differences in the mean scores of individual core elements. The highest scores were recorded for core elements, accountability and pharmacy expertise, while the lowest scores were in education and tracking antibiotic use and outcomes.

Conclusions: JUMC has moderate to intermediate levels of IPC and ASP programmes, with significant variation across individual components. Efforts are required to strengthen areas with lower scores, particularly in HAIs surveillance, antibiotic use tracking, and education and training. The similarities we observed in IPC and ASP programmes highlight an opportunity to leverage future collaborative efforts to enhance both areas.

Fig. 1

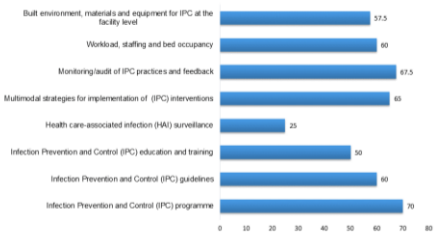

Figure 1: Score of individual core components of IPC at Jimma University Medical Center.

Fig. 2

Figure 2: Percentage score of individual core element of antibiotic stewardship programs at JUMC.

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Non-existence of antimicrobial stewardship programmes and high usage of antibiotics at two hospitals in Sierra Leone

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Introduction: Antimicrobial resistance (AMR) is a global public health concern that affects everyone. Irrational and overuse of antibiotics are key drivers of AMR. However, this can be prevented by establishing hospital antimicrobial stewardship (AMS) programmes.However, no studies have been conducted to assess AMS structure and antibiotic use among children. Therefore, we conducted the first-ever study to assess the AMS structures and antibiotics use in two tertiary hospitals in Sierra Leone.

Methods: This was a hospital-based cross-sectional survey using the World Health Organization point prevalence survey (WHO PPS) methodology. Data were collected at Ola During Child Hospital (ODCH) and Makeni Regional Hospital (MRH) using the WHO PPS hospital questionnaire and data collection tools.The records of all eligible patients meeting the inclusion criteria were reviewed and included in the survey. There was no obstruction of healthcare service delivery. Patient identifiers were not collected and approval was obtained from the hospital management and the Sierra Leone Ethics and Scientific Review Committee. Statistical analysis was conducted using the SPSS version 22.

Results: Both ODCH and MRH lack the appropriate AMS structures to support the rationale use of antibiotics. They lack all the required infrastructures, policy and practice, and monitoring and feedback mechanisms to ensure rational antibiotic use. Of the 150 patients that were included in the survey, two-thirds were admitted at ODCH and the majority were males (77.3%).The overall prevalence of antibiotics was 84.7% (95 CI 77.9-90.0%). Over two-thirds of the children less than one-year-old received antibiotics. More males (88.3%) were given antibiotics as compared to females. Most of the patients received at least two antibiotics with the least number prescribed being one and the highest being six. Community-acquired infections were the reason for antibiotic prescription. The top five antibiotics prescribed were gentamycin (27.4%), ceftriaxone (20.9%), ampicillin (19.8%), metronidazole (12.1%), and cefotaxime (8.5%).

Conclusion: The non-existence of antimicrobial stewardship programmes might be responsible for the high usage of antibiotics at ODCH and MRH. This has the potential to increase antibiotic selection pressure and in turn the AMR burden in the country. There is a need to establish AMS programmes at these hospitals to guide antibiotic prescription.

P 104

We are utilizing online interactive AMR case studies to address the inappropriate anti-biotic prescriptions by health workers – A look at the process, outcomes and lessons learned

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Background: The Medical Research Council (MRC) has been conducting online courses for health workers" (HWs) in anti-microbial stewardship since 2016. In 2022 through the onsite follow up visits, MRC realized that more cases of anti-microbial resistance (AMR) were reported. An assessment identified the health workers were given a lot of theoretical knowledge during the courses but less of real- life cases and experience.

Methodology: MRC started adopting real life cases of anti-microbial resistance from its research clinic.

The doctors in the research clinic identify challenging AMR cases during routine clinic days. The cases are reviewed by a physician who compiles them into case write ups and provides funding for further investigations. The cases are then presented at the multi-disciplinary team meetings at MRC for review and approval. The physician then forwards the cases to the eLearning team who make them interactive, illustrative and motivating for learning. This includes adding graphics, illustrations, animations and voice over recordings. All cases are reviewed for quality assurance by an independent medical specialist prior to uploading. In 2022, the MRC website was upgraded to open access and interactive format. This website

hosts the real life AMR interactive cases, the HWs log on, study the cases, complete the assessments and are rewarded CPD points and e-certificates.

Results: Over 42 real-life cases were uploaded. The uptake of the case studies has been good. A total of 3,103 certificates have been downloaded. One participant quoted "The visual effects and voice narrations mimic real patient interaction and have made learning less monotonous, I always look forward to more cases"" Most importantly, the IDI Annual report 2023 reported a decrease in AMR from 54% in 2019 to 38% in 2023 in the project area.

Lessons learned and next steps: The interactive studies are very engaging and motivation for learning and have been adopted by health facility staff to conduct continuous Medical sessions at their sites

At the start, all cases came from MRC but with time, the success of the online case studies attracted external case writers and reviewers and this added on the diversity of the cases

Innovations in learning are essential for knowledge retention and health outcomes e.g AMR reduction.

MRC intends to conduct case writing sessions so that even health workers of lower cadres can share cases from their contexts.

P 105

Antibacterial resistance and treatment of bacteraemic children in Monrovia, Liberia – A retrospective analysis

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Question: Antibacterial resistance is major cause of pediatric mortality (1). Reliable microbiology results can guide antibiotic recommendations for empiric and targeted treatment of sepsis. In a hospitalized pediatric population in Monrovia, Liberia, what are the antibacterial resistance patterns, and how well are these data used to adjust clinical treatment in real time?

Methods: A retrospective chart review was conducted on bacteraemic children (1 month–15 years) admitted to a pediatric referral hospital in Monrovia, Liberia (July 2019–September 2022). The hospital microbiology WHONET database was analyzed, and a hospital antibiogram was developed using EUCAST breakpoints (V12.0 2022). Antibacterial treatment appropriateness was assessed according to hospital treatment guidelines adherence and/or Infectious Disease – and Paediatric expert agreement.

Results: Of 3624 eligible blood cultures, 465 (12.8%) were positive, non-contaminated, and eligible for inclusion, representing 444 patients (47% female, 85% <5 years). Treatment data was available for 377/444 (85%) of patients, covering 395/465 (85%) samples. Over half of bacteraemia cases (n=248, 53.3%) were community acquired. Most commonly isolated pathogens were *Klebsiella spp*. (n=107, 23%), *Escherichia coli* (n=45, 11%) and *Staphylococcus aureus* (n=42, 9%). *Acinetobacter baumanii* and *Pseudomonas spp.* each appeared in 31 samples, including community sepsis. More one fifth (n=92, 23.3%) of all samples showed multidrug-resistance (ESBL=56, 14.2%, CRO=28, 7.1%, MRSA=8, 2.0%). Overall mortality was 36.3% (n=137). Empiric and targeted treatment were considered appropriate in 77.8% and 66.3% cases, respectively.

Conclusion: Significant multidrug-resistance was found in pediatric patients with community- and hospital-acquired bloodstream infections. Empiric antibiotics for sepsis should be adapted using hospital-based antibiograms. Enhancing diagnostics and microbiology-based treatment remains critical in Liberia and other resource-limited settings.

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1. Collaborators GBDAR. Global burden of bacterial antimicrobial resistance 1990-2021: a systematic analysis with forecasts to 2050. Lancet. 2024;404(10459):1199-226.

Table 1 Isolated pathogens of bacteremic children, Liberia (July 2019–September 2022)

Table 2 Multidrug resistance found in bacteremic children, Liberia (July 2019–September 2022)

Fig. 1

Table 1: Isolated pathogens of bacteremic children, Liberia (July 2019–September 2022)

Pathogen	Overall n=395 samples (n=377 patients)	Community-acquired n (%)	Probably nosocomial n (%)	Nosocomial n (%)	All nosocomial n (%)
Gram – negative Enterobacterales					
Klebsiella pneumonia	58 (14.7)	30 (7.6)	3 (0.7)	25 (6.3)	28 (7.1)
Klebsiella spp. (excl. pneumoniae)	30 (7.6)	16 (4)	1 (0.3)	13 (3.3)	14 (3.4)
Escherichia coli	39 (9.9)	34 (8.6)	1 (0.3%)	4 (1)	5 (1.3)
Enterobacter cloacae	16 (4.1)	3 (0.7)	0	13 (3.3)	13 (3.3)
Enterobacter aerogenes	7 (1.8)	3 (0.7)	1 (0.3)	3 (0.8)	4 (1)
Serratia species	6 (1.5)	4 (1)	1 (0.3)	1 (0.3)	2 (0.5)
Citrobacter spp.	4 (1)	4 (1)	0	0	0
Non-typhoid Salmonella spp.	22 (5.6)	18 (4.6)	0	4 (1)	4 (1)
Salmonella typhi	1 (0.3)	1 (0.3)	0	0	0
Shigella spp.	4 (1.0)	4 (1)	0	0	0
Morganella sp.	1 (0.3)	0	0	1 (0.3)	1 (0.3)
Hafnia sp.	1 (0.3)	1 (0.3)	0	0	0
Other gram negative Enterobacterales	7 (1.8)	5 (1.3)	0	2 (0.5%)	2 (0.5)
Fastidious growing gram-negative bacteria					
Haemophilus influenzae and parainfluenzae	6 (1.5)	6	0	0	0
Moraxella sp.	1 (0.3)	0	0	1 (0.3)	1 (0.3)
Non – fermenting gram – negative bacteria					
Acinetobacter baumanii	27 (6.8)	10 (2.5)	3 (0.7)	14 (3.5)	17 (4.3)
Pseudomonas aeruginosa	26 (6.6)	13 (3.3)	3 (0.7)	10 (2.5)	13 (3.3)
Burkholderia sp.	9 (2.3)	5 (1.3)	0	4 (1)	4 (1)
Other fermenting bacteria	27 (6.8)	10 (2.5)	3 (0.7)	14 (3.5)	17 (4.3)
Gram – positive bacteria					
Stophylococcus aureus	42 (10.6)	37 (9.4)	0	5 (1.3)	5 (1.3)
Streptococcus pneumoniae	13 (3.3)	12 (3)	0	1 (0.3)	1 (0.3)
Streptococcus spp. (excl. pneumoniae)	22 (5.6)	17 (77.3)	0	5 (22.7)	5 (22.7)

Fig. 2

Table 2 Multidrug resistance found in bacteremic children, Liberia (July 2019–September 2022)

MDR - Pathogens	ESBL	CRO	MRSA	TOTAL
n=92/395	n (%)	n (%)	n (%)	n (%)
Community Acquired				
Klebsiella pneumonia	12 (66.7)	6 (33.3)	x	18 (19.6)
Klebsiella species (excl. pneumoniae)	10 (90.9)	1 (9.1)	x	11 (12.0)
Escherichia coli	5 (100.0)	0	x	5 (5.4)
Pseudomonas aeruginosa	0	1 (100.0)	x	1 (1.1)
Other Pseudomonas	1 (50.0)	1 (50.0)	x	2 (2.2)
Acinetobacter baumanii	x	3 (100.0)	x	3 (3.3)
Other gram-negative bacteria	6 (46.2)	7 (53.8)	x	13 (14.1)
Staphylococcus aureus	x	x	6 (100.0)	6 (6.5)
ALL nosocomial				
Klebsiella pneumonia	10 (100.0)	0	x	10 (10.9)
Klebsiella species (excl. pneumoniae)	3 (100.0)	0	x	3 (3.3)
Escherichia coli	1 (100.0)	0	x	1 (1.1)
Pseudomonas aeruginosa	0	5 (100.0)	x	5 (8.3)
Other Pseudomonas	0	1 (100.0)	x	1 (1.1)
Acinetobacter baumanii	x	2 (100)	x	2 (2.2)
Other gram neg	8 (88.0)	1 (11.1)	x	9 (9.8)
Staphylococcus aureus	x	x	2 (100.0)	2 (2.2)
TOTAL n (%)	56 (60.9)	28 (30.4)	8 (8.7)	92 (100)

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Neonatal colonization with antibiotic-resistant pathogens at Muhimbili National Hospital, Dar es Salaam, Tanzania

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Background: The rise of multidrug-resistant (MDR) bacteria poses a health threat globally, with preterm neonates in low- and middle-income countries (LMICs) being particularly vulnerable to sepsis. This study aimed to screen preterm neonates for MDR bacteria in a large tertiary hospital in Dar Es Salaam, Tanzania, over a 4-month period, and to assess the feasibility of implementing a regular colonization screening regimen with the local infrastructure.

Methods: From April 2024 to August 2024 weekly screening regimen, analogous to the recommendation of the German Commission for Infection Prevention and Hygiene in Healthcare and Nursing (KRINKO) in neonatal intensive care units (NICUs), was conducted. Due to limitations in laboratory capacity and high positivity rates, the definition of a positive screening was modified to include growth on extended spectrum β-lactamase (ESBL) or MDR Acinetobacter selective plates (CHROMagar™). The number of screened patients was limited to 15 per week. Nasopharyngeal swabs for methicillin-resistant *S. aureus* (MRSA) were discontinued after 113 negative screenings, focusing instead on gram-negative bacteria identified through rectal swabs.

Results: A total of 330 swabs were collected, with a positivity-rate of 87.9%. Of the 511 isolates grown on selective plates, 25% were phenotypical resistant to meropenem, and 16% were classified as 3MRGN according to the KRINKO-definition by being resistant to three antibiotic groups (third-generation cephalosporins, piperacillin, and fluoroquinolones). Additionally, 29% of isolates were found to be resistant to both third-generation cephalosporins and piperacillin. The predominant pathogens identified were *K. pneumoniae* (36%), *E. coli* (34%), and *Acinetobacter baumannii* (17%), with 48% of *Acinetobacter baumannii* isolates exhibiting meropenem resistance.

Conclusion: Although labour intense neonatal colonization screening generates useful information on the presence of MDR bacteria in the NICU and monitor trends and detect outbreaks.

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Unequal power relations and interdisciplinary dialogue: the ethics of care applied to the study of knowledge construction within a One Health research programme on antimicrobial resistance

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Question: The problem of antibiotic resistance exemplifies interdependence of human, animal, and environmental health, as emphasized in « One Health » perspectives. While the need to approach the problem of antibiotic resistance in an interdisciplinary and intersectoral manner is recognized, the aim of this analysis was to analyse how research can enable knowledge co-production between different disciplines and stakeholders.

Methods: We draw on a research program on antibiotic resistance in Ghana in which we have been involved since 2021: AMR-B-CHANGE. This programme brought together microbiology, socio-epidemiology, and anthropology by combining microbiological analyses of antimicrobial resistance along the agri-food chain, questionnaires with social actors in population and interviews with health care workers, as well as ethnographies at farms and semi-urban/rural residential areas to understand patterns of antibiotic use and local perceptions of antibiotic resistance. A feminist care ethics approach enabled interdisciplinarity dialogue analysis within this research programme: following the work of Staffa, Riechers and Martin-Lopez (2022) by studing how power dynamics and systemic power structures interplayed with knowledge co-production mechanisms.

Results: Our work has analyzed internal obstacles linked to interdisciplinary, intersectoral and North-South collaborations. Along the programme we moved from a parallel pluridisciplinary dialogue to an interdisciplinary co-construction of knowledge. This switch occured through a convergence of interest when we engaged in collective participatory workshops which facilitated visibility of divergences. However, the negotiation of commons (as exemplified by this convergence of interests) between different researchers and stakeholders was held by differentiated constraints which created inequalities within collaborative dynamics.

Conclusions: Our analysis of knowledge co-production points to mechanisms inscribed within social relations emphasizing the necessity to intentionally question power inequalities within research. This study contributes to critical studies of consensus building showing how soft consensus is a tool to reinforce power dominations through the invisibilisation of diverging viewpoints (Lautier, 2010). It

highlights how "fertile disagreements" (Viveret, 2021) can contribute to the cross-fertilization of knowledge for interdisciplinary « One Health » research.

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Example of an interdisciplinary project on antimicrobial resistance – Benefits and challenges of a mixed-methods approach

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Background: Antimicrobial resistance (AMR) is recognized as a global concern, with particularly severe consequences in low- and middle-income countries. While it may occur naturally, it is also an anthropogenic problem linked to the irrational use of antimicrobials in humans and animal husbandry. This study aimed at (i) assessing baseline data on AMR pathogens in Burkina Faso and Ghana, (ii) understanding perceptions and uses/behaviours, and quantifying usage of antibiotics among healthcare workers, communities, and livestock farmers, and (iii) defining an AMR intervention using a design thinking approach.

Methods: This multidisciplinary study was conducted in two rural districts in Ghana and Burkina Faso. First, data were collected for microbiological analysis on AMR pathogens along dominant food production chains. The perception and understanding of AMR and antibiotic use among different stakeholders and community members was assessed using socio-epidemiology and anthropological methods. Qualitative methods included ethnographies (participant observation, free interview), in-depth and key informant interviews, and focus group discussions. The quantitative part consisted of the development of an inventory of circulating antibiotics, and a household survey. Second, an intervention on AMR was developed collaboratively with different stakeholders and community members using a design thinking approach to improve antibiotic usage.

Results: The analysis of microbiological, anthropological, and socio-epidemiological data has been done in both countries and revealed discordant results in the different disciplines. The first phase of the intervention development following the design thinking approach "empathize" is using these data to develop an understanding of the stakeholders. The interdisciplinary results allowed to give a global detailed but also discordant picture on AMR. We used the methods of reconciliation and initiation to develop a new perspective. Conclusion: Owing to the multifactorial nature of AMR, different perspectives need to be considered to develop a holistic context-based intervention tailored to local needs. This study stands out in its combination of different disciplinary and epistemological perspectives. Thereby, collaboration across disciplines and reconciliation of the results is of particular importance to achieve a common understanding of the problem and develop an accepted and efficacious intervention.

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Antimicrobial resistance through a One Health perspective – Insights from a survey on the commensal microbiota of heavy breeder hens from Bolivian farms

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Background: The overuse of antibiotics in animal farming, often for non-therapeutic purposes such as growth promotion and disease prevention, has made farms key sites for the selection and spread of antimicrobial resistance that can be also transferred to humans, posing a serious public health threat. Here we present a cross-sectional study on antibiotic resistance in the gut microbiota of heavy breeder hens from 9 poultry farms of Santa Cruz Department, Plurinational State of Bolivia.

Methods: Cloacal swabs were collected from 3060 heavy breeder hens across 9 farms in September 2024, and pooled in groups of 30, resulting in 102 samples, one per poultry house. Simultaneously, one environmental drag sample was collected from each poultry house, yielding 102 additional samples. A rapid screening method was used to detect antimicrobial resistance to amoxicillin/clavulanic acid, ampicillin, cefotaxime, ceftazidime, ciprofloxacin, meropenem, tetracycline and trimethoprim-sulfamethoxazole among Enterobacterales/Gram-negative bacteria. This study was part of a routine monitoring program for *Salmonella* conducted by the SENASAG, Bolivia's national agency responsible for agricultural health and food safety.

Results: Overall, resistance rates were high for most of tested antibiotics, with drag samples showing the highest rates. The highest rates were found for ampicillin (86.7% cloacal, 98% drag), tetracycline (94.3% cloacal, 99% drag), and trimethoprim-sulfamethoxazole (76.2% cloacal, 92.1% drag). Significant resistance was also observed for ciprofloxacin (64.8% cloacal, 91.1% drag), cefotaxime (41.9% cloacal, 71.2% drag), and amoxicillin/clavulanic acid (22.9% cloacal, 52.5% drag). Resistance to ceftazidime was lower (1.9% cloacal, 14.9% drag); no resistance to meropenem was detected.

Conclusions: Very high resistance rates were observed in the commensal microbiota of heavy breeder hens, including antibiotics of clinical concern, such as fluoroquinolones, penicillins and third-generation cephalosporins. Similar resistance patterns have been documented in the commensal enteric microbiota of healthy humans living in the same region, suggesting a potential transmission of resistant bacteria likely through the food chain and the environment. These results are preliminary and further molecular investigations are underway to better understand the mechanisms accounting for the observed resistance patterns in this region.

P 110

Interlinkage of β-lactam resistant bacterial genes from clinical, environmental, and poultry isolates from Katmandu – A big threat of AMR

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Background: The widespread and irrational use of antibiotics in empirical therapy and veterinary practices is of great concern in the developing world. The improper management of antimicrobial waste adds to the emergence of drug-resistant pathogens in the environment. Although there is regular reporting of the increased resistance among clinical isolates in Nepal, the interlinkages of the resistance genes among bacteria from different sources have not been explored.

Methods: *Staphylococcus aureus, Escherichia coli*, and *Pseudomonas aeruginosa* were isolated from the clinical, animal, and environmental samples collected during 2020-2022 and were subjected to antimicrobial susceptibility testing following the CLSI guidelines. The pathogens were then screened for β-lactam resistance genes *bla*TEM, *mcr-1*, *mecA*, and *blaNDM-1*.

Results: Among 2835 clinical samples, *E. coli* (10.3%, 292) was the predominant bacteria followed by *S. aureus* (6.0%, 169); and *P. aeruginosa* (4.0%, 143). 64.4% of *E. coli* were MDR and 43.8% were ESBL producers. The occurrence of the *bla*TEM and *mcr-1* gene were 44.5% and 16.4% respectively. Likewise, 80.9% of MRSA possessed the *mecA* gene and 30.1% of MBL-producing *P. aeruginosa* were positive for *blaNDM-1* gene. Out of 220 *E. coli* isolates from poultry samples, 30.4% of isolates possessed *bla*TEM among 128 ESBL producers. The colistin-resistant and *mcr-1* gene was found higher in poultry isolates compared to clinical isolates. The number of ESBL-producing *E. coli* and MRSA with their respective resistant genes was lower in water samples.

Conclusion: The resistant genes were ubiquitous in all sources. It is urgent to implement rationale antibiotic prescription in clinical settings, control the use of antibiotics in poultry/animal feeds, overuse of antibiotics in animals, and prohibit the disposal of antimicrobial waste in natural water resources without treatment.

Keywords: Antimicrobial resistance, MRSA, ESBL, MBL, Resistant genes (*mecA, mcr-1, blaTEM, blaNDM-1*)

Fig. 1

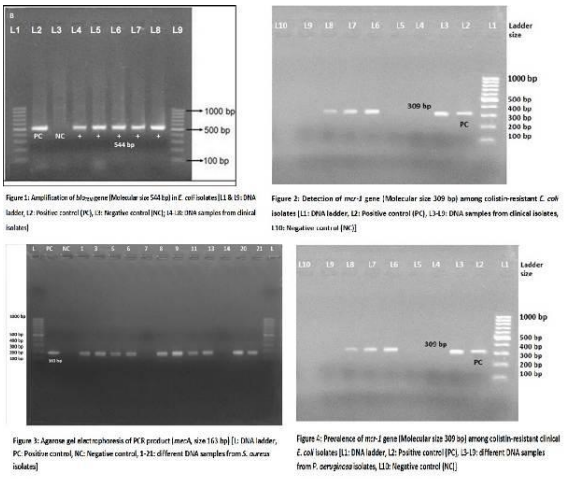

Figure 1: Amplification of *bla*$_{TEM}$ gene (Molecular size 544 bp) in *E. coli* isolates [L1 & L5: DNA ladder, L2: Positive control (PC), L3: Negative control (NC); L4, L6: DNA samples from clinical isolates]

Figure 2: Detection of *mcr-1* gene (Molecular size 309 bp) among colistin-resistant *E. coli* isolates [L1: DNA ladder, L2: Positive control (PC), L3-L9: DNA samples from clinical isolates, L10: Negative control (NC)]

Figure 3: Agarose gel electrophoresis of PCR product (*mecA*, size 163 bp) [L: DNA ladder, PC: Positive control, NC: Negative control, 1-21: different DNA samples from *S. aureus* isolates]

Figure 4: Prevalence of *mcr-1* gene (Molecular size 309 bp) among colistin-resistant clinical *E. coli* isolates [L1: DNA ladder, L2: Positive control (PC), L3-L9: different DNA samples from *P. aeruginosa* isolates, L10: Negative control (NC)]

Fig. 2

Interlinkage of β-lactam resistant bacterial genes from clinical, environmental, and poultry isolates from Kathmandu; A big threat of AMR

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Abstract

Background: The widespread and irrational use of antibiotics in empirical therapy and veterinary practices is of great concern in the developing world. The improper management of antimicrobial waste adds to the emergence of drug-resistant pathogens in the environment. Although there is regular reporting of the increased resistance among clinical isolates in Nepal, the interlinkages of the resistance genes among bacteria from different sources have not been explored.

Methods: *Staphylococcus aureus, Escherichia coli*, and *Pseudomonas aeruginosa* were isolated from the clinical, animal, and environmental samples collected during 2020-2022 and were subjected to antimicrobial susceptibility testing following the CLSI guidelines. The pathogens were then screened for β-lactam resistance genes bla_{TEM}, *mcr-1*, *mecA*, and bla_{NDM-1}.

Results: Among 2835 clinical samples, *E. coli* (10.3%, 292) was the predominant bacteria followed by *S. aureus* (6.0%, 169); and *P. aeruginosa* (4.0%, 143). 64.4% of *E. coli* were MDR and 43.8% were ESBL producers. The occurrence of the bla_{TEM} and *mcr-1* gene were 44.5% and 16.4% respectively. Likewise, 80.9% of MRSA possessed the *mecA* gene and 30.1% of MBL-producing *P. aeruginosa* were positive for bla_{NDM-1} gene. Out of 220 *E. coli* isolates from poultry samples, 30.4% of isolates possessed bla_{TEM} among 128 ESBL producers. The colistin-resistant and *mcr-1* gene was found higher in poultry isolates compared to clinical isolates. The number of ESBL-producing *E. coli* and MRSA with their respective resistant genes was lower in water samples.

Conclusion: The resistant genes were ubiquitous in all sources. It is urgent to implement rationale antibiotic prescription in clinical settings, control the use of antibiotics in poultry/animal feeds, overuse of antibiotics in animals, and prohibit the disposal of antimicrobial waste in natural water resources without treatment.

Keywords: Antimicrobial resistance, MRSA, ESBL, MBL, Resistant genes (*mecA, mcr-1, bla*$_{TEM}$, *bla*$_{NDM-1}$)

P 112

Key recommendations to the UN High-level Meeting on AMR – DTG "Global Health" working group's perspective

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Background: Antimicrobial resistance (AMR) is a major threat to global health, causing 1.27 million deaths in 2019 and contributing to 4.95 million more. On Sept. 26, 2024, global leaders at the UN General Assembly"s (UNGA) High-Level meeting on AMR adopted a political declaration with clear targets and actions. In response, the global health working group of the German Society for Tropical Medicine, Travel Medicine and Global Health e.V. (DTG) prioritized key targets.

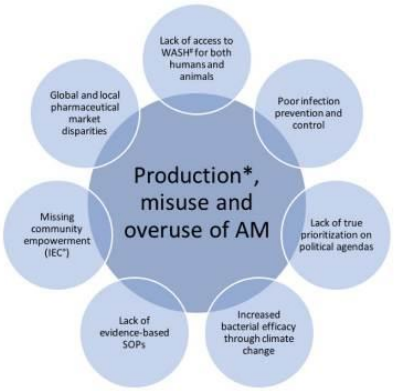
Methods: To prioritize key targets for combating AMR, the DTG global health working group employed a structured, expert-driven approach. The prioritization process was informed by expert opinions and supported by a narrative review of recent publications on AMR. The working group comprised nine board-certified medical professionals with expertise in infectious diseases, tropical medicine, microbiology, veterinary medicine, global and international health and humanitarian aid. Rankings of targets were developed through a two-step process: an open discussion to identify and debate potential priorities, followed by a consensus panel decision to finalize the rankings.

Results: According to the working group"s appraisal, the following global multisectoral actions are crucial to reach the targets by 2030: We need to strengthen intersectoral collaboration and interdisciplinary efforts between animal, human, plant and environmental authorities within the One Health approach and enhance interdisciplinary communication. Local communities must be strengthened and educated to increase awareness and support specific behaviour. We need strengthening of professional capacity and capability of health workers in different fields of expertise as well as infrastructure to improve National Action Plan implementation. Sustainable, consistent and diversified financing will be crucial to enhance universal health coverage and secure appropriate access to antimicrobials.

Conclusion: AMR is recognized as a global threat to health, especially of the most vulnerable. The prioritized targets are key to the implementation of well-coordinated, integrated and context-specific regional approaches to respond to health threats caused by AMR. To secure the future the UNGA on AMR requests to update the Global Action Plan on AMR by 2026 to ensure a robust and inclusive multisectoral response through a One Health approach.

References: Political Declaration of the High-Level Meeting on Antimicrobial Resistance, 2024 Sept. 9

Fig. 1



P 114

Can audit and feedback with clinicians using a real-time dashboard improve antibiotic stewardship in paediatric primary care in Tanzania? A cluster randomized controlled trial

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Introduction: Antibiotic overprescription is a key driver of antimicrobial resistance. ePOCT+ is a digital clinical decision support algorithm (CDSA) guiding clinicians to manage sick children in low-resource settings. Prior research showed that ePOCT+ combined with data-driven mentorship substantially reduced antibiotic prescription compared to usual care. However, another study evaluating ePOCT+ without similar mentorship found no impact.

Methods: To better understand the individual contributions of this complex antimicrobial stewardship intervention, we conducted a pragmatic, open-label, parallel-group, cluster-randomized controlled trial. The study aimed to assess whether mentorship with audit and feedback, informed by a real-time CDSA data dashboard, decreases antibiotic prescription among healthcare workers (HCW) using ePOCT+ (NCT05901155). 40 eligible primary care facilities in Tanzania (Morogoro and Mbeya regions) were randomized 1:1. We included all acutely ill children <15 years for whom prescription was recorded in the routine register. Both arms used ePOCT+, received antibiotic stewardship training, and ongoing mentorship (messages, phone calls, visits). In the intervention group, HCW and mentors had access to the real-time antibiotic prescription dashboard, which guided the mentorship (Fig1). The primary outcome was the proportion of cases prescribed an antibiotic, as recorded in the register.

Results: Between June and November 2023, we included 18,649 and 18,367 cases in the 20 intervention and 20 control facilities, respectively. The CDSA was used in 28.1% vs 22.8% of the cases in the intervention vs control arm. Antibiotic prescription was 51.1% in the intervention and 60.7% in the control group, corresponding to an adjusted absolute risk difference of -10.2% (95%CI -17.3% to -3.2%) and an adjusted relative risk (aRR) of 0.83 (95%CI 0.73 – 0.94) (Fig2). The reduction was similar in children managed with ePOCT+ (36.3% vs 42.1% in intervention vs control, aRR=0.76 (95%CI 0.61 – 0.90)) and without ePOCT+ (56.9% vs 66.1% in intervention vs control, aRR=0.87 (95%CI 0.77 – 0.96)).

Conclusion: Mentorship supported by real-time antibiotic prescription dashboards significantly reduced antibiotic prescription, both in children managed with and without an antimicrobial stewardship CDSA. These findings highlight the valuable role of audit and feedback in optimizing antibiotic stewardship interventions.

Fig1. Study design

Fig2. Results for primary outcome

Fig. 1

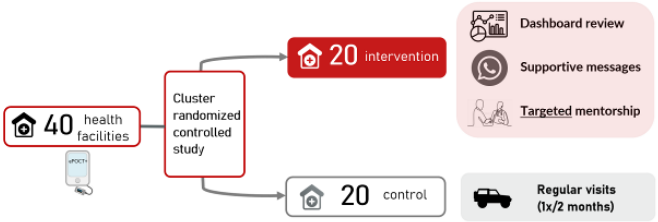
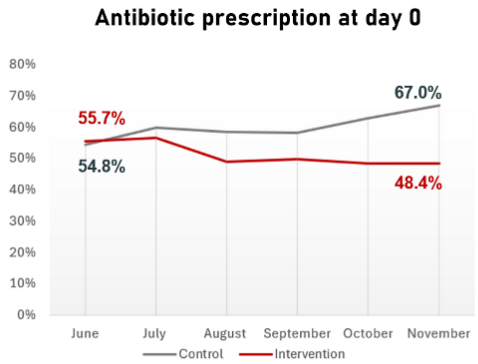


Fig. 2



Adjusted absolute risk difference -10.2% (95%CI -17.3% to -3.2%)
Adjusted relative risk 0.83 (95%CI 0.73 – 0.94)

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Innovating cost-effective approaches of antimicrobial stewardship among health workers – How effective is the interactive mobile phone short message service (sms) as a post-training assessment of knowledge retention?

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Introduction: The Infectious Diseases Program (IDP) offers specialised courses in the management of infectious diseases for health workers in resource-limited settings. IDI since 2015 has been running the Anti-microbial stewardship course for health workers. After the course, IDI provided onsite follow-up visits to assess the knowledge retention of the alumni. Over the years, IDI strived to innovate more cost-effective follow-up strategies; and in January 2024 implemented the use of interactive mobile phone short message service (SMS) as an approach to perform its assessment. SMS was a viable option due to its low cost, doesn"t need internet, uses basic phone, has a user-friendly interface, and high coverage in Uganda (SMS coverage is approximately 65% compared to 18% internet coverage).

Methods: IDP piloted the SMS follow-up to a group of 81 clinicians who had attended a five-day course in Antimicrobial Stewardship. Six weeks after the course, the 81 alumni began receiving follow-up quizzes via SMS. The quizzes were in the form of multiple-choice questions and were disseminated over 13 weeks. Questions were based on content covered during the course. Alumni replied to the questions through a toll-free SMS platform that instantly provided feedback on whether the answer was correct or wrong. A toll-free phone line was also used to receive technical queries in relation to the SMS.

Results: 79% of the alumni responded to the SMS quiz questions and 86% submitted the correct response. This was above the 70% pass mark that IDP approves for the award of certificates. Challenges that hindered responses included busy work schedules, poor network coverage, and lack of battery power. The high percentage of responses and percentage of correct responses, shows that SMS was well received and is effective as a post-training follow-up approach to ensure knowledge retention.

Conclusion: Innovation of cost-efficient approaches is essential for continuity of anti-microbial resistance knowledge dissemination programs within resource constrained communities. IDI has scaled up the SMS follow up to all courses because it proved to be a cost effective and efficient approach for knowledge retention.

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Can information campaign help reduce over-dispensing of antibiotics? Evidence from a clustered, randomized RCT with pharmacies in urban Ghana

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[2]University of Ghana, Accra, Ghana
[3]IDOS, Bonn, Germany
[4]University of Rotterdam, Rotterdam, Netherlands

Antimicrobial resistance (AMR) is associated with almost 5 million deaths every year, a number expected to rise to 10 million deaths annually by 2025. A major contributor to AMR is seen in the overuse of antibiotics in human-centered healthcare settings. In this context an important actor in LMICs are formal and informal pharmacies which are the gatekeepers to antibiotics for a majority of the population. Often, however, pharmacists dispense antibiotics without proper prescriptions and often contribute to the spread of AMR as patients receive antibiotics for non-bacterial infections and are advised incorrectly on the number of doses to take.

In this study we investigate whether a simple and low-cost information campaigns can help induce pharmacists to comply with official guidelines and therefore improve antibiotic prescription practices. The setting of our study is urban Ghana. Employing a clustered RCT in which we randomized 120 micro-locations covering about 480 pharmacies into control and treatment groups. The intervention run for about 9 months and consisted of a Whatsapp-based information campaign in which pharmacists in the treatment group received about 3 messages per week that were aimed at (i) improving pharmacists" knowledge about the correct usage and dispensing of antibiotics and (ii) make pharmacists aware of the adverse personal and societal impacts of overdispensing antibiotics.

Endline data collection of the RCT will be completed by June 2025 and it is envisioned to present the respective results of the impact evaluation at ECTMIH 2025. Considering that the study is still ongoing we briefly present some of our initial findings from the baseline studies. First, despite antibiotics being prescription drugs in Ghana we find that in about 90 percent of all cases we were able to purchase antibiotics without any prescriptions highlighting that unregulated access to antibiotics is widespread and easy. Second, we show that antibiotic vendors do not provide much guidance on the correct intake and storing of antibiotics. In fact, only a small minority of vendors provide advise on adherence to a full course or on which food/drinks to avoid when consuming antibiotics. Third, we observe substantial deficits in the knowledge of antibiotics vendors with many sellers being unaware of the correct intake of antibiotics and of societal impacts such as AMR.

P 117

Antimicrobial stewardship needs in a tertiary care burn unit in Malawi – Lessons learned from a pilot study

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[1]Kamuzu Central Hospital, Lilongwe, Malawi
[2]Leipzig University Medical Center, Infectious Disease and Tropical Medicine, Leipzig, Germany

Background: Antimicrobial resistance (AMR) represents a major global health threat, with the greatest burden in Sub-Saharan Africa. Hospital antimicrobial stewardship (AMS) addresses this by optimizing antimicrobial use. AMS ward rounds, where multidisciplinary teams review treatments and provide feedback, are a key intervention in AMS programs. However, evidence from low-resource settings is still limited. In 2024, Kamuzu Central Hospital (KCH), Lilongwe, Malawi, launched a pilot AMS ward round for paediatric burn patients - a group at high risk of infectious complications and AMR. This prospective observational study evaluated the pilot to assess AMS needs and inform anti-infective care.

Methods: Children (≤17 years) admitted to the burn unit at KCH between April 2024 and February 2025 were eligible for inclusion. The AMS team comprised a microbiologist, pharmacist, infection prevention and control expert, and an infectious disease consultant. Weekly virtual AMS ward rounds covered all paediatric burn patients enrolled in the study. Data was recorded on reporting sheets during AMS rounds. Data was analysed using RStudio.

Results: As of October 2024, 25 AMS ward rounds were conducted, involving 86 case discussions on 47 patients. Median age was three years and median total burn surface area at 15%. Suspected wound infections were common (42%; 36/85) and overall inpatient mortality high (21.5%; 14/65). Available microbiological results predominantly identified gram-negative bacteria, including *Pseudomonas aeruginosa*, *Acinetobacter baumannii*, and *Escherichia coli*. 51% (44/86) of patients were on antimicrobials at the time of review (Figure 1), primarily ceftriaxone (65%; 31/48). Microbial testing was frequently delayed until after antimicrobial therapy initiation: 83% (19/23) of patients on antimicrobials included in the AMS rounds had not yet received microbial testing at initial case discussion. The AMS team gave recommendations in 64% (55/86) of cases (Figure 2), frequently advising microbial testing (35%; 19/55). In 67% (26/39) of follow-up discussions, prior AMS recommendations had been implemented.

Conclusions: Preliminary findings underscore the value of AMS ward rounds, with most recommendations implemented. The study revealed a critical need for greater utilization of timely diagnostic testing, particularly before antibiotic treatment for clinically suspected infection. AMS rounds promoted the rational use of antimicrobials in this setting.

Fig. 1

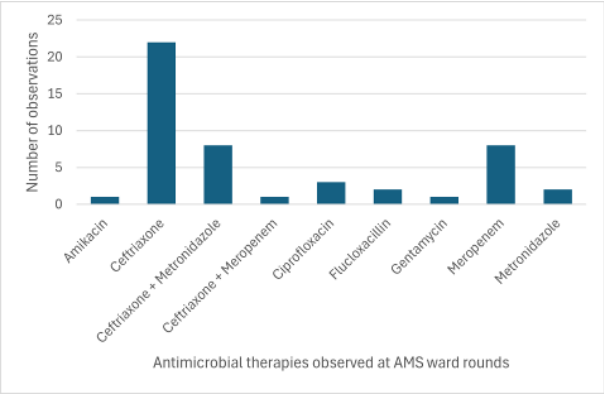
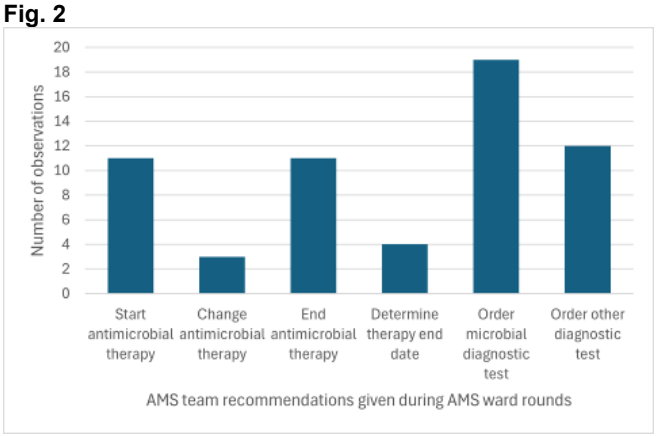


Fig. 2



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Pathways of acute febrile illness care from the community to health facilities in resource-limited settings – A multicentre study in the Democratic Republic of the Congo, Kenya, and Uganda

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[2]*Washington State University Global Health Program, Nairobi, Kenya*
[3]*College of Veterinary Medicine, Animal Resources, and Biosecurity, Makerere University, Kampala, Uganda*
[4]*Institut National de Recherche Biomédicale, Kinshasa, Congo, The Democratic Republic Of The*
[5]*Laboratoire Rodolphe Mérieux INRB-Goma, Goma/Nord Kivu, Congo, The Democratic Republic Of The*
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Introduction: The broad differential diagnosis of non-malaria febrile illness in sub-Saharan Africa is challenged by limited diagnostic tools and may lead to empirical treatment with inappropriate antibiotics. The Centers for Research on Emerging Infectious Diseases-East and Central Africa established a multicentre observational study enrolling patients ≥10 years presenting with acute febrile illness at health facilities in DRC, Kenya and Uganda (2021-2024). **Objectives.** We aimed to describe diagnostic hypotheses, health-seeking care pathway and antibiotic use, based on the World Health Organisation (WHO) AWaRe Classification, in the 3 countries and to identify possible drivers of antibiotic use. **Results.** A total of 4,806 subjects were enrolled: 1,370 (28.5%) DRC, 1,468 (30.6%) Kenya and 1,968 (40.9%) Uganda. About a quarter of the total population (23.3%) had already sought prior care, more frequently in DRC (36.6%) predominantly to pharmacies (30.9%), and Uganda (27.9%). Prior to enrolment, 50.0% of study population in DRC had already received antibiotics, higher than in Kenya and Uganda (3.3% and 11.2%, respectively). Undifferentiated febrile illness was registered in 37.5%. A widespread use of antibiotics was recorded (72.9%), in DRC (87.0%) > Kenya (68.9%) > Uganda (65.8%) with an overall Watch antibiotic use of 33%. Access to pharmacies and health facilities emerged as factors associated with antibiotic use in the community. After enrolment, antibiotic use was associated with prior antibiotic use, positive Widal test and urogenital infection in DRC, with fever and gastrointestinal or respiratory infection in Kenya and with urogenital infection in Uganda. Watch antibiotics use was prevalent in DRC, lower in Uganda and Kenya (62.2%, 32.9%, and 19.1% of total antibiotic consumption, respectively). **Conclusions.** Overall, undifferentiated febrile illnesses accounted for approximately 40.0% of enrolled subjects, in line with the wide range reported in the literature. Only Kenya and Uganda achieved the WHO recommended threshold of 60% Access antibiotics use. The

widespread use of antibiotics observed in our study raises concerns about the potential risk for antimicrobial resistance, requiring targeted interventions. Understanding the context-specific factors underlying patterns of antibiotic use is essential for the effective and sustainable implementation of antimicrobial stewardship programmes targeting both the formal and informal healthcare levels.

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Neglected etiologies of prolonged febrile illnesses in tropical and subtropical regions – A systematic review

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Question: Febrile illnesses that persist despite initial treatment are common clinical challenges in (sub)tropical low-resource settings. Our aim is to review infectious etiologies of "prolonged fevers" (persistent febrile illnesses, PFI) and to quantify relative contributions of selected neglected target diseases with limited diagnostic options, often overlooked, causing inadequate antibiotic prescriptions, or requiring prolonged and potentially toxic treatments.

Methods: We performed a systematic review of articles addressing the infectious etiologies of PFI in adults and children in sub-/tropical low- and middle-income countries (LMICs) using the PRISMA guidelines. A list of target diseases, including neglected parasites and zoonotic bacteria, were identified by infectious diseases and tropical medicine specialists and prioritized in the search. Malaria and tuberculosis (TB) were not included as target diseases due to well-established epidemiology and diagnostic options.Four co-investigators independently extracted data from the identified articles while assessing for risk of bias.

Results: 196 articles from 52 countries were included, 117 from Africa (33 countries), 71 from Asia (16 countries), and 8 from Central and -South America (3 countries). Target diseases were reported as the cause of PFI in almost half of the articles, most frequently rickettsioses (including scrub typhus), relapsing fever borreliosis (RF-borreliosis), brucellosis, enteric fever, leptospirosis, Q fever and leishmaniasis. Among those, RF-borreliosis was by far the most frequently reported disease in Africa, particularly in Eastern Africa. Rickettsioses (including scrub typhus) were often described in both Africa and Asia. Leishmaniasis, toxoplasmosis and amoebiasis were the most frequent parasitic etiologies. Non-target diseases and non-tropical organisms (Streptococcus pneumoniae, Escherichia coli, and non-typhoidal Salmonella spp) were documented in a fifth of articles.

Conclusions: Clinicians faced with PFI in sub-/tropical LMICs should consider a wide differential diagnosis including enteric fever and zoonotic bacterial diseases (e.g., rickettsiosis, RF-borreliosis and brucellosis), or parasite infections (e.g., leishmaniasis) depending on geography and syndromes. In the absence of adequate diagnostic capacity, a trial of antibiotics targeting relevant intra-cellular bacteria, such as doxycycline or azithromycin, may be considered.

Fig. 1

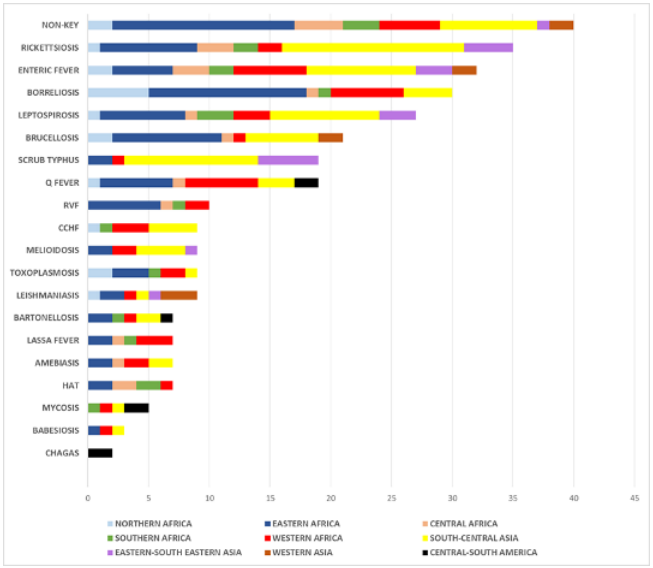
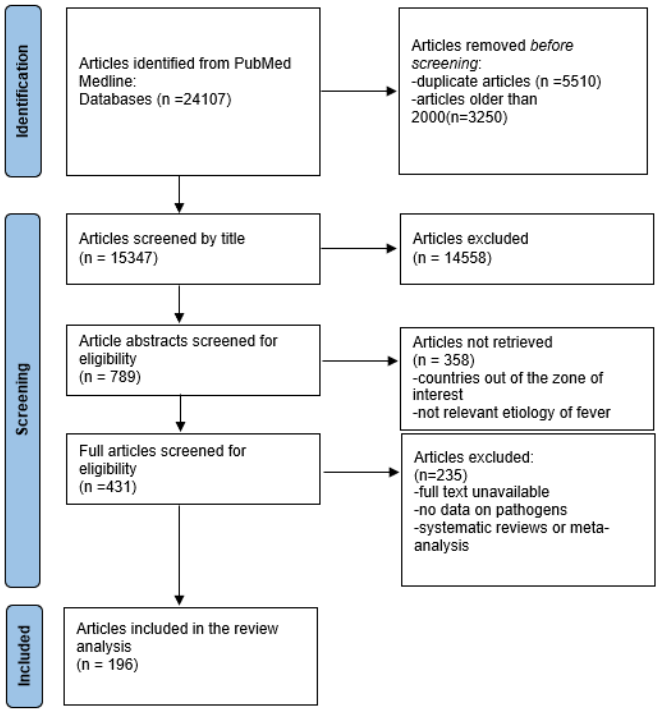


Fig. 2



P 120

Bacterial etiology and surveillance of urinary tract infections in outpatients from western Alajuela, Costa Rica – Epidemiological findings from a retrospective study (2024–2025)

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Urinary tract infections (UTIs) are a common cause of consultation in medical services around the world and an important cause of mortality among the elderly. In recent years, antibiotic resistance has increased, reducing the therapeutic options available for outpatient management. We conducted a retrospective, observational study with a quantitative-categorical approach from April 2024 to April 2025, analyzing urine cultures reported in patients from the

cantons of San Ramón, Palmares, and Naranjo, in the province of Alajuela, Costa Rica. Samples were categorized by sex and canton, and grouped into three age categories to enhance the analysis. Percentages of resistance to the most commonly used antibiotics were also recorded. Women represented the majority of cases; however, men had significantly higher odds of presenting with an ESBL-positive uropathogen compared to women (**OR = 2.29**, 95% CI: 1.01–5.18, $p < 0.05$). *Escherichia coli* was the most prevalent pathogen across all age categories. A statistically significant association was also found between older age and the risk of infection with an ESBL-positive pathogen (**$\chi^2(2) = 6.76$**, $p = 0.034$; **OR = 2.22**, 95% CI: 1.01–4.85). These findings emphasize the importance of ongoing surveillance among developing countries and targeted empirical treatment strategies in this region.

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2. Medina M, Castillo-Pino E. An introduction to the epidemiology and burden of urinary tract infections. Ther Adv Urol 2019;11:1756287219832172. https://doi.org/10.1177/1756287219832172
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Fig. 1

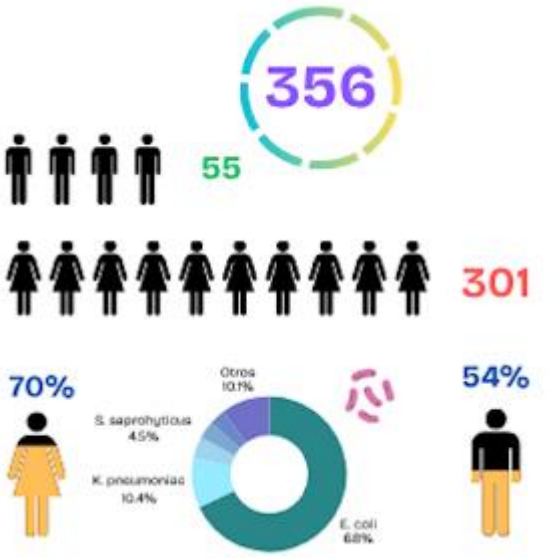

Fig. 2

Pathogen ESBL	<15 years of age	15–55 years of age	>55 years of age	Total
Negative	14	88	141	243
Positive	0	9	32	41
Total	14	97	173	284
Pearson	chi2(2) = 6.7607 Pr = 0.034			

P 121

Profile and clinical impact of C reactive protein results in children evaluated for febrile illness in the Democratic Republic of Congo

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Background: Adequate management of febrile illness (FI) in low-resource settings is challenging. Antibiotics are often prescribed by default. Biomarkers can help distinguish bacterial from non-bacterial infections and potentially reduce antibiotic use. C-reactive protein (CRP), available through several affordable POC tests, has not been robustly studied in the highly malaria-endemic regions of Central- and West Africa. The FIKI² study prospectively investigated the aetiologies and CRP profiles of FI in two clinical sites (Kinshasa and Kimpese) of the Democratic Republic of Congo.

Objectives: To describe the CRP profiles in the subgroup of children (<16 years) with fever across the diagnoses and outcomes, and to assess the impact of implementation of CRP testing on antibiotic prescription and outcome.

Results: 914 febrile children were enrolled from March 2021 to April 2023, of whom 679 had CRP results. Overall clinical resolution rate was 92.2% at day 21. Respiratory tract syndrome (RTS) and undifferentiated fever (UF) were the most common clinical presentations in 345 (37.7%) and 298 (32.6%) patients. Malaria accounted for 238 (26.0%) cases. Median CRP in malaria was 98 mg/L. CRP result was normal (< 10 mg/L) in 103/242 (42.6%) and 76/140 (54.3%) patients with malaria-negative RTS and UF. No patients with life-threatening infections (meningitis, sepsis, clinically relevant bacteremia), and none of the patients who died (n=5) had a normal CRP value. The empiric antibiotic prescription rate throughout the study was 45.7%. It significantly decreased from 52.1% in the first year following CRP implementation to 39.2% during the second year (p<0.001), a reduction of 24.8%. It particularly decreased in patients with malaria-negative UF or RTS and a normal CRP result from 45.5% to 3.6% (p<0.001), a reduction of 92.1%. No difference in outcome was observed in this group of patients between those who received or did not receive antibiotics (resolution rate of 98.0% and 95.9% respectively, p: 0.5).

Conclusion: CRP values were elevated in patients with malaria. In contrast, it was normal in about half of those with (malaria-negative) RTS or UF. Implementation of routine CRP determination was followed by a significant reduction in antibiotic prescriptions, especially in patients with malaria-negative UF and RTS, and low CRP values. Withholding antibiotics in this subgroup was not associated with a negative outcome.

P 122

Evaluation of point of care Hepatitis C antibody testing in methadone clinics on the HCV care cascade – EPOCH study

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Background: Novel strategies on enhancing Hepatitis C (HCV) testing and treatment uptake, especially in low- and middle-income countries (LMICs), is the crucial research priority. People who use drugs (PWUD) are the key target group for eliminating the HCV epidemic. The HCV Care Cascade tracks progress toward HCV elimination, focusing on diagnosis, treatment, and cure rates. Data on the effectiveness of rapid tests for linking individuals to care is limited, highlighting the need for further research.

This study aims to investigate HCV infection characteristics among PWUD in Ho Chi Minh City, Vietnam, and describe the Hepatitis C Care Cascade within this group.

Methods: The prospective cohort study involved 500 PWUD attending methadone clinics in Ho Chi Minh City, Vietnam. Participants underwent point-of-care anti-HCV testing and completed questionnaires on demographics, injecting practices, and access to HCV testing. Descriptive statistics, the Mann-Whitney test, and multivariable logistic regression were applied for analysis.

Results: Co-infection rates were 32.6% for HIV-HCV and 4.0% for HBV-HCV. Anti-HCV positivity was significantly associated with older age (≥40 years), low income (≤120 USD/month), and needle-sharing behavior. Among 500 participants, 65% tested positive for HCV, and 78% of these agreed to participate in a treatment trial. Barriers to seek care and treatment included high costs, perceived lack of need, no insurance, side effect concerns, and unawareness of treatment options.

Conclusions: The study highlights the high incidence of HCV among PWUD and the need for targeted interventions in this community to achieve HCV elimination. Point-of-care testing is acceptable and could be expanded to other similar high-risk groups. Financial barriers limit treatment access, suggesting the need for free treatment and testing programs for this vulnerable group in LMICs.

Disclosure: There is no conflict of interest in presenting or publishing this study's results.

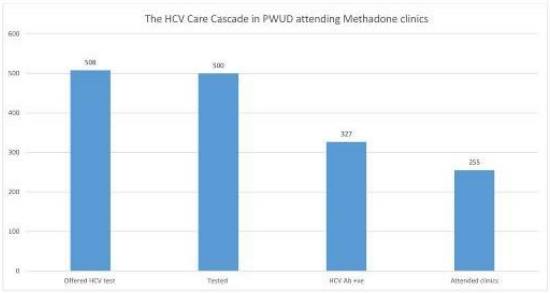
Fig. 1

*** Factors associated with being anti-HCV positive***

Characteristic	Anti-HCV test result			Logistic regression		
	NEG, N = 173[1]	POS, N = 327[1]	Overall, N = 500[1]	OR[2]	95% CI[2]	p-value
SEX						
Male	142 (33.9%)	277 (66.1%)	419 (100%)	0.91	0.51, 1.61	0.74
Female	1 (100%)	0	1 (100%)	0.00	0.00, 0.00	—
Transgender	30 (37.5%)	50 (62.5%)	80 (100%)	—	—	—
AGE GROUP						
Below 40	85 (45.9%)	100 (54.1%)	185 (100%)	—	—	—
Above 40	88 (27.9%)	227 (72.1%)	315 (100%)	**2.16**	**1.39, 3.35**	**0.001**
EDUCATION LEVEL						
Secondary school or below	146 (33.8%)	286 (66.2%)	432 (100%)	1.32	0.73, 2.40	0.355
High school or higher	27 (39.7%)	41 (60.3%)	68 (100%)	—	—	—
MONTHLY INCOME						
Below the poverty line	39 (23.2%)	129 (76.8%)	168 (100%)	**1.72**	**1.08, 2.75**	**0.024**
Above the poverty line	134 (40.4%)	198 (59.6%)	332 (100%)	—	—	—
HOMELESS STATUS						
No	171 (34.4%)	326 (65.6%)	497 (100%)	3.61	0.13, 104.0	0.455
Yes	1 (50%)	1 (50%)	2 (100%)	—	—	—
Decline	1 (100%)	0 (0%)	1 (100%)	0.00	0.00, 0.00	—
TOTAL YEARS OF DRUG ADDICTION						
≤10 years	98 (38%)	160 (62%)	258 (100%)	0.78	0.52, 1.18	0.241
>10 years	75 (31%)	167 (69%)	242 (100%)	—	—	—
DRUG USE FREQUENCY						
Never	135 (35%)	251 (65%)	386 (100%)	—	—	—
Every month	21 (31.3%)	46 (68.7%)	67 (100%)	1.32	0.73, 2.40	0.36
Every week	11 (29.7%)	26 (70.3%)	37 (100%)	1.5	0.69, 3.46	0.29
Decline	6 (60%)	4 (40%)	10 (100%)	0.77	0.19, 3.01	0.71
SHARE NEEDLE(S)						
No	159 (43.9%)	203 (56.1%)	362 (100%)	—	—	—
Yes	13 (9.6%)	123 (90.4%)	136 (100%)	**7.09**	**3.8, 13.3**	**0.000**
Decline	1 (50%)	1 (50%)	2 (100%)	1.56	0.09, 27.48	0.763

OR = Odds Ratio, CI = Confidence Interval

Fig. 2



P 123

Prevalence of occult Hepatitis B and Hepatitis E in blood donors, pregnant women, and HIV patients in southwestern Cameroon

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Background: Occult hepatitis B infection (OBI) is characterized by undetectable hepatitis B surface antigen (HBsAg) despite the presence of hepatitis B virus (HBV) DNA at low levels (<200 IU/mL) in serum. OBI poses a significant challenge to blood safety, particularly in HBV-endemic regions such as Cameroon, where screening primarily relies on HBsAg testing. Additionally, hepatitis E virus (HEV) in chronic HBV carriers may exacerbate liver disease. While most HEV infections are self-limiting, third-trimester pregnant women and immunocompromised individuals face an increased risk. This study aimed to investigate the incidence and genotype characteristics of OBI and HEV prevalence in blood donors, third-trimester pregnant women, and HIV patients in Southwestern Cameroon.

Methods: A cross-sectional study conducted in 2023 included 712 consenting participants: 289 blood donors, 233 HIV-

positive patients, and 190 pregnant women. Serum samples from all participants were tested for antibodies against HBV core (anti-HBc) and surface (anti-HBs) antigens, as well as HBV DNA. HEV testing was also performed on serum samples for anti-HEV IgG and IgM antibodies, and HEV RNA was extracted from both serum and matching fecal samples, targeting ORF1 and ORF2. Sanger sequencing was carried out on all HBV-DNA and HEV-RNA positive samples to determine the genotypes. Risk factors for HEV were assessed using a structured questionnaire.

Results: The findings revealed that 58% of blood donors tested positive for anti-HBc, 29% for anti-HBs, and 26% for both antibodies. OBI was confirmed in 4.5% of blood donors, with genotypes A and E predominating. Notably, 70% of OBI sequences in genotype E exhibited the sA184V substitution, which is associated with HBsAg detection failure, including immune escape variants. HEV seroprevalence was 7% for anti-HEV IgG and 2% for anti-HEV IgM, with the highest IgG prevalence (9%) observed in blood donors. The overall HEV RNA positivity was 1%, with blood donors showing the highest rate (2%), representing genotypes 3a and 3e. No significant associations were found between HEV seropositivity and dietary risk factors.

Conclusion: These findings underscore the risk of transfusion-transmitted HBV and highlight the presence of HEV. Given the high rate of OBI and HEV infection, the study recommends the implementation of nucleic acid testing (NAT) for HBV in blood donation centers to ensure blood safety and calls for enhanced HEV surveillance in Cameroon.

P 124

Hepatitis B cascade of care among migrants utilising primary care services in Catalonia, Spain

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Introduction: Although Europe is a low-prevalence region for hepatitis B virus (HBV) infection, HBV disproportionately affects migrant populations.[1] Few studies identify gaps in HBV prevention, diagnosis, and referral from Spain's primary care level[2][3], the main access point to the health system.

Objectives: This study aims to comprehensively describe HBV screening, diagnosis, referral, and vaccination practices among migrants attending eight primary care centres (PCCs) in Catalonia and identify patterns of primary care services throughout the care cascade.

Methods: A retrospective cohort study was conducted using data routinely collected in the electronic patient record from January 2013 to December 2018 at eight PCCs in Catalonia, Spain. The analysis included newly arrived African, Asian, Latin-American and Easter European migrants aged >16 with documented visits. The cascade of care was defined in sequential steps: screening, triple-panel test, HBsAg positivity, referral to specialist care, and vaccination eligibility and administration. Rates/frequencies will be described by year and by region of origin.

Preliminary Results: Between 2013 and 2018, 12,134 migrants had their first visit to the included PCCs. Of these, 24.2% (2,937) underwent a HBV test; 24.9% (730) were assessed through a complete triple-panel, while 6.6% (195) had at least HBsAg and anti-HBc tested. A positive HBsAg was identified in 122 migrants (4.5%), with the highest rate found among migrants from Sub-Saharan Africa [68/492 (13.8%)]. Overall, 75/122 (61.5%) were correctly registered with an ICD code in the system and 51/122 migrants (41.8%) were referred to specialist care. Among HBsAg-negative individuals, 782 were eligible for HBV vaccination, but only 43/782 (5.5%) recorded a first vaccination dose.

Conclusions: Understanding the cascade of HBV care for migrants is vital for improving care quality and health outcomes. Our findings indicate a need to enhance screening and prevention efforts and optimize referral processes for positive cases.

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P 125

Blood donation as powerful resource for WNV molecular epidemiology in Germany

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West Nile virus (WNV, *Orthoflavivirus nilense*) belongs to the Flaviviridae family and has ~11 kilobase long positive sense single stranded genome. In the enzootic cycle, migratory birds serve as amplifying hosts while ornithophilic mosquitoes of the genus Culex spp. are the main vectors. Most human cases are asymptomatic (~80%) while approximately 20% are developing west nile fever. To date, nine defined lineages have been described with wide geographic presence in Africa, Eurasia and Americas. The primary circulating WNV lineage in Europe was lineage 1 until 2004, when lineage 2 emerged in Hungary.1,2 While the initial detected epizootic event occurred in 2018, the first autochthonous human case in Germany was reported in 2019.3 Due to the regulation, blood products should be tested for WNV with a nucleic acid based diagnostic method to ensure transfusion safety.4 As humans pose as dead end hosts the viraemia of WNV is low and holds for short period of time which makes it challenging to get genetic information. We developed a novel method for Illumina sequencing platform which is using ~268 mean amplicon length. This method is suitable for samples with low viral load such as asymptomatic patients. The sensitivity of the method is 6,9 copy/µl where 70% of the genome is recovered. From 43 positive blood donor we were able to generate 29 suitable genomes for further analysis. We conducted a novel phylogeographic analysis with Hungary is a hotspot for WNV lineage 2 in Europe and has major contribution to WNV spread across Europe. WNV introduced to Germany multiple times and has endemic circulation at multiple regions. Virus genomics is essential for understanding the circulation and

spread of a pathogen. Additionally, it plays a crucial role in evaluating diagnostic accuracy and vaccine efficacy. Based on our result, blood donation could be a valuable resource for molecular epidemiology of WNV.

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Fig. 1

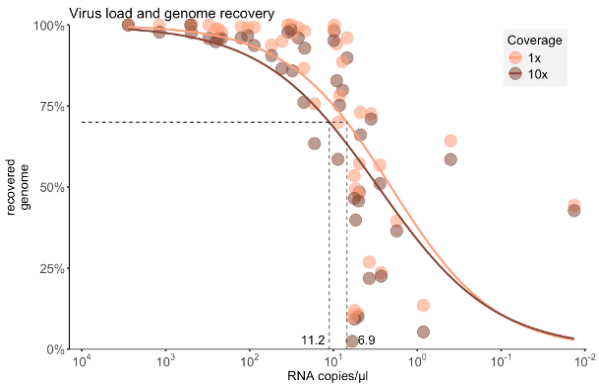
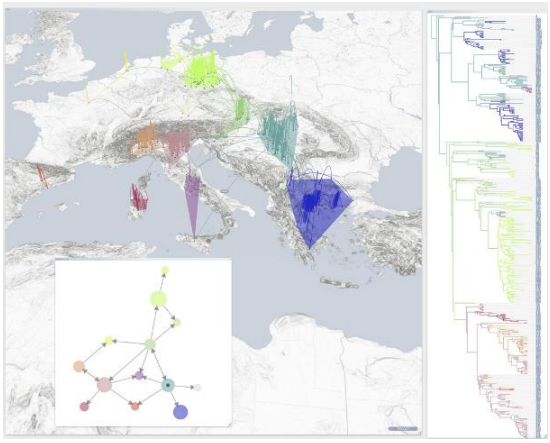


Fig. 2



P 126

Screening IGM and IGG Dengue antibodies among asymptomatic blood donors in a middle income setting country – Should tropical diseases testing be performed to improve transfusion safety?

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Background: Tropical diseases such as Dengue are often underdiagnosed or misdiagnosed as malaria in LMICs. The burden of such diseases is therefore unclear due to insufficient data. The aim of this study was to retrospectively assess the seroprevalence of dengue among healthy adults who donated blood at the Yaounde General Hospital(Cameroon) between November 2023 and June 2024.

Methods: Random selection among stored sera of blood donors was performed. IGM and IGG dengue antibodies were screened at LABOREB using a colorimetric enzyme immunoassay. Demographic data and donor"s consent were collected from individual donor"s form. Ethical clearance was obtained from the University of Mountain.

Results: ninety (90) samples were screened, with a male predominance of blood donors (93.3%). Mean age of donors was 31.4 years± 5. For lgM antibodies, 31.1% of donors were positive and 13.3% had an equivocal reaction; 26.7% of donors had positive IGG antibodies and 4.4% and equivocal reaction. In terms of infection status, 35.5% of screened donors showed absence of infection , 35.5% recent dengue infection, 15.6% ancient infection and 13.4% had an equivocal status. The age group 20 – 30 years had the highest positivity rates for both IGM and IGG. No significant difference was observed according to the area of residence (urban versus sub urban area).

Discussion and results: About 35% of donors showed a recent infection to dengue virus. This prevalence may be higher if we consider the 13.3% rate of equivocal reactions. As all these donors were asymptomatic and considering the fact dengue is a blood transfusion transmittable disease, additional testing for tropical diseases in LMICs may be advised. However, with challenges of blood supply in these settings; investigation of infection transmission dynamics through blood transfusion is primarily needed.

P 127

The burden of Dengue in Latin America and Asia – Epidemiological data over 57 months of follow-up in a phase 3 trial

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Question: Can the placebo arm data from Takeda's phase 3 trial, DEN-301 (NCT02747927) offer a rare opportunity to assess the standardized burden of febrile illness, serotype-specific virologically confirmed dengue (VCD), dengue hemorrhagic fever, dengue shock syndrome, and severe dengue across time, countries, and regions?

Methods: The phase 3 DEN-301 trial enrolled 20,099 participants aged 4–16 years in Asia (the Philippines, Sri Lanka, Thailand) and Latin America (Brazil, Colombia, Dominican Republic, Nicaragua, Panama), of which 6,687 were randomized to placebo. Of these, 91% completed the study follow-up of ~57 months (30,620.6 person-years [p-y]).

Results: A total of 9,698 febrile illnesses were recorded through active surveillance, of which 98% were tested for

dengue virus (DENV) using RT-PCR, and 5.8% (560 cases) were confirmed as dengue. This proportion increased with age (among those 4–5 years: 4.7%, 6–11 years: 5.8%, 12–16 years: 6.9%). By region, the incidence of dengue was more than twice as high in Asia (incidence rate [IR]=2.7/100 p-y) than Latin America (IR=1.2/100 p-y). Over 25% of VCD cases were hospitalized (IR=0.5/100 p-y). The decision to hospitalize was per local standard of care and rates of hospitalized VCD ranged widely by country (eg, 4.4% in Panama, 8.3% in Brazil, 68.0% in Sri Lanka). From December 2018 (study month 28) through ~57 months of follow-up, there was a decrease in VCD incidence/100 p-ys (months 28–39: 3.0, months 40–51: 0.7, months 52–57: 0.4). Of the 560 VCD cases over 57 months, DENV-1 was the most predominant serotype detected (41.1%), followed by DENV-2 (34.5%), DENV-3 (20.4%), and DENV-4 (4.1%).

Conclusions: These data allow a standardized comparison across populations and time (2016-2022). The burden of dengue in children aged 4–16 years was higher in Asia than in Latin America. Different local standards of care may explain the variable hospitalization rates. The observed decrease in dengue incidence may reflect epidemiological trends or more probably the impact of social restrictions during the COVID-19 pandemic. These findings may help validate assumptions needed to design public health interventions such as vaccination programs.

Funding: Takeda Pharmaceuticals International AG, Zürich, Switzerland

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P 128

The evolution of Dengue fever trends in central-west Brazil – A 10-year analysis of incidence from 2013 to 2023 in Mato Grosso do Sul

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Question: On January 3, 2024, Dourados, Mato Grosso do Sul, was the first Brazilian municipality to implement a mass vaccination campaign using Takeda"s tetravalent dengue vaccine, TAK-003. An observational real-world study estimating vaccination impact on the incidence of dengue versus an unvaccinated control population in the same state (Ponta Porã) is currently ongoing. What was the historical incidence of dengue from 2013-2023 in Dourados and Ponta Porã in the prevaccination period?

Methods: This descriptive, retrospective, epidemiological study used aggregated dengue data from the Brazilian Notifiable Diseases Information System (SINAN) collected from January 2013 to December 2023 in individuals aged 4-60 years from Dourados (population=206,252) and Ponta Porã (population=78,545). Annual incidences of suspected and confirmed dengue from 2013-2023 were divided by population size and expressed as cases per 100,000 population. Data were stratified by sex, age group (4-17, 18-45, and 46-60 years), and calendar month.

Results: A total of 19,349 suspected (incidence=953) and 11,439 confirmed (incidence=563) dengue cases were reported in Dourados and 13,260 suspected (incidence=1628) and 6861 confirmed (incidence=842) in Ponta Porã during the study period. The lowest incidence rates were observed in the 4-17 years group in both municipalities (confirmed: Dourados=217, Ponta Porã =295) with higher incidence rates observed in the 18-45 years group (confirmed: Dourados=681, Ponta Porã =1089). Poisson regression analysis showed a reduced relative risk of dengue for the 4-17 years group versus 18-45 years for both suspected and confirmed dengue cases and for both municipalities (incidence rate ratio: 0.27-0.32). Males had lower incidences of suspected (Dourados=781, Ponta Porã=1345) and confirmed (Dourados=483, Ponta Porã=692) dengue cases than females (suspected: Dourados=1121, Ponta Porã=1889; confirmed: Dourados=642, Ponta Porã=978). Peak incidence rates were observed in March-April, with lowest rates in August-October. This seasonal pattern was consistent across Dourados and Ponta Porã.

Conclusions: This historical analysis reveals critical dengue transmission patterns, which were similar in Dourados and Ponta Porã, highlighting key periods of outbreaks and seasonal dynamics. These insights provide a baseline for analyzing the impact of the ongoing TAK-003 vaccination program in Dourados.

P 129

Genomic and clinical epidemiology of moderate and severe cases of SARS COV2 infection in Benin

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Questions: During COVID-19 pandemic, according to WHO recommendations, Benin implemented a response strategy with several components including genomic surveillance. This made it possible to detect and identify the different variants of SARS COV 2 which were prevalent during successive epidemic waves. This study aimed to describe the genomic and clinical epidemiology of SARSCOV 2 in Benin.

Methods: A descriptive and analytical cross-sectional study was conducted on data collected over 14 months between October 2020 and December 2021 and included subjects with moderate and severe forms of covid-19 confirmed by quantitative PCR, hospitalized in epidemic treatment centers in Benin. Sociodemographic, clinical, biological and therapeutic variables were collected. Genomic sequencing was performed.

Results: Men were predominant with a sex ratio of 1.93. The oldest was 84 years old and the youngest 1.5 years old. Littoral, Atlantique and Ouémé were districts most affected. The comorbidities found were HBP, diabetes, obesity, heart disease, HIV AIDS, sickle cell disease, renal failure. No subjects were vaccinated against covid-19. Severe cases accounted for 35% with a predominance of stage 2. Overall 11 variants have been identified: Alpha, Beta, Eta, Delta, B.1.1.318, B.1.619, B.1.620, R.1, C.36.3, AV.1 and AZ.2. The predominant were: Eta, B.1.1.318 and Alpha. Mean length of hospitalization was 9.63 days ± 3.59. Most patients presented with D-dimer and prothrombin disturbances and anemia. Mortality was 16.2%, the significantly highest number of deaths was observed with the Eta variant. Clinical and biological parameters were not significantly different between dominant variants.

Conclusion: Eta variant was the most virulent in Benin with more severe cases and deaths.

P 130

Profil épidémiologique des personnes atteintes de choléra selon les caractèristiques de la zone de santé – RDC

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Contexte: le choléra est un problème majeur de santé publique en raison de sa forte mortalité chez les personnes touchées ;dans les régions épidémiologique,80% des cas notifiés par OMS dans le plan Mondial proviennent d'Afrique subharienne.En RDC,le profil des personnes infectées par le choléra est moins connu,et les stratégies pour le prévenir par une campagne de vaccination sont mal faites.

Objectif: Déterminer différents profils de personnes touchées par le choléra

Méthode: Une étude analytique rétrospective a été menée dans 17 zones de santé de la ville province de kinshasa.la collecte active des données sur les cas suspects de choléra identifiés entre 2020 et 2024 a été effectuée sur base des registres nationaux disponibles dans les 17 zones sélectionnées.ces données ont été organisées dans les tableurs Excel avec les variables, année, semaine zone de santé, âge, sexe,profession pour la comparaison entre les groupes et la proportion ;les statistiques des tests (chien carré et test de Fisher) ont été réalisées a l'aide de la version 21 du logiciel SPSS pour chaque période d'évolution.les proportions de chaque variable ont été calculés a partir de leur intervalle de confiance fixé à 95%.

Résultats: Les commerçants,les pêcheurs,les élèves,les étudiants,les agriculteurs,les voyageurs et les conducteurs sont les plus touchés dans les zones endémique avec une proportion de 78,5%(IC à 95%:75,9-80,8).La tranche d'âge la plus touchée est celle de 5-14 ans avec 30%(IC 95%:29,5-31,1)dans les zones endémiques et 25,7%(IC95%:22,9%-28,8%)dans les zones non endémiques.la proportion était respectivement de 28,7%(IC à 95%:27,3-30,7%),20%(IC à 95%:27,1-29,3)et 25,9%(11,5-44,7) dans les phases évolutives des zones d'endémie d'accalmie,de pic épidémique et de redémarrage dans la tranche d'âge de 5-14 ans.

Conclusion: les résultats de cette étude restent un défi car la stratégie sera appliquée en termes d'âge et d'autres aspects.une approche multidisciplinaire est essentielle pour prévenir le choléra.

Mots-clés : Profil épidémiologique, choléra,zone de santé,RDC

Fig. 1

P 131

Cases presenting to the emergency room of a Municipal Hospital in Ghana – A Two Year Review

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Research question: What is the burden of emergency cases at the Hohoe Municipal Hospital in Ghana?

Methods: A retrospective review was conducted at the Accident & Emergency Centre (A&E) of the Hohoe Municipal Hospital, Ghana. The study included all patients treated at the A&E from January 1st, 2022 to December 31st, 2023. The time of presentation were classified into (A=Weekday from Monday to Thursday, B=Weekend Friday to Sunday). Discharge dates were defined by depature from the A&E, either through discharge to home, transfer within the hospital, referral to tertiary care, patient depature against medical advice or death. Clinical presentation and diagnosis were transcribed and converted into ICD-11 classifications. Length of stay was calculated from admission to exist from the A&E. Logistics regression was performed to test the association between age, sex, length of stay, week type and number of pregnancies with mortality outcome (death) as the reference group. Statistical significance level was set at $p < 0.05$ and confidence interval at 95%. Data were coded, stored and analysed using R Statistical Software (v4.3.2).

Results: A total of 2609 patients were admitted. This included 1,449(57.1%) males and 1,088(42.9%) females. The majority of patients (58.9%) were transferred to another unit in the hospital, while (24.1%) were discharged home. Three hundred and thirty patients (13%) died. The leading cause of admission were Malaria (11.4%), Stroke (6.6%) and essential hypertension (5.4%). The average length of stay was (1.8). While there were clearly seasonal variations in the presentation of infectious dieases, the average number of cases seen per weekdays was (1) and per weekend was (2). Advanced age was significantly associated with mortality.

Conclusion: Although disease of infectious origin still dominates, Non-Communicable diseases form an important

part of cases presenting at the A&E of this hospital. Equipping the hospital to respond appropriately to burden of cases should be based on the profile of diseases that presents commonly to the hospital.

Fig. 1

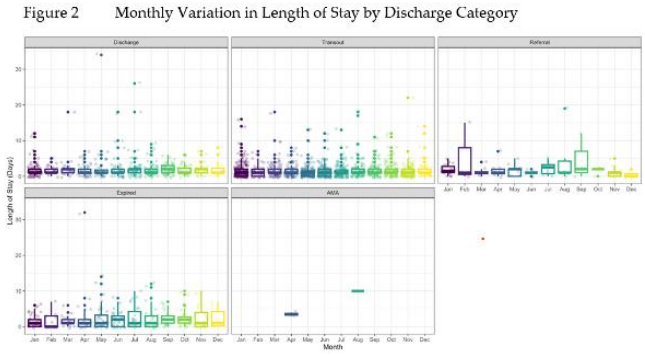
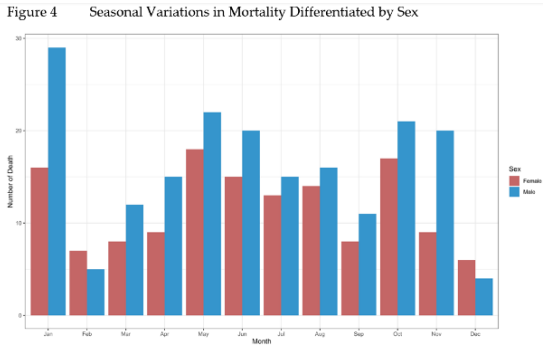


Fig. 2



P 132

Diagnoses and outcomes of critically ill patients admitted to a high dependency unit of a rural referral hospital in Tanzania – A prospective cohort study

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Background: Evidence on outcomes of patients admitted to high dependency units (HDUs) of hospitals situated in rural sub-Saharan Africa is unknown. In this study, we describe the implementation of the HDU of a referral hospital in rural Tanzania and patient's characteristics, diagnoses, and outcomes of critically ill patients admitted to this HDU, and factors associated with in-hospital mortality.

Methods: This prospective single-center cohort study was conducted in the newly implemented HDU of a rural referral hospital in Tanzania. All patients admitted to the HDU within routine care were eligible. We performed descriptive analyses, univariate- and multivariate models and the area under the receiver operating characteristic curve for predictors of in-hospital mortality.

Results: From April 4th 2023 to March 29th 2024, 491 admitted patients were included and followed-up until hospital discharge. Median patients' age was 46 years (IQR 29-65); 259 (53%) were females. The most common diagnoses were sepsis (N=96, 20%), hypertension (N=91, 19%), diabetes mellitus (N=84, 17%) acute kidney injury (N=66, 13%), decompensated heart failure (N=64, 13%), aspiration pneumonia (N=60, 12%), and stroke (n=59, 12%). Mortality during HDU and hospital stay was 30% and 37%, respectively. Predictors of in-hospital mortality were age ≥ 45 years versus 18-44 (adjusted Hazard Ratio (aHR) 1.56, 95%CI 1.07-2.28, p=0.03), blood pressure <90mmHg (aHR 2.33, 95%CI 1.48-3.81, p<0.001), Glasgow Coma Scale score ≤ versus 14-15 (aHR 2.13, 95%CI 1.24-3.64, p=0.02) and oxygen saturation at room air < 90% (aHR 1.62, 95% CI 1.04-2.51, p=0.03). The area under the curve predicting in-hospital mortality was 0.69 (95%CI 0.65-0.73) for the NEWS and UVA score, 0.66 (95%CI 0.62-0.70) for the MEWS score, and 0.65 (95%CI 0.61-0.69) for the qSOFA score.

Conclusion: Sepsis and non-communicable diseases were the most common diagnoses. Mortality in rural settings remains high. Scores such as UVA, MEWS, NEWS and qSOFA predicted in-hospital mortality with a moderate accuracy. Decentralisation of critical care is needed to ensure rapid care of seriously ill patients and there is an urgent need for scaling up HDU and implementing intensive care in rural settings.

P 134

Critical care in Malawi – The influence of corruption

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Background: Beds in critical care are an extremely valuable ressource in Malawi. Non-medical decisions influence admission criteria. Especially detrimental and difficult to investigate is corruption.

Objectives: To evaluate for the first time the real life influence of corruption on our critical care decision making.

Methods: During 2024 we distributed a totally voluntary and completely anonymous questionnaires to our fourth year medical students in anaesthesia and intensive care and asked them about their practical experiences with corruption in the health system and especially in anaesthesia, emergency medicine and critical care.

Results: We received 38 questionnaires from 76 possible (50 %). 32 respondents were male, 6 female (15.8 %). 14 (37 %) filled out all questions, no imputations were done. 22 respondents consider corruption in medicine as widespread (57.9%). 24 cosider ICU especially at at risk for bribes (63.2%).88 (!) different groups were mentioned being inclined to bribe. Politicians got 20 references (22.7 %), the "rich": 17 (19.3%), people of social power (famous, media): 9 (10.2%), ICU-"in-charge": 12 (13.6%), anaesthetists: 10 (11.4%), nurses: 2 (2.3%), other med. staff: 4 (4.5%), the poor 1 (1.1%), people with children 1 (1.1%), government officials: 3 (3.4%), 9 had "no "idea" or no answer: (10.2%). 56 groups with a background in health were seen more vulnerable than the 32

without (63.6% /36.4 %). No differentiation was made by the candidates between the sexes, the religions, "race", age or citizenship. 40 times aims of corruption were dentified: Early ICU admission (7 participants), better treatment (6), elites have an "intrinsic superiority complex" (1), rich think they can buy all (3), relatives of nurses are preferred (2),the "right"of rich to get better treatment (1),desperation (2), health workers are preferred (2), staff "deserve" better treatment (1), help loved ones (4), not well payed well (2), in-charge wants money (1), high ranks overrule junior doctors decisions (2), powerplay of politicians (4 bribe is justified for "the element of subjectvity" in medical decisions (1), give better care even when ICU is not necessary (1).Four participants thought that all ICU personal follow ethical principles, six that corruptio and one only heard rumours.

Conclusion: Corruption challenges our ICU-policies. We were surprised on the openness of our collaborators and have to congratulate them on their courage.

P 135

Navigating ethical waters – Balancing cultural values and patient safety in research within resource-limited settings

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Introduction: Ethical considerations in research conducted in resource-limited settings present significant challenges, requiring a careful balance between respecting cultural values and ensuring patient safety. Aligning research goals with the needs of the local context becomes more complex when economic constraints hinder the sustainability of effective interventions. A critical ethical issue in such settings is the ability of participants particularly those from educationally and economically disadvantaged backgrounds to fully understand informed consent processes. Researchers" experiences in navigating these ethical complexities while safeguarding participant interests are crucial to improving research practices. The interplay between maintaining international research standards and addressing local ethical dilemmas is especially evident in cases such as Buruli ulcer clinical trials in Ghana.

Methods: This study utilises narrative synthesis, combining literature review with the experiences of multidisciplinary researchers. Semi-structured interviews are employed to explore the ethical landscape where cultural values intersect with concerns about patient safety, limited resources, and administrative procedures. The research also examines how researchers co-create and design studies with local communities to meet the needs of target populations while adhering to ethical guidelines. A particular focus is placed on ensuring informed consent is comprehensible, especially for populations with low literacy or facing language barriers. Furthermore, the study investigates the role and competence of Institutional Review Boards (IRBs) in overseeing research procedures.

Findings and Conclusions: Key findings indicate that researchers in low-resource settings often face dilemmas in balancing high-standard research protocols with local cultural norms. Engaging communities in the co-design of research enhances informed consent and reduces the risk of exploitation. Planning for the sustainability of interventions, including capacity-building and exit strategies, is essential to ensure lasting impact. However, major challenges include inadequate funding, delays in approval processes, and difficulties in managing the complexities of ethical oversight within limited timeframes and resources.

Ensuring patient safety requires balancing cultural values and ethical principles, with collaborative efforts from policymakers, health workers, researchers, and participants.

P 136

The dubious case of Urbanorum – A call to strengthen global pathogen veri cation mechanisms

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The detection and validation of novel pathogens have become increasingly important, as seen with the emergence of COVID-19 and mpox. Current detection and response capacities, especially in resource-poor regions, are insufficient, highlighting the key role of clinical laboratories. Despite the strides made by national and supranational agencies in targeting viruses and bacteria, parasites have been largely overlooked. The case of Urbanorum, a purportedly novel intestinal parasite reported from South America, illustrates the challenges in validating new pathogens. Compelling microscopic images have fostered belief in the existence and aetiological role of Urbanorum, posing grave challenges for health-care workers with poor parasitological knowledge, who might accept such results at face value and administer unnecessary treatments to affected individuals. Although the number of publications is scarce, these sources present a seemingly credible narrative that spreads through local social media. However, doubts about the existence of Urbanorum persist due to the absence of genetic and molecular analyses and inconsistencies in epidemiological data. This situation exemplifies the need for robust global pathogen verification mechanisms and authoritative guidance from organisations such as the US Centers for Disease Control and Prevention (CDC) and WHO to prevent misinformation and aid clinical judgement. A Latin American regional CDC could be instrumental in verifying claims of novel pathogens and providing credible guidance at both local and global levels. This Personal View emphasises the urgent need for enhanced global coordination, improved diagnostic methodologies, and reliable information dissemination to effectively manage threats regarding emerging pathogens.

Fig. 1

P 137

Improving procedures for minimally invasive tissue sampling in fatal infectious diseases

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Background: Post-mortem examinations are critical for accurate mortality surveillance, yet conventional autopsies face significant cultural, logistical, and financial challenges, particularly in low- and middle-income countries. Minimally Invasive Tissue Sampling (MITS) offers a less invasive, highly accurate alternative to conventional autopsies, though its diagnostic precision depends on sampled tissue quality influenced by procedural and environmental factors.

Objective: This study aims to improve procedures for minimally invasive tissue sampling in fatal infectious diseases.

Methods: A prospective observational study will be conducted at the Institute of Legal Medicine, University Medical Center Hamburg-Eppendorf, Germany. Physicians with variable MITS experience perform standardized sampling procedures on decedents with ascending post-mortem intervals, collecting tissues from different organs using a variety of techniques and equipment. Statistical analyses, including correlation and regression analyses, will be applied to assess the impact of these variables on sample integrity and diagnostic adequacy.

Expected Outcomes: The study will identify critical procedural and environmental determinants influencing tissue sample quality. Anticipated findings will provide evidence-based recommendations for enhancing MITS protocols - such as targeted operator training and equipment optimisations - to improve diagnostic accuracy and overall mortality data reliability.

Conclusion: This study systematically examines the interplay between individual, procedural and environmental factors to optimise MITS methodology by developing standardised protocols that enhance sampled tissue quality and diagnostic outcomes. This will ultimately strengthen mortality surveillance and inform public health interventions in resource-limited settings.

P 138

Challenges in diagnosis of zoonotic parasites and the use of e-Diagnosis

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Introduction: Expertise in medical parasitology (especially morphologists) is dwindling in the developed world where it is often a neglected part of microbiology. However, with travel, migration, refugee movements, increasing immune-suppression for various other treatments and lifestyle changes bringing humans closer to animals, parasitic infections are seen regularly. Currently molecular techniques are not universally available commercially to be introduced in diagnostic laboratories. As a consequence, diagnosis of parasitic infections, especially zoonotic parasites, has become challenging and possibly missed or misdiagnosed leading to compromised management of human cases.

Method: A voluntary group of expert parasitologists from around the world including veterinary experts have formed an international group (called the e-diagnosis group) to overcome this shortfall of expertise.This group uses electronic media to communicate fast and examples will be presented to highlight how this group helps in combining expertise and tools to make a diagnosis and filling in this gap of this neglected group of microbiology specialists.

Results: By joining expertise, the group has managed to diagnose some common and uncommon parasitic infections, helping clinicians in managment of these cases. Some of these cases will be included in this presentation as examples. Many of these cases are published along with details of morphological and molecular diagnosis, some of these for the first time.

Conclusions: As expertise in clinical parasitology diminishes, combining the skills of international experts helps in diagnosis of rare or uncommon parasitic infections. Publication of such cases also adds to the medical literature as reference for medical personnel who might see similar cases in future.

P 139

Improving ePOCT+, a digital clinical decision support algorithm for children in Tanzania and Rwanda – A mixed-method and before-after analysis

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Background: Digital clinical decision support algorithms (CDSA) have been found to improve healthcare provider adherence to guidelines, by guiding clinical assessments and suggesting appropriate diagnoses and treatments. However, low uptake, acceptance, and adherence to some CDSAs hinder their potential for improving care.

Methods: This mixed-method study examined healthcare provider acceptance of proposed diagnoses by ePOCT+, a digital CDSA used in Tanzania and Rwanda (figure 1). The analysis was complemented by 13 in-depth interviews with healthcare providers to understand challenges related to the clinical content and frequently rejected diagnoses. Quantitative data were summarized using descriptive statistics, while qualitative data was analyzed using the framework method and narrative descriptions. Based on these findings, ePOCT+ was modified following validation by a national panel of clinical experts. A before-after analysis then compared diagnosis acceptance rates before and after these modifications.

Results: Between November 2021 and October 2022, 31,373 new consultations using ePOCT+ were conducted across 36 public primary health facilities in Tanzania and Rwanda. In Tanzania, 94.1% of diagnoses for children 2 months to 15 years were accepted, compared to 65.8% in Rwanda.

Qualitative feedback revealed three major reasons for rejecting proposed diagnoses: 1) mismatch between clinical judgement and proposed diagnosis based on clinical and anthropometric data (e.g. malnutrition diagnoses), 2) misunderstanding of diagnoses (e.g. Suspicion of malaria diagnosis), and 3) hesitancy to refer patients to the hospital (e.g. severe diagnoses). Adaptations to clinical algorithms based on quantitative and qualitative findings resulted in an increase in acceptance of some diagnoses (figure 2).

Conclusions: This analysis of healthcare providers' behavior and their reasoning for accepting or rejecting diagnoses proposed by digital CDSAs provided useful insights into the acceptance of clinical content. This feedback can inform refinements to the algorithms and help tailor strategies, such as targeted training, to enhance CDSA adoption.

Figure 1: Study setting and data source: A) Quantitative data: ePOCT+ data; B) Qualitative data

Figure 2: Major findings: A) Qualitative findings; B) Selection of highly rejected ePOCT+ diagnoses; C) Acceptance rate of diagnoses before and after modifications to the clinical algorithms in Tanzania

Fig. 1

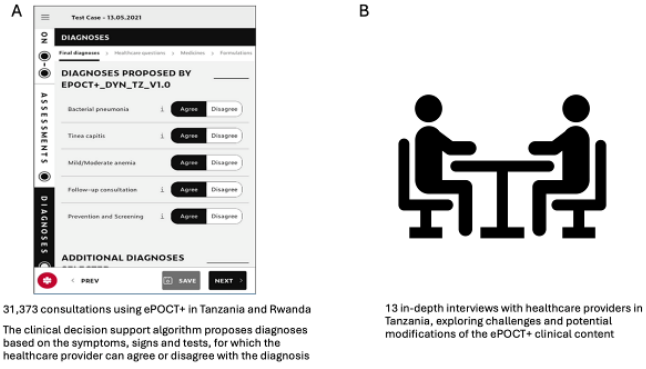
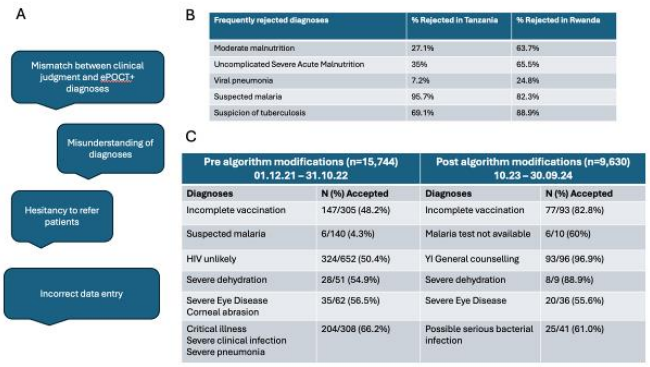


Fig. 2



P 140

Detection of anti-T. cruzi antibodies in dried blood samples - A comparison between the use of Whatman filter cards and plasma separation cards

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Question: Diagnosis of the chronic phase of Chagas disease is based on the use of serological techniques, for which an invasive blood sample (serum or plasma) is required. However, in remote areas or areas with difficult access to health systems, the collection of these samples may be impractical or inaccessible. Alternatively, dried blood samples (DBS) offer advantages over invasive samples in terms of ease of collection, transport and storage. A range of DBS collection systems is available, with Whatman filter paper cards being the most commonly used. However, there are devices such as cobas® plasma separation cards (PSC), which allow the collection of plasma samples from blood, also in dry sample format. The aim of the present study was to analyse the performance of anti-*T. cruzi* antibody detection in DBS obtained in two different devices: Whatman and PSC.

Methods: A prospective study was conducted in which 382 serum and whole blood samples were analysed. The latter were used to obtain DBS collected on Whatman and PSC cards. Serum samples (gold standard) and DBS were tested for IgG anti-*T. cruzi* using the Elecsys Chagas serological assay.

Results: Results obtained for dried blood versus serum samples are presented in Table 1. Both DBS collection systems showed high concordance with serum samples (>96%). However, the antibody index values detected in the DBS were lower than those detected in the serum samples ($p < 0.05$). Qualitative results obtained from DBS were highly concordant between the two collection systems, with only two discrepant samples (2/382; 0.5%), both positive when collected on Whatman cards and negative collected on PSC. However, the antibody index values detected in the Whatman-collected samples were higher than those in the PSC-collected samples (median 96.45 vs. 63.33; $p < 0.05$).

Conclusions: Both DBS collection devices demonstrated high percentages of sensitivity and specificity for the detection of anti-*T. cruzi* antibodies. This finding supports the use of this type of sample as a viable alternative to invasive sampling, particularly useful in contexts with limited access to health systems. Although the qualitative concordance between DBS collection devices is very high, the antibody index values obtained with PSC-collected samples are lower, which may compromise the sensitivity of the technique in samples with a low antibody index. This highlights the importance of optimizing these methods for implementation in different scenarios.

Fig. 1

Table 1. Analytical performance of dried blood samples

Type of device	Sensitivity % (95% CI)	Specificity % (95% CI)	Kappa value (95% CI)
Whatman	95.55 (92.32-97.51)	100 (94.9-99.9)	0.910 (0.862-0.958)
PSC	94.86 (91.49-96.99)	100 (94.9-99.9)	0.897 (0.846-0.948)

P 141

Challenges in schistosoma diagnostics – Comparing UCP-IF CAA and POC-CCA in preschool-aged children in three endemic regions of Madagascar

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Madagascar is burdened by a high prevalence of schistosomiasis. As no gold standard for the diagnosis of schistosomiasis is available, novel approaches using non-invasive antigen detection tests and a small quantity of urine could improve diagnostics. While evaluations of two of such tests, the up-converting reporter particle lateral flow (UCP-LF) test detecting the circulating anodic antigen (CAA), and the point of care test for detecting circulating cathodic antigen (POC-CCA), are mostly focused on school-aged children and adults to assess prevalence, investigations on preschool-aged children are scarce. The objective of this study was to estimate the prevalence of schistosomiasis in preschool-aged children in Madagascar and compare the performances of two non-invasive antigen detection tests.

A cross-sectional study was conducted between 2020 and 2021 at 42 primary health care centers in the regions of Itasy, Bongolava and Amorin"i Mania of Madagascar, involving children between 6 and 24 months during a routine medical visit where first POC CCA tests were performed following the protocol of the study. A central laboratory performed this assay a second time to all samples while testing for UCP-LF CAA was carried out at a different laboratory. The prevalence of schistosomiasis with 95% confidence intervals (CI 95%) for the two tests and the proportion of concordant results were calculated. The Spearman correlation coefficient was used to determine the association between CAA concentration and POC-CCA G-scores.

Of 2008 children included in the study, 6.2% (n=124, CI 95%: 5.2-7.3) tested positive with the UCP-LF CAA test. With the POC-CCA test, 41.2% were positive (n=828, CI 95%: 39.1-43.4), while 29.6% had trace results (n=594, CI 95%: 27.6-31.6). The proportion of concordant results on both assays ranged from 30.7% when POC-CCA trace results were considered positive, to 57.9% when they were considered negative. No correlation was observed with the Spearman correlation coefficient.

Our preliminary results from a large-scale study on children showed an unexpected prevalence of schistosomiasis in the three regions of Madagascar. A limited agreement between the two tests was observed. Precautions must be taken before considering the use of the POC-CCA test for informing public health strategies for pre-school aged children. The highly sensitive UCP-LF CAA should be implemented in more laboratories to better control and monitor the disease.

P 142

POC-CCA3 – Reducing batch-to-batch variation in the WHO-endorsed POC-CCA for Schistosoma mansoni and improving test interpretation

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Background: World Health Organization (WHO) schistosomiasis control programmes typically rely on Kato-Katz microscopy (KK) to detect *Schistosoma mansoni* eggs, although KK has limited sensitivity, especially in low-intensity infections. The WHO-endorsed point-of-care circulating cathodic antigen test (POC-CCA) is more sensitive but lacks the complete specificity of KK and has suffered significant batch-to-batch variability, compromising reliability. We evaluated an updated version, POC-CCA3, with the aim of addressing this batch-to-batch variation.

Methods: The POC-CCA3 employs recombinant monoclonal antibodies for *Schistosoma* CCA detection. School-aged children (n=870) in moderate (Tororo) and high endemicity (Mayuge) settings in Uganda were tested using KK, POC-CCA, and POC-CCA3 tests over three consecutive days. Data were analysed using descriptive statistics and Bayesian Latent Class Analysis, estimating diagnostic performance including sensitivity, specificity, receiver operating characteristic curves, and batch-specific variation and day-to-day variation.

Results: Model median prevalence estimates were 91.4% (Mayuge) and 31.2% (Tororo). A single POC-CCA3 test at G-score threshold 4 achieved estimated sensitivity and specificity, respectively, 86.3% and 92.9% in moderate and 88.1% and 95.5% in high endemicity settings. POC-CCA3 has a small increase in the probability of meeting the WHO TPP for monitoring and evaluation compared to the original POC-CCA. Overall diagnostic performance (AUC >94.2%) was higher compared to POC-CCA, with markedly lower batch-to-batch variation.

Conclusions/Next steps: The POC-CCA3 demonstrates superior performance and greater consistency compared to POC-CCA. A G-score threshold of 4 maximises performance towards WHO target product profile (TPP) requirements. However, neither test consistently meets WHO specificity requirements from a single sample, suggesting the need for continued refinement.

Fig. 1

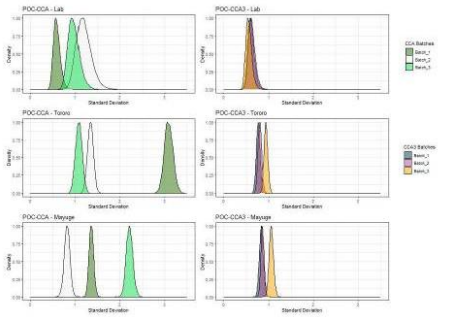

Figure 3. Posterior distributions of the standard deviation for each batch of POC-CCA (left) and POC-CCA3 (right), estimated under three conditions: Laboratory evaluation (using AWA-TCA CCA spiked urine samples) and field evaluation in Tororo and Mayuge. Each colour denotes a different batch within that setting. A smaller standard deviation indicates less variability in producing G-scores, while larger values suggest greater inconsistency in that batch. The close clustering of the POC-CCA3 batches indicates high batch-to-batch consistency.

P 146

The use of in-situ microscopy for the detection of intestinal parasites

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Parasitic diseases, particularly those caused by intestinal helminths and protozoa, are among the most common infections in the developing world. In fact, they account for the majority of diseases on the WHO's list of neglected diseases. There are several types of helminth that can infect the human gastrointestinal tract: tapeworms, roundworms and hookworms. The most common species are *Taenia saginata, Ascaris lumbricoides, Trichiuris trichiuria, Ancylostoma duodenale and Necator americanicus*, but there are hundreds of different species that can infect the human body. Protozoa

are single-celled organisms, the most common of which is *Giardia lambia*. These parasitic diseases are not limited to humans, but also affect wildlife, livestock and pets. They are transmitted by ingestion of contaminated food or water and cause anemia, diarrhea and malnutrition. These infections are easily treatable, but the lack of health structures and personnel leaves many rural areas uncovered.

Diagnosis of parasitic diseases is mostly based on manual microscopy, namely the Fecal Egg Count (FEC) methods, with protocols such as Winconsin, Kato-katz and Mc-Master being the state of the art for both human and veterinary medicine. In addition, devices have been developed to standardize and automate the process, such as FLOTAC and mini-FLOTAC, FECPAK (Techion Group Limited), Parasigth AIO (Parasight System Inc.) and VETSCAN IMAGYST (Zoetis Inc.), with varying degrees of success. Issues that remain are the diagnosis of co-infections, the performance and the cost of the procedure. That's why there is a high demand for devices that can simplify this procedure at point-of-care centres. Our current work focuses on the use of an adjustment-free in-situ microscope to visualize and identify different species in stool samples, with the aim to provide an efficient and portable tool to assist doctors in their diagnosis.

Fig. 1

P 147

Validation of PCR assays for detection of *Taenia* spp. in environmental samples

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Background: Detecting *Taenia saginata* and *Taenia solium* in environmental matrices is critical for understanding transmission dynamics and monitoring control measures. This study reports the validation of two novel PCR assays: (i) *T. saginata*-specific PCR for exclusive detection of *T. saginata* and (ii) *Taenia* species PCR capable of detecting both *T. saginata* and *T. solium*. The preliminary evaluation using a defined number of eggs under controlled laboratory conditions yielded a sensitivity of 92% for the *T. saginata*-specific PCR and 87% for the *Taenia* species PCR. This study aimed to estimate their performance in environmental samples, i.e., soil and surface water.

Methods: Fifteen liters of surface water was collected from a rainwater reservoir, assumed to be free of contamination with *T. saginata* and *T. solium* eggs. Spiking experiments were conducted with 1 and 10 eggs per liter, each in triplicate. Spiked aliquots were filtered through 41 µm (NY4104700 Merck) and 20 µm (NY2004700 Merck) Nylon Membrane Filters, followed by DNA extraction directly from the filters with the DNeasy PowerSoil Pro Kit. For soil validation, 3 kg of soil was collected from a site assumed to be free from previous contamination with target parasites. Aliquots (50 g) were individually spiked with 5, 10, or 20 *T. saginata* eggs, each in triplicate. Egg recovery was performed using the flotation method with Saturated NaCl/Sucrose solution (s.g.=1.28), followed by filtration (41 µm and 20 µm) and DNA extraction.

Results: The DNA extracted from 20µm filters consistently tested positive in both assays for spiked water aliquots, indicating the ability of assays to detect at least 1 egg per liter of surface water. In the analysis of spiked soil aliquots, PCR analysis of DNA resulted positive in all extracts from the 20µm filters, leading to the detection of 5 eggs per 50 g of soil, equivalent to 1 egg per 10 g. Of the two filters used, the 20µm filter effectively recovered the eggs.

Conclusion: Both PCR assays demonstrated the ability to detect as low as 1 egg per liter of surface water and 1 egg per 10 g of soil. Ongoing experiments aim to assess the LOD of the assays using lower levels of contamination. These assays provide efficient tools for environmental surveillance of *T. saginata* and *T. solium*, aiding in epidemiological studies and public health interventions.

P 148

Luminescent Nucleic Acid Sensors (LUNAS) – A versatile and simple molecular diagnostic test for infections diseases in low-resource setting in sub-Saharan Africa

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Infectious diseases impose a severe burden on sub-Saharan Africa (SSA), where diagnostic infrastructure remains critically limited. In the case of malaria, for which SSA bears over 90% of the global burden, primary healthcare providers rely on rapid diagnostic tests (RDTs), which have limited sensitivity for non-falciparum species and are susceptible to antigenic mutations, or microscopy that requires skilled personnel. In many rural areas, lack of diagnostic facilities forces healthcare providers to rely solely on clinical symptoms, leading to frequent misdiagnoses and inappropriate treatments that contribute to antimicrobial resistance (AMR). The COVID-19 pandemic further exposed weaknesses in diagnostic capacity, underscoring the urgent need for scalable, cost-effective, and context-appropriate diagnostic solutions.

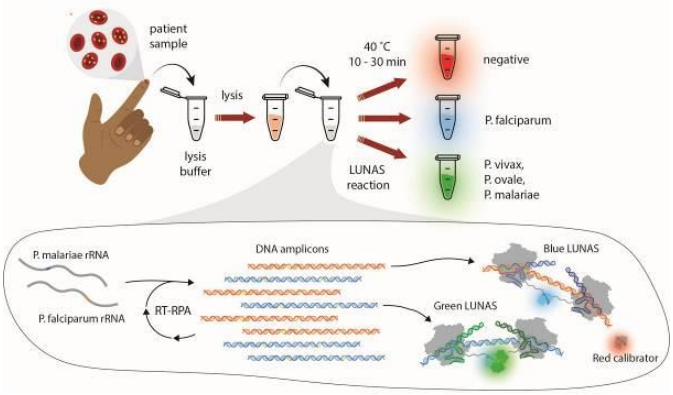
The LUNAS diagnostic platform directly addresses these challenges. LUNAS is a portable, low-cost, and highly sensitive nucleic acid detection platform that combines recombinase polymerase amplification (RPA) and CRISPR-Cas9-based split luciferase complementation, enabling rapid, on-site infectious disease testing in resource-limited settings1. LUNAS can quickly detect pathogen DNA/RNA in minimally processed samples without requiring specialized laboratory equipment., It provides diagnostic results in 30 minutes using a cheap battery-powered portable device with a simple camera-based readout. These characteristics make LUNAS particularly suited for low-resource settings, where rapid and accurate test-informed treatment can significantly improve health outcomes.

A clinical validation study of the LUNAS malaria test is being conducted in Kumi District, Uganda, by the time of this conference. The test uses color variants of the sensor to distinguish *P. falciparum* from non-*falciparum* malaria, enabling more precise treatment decisions. Following successful validation, LUNAS will be deployed through an impact-driven social enterprise model (Spotlight Dx) to ensure equitable access and maximize societal benefit.

References:

(1) van der Veer, H. J.; van Aalen, E. A.; Michielsen, C. M. S.; Hanckmann, E. T. L.; Deckers, J.; van Borren, M. M. G. J.; Flipse, J.; Loonen, A. J. M.; Schoeber, J. P. H.; Merkx, M. Glow-in-the-Dark Infectious Disease Diagnostics Using CRISPR-Cas9-Based Split Luciferase Complementation. *ACS Cent. Sci.* **2023**, *9* (4), 657–667.

Fig. 1



P 149

Evaluation of COVID-19 point-of-care tests in a rural setting of Ghana – Performance of Panbio Ag-RDT, FaStep IgM-Ab-RDT, and BioFire RP2.1*plus*

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Question: Respiratory pathogen surveillance needs rapid, accurate, and affordable COVID-19 point-of-care (POC) tests to complement confirmation with COVID-19 rRT-PCR in Ghana, as it had a longer turnaround time as well as a higher cost. This study evaluated the performance of Panbio Ag-RDT, FaStep IgM-Ab-RDT, and BioFire RP2.1*plus* in real-world clinical and field settings using Real-Star RT-PCR as the reference test.

Methods: The study was a cross-sectional study, which recruited 361 symptomatic patients of 16 years and older. Samples were collected from April 2021 to June 2023 at the Saint Francis Xavier Hospital, Assin Foso, Ghana. The overall diagnostic performance of COVID-19 POC tests, along with the impact of SARS-CoV-2 variants of concern on the diagnostic performance of the tests, were evaluated.

Results: Panbio Ag-RDT and BioFire RP2.1*plus* were good alternatives for rRT-PCR, but FaStep IgM-Ab-RDT was not. The BioFire RP2.1*plus* had the highest overall sensitivity (82.05%; CI_{95}:67.33–91.02%) and specificity (96.89%; CI_{95}:94.38–98.30%). This was followed by Panbio Ag-RDT with overall sensitivity of 74.36% (CI_{95}: 58.92–85.43%) and specificity of 97.83% (CI_{95}: 95.58–98.94%), with FaStep IgM-Ab-RDT having the least overall sensitivity (10.26%; CI_{95}: 4.06–23.58%) and specificity (95.34%; CI_{95}: 92.46–97.16%). Panbio Ag-RDT and BioFire RP2.1*plus* had an accuracy of 100% (n/N=13/13; CI_{95}: 77.19–100.00%) in detecting the omicron variant, while FaStep IgM-Ab-RDT had an accuracy of 15.38% (n/N=2/13; CI_{95}: 4.33–42.24%).

Conclusion: Performance of Panbio Ag-RDT and BioFire RP2.1*plus* suggests they could be beneficial COVID-19 diagnostic tools in real-world settings in Ghana. Panbio Ag-RDT could be deployed for rapid field screening and testing at rural healthcare facilities. BioFire RP2.1*plus* could be used for rapid and accurate testing in district and regional healthcare settings, especially in patients with respiratory infections, due to its syndromic testing technology. The usage of FaStep IgM-Ab-RDT for acute COVID-19 testing needs further investigation against validated immunological tests, e.g., ELISA.

P 150

Strategies for implementation of Point-of-care ultrasound (POCUS)

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Introduction: Medical imaging is integral to modern, evidence-based healthcare. While advanced techniques are costly, point-of-care ultrasound (POCUS) is relatively accessible, facilitates bedside clinical decision-making and may be particularly valuable in low-resource settings (LRS). We present experiences from seven years of POCUS implementation in Malawi, evaluating its adoption and integration into practice.

Methods: Since 2017, POCUS courses have been introduced at Queen Elizabeth Central Hospital in Blantyre, Malawi. Using patient records we evaluated the uptake of POCUS across several indications following these trainings. Additionally, we assessed differences in ultrasound knowledge, confidence in image acquisition and interpretation, and POCUS integration into clinical routine. Findings are presented alongside a review of POCUS implementation strategies in LRS, with data from the included studies analysed using the Expert Recommendations for Implementation Change tool1.

Results: Patient records were analysed for cases of trauma (n=96), extrapulmonary tuberculosis (EPTB) (n=106), and heart failure (n=101). Ultrasound was used in ~50% of cases, with POCUS accounting for 93%, 93% and 29% of scans, respectively. Scans were primarily performed by staff from Internal Medicine (56%) and Emergency Medicine (26%), with registrars (59%) and consultants (21%) conducting the majority. Pathological findings were identified in 18% (trauma), 66% (EPTB) and 58% (heart failure). Capability assessment results demonstrated that POCUS training significantly improved knowledge scores (Fisher"s exact p=0.002), confidence in performing and interpreting scans (p<0.001), and the integration of POCUS into clinical practice (p<0.001). Our scoping review included 10 studies describing POCUS implementation in LRS. Programmes were predominantly department-specific, and cost-benefit analyses largely focused on particular POCUS indications, limiting the generalisability of the findings. Pre-implementation needs assessments were rarely conducted, follow-up evaluations were inconsistent and trainer capacity building was rarely reported.

Conclusion: POCUS training in Malawi could be expanded to further professions and departments to promote its use. Additionally, we aim to integrate POCUS into district-level

facilities while addressing local needs and supporting local trainer capacity building.

[1] Powell et al. (2015). Implementation Science, 10, 21, DOI:10.1186/s13012-015-0209

P 151

An international community of practice on Point-of-Care ultrasound learning – A decolonizing and sustainable solution to capacity building

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Introduction: Point-of-care ultrasound (POCUS), defined as ultrasonographic imaging by the treating physician at the patient"s bedside, demonstrated impact on diagnosis and management in high- and low-resource settings. Lack of trained health workers is one of the main limitations for more widespread use of POCUS, especially in low-resource settings. Communities of practice (CoP), defined as a learning partnership among people with a communal interest in which experience and expertise are exchanged, may offer a sustainable solution and can help bridge international divides. Little is known about the dynamics of communities of practice in an international context.

Methods: we evaluated the experience of people involved in an international community of practice on POCUS in a district hospital in Tanzania: Tanzanian clinicians (Medical Officers and Clinical Officers), Dutch medical doctors specialized in Global Health, and Dutch medical students participating in a rotation health care in lower income countries. We conducted 9 focus group discussions and 17 one-on-one interviews, and observed the participants during hands-on training and during clinical work. Data was analysed using atlas.ti with grounded theory.

Results: The main themes that were recognized in this research were motivation (both financial and intrinsic), differences in learning and teaching styles, and (in)equity. Observed barriers included lack of access to a machine, language differences, hierarchy and trust in accurate use and safeguarding of the ultrasound machine. We discovered that a longitudinal approach to learning POCUS has multiple challenges, such as a high workload, making it difficult to attend sessions. However, we also observed that the CoP was successful in fostering peer-assisted learning as well as task-shifting and task-sharing.

Conclusion: Learning in an international Community of Practice could be a sustainable way to build capacity on POCUS in Tanzanian clinicians and nurses, as well as Dutch medical doctors in Global Health and Dutch medical students. It has an impact on decreasing workload for local sonographers and fosters task shifting and task sharing. The impact on clinical reasoning and decolonisation in global health will be investigated further in the next phase of the research.

Fig. 1

Fig. 2

P 152

Prevalence of terbinafine-resistant dermatophytes in schoolchildren in the Republic of Guinea

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Dermatophytosis is the most prevalent superficial fungal infection, affecting 20-25% of the global population, primarily caused by *Trichophyton* spp. Terbinafine, an allylamine antifungal that inhibits squalene epoxidase a key enzyme in ergosterol biosynthesisis the current gold standard treatment. However, terbinafine resistance, initially documented as isolated cases, has evolved into an epidemic in India. The emergence and global dissemination of terbinafine-resistant strains, notably *Trichophyton indotineae*, underscore the urgent need for enhanced surveillance. Rapid and reliable detection methods are crucial, as the standardized protocols of the European Committee for Antimicrobial Susceptibility Testing (EUCAST) are labor-intensive, impeding efficient monitoring of resistance evolution.

This study aimed to assess the performance of the terbinafine-containing agar method (TCAM) in detecting terbinafine resistance in dermatophyte strains isolated in Guinea.

We adapted TCAM for terbinafine resistance screening by reseeding previously sequenced dermatophyte strains onto Potato Dextrose Agar (PDA) supplemented with terbinafine (0.2 mg/L), chloramphenicol (0.05 g/L), and cycloheximide (0.3 g/L). The cultures were incubated at 25–28°C for 7–14 days. As quality controls, four *T. mentagrophytes* var. *indotineae* and two *T. interdigitale* terbinafine-resistant reference strains were included. The terbinafine resistance of strains growing on TCAM was further confirmed using EUCAST susceptibility testing standards.

A total of 146 dermatophyte strains were analyzed from 497 schoolchildren. Of 106 dermatophyte species tested, TCAM identified eight potential terbinafine-resistant strains: *Trichophyton soudanense* (62.5%), *Microsporum audouinii* (25%), and *Trichophyton violaceum* (12.5%). However, only one strain, *Trichophyton rubrum*, was confirmed as terbinafine-resistant, with a minimum inhibitory concentration (MIC) of 2 mg/L, while the remaining seven were classified as susceptible by EUCAST standards.

Our findings validate the efficacy of TCAM as a rapid screening tool for terbinafine resistance in dermatophytes. This study also provides the first evidence of terbinafine resistance in the Republic of Guinea, with a prevalence of 0.7%. Further investigations are warranted to monitor resistance-associated genetic markers and track the evolution of terbinafine-resistant strains.

Keywords: Dermatophyte, Resistance, Terbinafine, *Trichophyton* spp., Guinea

Fig. 1

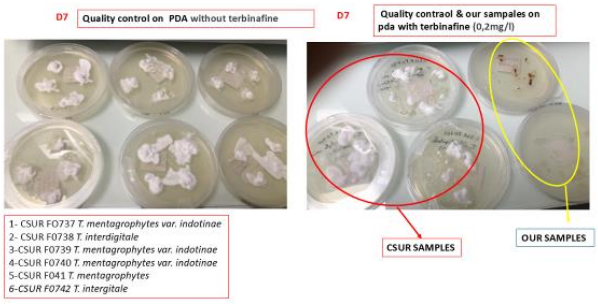
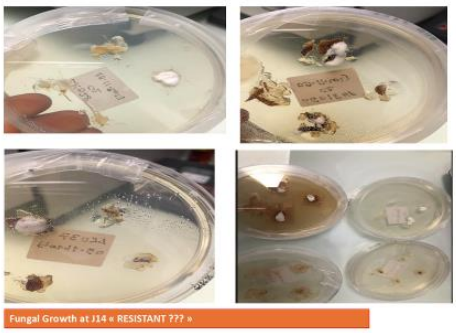


Fig. 2



P 153

Dermatological diseases on the pigmented skin in patients from Ethiopia compared to patients with lighter pigmented skin

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The typical skin conditions seen in outpatient clinics in Ethiopia are not vastly different from patients from other parts of the world. However, the clinical presentation of common skin diseases can vary significantly on pigmented skin. In Ethiopia, the majority of the population has Fitzpatrick skin type V, with fewer individuals having type VI. Diagnosing skin diseases can be particularly challenging for clinicians who lack experience with darker skin tones, especially those from outside Africa. For example, vitiligo can sometimes be mistaken for tuberculoid leprosy and vice versa, which may discourage individuals from seeking medical care in fear of stigmatization (1). A big group of skin diseases are infections of the skin. Among the most common conditions is Tinea capitis, which affects an estimated 25–30 % of school-aged children in Ethiopia (2). The clinical presentation of Tinea capitis in Ethiopia typically includes gray, widespread scaling patches with minimal signs of inflammation. Due to the common hairstyle of Ethiopian female patients, the characteristic reversible alopecia can be difficult to detect (pict.1). A potassium hydroxide (KOH) test should be performed to confirm the diagnosis and to differentiate it from psoriasis capitis, especially in older patients. Other fungal infections, such as Tinea faciei and Tinea corporis, appear more subtle on pigmented skin than on lighter skin tones (pict.2 and 3). In picture 3, a discrete, darker pigmented plaque with a slightly elevated margin can be observed on the right side of the hand. However, the erythematous inflammation typically seen in Caucasian patients is absent. Chronic inflammatory skin diseases, such as atopic dermatitis or psoriasis are also common. Picture 4 shows a 60-year-old woman with severe xerosis cutis and lichenification on both arms and forearms which is typical for atopic dermatitis. Scratch marks and erythematous background are less visible than in Caucasian patients.

In Ethiopia, there is a high burden of skin-related diseases. Proper diagnosis and treatment are crucial for patient recovery. Additionally, with increasing migration, it is important to enhance medical training in Europe on diagnosing and treating patients with pigmented skin.

1. LEPROSY AND VITILIGO, Browne, S.G. The Lancet, Volume 299, Issue 7746, 380

2. Birhanu MY et al. Tinea capitis among schoolchildren in Ethiopia: A systematic review and meta analysis. PLoS One. 2023 Feb 10;18(2):e0280948

Fig. 1

Appendix

Picture 1.

Picture 2.

Picture 3.

Picture 4.

The written informed consent was obtained from the patients or the guardian for taking pictures

P 155

***Nocardia asiatica* lymphadenitis in a lung transplant recipient and medical tourist – A diagnostic challenge**

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Introduction: Solid-organ transplant recipients are at increased risk for opportunistic infections, including nocardiosis. Although pulmonary and CNS involvement predominate in these patients, other forms of nocardiosis have been reported. We present a case of cutaneous nocardiosis with regional lymphadenitis following lung transplantation in Brazil.

Case Presentation: A 73-year-old Portuguese male with idiopathic pulmonary fibrosis traveled to Rio de Janeiro, Brazil, for a lung transplant in April 2024. Three months post-transplant, he sustained a nasal laceration, from a fall onto soil-contaminated ground. The wound initially healed with amoxicillin-clavulanate, but afterwards, a nodule with ulceration developed in the dorsum of the nose (figure 1). In October 2024, dermatologic evaluation in Brazil suggested sporotrichosis based on histopathology from a skin biopsy, showing suppurative granulomas. Itraconazole was initiated; but no fungal structures were seen, and cultures were negative.

Although the nasal lesion improved, by October 2024, he noted a progressively enlarging swelling in the left parotid region and a new right submandibular mass (figure 2). In November 2024, he presented with erythema and pain in the left parotid region and was admitted assuming an acute bacterial superinfection. A CT scan revealed necrotic lymphadenopathies in both parotid and right submandibular areas. Fine-needle aspiration of two of these areas showed positive PCR results for *Nocardia* sp., and *Nocardia asiatica* was isolated from both samples. Species identification was confirmed by MALDI-TOF and 16S rDNA sequencing. Pulmonary CT and CNS MRI excluded involvement of these areas. PCR testing of the initial skin biopsy was negative for *Sporothrix* but positive for *Nocardia*, leading to a final diagnosis of lymphocutaneous nocardiosis. Antibiotic therapy was switched to cotrimoxazole, and itraconazole was discontinued. The patient clinically improved, with reduced lymphadenopathies and resolution of inflammatory signs, and was discharged on oral cotrimoxazole with ongoing follow-up.

Conclusions: This case highlights the diagnostic challenges of nocardiosis, particularly its potential misidentification as sporotrichosis in endemic regions. A high index of suspicion is essential in cases of persistent skin and lymph node infections following soil inoculation. Appropriate molecular and culture-based diagnostics are crucial, especially in immunosuppressed patients.

Fig. 1

Fig. 2

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Serosurveillance identifies an endemic hotspot of Lassa fever in Faranah, upper Guinea

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Question: Lassa fever, caused by Lassa virus (LASV), is a rodent-borne disease endemic to West Africa. Despite growing interest from the global health community, the overall disease burden remains poorly understood due to persistent underreporting and inadequate diagnostic capacities. This study aimed to assess LASV seroprevalence and infection dynamics in rural Guinea, addressing critical gaps in our understanding of its epidemiology in endemic settings.

Methods: A cross-sectional serosurveillance study was conducted across six villages in Faranah, Upper Guinea, involving 1,306 participants. Serum samples were analyzed for LASV-specific IgG and IgM antibodies using ELISA and immunofluorescence assays. Statistical and mathematical models were used to estimate key epidemiological parameters, including the force of infection, antibody waning rates, and infection prevalence.

Results: Overall, IgG seroprevalence was 82.3%, while IgM prevalence stood at 1.8%. Seroprevalence exceeded 50% by age five and increased steadily with age, indicating lifelong exposure. The prevalence of active infections was estimated at 8–10 per 10,000 individuals at any given time. Antibody waning rates suggested an average IgG persistence of 58 years. Mathematical analysis showed that halving LASV prevalence would require a tenfold reduction in the force of spillover, highlighting the challenges of effective control measures.

Conclusions: The seroprevalence observed in this study was markedly higher than reported elsewhere in West Africa, identifying Faranah as a clear hotspot for LASV transmission. Despite the high seroprevalence and estimated force of infection, the number of reported acute cases is very low, suggesting that LASV may frequently cause pauci- or asymptomatic infections or be commonly misdiagnosed for other diseases. Either way, these findings underscore that LASV is more widespread than initially assumed in rural Guinea.

Fig. 1

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Electrocardiographic alterations in patients treated for acute Lassa Fever – Description of results from a phase II clinical trial in Nigeria

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Question: Lassa virus (LASV) leads to high case fatality among hospitalized patients in West Africa. While the pathophysiology of the disease is poorly understood, cardiac pathology is suspected to constitute an important feature of severe Lassa Fever (LF). We report an analysis of electrocardiogram (ECG) findings in patients enrolled in a clinical trial comparing ribavirin with favipiravir for the treatment of LF.

Methods: This randomized controlled open-label phase II clinical trial conducted at two reference hospitals for LF treatment in Nigeria, assessed the tolerability, safety and pharmacokinetics of favipiravir compared to ribavirin in the treatment of acute LF. Hospitalized adult participants with RT-PCR-confirmed mild LF were eligible to participate. ECG readings were performed as baseline and on days 2, 4, 10, and additionally on day 3 for patients receiving favipiravir.

Results: From August 2021 to October 2022, 40 patients (48% female) were included in the study, and 36 (90%) completed the 10-day follow-up period. ECG alterations were similarly distributed between treatment arms and observed in 18 (45%) participants, namely, T-wave inversion (n=14; 35%), conduction disorders (n=5; 13%), ST-segment elevation (n=4; 10%), and arrythmia (n=2; 5%). 36% (n=9) of the alterations observed subsided by the end of the study.

Conclusion: ECG alterations observed in both treatment arms are compatible with direct cardiac effects of the LASV. The new onset of chest pain combined with the evolution of ECG findings over time are suggestive for the occurrence of perimyocarditis in a subset of participants.

Fig. 1

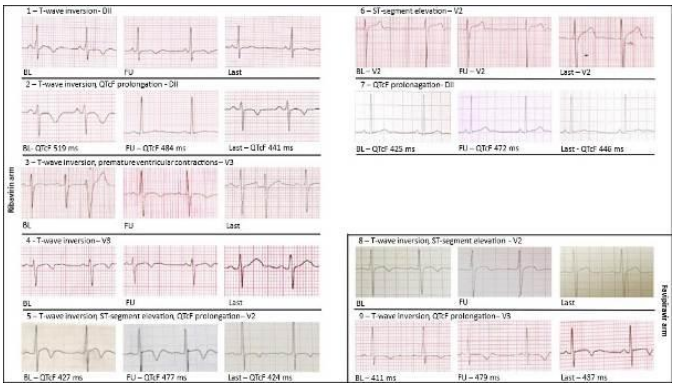
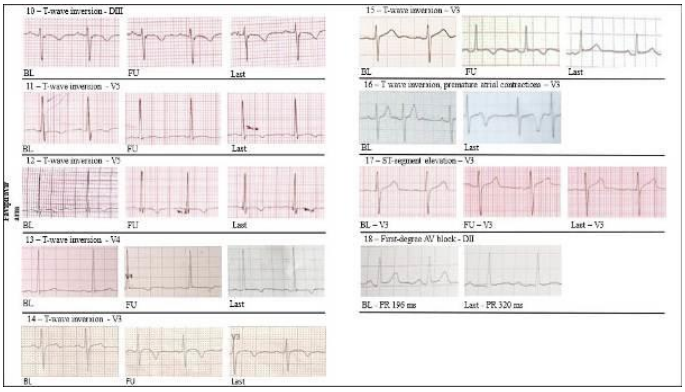


Fig. 2



P 158

Hepatitis in fatal Lassa fever – Histopathological findings and clinical correlation of liver pathology

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Introduction: Lassa fever (LF) is a potentially fatal disease caused by the Lassa virus (LASV). Elevated aminotransferases indicating hepatitis are common in LF and strongly associated with fatal outcome. Autopsy case reports identified the liver as a main target organ of LASV, revealing hepatocellular necrosis. Viral antigen was identified in archived liver samples. Yet, the pathophysiological mechanisms of LF hepatitis remain poorly understood.

Methods: Post-mortem liver tissue was obtained from deceased patients with RT-PCR confirmed LASV infection using a minimally invasive, needle-based approach. Formalin-fixed specimens were analysed using haematoxylin and eosin staining to assess histopathological changes. Immunohistochemistry (IHC) was performed to detect viral antigen and recruitment of immune cells. Pre-mortem clinical and laboratory values were collected to correlate histopathological findings with clinical organ involvement.

Results: 16 cases were prospectively recruited. 63% were male, the mean age was 42 years. Clinically, all cases showed elevated aminotransferase levels, 80% had hyperbilirubinemia, and one third had acute liver failure. In addition, 86% had acute renal failure, 88% had respiratory distress and 63% showed clinical signs of bleeding. LASV antigen was detected in liver tissue by IHC in 12 cases (75%), primarily localized in hepatocytes and sinusoid endothelial cells. Focal hepatocellular necrosis with varying severity was observed in all but three cases (81%). Histologically, parenchymatous bleeding was observed in only two cases. IHC further revealed marked immune cell infiltration in all examined livers with recruitment and activation of CD68+ mononuclear phagocytes and CD3+ T cells.

Conclusion: Here we present the first prospective cohort to correlate post-mortem liver pathology with clinical data in LF. In all cases the liver was significantly affected by LF, with some cases progressing to acute liver failure with extensive hepatocellular necrosis. Viral quantity was high in most cases(12/16), suggesting the liver as the primary site of infection. Lack of virus in other cases may result from different disease stages or tissue damage from secondary causes like sepsis. Immune cell infiltration and activation were a consistent finding suggesting inflammation as primary driver of liver damage in fatal LF. In addition, we are conducting spatial transcriptomics to identify specific molecular pathways involved in LF hepatitis.

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Funduscopy findings in Lassa fever patients indicate systemic inflammation and endothelial damage

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Introduction: Lassa fever (LF) is a viral hemorrhagic fever (VHF) which commonly presents with flu-like symptoms but, in severe cases, may be complicated by acute kidney injury, bleeding, sepsis and vascular leak. Although less frequently reported than in Ebola virus disease where uveitis and vision loss are common findings, LF patients may also develop ocular symptoms. These include conjunctivitis [1], conjunctival injections and retinal hemorrhage [2]. In this study we assessed ophthalmologic complications of acute LF using fundoscopy and correlated these findings with clinical and laboratory data of the patients.

Methods: In this observational, prospective cohort study, we recruited 33 consecutive RT-PCR confirmed LF patients from 31 January to 22 February 2024 at Irrua Specialist Teaching Hospital, Nigeria. Study visits included clinical exam, funduscopy, and laboratory testing. Mann-Whitney U Test was used to correlate funduscopic findings to laboratory parameters.

Results: Median age of our participants was 33 (29-45) years and 42% were female. One patient died. The most frequent funduscopic findings were a decrease in the arteriovenous (AV) ratio due to venous dilatation (58%), and microhemorrhages (12%). Descrease in AV-ratio was significantly associated with higher GOT (p=0.02) and creatinine values (p=0.03) and trended towards a correlation with lower Lassa virus PCR Ct values (p=0.08), all three of which are predictors of severe LF.

Conclusion: In this prospective characterization of fundoscopy findings in LF we demonstrated a decrease in retinal AV-ratio due to venous dilatation in a majority of patients as a possible sign towards systemic inflammation and endothelial damage. In more severe cases microhemorrhages may occur if venous dilatation increases further, leading to congestion. Endothelial damage resulting in vascular leak is thought to be one of the main drivers in LF VHF. Retinal AV-ratio decrease may thus be used to predict severe disease employing a non-invasive diagnostic tool such as funduscopy.

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Rotational thromboelastometry in Lassa fever – Insights into LF-related coagulopathy

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Introduction: Lassa fever (LF) is a viral hemorrhagic fever caused by the Lassa virus (LASV), endemic in West Africa, with an estimated 500,000 infections and 5,000 deaths annually. Transmission from the natural rodent host to humans and human-to-human transmission during burials, in healthcare, and in the rural communities contribute to LF-morbidity. Clinical complications of LF are acute kidney injury, central nervous system manifestations, and bleeding. Previous studies report coagulopathy linked to hepatitis and plasmatic coagulation inhibitors, as well as platelet dysfunction and protein C pathway changes, indicating endothelial barrier weakness. Thus, although bleeding is less severe as in other VHFs like Ebola, coagulation alterations occur and pose a significant risk when integrating advanced clinical care in LF treatment. In this pilot study, we utilized rotational thromboelastometry (ROTEM) for detailed coagulation assessment, to understand LF-coagulopathy.

Methods: Between 9th of February 2022 and 21st of March 2024, we conducted 109 ROTEM measurements in 49 patients, recording clotting time, clot formation time, amplitudes at 5 to 30 minutes, maximum clot firmness, and lysis parameters for extrinsically activated ROTEM, intrinsically activated ROTEM, fibrinogen-specific ROTEM, and extrinsically activated ROTEM with the addition of fibrinolysis-inhibitor (APTEM).

Results: ROTEM parameters differed mostly between fatal and non-fatal cases and hemorrhagic and non-hemorrhagic cases with regards to clotting time, clot formation time, amplitudes, and maximum clot firmness in EXTEM and INTEM. Additionally, individual patients showed signs of thrombocyte dysfunction and fibrinogen deficiency or polymerization disorder. By univariate mixed-effects regressions stratified by presence of hemorrhagic symptoms and outcome, icteric hepatitis was a relevant cause of coagulopathy in severe cases, whereas in milder cases, hepatitis (elevated liver function tests), inflammation, acute kidney injury, platelet counts, and inflammation each contribute to coagulopathy. Conclusions LF-coagulopathy is mostly characterized by disorders in clot formation, while clot stability defects and hyperfibrinolysis does not seem to be relevant in LF. Most coagulation disorder is due to general abnormalities in the intrinsic and extrinsic pathway. Coagulopathy in LF is multifactorial and seems highly dependent on the individual levels of inflammation and hepatic and thrombocyte impairment.

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Neuro-Lassa – Clinical and EEG findings in 61 prospectively recruited Lassa fever patients with neurological symptoms

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Introduction: Lassa fever (LF) is a viral hemorrhagic fever caused by *mammarenavirus lassaense* (LASV). Neurological symptoms are strongly associated with fatal outcome [1], yet, to date, neurological research in LF is limited to individual reports [2]. As systematic examinations are lacking, it remains unclear whether LASV directly infects the central nervous system or if symptoms are caused by metabolic derangement due to systemic infection. In this study we systematically characterized LF patients with neurological symptoms by clinical neurological examination and electroencephalography (EEG) and correlated these findings to laboratory parameters.

Methods: From 14 February 2022 to 12 July 2023, we enrolled 61 RT-PCR confirmed LF patients with neurological symptoms at Irrua Specialist Teaching Hospital in Nigeria. Inclusion criteria were meningitis, seizure, focal neurological deficits and impairment of consciousness. Neurological examination and EEG were carried out 3 times over 10 days and were supplemented by bidaily laboratory investigations.

Results: Median age of our participants was 32 years and 43% were female. 15 patients (25%) died. Frequent clinical neurological symptoms were meningitis (67%), encephalopathy (64%), seizure (33%), cortical focal deficits (26%), tremor (18%) and limb ataxia (13%). Laboratory investigations offered a rivaling diagnosis of metabolic encephalopathy in 41% of cases. However, 46% of cases had isolated neurological signs in the absence of metabolic derangement indicating Lassa virus-induced meningoencephalitis. These findings were supported by our most common EEG pathologies: background slowing (36%), generalized rhythmic delta activity and focal slowing (each 11%).

Conclusion: Our results reveal two different phenotypes of Lassa virus infection with neurological deficits: Hyperinflammatory state with organ failure and metabolic encephalopathy versus distinct neurological symptoms suggestive of meningitis and encephalitis without metabolic derangement. This has substantial implications for research, therapy development and clinical practice as the two patient groups require different treatments tailored to their respective etiologies.

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Extended POCUS in critically Ill patients with Lassa Fever – The role of lung ultrasound in respiratory care and fluid management

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Background: Lassa fever (LF) is a viral hemorrhagic disease with high morbidity and mortality, particularly in critically ill patients. Clinical experience shows that respiratory failure is common and often life-threatening. The exact pathogenesis of respiratory pathology in LF however remains unclear, posing challenges to its management. ARDS (Acute Respiratory Distress Syndrome), pulmonary edema, and pleural effusions are considered possible causes but are difficult to assess conventionally in an isolation ward. Extended Point-of-Care Ultrasound (POCUS), particularly lung ultrasound (LUS), provides a rapid, non-invasive alternative tool.

Methods: As part of the Lassa fever SEPSIS prospective, observational cohort study, we conducted LUS examinations on critically ill LF patients admitted to the intensive care unit at Irrua Specialist Teaching Hospital (Nigeria). A total of 19 patients were included. LUS was used to identify B-lines (indicating interstitial syndrome), pleural effusions, and alveolar consolidations according to the BLUE-Protocol [1]. Additional Extended POCUS assessments included cardiac ultrasound and inferior vena cava (IVC) measurements. Findings were correlated with clinical status, oxygenation parameters and laboratory findings.

Results: Lung ultrasound detected early non-cardiac pulmonary edema and pleural effusions in a significant number of critically ill patients. Presence of bilateral B-lines was associated with rapidly worsening oxygenation. In later stages of the disease, increasing pleural effusions were detected, particularly in patients with renal failure. Additionally, clear indications of pneumonia due to bacterial superinfection were observed in some cases.

Conclusion: Extended POCUS, with a focus on LUS, delivers key information on the clinical pathophysiology and guided management of respiratory complications in critically ill LF patients. Our findings suggest that critical LF is complicated by massive vascular leak and intravascular hypovolemia. Medical countermeasures for Lassa-VHF should focus on managing fluid third-spacing, especially in resource-limited settings where interventions like thoracocentesis and dialysis are challenging especially due to the risk of hemorrhage in Lassa-VHF.

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Clinical and paraclinical correlates of Severe Lassa Fever – First results of the Irrua Lassa Fever SEPSIS study

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Background: Lassa fever (LF) is a severe zoonotic disease caused by the Lassa virus. LF is endemic to West Africa, with Nigeria experiencing annual outbreaks. Clinical presentation ranges from asymptomatic to severe illness, with case fatality rates exceeding 20% in hospitalized patients. Actual hemorrhage is rare, and the actual clinical pathophysiology is poorly understood. The SEPSIS study investigates whether LF triggers a hyperinflammatory response, either directly or via secondary bacterial infections, to identify potential therapeutic strategies.

Methods: Adult RT-PCR confirmed LF cases are recruited at the Irrua Specialist Teaching Hospital (ISTH), Nigeria, since January 2024. Study visits conducted bidaily include clinical assessment and laboratory investigations including inflammation (CRP, IL6 etc.) and bleeding (thrombocytes, INR, aPTT, etc.) markers. In addition, blood cultures are collected and, if positive, subjected to species identification diagnostics. Here, we present a preliminary analysis of the clinical and paraclinical outcomes of SEPSIS study patients with severe Lassa fever admitted to the intensive care unit at ISTH.

Results: As of 17 January 2025, 34 (27%) of enrolled patients were admitted to the ICU and thus were included in the preliminary analysis. The mean age was 44 (±16) years, 65% were male. Patients had symptoms for 12.4 (±5.4) days before admission. The case fatality rate in this population was 44% (n=15). Ribavirin was administered to 33 patients; 27 also received dexamethasone. Supportive care included blood transfusions (n=16), hemodialysis (n=17), and oxygen therapy (n=23). AKI was observed in 82%, bleeding, neurological symptoms, and severe anemia were also frequent. Inflammatory markers were markedly elevated (mean CRP: 140 vs 77 mg/L; mean WBC: 27 vs 11 $10^3/mm^3$ in fatal vs non-fatal). Sepsis biomarkers (IL-6, PCT) also showed a pronounced elevation correlating with severity. Blood cultures were positive in 10 of 28 ICU patients; *Staphylococcus spp., E. coli, Acinetobacter baumannii* and other pathogens were detected.

Conclusion: Severe cases of LF treated at the ICU at ISTH suffered from hyperinflammation, organ dysfunction, and frequent secondary bacterial infections, sometimes with (multi-)drug resistant pathogens. We recommend increased efforts for the development of host-directed, anti-inflammatory therapy for Lassa fever, in addition to evaluation and treatment of secondary investigation.

P 164
Evaluation of new HIV/AIDS policy implementation in Uganda – Comparison between public and private health center
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Background: In 2015, Uganda adopted the World Health Organization "HIV testing and treat" policy and rolled it out in 2016. Early diagnosis and treatment of HIV infected clients is essential in averting HIV-related morbidity and mortality. While the adaptation is these policies are essential to mitigate the escalating number of new HIV infections, its implementation in the health facilities is hardly understood.

Methods: A cross section design with mixed method data collection tools were employed. We assessed the implementation of the new "test and treat policy" in four high volume public and private health facilities in Uganda. The 2016 ministry of health HIV policy document were reviewed and pre-determined indices were extracted in relation to the content as per HIV service provision policy guidelines.

Results: Most of the test and treat policy guidelines were implemented in both Public and Private health care facilities (Free HIV testing, Option B+, Free highly active Antiretroviral Therapy (HAART) and Post exposure prophylaxis). Both had a notable implementation gap relating to retention in care but were more common among the private health care setting. Public health facilities highly implemented policies related to care and treatment than private and performed better on quality of care indicators such as; availability of drugs.

Factors that facilitated the implementation included; availability of lead HIV implementation partner, content of the policy guideline, district partner coordination structures, availability of scientific evidence and strong data management structures.

Barriers in implementation of policy in private health facilities included; weak coordination, lack of logistics and commodities, poor supervision, few health workers orientated with new policy guidelines , health information system and poor referral systems that threatens the successful implementation of this policy

Conclusions: Most HIV policies were highly implemented in the public health facilities; however, gaps in implementation coverage prevail and exist in the private setting. Strategies to ensure high implementation of HIV policies in private setting against adaption of any new policy.

P 167
Challenges of prevention of mother-to-child transmission of HIV services in the democratic Republic of Congo, case study of the Beni Health District
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Background: Despite the progress made so far in reducing Mother-to-child Transmission (MTCT) of HIV, the Democratic Republic of Congo (DRC) still contributes significantly to the global burden of new pediatric HIV infections through one of the highest rates of MTCT estimated at 26,5% in 2022 (1). The aim of this study is to analyze and discuss the challenges associated with the utilization of Prevention of Mother-to-child Transmission (PMTCT) of HIV services in DRC.

Methods: A literature review was conducted to identify relevant articles on existing knowledge about PMTCT services in DRC, using a social-ecological model (2). This was supplemented by remote interviews with health care workers (HCWs) involved in the PMTCT services delivery in the Beni Health District used as case study.

Results: Several challenges have been identified as being at the root of low screening rates of HIV among pregnant women and hindering the uptake of PMTCT services at different levels of the ecological model. *At individual level* challenges included delays in access to antenal care services, inadequate knowledge on PMTCT, negative perceptions towards PMTCT, perceived lack of privacy and confidentiality, and women"s perceptions of healthcare providers. *At Family and pear level*,

gender-based violence and low male partners' involvement in PMTCT were found as main challenges. *At community level,* stigma and discrimination, and fear of disclosure of HIV status were found as bottlenecks. *Socio-cultural factors* such as cost and lack of transportation, and family pressure to comply with local feeding practices were cited as barriers. *At the health system and infrastructure level*, the main challenges were: low coverage and low quality of PMTCT; inadequate training of HCWs; low adherence to antiretroviral therapy (ART), low retention in care and lost-to-follow up.

Conclusion: The elimination of MTCT remain major challenge for the Congolese health system. A comprehensive PMTCT strategy that includes sensitization for pregnant women, pre- and post-HIV test counseling, testing, therapeutic care through ART and early enfant diagnosis may be implemented throughout the Congolese territory to eradicate the MTCT of HIV.

References: (1) UNAIDS DATA 2023. (2) Onono M, et al. 2015 "You Know You Are Sick, Why Do You Carry A Pregnancy Again?" Applying the Socio-Ecological Model to Understand Barriers to PMTCT Service Utilization in Western Kenya.

Fig. 1

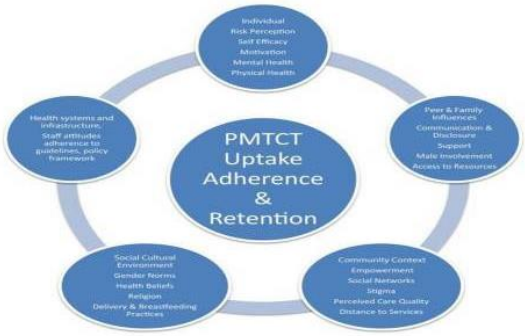

Figure 4. Socio-ecological model (12)

Fig. 2

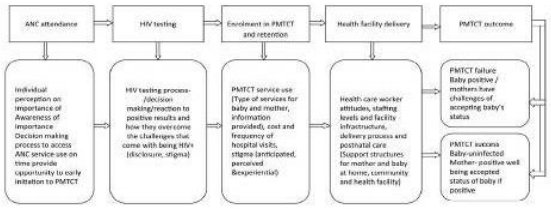

Figure 5. Conceptual model to describe service use and factors influencing uptake of PMTCT services (12)

P 169

Renal function during tenofovir-based antiretroviral therapy among people living with HIV in Lilongwe, Malawi – Findings from the prospective LighTen cohort study

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Question: Most first-line antiretroviral therapy (ART) regimes in Sub-Saharan Africa contain tenofovir disoproxil fumarate (TDF) which has a nephrotoxic potential. Baseline renal function assessment is not feasible in many settings and therefore not required prior to starting ART according to Malawian guidelines. We assessed renal function over 36 months in people living with HIV (PLHIV) starting TDF-based ART at Lighthouse Clinic, Lilongwe, Malawi.

Methods: Data on demographics, medical history, laboratory values, WHO stage, and anthropometric measures were collected at study entry and during visits at 1, 3, 6 months, and every 6 months until month 36. The main outcome of the study was renal function, defined by the estimated glomerular filtration rate (eGFR) calculated using the CKD-EPI equation. Descriptive statistics and multivariable linear regression analysis were performed.

Results: A baseline creatinine value was available for 1,430 PLHIV (57% female, mean age±SD 36.0±9.3 years). Of these, 443 PLHIV (62% female) were observed until month 36. Factors associated with changes in eGFR over time included baseline log-transformed eGFR (coefficient=-0.862; p<0.001), age at baseline, and initial WHO clinical HIV stage. The overall trend in eGFR categories indicated a shift towards lower classes.

Table: eGFR class at study entry and the final visit for PLHIV observed for 36 months.

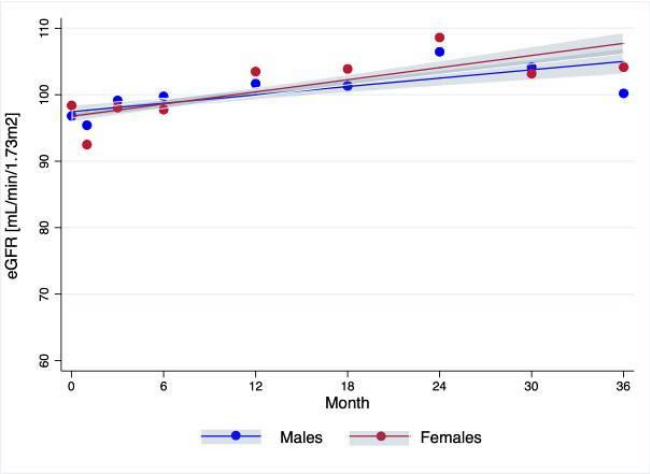
Figure: Mean eGFR over time from month 0 to month 36 along with modelled line and 95% confidence interval, separated by sex.

Conclusion: In this large cohort of PLHIV, TDF did not result in a decline in eGFR. Indeed, an unexpected trend of improved renal function was observed. Even though findings need to be interpreted with caution due to considerable attrition, our results suggest TDF can be administered safely in resource-limited settings where ART decisions are frequently made without pre-treatment renal assessment.

Fig. 1

eGFR [mL/min/1.73m^2]	Study entry	Final visit
≥90	65.7%	77.4%
60-89	30.7%	20.8%
30-59	2.5%	1.8%
15-29	0.9%	0.0%
<15	0.2%	0.0%

Fig. 2



P 170

Change in WHO cardiovascular risk prediction over three years in PLHIV after initiation of tenofovir-based antiretroviral therapy

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Question: People living with HIV (PLHIV) are at increased risk of cardiovascular disease (CVD). As formal assessments of CVD risk in Malawian PLHIV are scarce, we were interested in its change over time in ambulatory PLHIV in Lilongwe, Malawi.

Methods: Post-hoc analysis was conducted on PLHIV enrolled in a prospective cohort after the initiation of tenofovir-based antiretroviral therapy (ART). Demographic and anthropometric data were collected at baseline, 1, 3, 6 months and every 6 months thereafter until month 36. Non-laboratory WHO charts for Eastern Sub-Saharan Africa was used to quantify the risk of major CVD events and to observe the change over time.

Results: Among 413 PLHIV aged ≥40 years, hypertension prevalence at baseline was 56/197 (28.4%) in women and 60/216 (27.8%) in men. The change in CVD risk was analysed in 201 participants (53.7% male) who were still alive and receiving tenofovir-based ART at month 36. Hypertension had newly developed in 8.5% of women and 7.1% of men. Blood pressure (BP) was initially ≥140/90 mmHg in 10/15 (66.6%) PLHIV on antihypertensive treatment compared to 27/37 (73%) PLHIV at month 36. CVD risk increased by one category in 24 participants (11.9%) associated with weight gain (n=5), increased BP (n=4), or both (n=12).

Conclusions: Formal cardiovascular risk assessment identified weight gain and uncontrolled hypertension as important factors for increased CVD risk in PLHIV on ART, despite higher antihypertensive treatment rates. Comprehensive integrated care with repeated lifestyle modification messages and strengthening of health worker capacity is essential to reduce CVD risk in this population.

P 171

Differentiated effects of concomitant co-infection with human immunodeficiency virus (HIV) on the epidemiology of classically opportunistic and more virulent gastroenteric pathogens in a population of Ghanaian people-living-with-HIV (PLWH)

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Introduction: The epidemiology of several infectious diseases is influenced by concomitant co-infection with the human immunodeficiency virus (HIV). While interaction with opportunistic infections has been comparably well assessed, less information is available on the effects of pre-existing HIV infection on the epidemiology of comparably more virulent gastroenteric microorganisms. To address this topic, we screened for gastroenteric pathogens in stool samples obtained from a population of Ghanian people-living-with-HIV (PLWH).

Methods: A population of Ghanian PLWH, from whom round about a half was on antiretroviral therapy at the assessment time, and a small group of Ghanaian individuals without known HIV infection were screened with real-time PCR for gastroenteric pathogens in their stool samples. Microsporidia as well as the coccidian parasites *Cyclospora cayetanensis*, *Cystoisospora belli* and *Cryptosporidium* spp. were assessed as opportunistic pathogens for the analysis, while *Entamoeba histolytica* was chosen as a more virulent microorganism even in immunocompetent individuals. In parallel, study participants were asked for clinical information and further assessed for HIV viral loads, CD4+ as well as CD8+ T-lymphocyte counts and cell surface markers on peripheral blood mononuclear cells.

Results: For the assessed opportunistic pathogens, an expected association of their prevalence and infection-related gastroenteric symptoms with immunodeficiency could be confirmed. A contrariwise epidemiology was observed for *E. histolytica* as the chosen example for a more virulent enteric pathogen. In particular, there was a negative association of *E. histolytica* DNA detections with both HIV-positivity and with the degree of HIV infection-associated immunosuppression,

but not with concomitant clinical symptoms in spite of an increased likelihood of a medical history of recent infectious gastroenteritis. Further, amebic colonization was facilitated by concomitant antibiotic drug application affecting the enteric microbiome and high amebic loads were associated with a marked CD8+ T-lymphocyte response.

Discussion: Together with the lacking association of *E. histolytica* DNA detections and concomitant clinical symptoms, the observed higher *E. histolytica* prevalence in more immune-competent individuals points towards a lower likelihood of asymptomatic enteric colonization with more virulent enteric microorganisms like *E. histolytica* is case of immunosuppression.

P 172

Mortality and its associated factors among older HIV infected patients on antiretroviral therapy – A retrospective cohort study at urban HIV clinic in Uganda

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Background: Access to quality Highly Active Antiretroviral Therapy (HAART) among HIV infected patients is associated with good treatment outcomes including mortality, and increase in older persons with HIV. However, majority of the studies have been done in developed countries, with limited data in low-resource constrained countries. Our study used routinely collected data to assess, mortality and its associated factors at one of the urban HIV clinic in Kampala.

Methods: We retrospectively reviewed data for patient attending one of the urban in Kampala. A we performed a cohort analysis of adult (> 18 years) HIV-Infected persons, who were initiated on HAART between January 1 2006 to 2nd January 2014. We stratified age into three categories; 18-34(younger adults), 35-49 (mid-age) and 50 years and above (older adults). Mortality was described using Kaplan Meier Survival analysis methods, to calculate the survival probability with mortality as end point. Passion regression analysis was performed to determine adjusted relative risks (RR) of mortality.

Results: Among 8203 patients that were initiated on HAART, with mean age 38.3 years (SD: 6.8) and average follow up of 6.2 years (SD: 2.2) and medium baseline CD4 was 187 cells per cubic millimeter (IR: 68-203). Older persons (>=50 years) was associated high risk of death with relative Risk (RR) at 2.3, (95% CI 1.87-3.23) compared to younger age. Being female, advanced age (70 years), lower CD4 and WHO clinical staging of III & IV were significantly associated with higher risk of mortality in later years.

Conclusion: Slow immunological response among older person was associated with mortality. Hence, optimal mortality of older persons on HAART is critical to reduce mortality among this age category

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P 174

Profile, TB prevalence and attributes of TB Positivity among the PLHIVs in a tertiary level ART center of Dhak, Bangladesh

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Background: Tuberculosis (TB) is a leading cause of death among people living with HIV (PLHIV), posing a major challenge to TB control efforts, particularly in Bangladesh. The WHO estimates approximately 360,000 TB cases in Bangladesh annually. In 2021, 306,756 new TB cases and 44,000 deaths were reported. The HIV-related TB mortality rate in the country is 0.09 per 100,000 population, with an incidence of 0.43 per 100,000. This study, conducted at the largest antiretroviral therapy (ART) center in Bangladesh, aims to examine the prevalence of TB among PLHIV and identify factors associated with TB positivity.

Methods: This was a cross-sectional retrospective study utilizing secondary data from the Infectious Disease Hospital (IDH), the largest ART center in Bangladesh. Data from PLHIV receiving ART between January and December 2022 were included. The study focused on the demographic profile of PLHIV, TB prevalence, and attributes of TB positivity.

Results: A total of 813 PLHIV were included, with 67.4% (n=551) males, 31.1% (n=256) females, and 1.2% (n=10) transgenders. The mean age of participants was 35.4±10.6 years, with the majority (38.3%, n=313) in the 30-39 age group. Most participants were from Dhaka Division (47.5%, n=386), followed by Chattagram (23.6%, n=192) and Mymensingh (10.6%, n=86). Risk groups included clients of sex workers (43.5%, n=386), people who inject drugs (PWID) (15.9%, n=126), and men who have sex with men (MSM) (11.2%, n=89). Of the 813 PLHIV, 38.2% (312 individuals) were tested for TB using Gene-Xpert, with 9.3% testing positive. TB-positive individuals were older (40.76±9.4 vs. 34.4±10.4 years; p=0.002). Younger PLHIV (≤40 years) had a higher TB positivity rate (55.2% vs. 44.8%; p=0.008). Among risk groups, no TB-positive female sex workers were found, but TB positivity was higher among clients of sex workers (44.8%) and MSMs (17.2%) compared to other groups (≤13.8%; p=0.0001).

Conclusions: This study highlights the high burden of TB among PLHIV in Bangladesh, especially among younger individuals and high-risk groups such as clients of sex workers and MSMs. The findings suggest the need for enhanced TB screening and targeted interventions for these populations. Policymakers and health managers can use this data to develop more effective strategies to address the co-epidemics of HIV and TB in Bangladesh.

P 175

Enhancing tuberculosis treatment outcomes – The role of nutrition education and micronutrient supplementation on immunological markers and quality of life in peri-urban Bangladesh

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Malnutrition and tuberculosis (TB) are closely linked, with undernutrition increasing the risk of TB, while TB exacerbates malnutrition. This study aimed to evaluate the impact of nutrition education and micronutrient supplementation (Zinc and Vitamin A) on biochemical, immunological markers, and the quality of life (QoL) in pulmonary TB patients receiving DOTS in the peri-urban areas of Bangladesh. A prospective longitudinal intervention study was conducted involving 216 adult, newly diagnosed sputum-positive TB patients, randomly allocated into three groups: Group A (DOTS only), Group B (DOTS + nutrition education), and Group C (DOTS + nutrition education + micronutrient supplementation). The study

assessed nutritional status, biochemical markers (serum Zinc, retinol, leptin), sputum conversion time, and QoL using the SF-36 questionnaire at baseline, 2 months, and 6 months.

Results showed significant improvements in nutritional indicators such as weight and BMI in all groups, with the greatest increase in Group B (16.5%). Group C, which received both micronutrient supplementation and nutrition education, demonstrated the highest increase in serum Zinc (0.85 mcg/mL) and retinol (31.4 mcg/dL) levels. Serum leptin levels, indicative of fat stores, increased in all groups. Although sputum conversion time was shortest in Group B, the overall QoL improved in all groups, reflecting enhanced physical and mental health.

This study highlights that while micronutrient supplementation and nutrition education may not lead to significant outcomes in all parameters, they positively impact the nutritional status, immune function, and QoL of TB patients. Raising awareness about nutrition and integrating it into TB treatment strategies could play a vital role in improving health outcomes and controlling TB in resource-poor settings.

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Addressing cross-border challenges in drug-resistant pulmonary tuberculosis – A ten-year study at the Ghana-Ivory coast border

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Introduction: Drug-resistant TB (DR-TB) remains a significant public health concern worldwide. Migrants and refugees often face increased risk of acquiring TB due to challenging living conditions and limited healthcare access. Cross-border transmission of DR-TB has been documented in many settings and adversely affect the health of host and migrant populations. This study aimed to assess the prevalence and transmission dynamics of DR-TB among this vulnerable population in Ghana.

Methods: Setting: The Western Region of Ghana shares border with the Comoe District in Ivory Coast. It is the site of the Elubo Border, a key crossing point between Ghana and Ivory Coast as well as other small approved and unapproved entry points. The Western Region keeps a centralized DR-TB register which captures all notified DR-TB cases in the region. Methods:This retrospective study analysed data from the Ghana side of the Ghana-Ivory Coast border using Western Region of Ghana"s DR-TB register. We identified all notified DR-TB cases from January 2012 to December 2022 in which the case identified as migrant and or refugee. Additionally, their medical records, treatment adherence, and contact tracing data were also retrieved.

Results: 210 DR-TB cases were notified during the period and 2(1%) met the inclusion criteria. Both cases had been diagnosed with drug sensitive TB in their home country (Ivory Coast) before migrating to Ghana and were missed by pre-immigration screening at the entry points. Both received successful treatment in Ghana, demonstrating adherence to treatment protocols. However, a household contact of one of the cases developed DR-TB two years later, suggesting probable local transmission.

Conclusion: Our study confirms the existence of cross-border DR-TB transmission between Ghana and Ivory Coast. Robust pre-immigration screening, enhanced in-country surveillance, and strengthened international collaboration are essential to effectively control DR-TB among migrant and refugee populations in Ghana and beyond.

Fig. 1

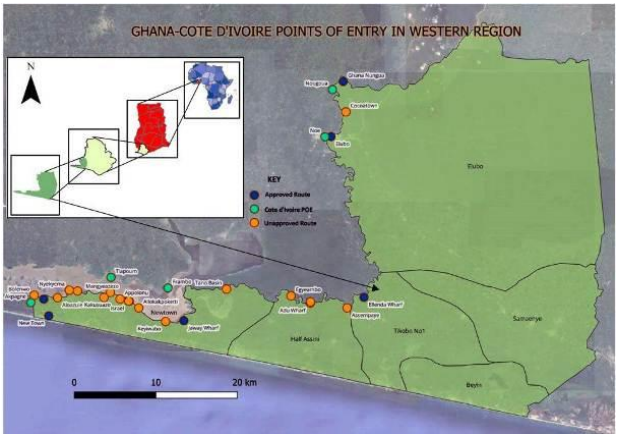
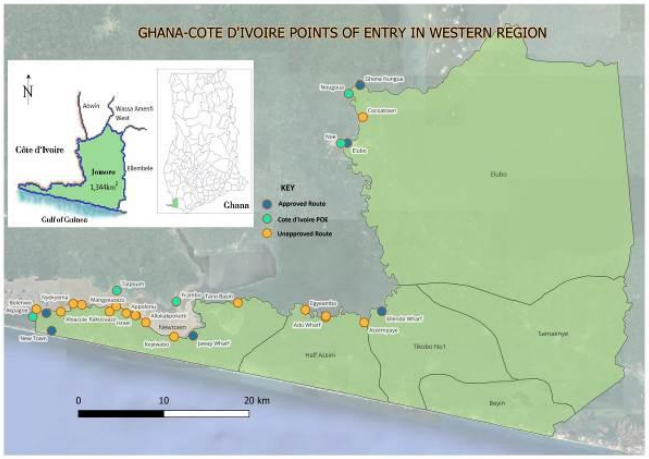


Fig. 2



P 178

The yields of the active case finding of household contacts of tuberculosis patients using chest X-ray, implemented at the ambatondrazaka tuberculosis diagnosis and treatment center in Alaotra Mangoro region, Madagascar

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Background: Each year, Madagascar accounted 35% missing TB patients according to WHO estimated incidence. In 2022, an active case finding of TB patients household contacts intervention was implemented at a pilot site. In order to assess the yields, an evaluation was conducted.

Methods: The investigation consists of a questionnaire administration, a free chest X-ray and a bacilloscopy in case of suspicion of TB by the clinic or radiography. All index cases (patients with bacteriologically-confirmed TB (BC TB) aged over 14 years) and their household contacts enrolled at the site during the study period, from June 1, 2022 to December 31, 2023, were included. Data were analyzed with Epi info version 7.2.1.0. Frequencies were used to assess prevalence, as well as Multivariate logistic regression for the predictive factors of TB. Statistical significance was set at a p-value less than 0.05.

Results: A total of 194 index cases were included, which was 35% of the eligible patients. They were mainly men while the contacts were predominantly female, the median age were 34 and 20 successively. Low contact participation was noted at all stages of the care cascade. Of the 945 contacts reported, 612 (65%) were investigated and smear testing was performed by 47% of the indicated cases. The prevalence of all forms of TB among household contacts was 5.1% CI [3.9-7.5] and that of BC TB was 1.4% CI [0.7-2.7]. The number of contacts needed to detect a new case of TB was 18, while the number of index cases that led to contact tracing to diagnose a case of TB was 6. All diagnosed TB cases had a X-ray suggestive of TB. Sixty percent of all diagnosed cases, including 4 BC TB cases, did not have suggestive symptoms and would have missed the diagnosis without radiography. The risk factors for tuberculosis identified were sharing a bedroom OR=16.0 CI [1.8-143.7] with index cases, poor treatment outcomes of index cases OR=22 CI [7.8-62.1], history of TB in contacts OR=7.4 CI [2.2-25.0], and high bacillary load of index cases two plus OR=3.5 CI [1.0-12.1] and three plus OR=4.7 CI [1.2-18.9].

Conclusions: Radiography has shown its added value by identifying two-thirds of TB cases that would not have been identified by clinical assessment alone. Active case finding of household contacts is relevant to find the missing TB cases in Madagascar, hence the recommendation for its extension. Assessment of the determinants of low participation at each stage of the care cascade is needed.

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Thermal Imaging – A handheld tool for point-of-need screening of cervical lymph node tuberculosis

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Question: This research seeks to determine whether screening with the thermal imaging camera can effectively identify pathological cervical lymph nodes, and differentiate between lymph node tuberculosis and other causes, surpassing the efficiency of conventional tuberculosis tests.

Methods: In a multi-center study with the iccdr,b (Bangladesh), the Makerere University (Uganda) and Saarland University (Germany), patients with chronic lymphadenopathy were examined. Each participant received a standardised clinical examination, medical history assessment, sonography and, if possible, a puncture of a lymph node with further specific diagnostics (Figure 1). Three thermal images (FLIR C5 thermal camera) of the cervical region (frontal and lateral) were captured per patient and analyzed using a convolutional neural network, while clinical data were processed by a multilayer perceptron. The outputs of both models were integrated into a combined model for final classification. The reference for evaluating the diagnostic accuracy was based on multiple clinicians' assessments.

Results: The database contains thermal images and clinical information on cough and B-symptoms from 165 patients, including 49 (29.7%) with tuberculosis, 67 (40.6%) with other lymphadenopathies, and 49 (29.7%) healthy controls. In the combined neural network, an accuracy of approximately 90% in distinguishing healthy from pathological findings, and an estimated accuracy of 70% in diagnosing lymph node tuberculosis was identified. The GeneXpert MTB demonstrated a sensitivity of 75% (95% CI: 60.4–86.4%) and a specificity of 98.2% (95% CI: 90.3–100%), comparable to the in-house PCR MTB, which had a sensitivity of 70.8% (95% CI: 55.9–82.7%) and the same specificity. Cytology showed the highest sensitivity at 83.3% (95% CI: 69.8–92.5%), but had lower specificity at 94.6% (95% CI: 85.1–98.9%). Due to their low positive detection rates, AFB and Culture exhibited low sensitivity, at 12.5% (95% CI: 4.7% – 25.2%) and 10.4% (95% CI: 3.5% – 22.7%).

Conclusion: A good specification for pathological cervical lymphadenopathy was possible using a thermal imaging camera. In terms of discriminating whether cervical lymph node tuberculosis was present, the screening was in the range of sensitivity of the GeneXpert MTB test and an in-house tuberculosis PCR. Overall, cytology showed very high sensitivity, whereas culture and AFB results showed a very low confirmatory sensitivity.

Fig. 1

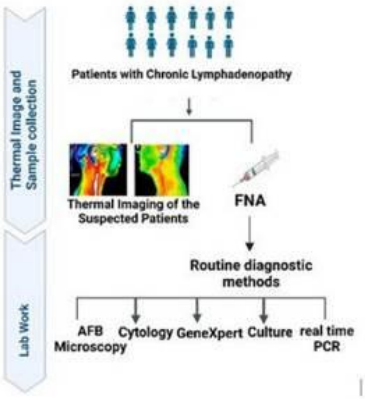

Figure 1: Schematic diagram of the study procedure and laboratory investigations, (FNA= Fine Needle Aspiration, AFB= Acid-Fast Bacilli)

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Unfavorable treatment outcomes and associated factors among patients with multidrug-resistant tuberculosis in southwestern Oromia, Ethiopia

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Background: Multidrug-resistant or rifampicin-resistant tuberculosis (MDR/RR-TB) remains a major global public health problem due to its complex requirements for diagnosis and treatment. This study assessed unfavorable treatment outcomes and associated factors among MDR/RR-TB patients in Southwestern Oromia, Ethiopia.

Methods: A ten-year retrospective study was conducted from April to June 2023 on 226 MDR/RR-TB patients treated between 2013 and 2022 at five treatment facilities in Southwestern Oromia, Ethiopia. Data on sociodemographic factors, clinical details, laboratory results, and treatment outcomes were extracted from the MDR-TB registry. Logistic regression analysis was used to explore the associations

between independent variables and unfavorable treatment outcomes.
Results: Out of 226 patients, 40 (17.7%) had unfavorable treatment outcomes (13 were lost to follow-up, seven experienced treatment failure, and 20 died). HIV infection (AOR=5.05, 95% CI: 2.06-12.36), a history of prior TB treatment (AOR=2.87, 95% CI: 1.20-6.88), and a low baseline body mass index (AOR=2.50, 95% CI: 1.01-6.21) were significantly associated with unfavorable treatment outcomes. Conclusion: A significant proportion of MDR/RR-TB patients had unfavorable treatment outcomes. MDR/RR-TB patients with HIV infection, a history of prior TB treatment, and a low body mass index require special consideration further to improve the treatment outcomes.

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Evaluating the impact of a gender-responsive intervention on TB knowledge and stigma – A quasi-experimental study with a control arm

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Background: Men account for more than two-thirds of TB cases in Nigeria and experience significant delays in accessing care, which contributes to poorer health outcomes. Limited awareness of TB, including the availability and locations of services, alongside TB-related stigma, are major barriers to care for men. In response, a targeted intervention was co-developed with local stakeholders and implemented in a peri-urban area to enhance care access for men. This report presents the intervention's effect on TB knowledge and stigma in a peri-urban community setting.

Methods: A concurrent mixed methods evaluation design was employed for this intervention. Two intervention (IC) and two control clusters (CC) were non-randomly selected, followed by a baseline community survey assessing TB knowledge and stigma across all clusters.

A Local TB Action Group (LTAG) was formed in each IC (n=12 per cluster), comprising community leaders and influential members committed to participating in the project. The multi-pronged intervention, which included men-led TB awareness campaigns and mobile X-ray screening in men"s socio-cultural congregate settings, was implemented in the ICs over six months while the CCs had routine TB programme activities.

Following the intervention, a post-intervention survey on TB knowledge and stigma was conducted in all clusters. Data was collected with the validated STOP TB partnership tool for community KAP and stigma assessment. Knowledge was categorized as correct or incorrect while stigma was rated continuously on a 44-point scale. Mixed-effects logistic and linear regression analyses were performed to evaluate the intervention"s effect on TB knowledge and stigma respectively. In the model setup, primary fixed effect variable was "Cluster type (IC vs CC)", secondary fixed effect variables were Sex, Education, Employment, Socio-economic status while the random effect variables were Participants" ID, Time (baseline vs endpoint).

Results: As shown in figures 1 and 2, communities in the ICs had 70% higher adjusted odds of correct knowledge of TB. The effect was more pronounced for men in the intervention communities who had over two-fold higher odds of correct knowledge. Similarly, the intervention led to Significant decline in stigma in the ICs compared to the CCs.

Conclusion: A co-created gender-responsive intervention implemented by local stakeholders improved knowledge and reduced TB-related stigma in vulnerable peri-urban settlements in Nigeria.

Fig. 1

Figure 1: Mixed effect logistic regression model for knowledge

Term	Estimate	Std. error	OR	Lower 95% CI	Upper 95% CI
Control arm	-	-	1	-	-
Intervention arm	0.5462	0.0743	1.73*	1.50	1.99
Intervention arm	0.5303	0.0845	1.70**	1.44	2.01
Men in control arm	-	-	1	-	-
Men in intervention arm	0.9467	0.1477	2.58**	1.93	3.44

*Crude Odds ratio, **Adjusted Odds ratios (adjusted for education, employment, Socio-economic status)

Fig. 2

Figure 2: Mixed effect linear regression model for stigma

	Estimate	*Std. error*	*t - value*	*Lower CI of estimate*	*Upper CI of estimate*
(intercept)	34.1616	7.0581	4.840	20.3278	47.9954
Intervention arm	-11.5135*	0.3134	-36.7390	-10.8992	-12.1278

*Estimate model adjusted for Education, Employment, Socio-economic status

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Health system bottlenecks impacting on management of childhood tuberculosis in Tanzania – Perspectives from an international multistakeholder workshop

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Background: About 55% of the estimated 1.2 million global childhood TB (CTB) cases are 'missing' and a significant proportion of these are likely to be in sub–Saharan Africa (SSA), home to 16 of the 30 high TB burden countries (HTBCs) including Tanzania. As health systems worldwide face increasing uncertainties and pressures including pandemics such as covid19, gains made on TB control might be lost especially in HTBCs with fragile, poorly resourced health systems. We organized a multi-stakeholder workshop in Tanzania, drawing on existing evidence and contextual realities to identify health system bottlenecks facing CTB management and support the knowledge base for health systems strengthening for CTB.

Methods: We conducted a three-day multidisciplinary, multistakeholder, hybrid, international workshop in multiple locations within Tanzania and one location in UK. Workshop consisted of two plenary sessions followed by group work and debriefing sessions on days 1 and 2, with final group discussions and conclusion on day 3. Presentations at plenary sessions were delivered by participating experts and covered childhood TB from global health, programmatic, epidemiological, clinical, and community perspectives. Discussion groups were representative of participants" discipline, experience and skills, and discussed bottlenecks to

CTB management based on the health systems building blocks.

Results: Fifty-nine participants attended the workshop, 30 (50.8%) were females and 2 were parents of children with TB. Participants were drawn from the Tanzania National TB and Leprosy Control Program, 5 research institutions, 6 health facilities including primary, secondary and tertiary centres, 1 community-based organization and parents of children with TB. Poor knowledge and misconception about CTB, poor health seeking behaviour, transportation costs and lack of trained health workers at community level; lack of health worker training opportunities, lack of diagnostics and non integration of services at health facility level, and delayed implementation of recommendations at policy level, were key bottlenecks facing CTB management identified.

Conclusion: Networking within health system, integration of services and inclusion of families and communities affected by CTB in decision making, are key to addressing the multi-level bottlenecks facing CTB management.

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Tuberculosis treatment support tools trial (TB-TST) – Pathfinder to map operational and ethical barriers to trial initiation during the COVID-19 pandemic

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Background: The TB-TST clinical trial, which evaluates the effectiveness of digital tools for tuberculosis (TB) treatment adherence in argentine population, began precisely as the COVID-19 pandemic was declared. This unprecedented timing introduced significant challenges to study implementation.

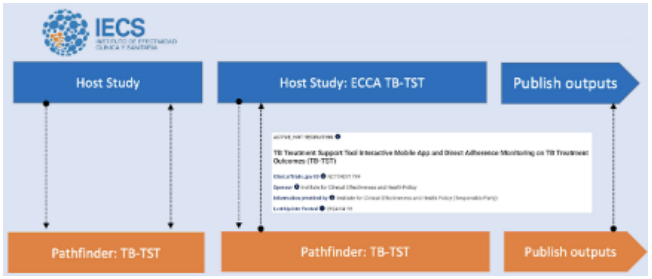
Objective: Identify and address operational and ethical barriers encountered in the TB-TST study amid the pandemic.

Methods: The Pathfinder framework, a mixed-methods approach, was used to systematically map barriers and mitigation strategies at multiple operational levels, from regulatory challenges to patient recruitment.

Results: Argentina"s mandatory lockdown severely restricted healthcare access, delaying TB diagnoses and disproportionately affecting vulnerable populations. Key obstacles in the TB-TST study included delays in drug metabolite test strip production and distribution, recruitment interruptions, and ethical concerns regarding autonomy and beneficence due to limited diagnostic and treatment access. Increased reliance on digital health tools raised privacy and confidentiality concerns. To mitigate these barriers, the study implemented contingency planning for recruitment, innovative communication channels for remote team training, and enhanced data governance measures. These strategies were approved by site ethics committees to ensure compliance with ethical principles.

Conclusion: The resilience and adaptability of the research team were crucial in seeking solutions to minimize the inherent restrictions of the pandemic itself and the strict restrictions imposed by the local government, maintaining the integrity of the study during the largest global health crisis in a century in the last 100 years in terms of global impact in terms of mortality, economic and social disruption, and pressure on health systems such as COVID-19.

Fig. 1



P 186

Dynamics of Plasmodium malariae infections in Papua New Guinea

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Background: Plasmodium malariae remains one of the most neglected human malaria parasites, with limited data on its epidemiology, genetic diversity, and infection dynamics. This study aims to describe the prevalence of *P. malariae* infections over time in Papua New Guinea (PNG) and assess recurrent and persistent infections, as well as factors associated with *P. malariae* occurrence in this population.

Method: Data and samples from six longitudinal cohort studies conducted in PNG between 2004 and 2013 were analysed. Parasite prevalence and density were determined using species-specific qPCR, and genetic diversity is currently being assessed through *P. malariae* specific polymorphic markers. A mixed-effects logistic regression model was used to explore risk factors associated with *P. malariae* infection across different ecological and temporal settings.

Results: A total of 2,327 participants, aged between 0.5-15 years, from six longitudinal studies were included, contributing to 32,638 study visits. *P. malariae* was detected in 588 samples from 472 individuals, with 112 individuals testing positive on two or more occasions (range: 2–11 visits). In the risk factor analysis for *P. malariae* infection, children aged 6-12 years had the highest risk, OR 4.0 (95% CI 1.1-14.4) compared to other age groups, in a model with random intercepts for study, village and participant. Ongoing fever, sex, reported bed-net use and infection with other *Plasmodium* species did not significantly alter the risk of *P. malariae* infection.

Genotyping is ongoing and will determine the relatedness of these repeated *P. malariae* infections within individuals, enabling a more comprehensive understanding of the infection dynamics of *P. malariae,* and potentially chronic nature of *P. malariae* in PNG.

Significance: This project represents the first genetic surveillance of *P. malariae* in PNG. Through detailed genetic analysis, it seeks to improve understanding of *P. malariae* epidemiology and infection dynamics and highlight the importance of including this species in malaria control and elimination strategies.

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Epidemiological trends and climatic drivers of Malaria in Igunga District, Tanzania (2019–2024) – Implications for emerging Vector-Borne Diseases

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Vector-borne diseases (VBDs), particularly malaria and dengue, are on the rise in sub-Saharan Africa, including Tanzania, particularly since the COVID-19 pandemic. Correct diagnosis of malaria and other VBDs in low and middle-income countries is challenged by limited diagnostic capacity and reliance on clinical symptoms only. As part of the Rise to the Challenge: AI-Powered Communities Battling VBD in the Face of Climate Change (RISE) project , we aimed to understand the impact of VDBs in an area of Tanzania which was previously predicted to see an increase of dengue due to climate change, but which is lacking targeted surveillance and control strategies. The climatic and epidemiological trends inform the development of a digital early warning tool for surveillance and targeted interventions in Igunga district of Tabora. From 2019-2024 the area reported a malaria prevalence (23%) of almost 3 times the national average (8.1%).

We used generalized linear mixed-effects modeling (GLMM) to assess the associations between climate variables and varying MRDT confirmed malaria positivity rates over time. Overall, a total of 930,647 suspected cases of malaria were reported in the district from 2019-2024. The positivity rate varied by month, across years and between age groups and sex. In line with scientific literature, we found a clear seasonal trend for confirmed malaria, but significant differences in the positivity rates throughout the year. This suggests other VBDs with similar symptoms may contribute to the number of suspected cases. On average, in January only 15.4% of suspected cases were confirmed, while in June this rises to 39%. Our analysis showed significant associations between confirmed cases and temperature and rainfall as well as Normalized Difference Vegetation Index (NDVI). Changes in positivity rates across years are a clear seasonal trend aligned with rainfall peaks (March and April), linked with increased breeding sites for mosquitoes. April to June had the highest positivity rates. Periods of low malaria positivity coincided with increased febrile cases, potentially reflecting other VBDs like dengue.

The pattern of unconfirmed febrile illnesses outside malaria peaks suggests the circulation of other VBDs such as dengue. Our findings support the development of digital early warning tool based on observed trends.

Fig. 1

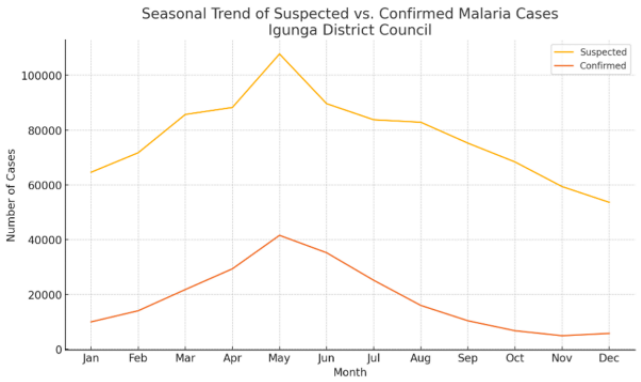
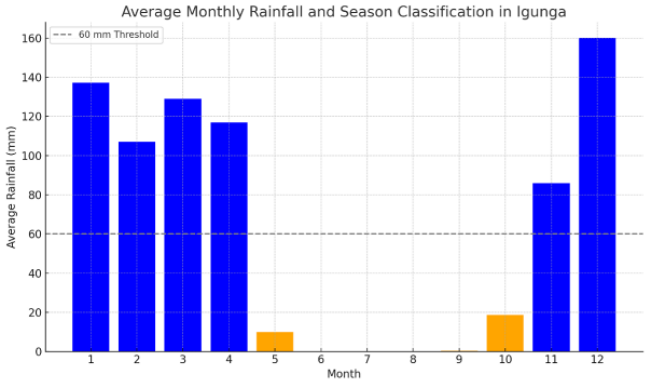


Fig. 2



P 188

Rainfall, temperature, and malaria – A quantitative evaluation of climate impacts on malaria trends in Zambia (2009-2023)

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Background: Climate change is recognized as one of the greatest threats to global health security, with its effects disproportionately impacting countries that have contributed least for its increase. Malaria, one of the deadliest infectious diseases worldwide, continues to pose a major public health challenge with 92% of the cases coming from sub-Saharan Africa. The link between climate change variables and increasing malaria incidence has been underexplored, thus barring exploration of climate-adaptive strategies for malaria control. This study examined the correlation between malaria incidence and observed changes in precipitation, temperature and humidity across all 10 provinces in Zambia over the past 15 years, and the impact of shifting rainfall patterns.

Methods: A quantitative analysis was conducted of hospital records, metrological data from manual observation stations and historical data from the District Health Information System, to identify malaria hotspots and -rainfall patterns from 2009-2023. SATSCAN Analysis Software was used to assess the correlation between malaria incidence and climate variables, including maximum and minimum temperature, humidity and precipitation

Results: Over the 15-year period, a shift in malaria incidence was observed, with high-incidence districts moving from the eastern and northern regions of Zambia (2009-2011) to the north-western and western parts of the country(2020-2023). District-specific incidence gradually increased from a peak of 1,187 cases per 100,000 persons during 2009- 2011

to 1,316 from 2021-2023. A a strong positive correlation was found between precipitation and humidity (ρ = 0.78, p < 0.001), as well as between precipitation, minimum and maximum temperature (p < 0.001).

Conclusions: The study highlights significant shifts in weather patterns and corresponding changes in malaria incidence across Zambia. The findings offer valuable data for developing forecasting models to better understand and predict the evolving geographic distribution of malaria, potentially linked to climate change. These insights will inform future strategies for malaria control for Zambia and the Sub-Saharan Africa region as a whole.

Key words: *Malaria, vector-borne diseases, infectious diseases, Climate-health, one health, Zambia, SSA*

Fig. 1

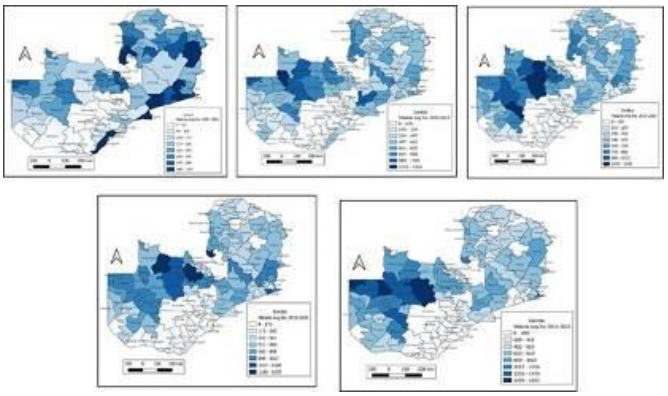
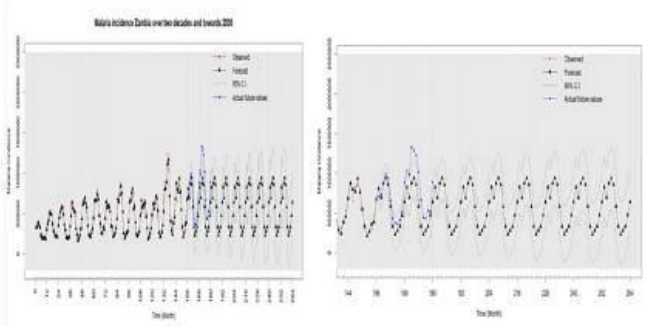


Fig. 2



P 189

Zambian healthcare workers' and community-based volunteers' perspective on climate change and malaria – A qualitative study

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Background: The World Health Organization (WHO) recognises climate change as the biggest health threat to humanity. Its impact is more pronounced in low- and middle-income countries (LMICs), where vulnerability to vector- and waterborne diseases is heightened. Climate change increasingly influences malaria transmission dynamics, yet its impact on malaria control efforts remains underexplored. This study assessed the perspectives of healthcare workers and community-based volunteers in Zambia on the stalled malaria elimination progress and the role of climate change in malaria incidence.

Methods: A cross-section qualitative study was conducted through 9 key informant interviews and 14 focus group discussions between August and October 2023 in 20 purposefully selected districts that were chosen based on high or low malaria prevalence. Data were transcribed verbatim, and imported into ATLAS.ti version 23, and analysed thematically. Findings are presented as narratives supported by direct participant quotes.

Results: Healthcare workers identified flooding, drought, deforestation, and shifting rainfall patterns as key factors influencing malaria transmission. Climate-related disruptions, logistical constraints, and competing health priorities, including cholera outbreaks and COVID-19 posed challenges to malaria interventions. While participants recognized the need for an integrated response, they primarily emphasized existing malaria control strategies, such as indoor residual spraying (IRS) and insecticide-treated nets (ITNs), while overlooking climate resilience measures. Few respondents referenced national climate adaptation policies, highlighting gaps in policy dissemination and implementation. Additionally, vector resistance and diagnostic inaccuracies were noted as contextual factors in malaria incidence rates and control. The potential role of malaria vaccination as a climate-adaptive intervention was not explored and warrants further exploration.

Conclusions: Findings highlight the need for cross-sectoral collaboration, policy-driven climate adaptation strategies, and investment in climate-resilient health infrastructure. Educational initiatives targeting healthcare workers and community health workers are crucial for bridging knowledge gaps and sustaining malaria control efforts. A holistic approach is essential for sustaining malaria elimination in the face of climate change.

Fig. 1

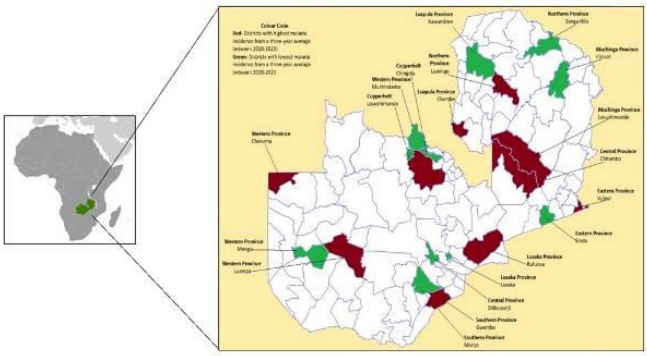

Figure 1: Map of Zambia showing location for qualitative interviews for the HCW perspectives

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Sociodemographic and socioeconomic predictors of malaria transmission among children and adolescents in rural area of the Republic of Guinea

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Introduction: Malaria remains a significant public health challenge in Guinea, especially in rural area. This disease disproportionately affects children and adolescents, who are often overlooked in research. This study sought to identify the sociodemographic and socioeconomic factors influencing

malaria transmission in these vulnerable groups, with the aim of refining and enhancing targeted public health interventions.

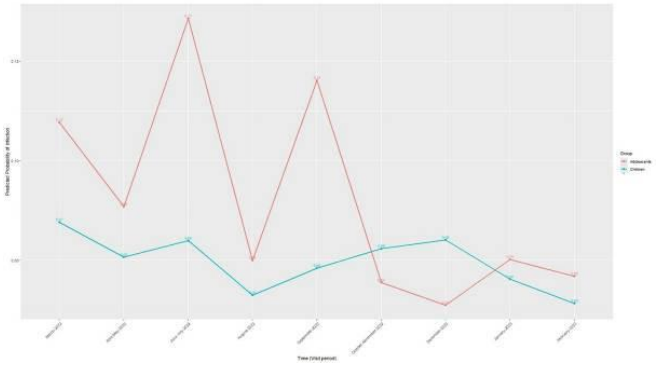
Methods: A longitudinal survey was conducted in Maferinyah between March 2022 and February 2023. This investigation focused on children aged 1–9 years and adolescents aged 10–19 years old. Data collection comprised monthly home visits for clinical examination and interviews using standardised questionnaires. Malaria infection was confirmed using blood smears and mixed logistic regression was employed to assess the impact of various sociodemographic and socioeconomic variables on malaria risk.

Results: Adolescents exhibited significantly higher probabilities of malaria infection than children (p = 0.001), with predicted probabilities peaking in June-July 2022 (17.1% vs. 6.0%) and September 2022 (14.0% vs. 4.6%). The use of mosquito repellents significantly reduced the risk of malaria (children: AOR=0.33, 95% CI: 0.14–0.79; adolescents: AOR=0.40, 95% CI: 0.16–0.96). Households with heads aged over 50 years had a significantly increased infection risk in children (AOR=4.26, 95% CI: 1.39–13.06), while a similar trend was observed but was not statistically significant in adolescents (AOR=2.78, 95% CI: 0.95–8.15). Secondary education of household heads significantly decreased the risk of infection in adolescents (AOR=0.40, 95% CI: 0.16–0.96).

Conclusion: Adolescents are a key demographic for malaria intervention because of their high prevalence and seasonal vulnerability. Targeted programs should enhance preventive measure adoption, promote head household education, and address the challenges in older-headed households. Community-driven, context-specific strategies that ensure equitable resource distribution and foster behavioural change are essential to effectively reduce the malaria burden.

Keywords: Sociodemographic and socioeconomic factors, malaria, children, adolescents, rural Guinea.

Fig. 1



P 191
Study of histopathological findings in malarial acute renal failure in north India

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Introduction: Malaria involves most of the organs of the body, which depends on the severity of the disease. Renal complications are not uncommon and account for approximately 5%–30% of total hospital and ICU admissions. The most commonly observed complication is acute renal failure, which presents as oliguric (urine out up less than 400 ml/day). In most cases, acute renal failure is reversible. The kidney, being relatively unique among all major organs of the body, has the ability to recover from almost complete loss of function to normal Method Hospitalized patients of malaria (P falciparum and P vivax) in the ICU and in the general ward of a medical college hospital with renal failure as per WHO criteria and confirmed cases of malaria by peripheral blood smears (thick and thin), optiMAL, PCR, and renal biopsy.Exclusion criteria were set up to rule out other causes of acute senal failure before and during the illness.
Result A total of 219 (PV-45 PF 174) patients with malaria having acute renal failure were observed during the two-year study period admitted to the hospital.Oligurea with renal failure was in 54 (24.65%) PV-12, PF 33, and mixed-9 patients, while non-oliguric renal failure was in 165 (75.34%). PV-24, PF 123, mixed-18. Most patients with malaria with renal failure were between the ages of 20 and 40. The total number of deaths from malaria with acute renal failure was 63. Death from malaria with oliguric renal failure: 42 (63.62%), Pv-9, PF-24, and mixed (9); death from non-oliguric renal failure: 21 (33.33%). PV-21, PF-00, mixed 00. Histopathological findings in 39 patients were suggestive of acute tubular necrosis and mesengioproliferative glomerulonephritis (MPGN). oliguric renal failure 30 (76.92%) non-oliguric renal failure, 9 (23.07%) acute tubular necrosis was in 21 (53.84%) oliguric and 18 non-oliguric, and MPGN was in 18 (46.15%). The incidence of renal failure was 2.07% in 1994, 6.16% in 2001, and 23.47% in 2003 in this region of the country. Though renal failure was common with PF malaria and rare with PV malaria, we confirmed P vivax with acute renal failure by PCR in four cases of our study. Conclusion Renal failure prevalence in hospitalized malaria patients is 16.43%, and oliguric renal failure in malaria has a poor prognosis. Major histopathological findings of acute renal failure patients are acute tubular necrosis and mesengioproliferative glumerulonephritis.

P 192
Bacteria presence in cerebral malaria – Assessing its association with disease severity in Ghanaian children

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Question: Cerebral malaria (CM), a severe neurological complication from *Plasmodium falciparum* infection, contributes significantly to child morbidity and mortality despite effective antimalarial treatments. Data indicate that bacterial co-infections may affect malaria severity, yet the bacteria species linked to severe malaria are not well-studied. This research investigates bacteria species and their association with severe malaria in Ghanaian children.

Methods: Bacteria were cultured and identified from blood, rectal swabs, and cerebrospinal fluid (CSF) of children aged between 1 and 12 years diagnosed with CM, uncomplicated malaria (UM) from referral hospitals in Accra and healthy controls (HC) from community schools. Bacteria species identification was performed using culture and MALDI-TOF biotyping techniques. Antimicrobial susceptibility was assessed for 15 antibiotics via the Kirby-Bauer disk diffusion method.

Results: In total, 52 bacteria isolates were identified across 13 genera from rectal swabs. Blood cultures from CM and UM showed low levels of coagulase-negative staphylococci (CoNS) and Bacillus species, with CSF cultures showing no bacteria growth. Rectal swabs revealed a 43.2% overall prevalence of *Escherichia coli*, with the highest (63.6%) in CM and the least (35.7%) in HC. Other significant bacteria from rectal swabs included *Pseudomonas* species (CM: 18.2%, UM: 41.7%), *Enterococcus* species (CM: 27.3%, UM: 33.3%,

HC: 12.5%), and *Staphylococcus aureus* (CM: 18.2%). *Escherichia coli* showed the closest association with CM, although not significant (OR = 3.15, p=0.17). Notably, 62.9% of bacteria isolates were resistant to cotrimoxazole, 51.9% to ampicillin, and 51.9% to tetracycline. However, most were sensitive to ceftriaxone (85%), the most prescribed antibiotic in Ghana"s healthcare system.

Conclusion: This study underscores the potential role of bacterial species in exacerbating malaria severity in children. The high prevalence of *Escherichia coli* in CM rectal swabs suggests its possible contribution to disease severity. These findings highlight the need for integrated management of bacteria co-infections in paediatric malaria cases in endemic areas and suggest revising treatment protocols to improve clinical outcomes in children.

P 193

The effects of malaria in pregnancy on children's socio-emotional development at 6 years of age in Benin – A prospective mother–child cohort

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[3]*Institut de Recherche pour le Développement – IRD FRANCE, Mère et Enfant Face aux Infections Tropicales, Paris, France*
[4]*Institut de Recherche Clinique du Bénin, Abomey-Calavi, Benin*

Malaria during pregnancy impacts children"s development through direct and indirect pathways. Studies show that children exposed in utero have lower cognitive, behavioral, and executive function scores than their non-exposed peers. Indirect effects may include associations with low birthweight and preterm birth, which increase the risk of cognitive and socio-emotional difficulties, as well as conditions like cerebral palsy. Despite these risks, research from Sub-Saharan Africa on malaria in pregnancy and socio-emotional outcomes is scarce, with most studies focusing on neurocognitive effects. To address this gap, we examine malaria exposure at different pregnancy time points and its association with children"s internalizing, externalizing, and ADHD symptoms at age 6 using the Strengths and Difficulties Questionnaire (SDQ) and Test of Variables of Attention (TOVA).

Data originate from the MiPPAD clinical trial, the nested cohort study, APEC, and the follow up cohort, EXPLORE. These assessments were conducted across three health centers in the Allada district of Benin (Sékou, Allada, and Attogon).

A total of 505 participants provided malaria status data via blood smears in pregnancy or PCR tests at delivery, with testing at: first prenatal visit (N=505); second prenatal visit (N=502); third prenatal visit (N=468); PCR test at delivery (N=402); PCR test for placental malaria (N=401); emergency visits (N=79 positive cases). Socio-emotional outcomes were assessed in all children using the Strengths and Difficulties (SDQ) questionnaire, with ADHD symptoms measured among the 452 children who completed the Test of Variables of Attention (TOVA). We used unadjusted and multivariate linear regression models to examine malaria exposure"s relationship with socio-emotional development, adjusting for maternal and household characteristics. We also analyzed placental malaria (N=401), previously linked to adverse neurodevelopment. In both unadjusted and adjusted models, we found no significant association between malaria in pregnancy (at any time point) or placental malaria and children"s internalizing, externalizing, or ADHD symptoms at age 6. These results suggest that malaria in pregnancy may not cause long-term socio-emotional difficulties. Future research should examine socio-emotional development at earlier stages to determine whether any effects emerge in infancy and whether protective factors like home environment and schooling mitigate potential impacts.

P 195

Factors Associated with Persistent Anemia at Day 28 During Antimalarial Treatment in Children Aged 6–59 Months in Guinea

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Introduction: Malaria remains a leading cause of morbidity and mortality in sub-Saharan Africa. Persistent anemia following antimalarial treatment poses significant health risks for children under five in Guinea. The study aimed to analyze the factors associated with the persistence of anemia at day 28 during antimalarial treatment in children aged 6 to 59 months in Guinea.

Methods: This study analyzed secondary data from Therapeutic Efficacy Studies (TES) conducted between 2016 and 2023 across four sentinel sites in Guinea. These randomized controlled trials evaluated the efficacy and safety of artemisinin-based combination therapies (ACTs) in children aged 6–59 months with uncomplicated *Plasmodium falciparum* malaria. Persistent anemia was defined as hemoglobin levels below WHO thresholds at day 28 post-treatment. Sociodemographic, clinical, and biological data were collected and analyzed using multivariable logistic regression to identify factors associated with persistent anemia.

Results: Overall, 2,904 participants were included from 2016 to 2023, distributed across four sites in Guinea. The median age was 48 months, with 85.3% of the children aged between 24 and 59 months. Among participants, 41.1% presented persistent anemia at day 28. Regional disparities were observed, with Maferinyah reporting the highest prevalence (50.9%). Recovery rates varied by treatment arm, with Pyramax showing the highest resolution of anemia (76.6% resolved by day 28).

Multivariable analysis highlighted key determinants of anemia persistence, including regional disparities (highest in Maferinyah; OR=1.87, 95% CI: 1.45–2.42, p<0.001), younger age (6–23 months; OR=3.64, 95% CI: 2.85–4.65, p<0.001), lower baseline hemoglobin levels (OR=1.92, 95% CI: 1.45–2.55, p=0.002), and treatment with ASAQ (OR=2.31, 95% CI: 1.78–3.01, p<0.001).

Conclusion: Persistent anemia post-malaria treatment remains a public health concern in Guinea. Targeted interventions, including nutritional support, iron supplementation, and region-specific strategies, are crucial to improving recovery and reducing complications in vulnerable populations.

P 197

Development of an improved protocol for plasmodium detection

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Introduction: Malaria remains a major global health challenge, requiring rapid and accurate detection of *Plasmodium* species for effective treatment and control. Conventional diagnostic methods such as microscopy or rapid diagnostic tests (RDTs) have limitations in sensitivity, species specificity, or lengthy procedures. Molecular approaches such as PCR offer higher accuracy but depend on fast and sufficient nucleic acid extraction. Thus, technologies allowing molecular testing at the point-of-care are considered useful enablers for effective malaria control in endemic and remote regions.

Objective: Our work aimed at simplifying and shortening the nucleic acid extraction process without compromising the sensitivity of subsequent detection assays. Furthermore, the extraction process shall be simple and fast enough to allow molecular testing even under conditions with minimal laboratory requirements.

Methods: We refined a molecular detection approach by optimizing nucleic acid extraction of *Plasmodium* species from blood. The developed protocol encompasses hemolysis of red-blood cells, capture of the released *Plasmodium* cells, disruption of parasite cells, and removal of impurities from the lysate.

Results: The improvements comprise the following key steps: (a) modification of the cell capturing buffer for simultaneous hemolysis and capture of parasite cells, (b) rapid lysis and inhibitor-removal by Reverse Purification. The optimized extraction workflow allows for total nucleic acid extraction in as short as 20 minutes with a minimum of processing steps. At the same time, it enables *Plasmodium* detection assays to be highly specific and sensitive.

Conclusion: This work presents an optimized protocol for more efficient and cost-effective DNA/RNA extraction of *Plasmodium* enhancing sensitivity, reducing processing time, and improving cost-effectiveness while maintaining downstream test accuracy. Furthermore, the protocol can even be applied to testing for other parasite infections showing immense potential in both clinical as well as field-settings. The method"s high sensitivity and fast turn-around time renders it particularly valuable for malaria surveillance and elimination programs.

P 198

Isothermal nucleic acid amplification with recombinase polymerase for rapid detection of drug resistance in plasmodium parasites – a feasible point-of-care technology

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Drug resistance is recognised as one of the major obstacles to malaria control and elimination, with key drivers of resistance associated with specific single nucleotide polymorphisms (SNPs)1. Point-of-care (PoC) nucleic acid amplification technologies could improve malaria diagnosis and parasite genetic profiling, enhancing malaria surveillance in both endemic and non-endemic regions. Our aim is to develop a PoC biosensor based on Recombinase Polymerase isothermal Amplification (RPA)2 and SNP-specific amplification technique to detect the presence of SNPs in Plasmodium falciparum parasites that are associated with resistance to sulfadoxine/pyrimethamine (SFD/PYR). SFD/PYR is the primary antimalarial chemoprevention for pregnant women and children under two years old in malaria-endemic regions. The following results were achieved: 1) a protocol was developed to target the N51I, C59R and S108N SNPs associated with PYR resistance, 2) proof-of-principle was demonstrated using synthetic DNA (Fig.1), 3) proof-of-concept was demonstrated using extracted DNA from P. falciparum strains with the SNPs of interest (Fig.2), 4) the limit of detection for each SNP was determined using serial 1:10 dilutions of synthetic and natural DNA (Figs.1, 2 and 4), 5) cross-reactivity with other human-important Plasmodium species was ruled out (Fig.3). We have demonstrated the proof-of-principle and proof-of-concept of the first isothermal RPA-based assay designed to detect PYR-resistance-associated SNPs in P. falciparum parasites. Work in progress: 1) validation of the solution-phase RPA assay using extracted DNA from P. falciparum field isolates, and 2) integration of the solution-phase RPA assay with a heat-portable platform for the real-time, multiplexed detection of mutant parasites and quantification of parasite load [DxHub project — a Greek–Portuguese initiative promoting point-of-care solutions for infectious disease diagnostics (HORIZON EUROPE, 2025–2029)]. Fig.1. Proof-of-principle demonstration. Fig. 2. Proof-of-concept demonstration. Fig. 3. Exclusion of cross-reactivity with other human-important Plasmodium species. Fig.4. Schematic figure showing the limit of detection (LoD) of the RPA assays for detecting the PYR-resistance-associated SNPs in P. falciparum. 1. Wicht, K. J., Mok, S. and Fidock, D. A. (2020). doi: 10.1146/annurev-micro-020518-115546. 2. Lobato, I. M. and O"Sullivan, C. K. (2018). doi: 10.1016/j.trac.2017.10.015.

Fig. 1

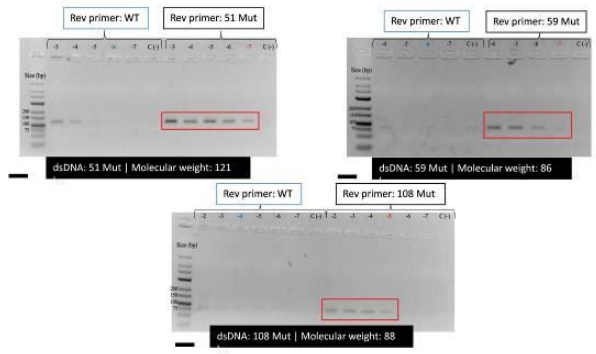

Fig.1. Proof-of-principle demonstration.

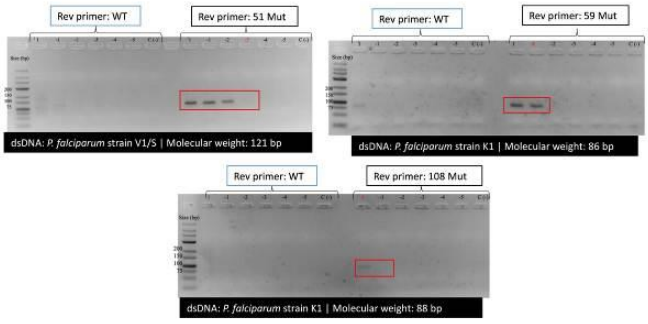

Fig.2. Proof-of-concept demonstration.

Fig. 2

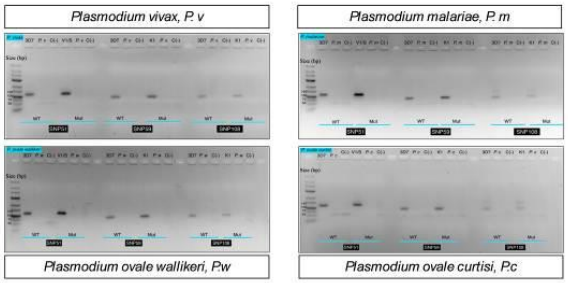

Fig.3. Exclusion of cross-reactivity with other human-important *Plasmodium* species.

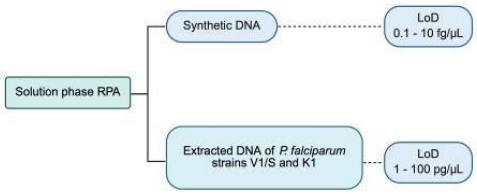

Fig.4. Schematic figure showing the limit of detection (LoD) of the RPA assays for detecting the PYR-associated SNPs in *P. falciparum* .

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Bringing AI to the frontlines – Real-world performance of an automated Malaria Microscopy System in Malawi

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Question: Can the miLab™ automated diagnostic platform provide reliable and accurate malaria diagnosis compared to conventional methods in a real-world clinical setting in Malawi?

Methods: A prospective study was conducted at Bwaila Hospital, Malawi, between May and November 2024. After obtaining written informed consent, patients underwent malaria testing using three modalities: miLab™, traditional light microscopy, and malaria rapid diagnostic test (mRDT). miLab™ is an automated platform that prepares blood smears and employs AI algorithms to detect Plasmodium-infected red blood cells. Microscopy was used as the reference standard. Participants with discordant results between microscopy and mRDT were excluded from the final analysis. The diagnostic performance of miLab™ was assessed by calculating sensitivity, specificity, positive predictive value (PPV), and negative predictive value (NPV).

Results: Out of 1,226 enrolled participants, 36 were excluded due to discordant results between microscopy and mRDT. Among the remaining 1,190 participants, miLab™ identified 230 true positives, 12 false negatives, 947 true negatives, and 1 false positive. This yielded a sensitivity of 95.0%, specificity of 99.9%, PPV of 99.6%, and NPV of 98.7%.

Conclusions: The miLab™ platform demonstrated excellent clinical performance for malaria diagnosis in a real-world setting. With high sensitivity and near-perfect specificity, the system offers a promising alternative to traditional microscopy. Its automation and AI-based analysis may help address the limitations of operator-dependent methods, making it a suitable solution for resource-constrained environments.

P 200

Searching for malaria in a pre-elimination setting in the Putumayo area of the Ecuadorian Amazon basin

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Question: Malaria infects approximately five percent of the world"s population and still causes around six hundred thousand deaths each year. Knowledge on presence and transmission of *Plasmodium* parasites is essential for outbreak surveillance and response and to prevent morbidity and mortality. However, within the Amazon region, there are large areas where little is known about the current presence of human-pathogenic *Plasmodium* spp, nor are there precise case number estimates at hand. As for the Putumayo region, in the far-Northeastern part of Ecuador, bordering the Colombian Putumayo district, an extensive area of close to four-thousand square kilometers of dense rainforest. In Ecuador, malaria cases have declined during the last two decades and its malaria policy has shifted from control to elimination. However, as overall malaria incidence is declining, the proportion of malaria attributable to *P. vivax* increased. Participants from three communities at three time points during the rainy season were tested on the presence of malaria to determine prevalence.

Methods & Results: RDTs: All 293 HRP2/pLDH RDTs were scored negative by two readers.

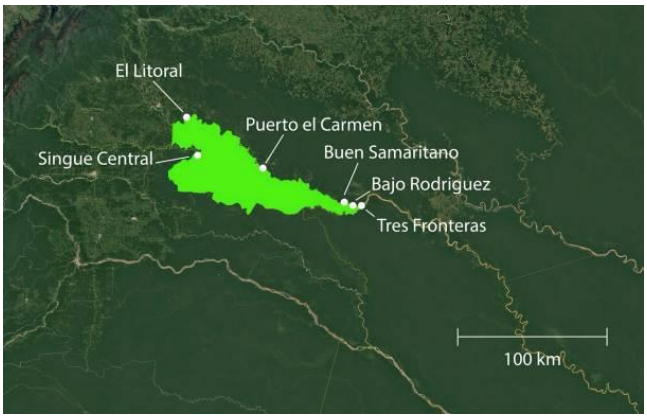
Microsopia: Microscopic examination of all thick smears after resolving disagreements between the two main readers and confirmation by a third reader resulted in three positive slides. Examination of the three corresponding thin slides identified *P. vivax* for all three. Number of parasites were too small to count.

PCR: Molecular analysis by PCR resulted in five positive samples with a mean Ct of 32. The three samples found positive withmicroscopy were all positive with q PCR; in addition, two slide- and RDT-negative samples were positive on PCR.

Results: Due to the small number of inhabitants in the communities and the timely notification of the upcoming visit, the proportion of inclusions within most of the communities is high. Therefore, it is likely that transmission of *Plasmodium* spp. within these communities is really low. This holds true both for the more remote communities as well as for the larger villages within Putumayo. In contrast with the southern part of Ecuador, *Plasmodium* spp. is clearly not eradicated within Putumayo which is of utmost clinical relevance when a new case of acute febrile illness presents. For the surveillance of a new outbreak, it is essential to know which pathogens can be the causative agent. Also, when the transmission of plasmodium is subclinical.

Fig. 1

Fig. 2



P 202

Policy analysis of the introduction of the malaria vaccine in Benin

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Question: In Benin, a lower-middle-income country in West Africa with a population of approximately 14 million, the national prevalence and incidence of malaria were 32.8% and 16.5% respectively in 2023, with 1.3% of severe cases and a case-fatality ratio (CFR) of 1.4 per 1,000 severe cases. Nearly 7,500 severe malaria cases were diagnosed in pregnant women, and 726,909 under-5 children were affected, with a specific CFR of severe forms of 21%. The National Integrated Plan aimed at Eliminating Diseases—particularly malaria—by 2030 relies on interventions such as the distribution of insecticide-treated bed nets, seasonal chemoprophylaxis, intermittent preventive treatment in pregnant women, vector control, diagnosis, and treatment. Malaria control efforts are led by the National Malaria Control Program (NMCP). In 2024, Benin introduced the malaria vaccine as a new component of its Expanded Programme on Immunisation (EPI) implemented by the National Agency for Primary Healthcare (NAPHC) in connection with the NMCP. However, many questions arise regarding the performance of this policy measure. This study aims to analyse the malaria vaccine introduction policy in Benin.

Methods: We applied the Walt & Gilson Policy Triangle Analysis framework and conducted a documentary review and interviews at the central, departmental and peripheral level with key stakeholders (NAPHC, NMCP, EPI, Ministry of Health authorities, donors).

Results: The context was highly favourable for the introduction of the malaria vaccine, both internationally (with funding available through the Gavi Alliance) and nationally (with strong public acceptance). However, several inconsistencies emerge from the "actors" dimension of the Policy Triangle Analysis, leading to fragmented governance. Specifically, in terms of process, the malaria vaccine introduction was "donor-driven", initiated by Gavi through its main counterpart, the EPI. This has led to competition for power, resources, and decision-making among stakeholders. As a result, coherence with other malaria control interventions led by the NMCP is not fully ensured. This raises questions about whether introducing the malaria vaccine offers the best value for money compared to other malaria control strategies.

Conclusion: The introduction of the malaria vaccine should be based on clear processes ensuring its coherence in terms of governance, seamless integration with existing interventions, and alignment with the broader health system.

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Factors influencing implementation of malaria chemoprevention for under two years African children – A scoping review

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Introduction: Malaria is a leading cause of infant mortality in Africa, with children under five years old and pregnant women being the most vulnerable populations. Seasonal malaria chemoprevention (SMC) and perennial malaria chemoprevention (PMC) and recently introduced malaria vaccines, are some effective prevention measures against malaria to complement insecticide-treated mosquito nets and indoor residual spraying. The review aimed at assessing the effectiveness of chemoprevention strategies and analyzing the factors influencing their implementation and outcomes.

Methods: A scoping review was conducted using the Joanna Briggs Institute (JBI) framework to synthesize findings. Search was performed across PubMed, Scopus, and google scholar databases. Data was assessed independently by two researchers.

Results: In total 375 articles were identified from the three databases. Of these, 38 articles were included in the review. The studies were conducted across 16 African countries implementing both strategies. PMC and SMC were both efficacious for malaria prevention with protective efficacy varying from 20% to 87.5% for PMC and up to 88.2% for SMC. Both strategies coupled with vaccination yielded greater efficacy. The factors reported to influence the efficacy of the strategies were the transmission season, the prevalence of asymptomatic parasitemia and the transmission intensity. Implementation and adherence to the strategies were influenced by the lack of political will, the absence of community distributors and the absence of parents during administration.

Conclusion: The efficacy of chemoprevention increases when co-administered with vaccination. This review summarizes results from diverse research activities to inform implementation in malaria endemic settings. Malaria endemic countries will be well prepared for implementation in the light of the different factors influencing implementation and adherence to the strategies.

Keywords: Malaria; Chemoprevention; Under Five children; Scoping review.

1. WHO. Fact sheet about malaria [Internet]. 2022 [cited 2022 Dec 14]. Available from: https://www.who.int/news-room/fact-sheets/detail/malaria
2. Malaria vector control [Internet]. [cited 2023 Sep 13]. Available from: https://www.who.int/teams/global-malaria-programme/prevention/vector-control

Fig. 1

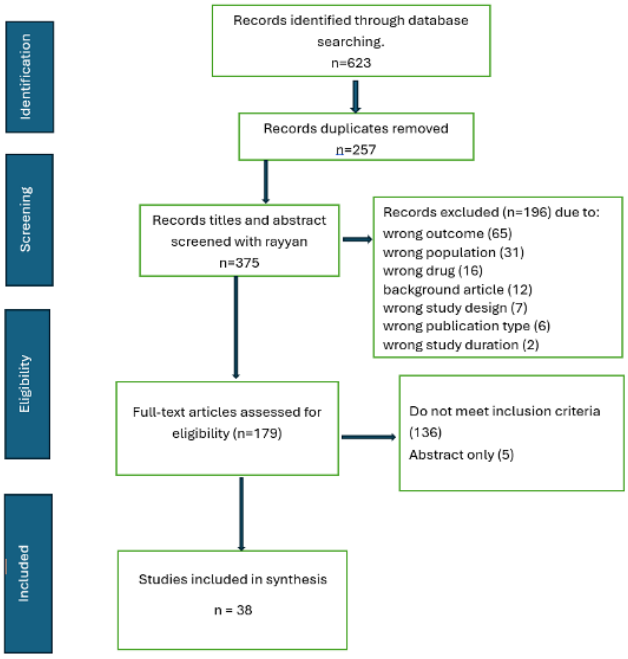

Fig 1: PRISMA Flow Diagram for inclusion process of articles in the review

P 204
Assessment of different techniques and markers to distinguish recrudescence from new infection in an antimalarial therapeutic efficacy study conducted in Rwanda

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[1]Swiss Tropical and Public Health Institute, Medicine, Allschwil, Switzerland
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Question: Accurate estimation of antimalarial drug efficacy against *P. falciparum* requires PCR correction to distinguish recrudescence from new infection in cases of recurrent infections. One of the currently used markers for PCR correction (*glurp*) has been found to be suboptimal, and there is a need to find more robust markers and techniques. However, finding optimal genotyping techniques, markers and decision algorithms is challenging, especially for samples from high transmission settings with high complexity of infection. In this study, we compared several markers and decision algorithms using samples collected in Rwanda to identify the most suitable and robust approaches for PCR correction.

Methods: We analyzed patient samples by capillary electrophoresis and amplicon deep sequencing and assessed the diversity and allelic frequency of *msp1*, *msp2*, *glurp*, microsatellites (*Poly-α, PfPK2, TA40, TA81*) and *ama1-D2, ama1-D3, cpmp, cpp, csp*. We then classified the samples into recrudescence or new infection based on different marker combinations and three decision algorithms (WHO algorithm, 2/3 algorithm, and a Bayesian statistical approach), and compared our results with previously published findings.

Results: *TA40* and *PfPK2* had the highest sensitivity in detecting minority clones for microsatellites; however, their intra-assay reproducibility was found to be limited. *Msp2/3D7* and *cpmp* had the highest genetic diversity. The WHO algorithm identified the fewest recrudescences across all marker combinations. Conversely, the 2/3 algorithm identified the highest number of recrudescences, and the algorithm based on Bayesian statistics yielded intermediate results. We observed the least variability among the different algorithms for the combination of *ama1-D2/ama1-D3/cpmp*. In our study, replacing *glurp* with other markers did not significantly alter the final number of recrudescent infections.

Conclusions: Our findings suggest that replacing glurp by microsatellites may not improve the PCR correction accuracy. However, the combination of *ama1-D2/ama1-D3/cpmp* yielded the most consistent results in detecting recrudescences, regardless of the decision algorithm used. Therefore, it should be considered for PCR correction in the future. Further evaluation of decision algorithms based on probabilistic approaches, compared to match-counting methods, is essential to ensure the accuracy and consistency of PCR-corrected drug efficacy estimations.

Fig. 1

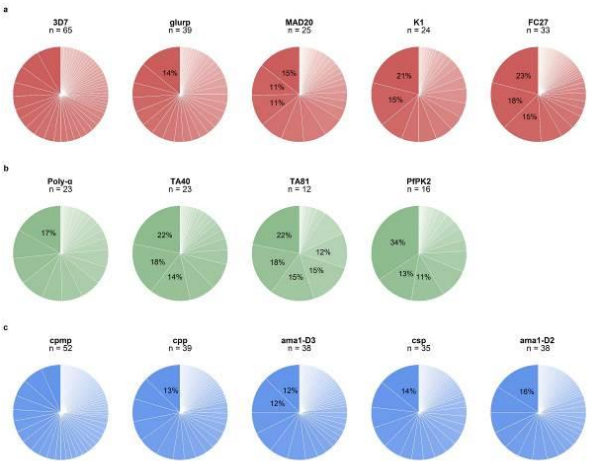
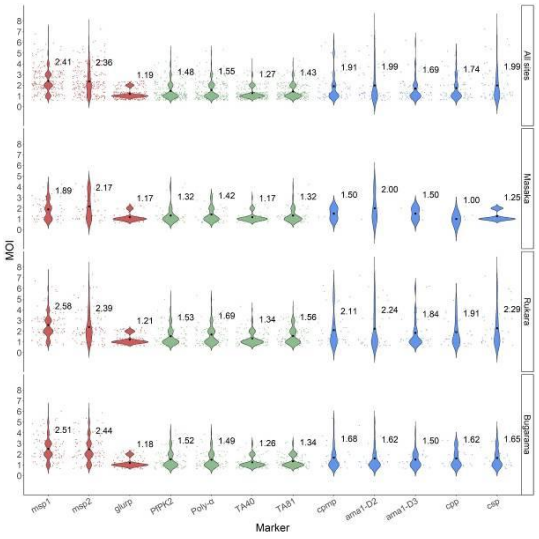


Fig. 2



P 205

Recurrent malaria infections, development of immunity and implications for vaccine efficacy trials

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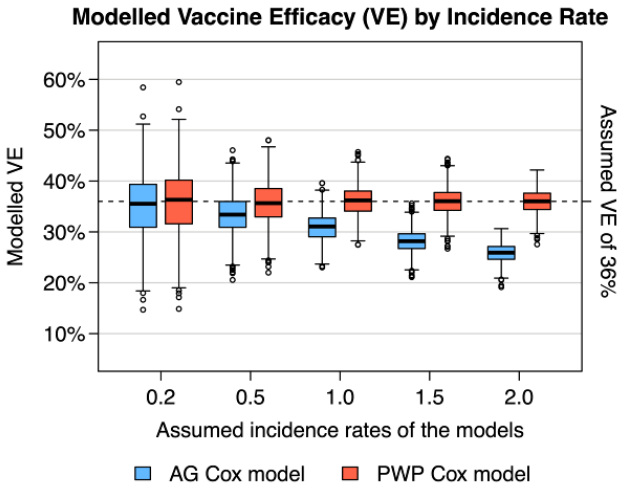
In high-endemic areas, recurrent malaria infections are common, and each experienced infection contributes to the development of (partial) immunity. In recent years, different malaria vaccines have been developed and tested in clinical trials. The studies were conducted at study sites with different levels of malaria endemicity. However, the development of immunity is endemicity-dependent. In particular, unvaccinated study participants build up immunity faster in highly endemic areas than in areas of low endemicity. This may affect the results of vaccine trials. Here, we simulate malaria trials conducted in areas with low and high endemicity to demonstrate the impact of acquired natural immunity on the estimated vaccine efficacy (VE).

The occurrence of recurrent malaria infections in individuals was simulated using Markov Chains. Infections in cohorts of 500 vaccinated and 500 unvaccinated participants were modelled assuming a VE of 36%. Susceptibility to malaria infection was assumed to drop from the first to the sixth recurrent infection from 1 to 0.9, 0.7, 0.5, 0.3, 0.2, and 0.1, respectively. One-thousand cohorts were simulated using malaria incidence rates of 0.2, 0.5, 1.0, 1.5, and 2.0 infections per person-year, representing study areas with different infection risks. Hazard ratios (HR) were estimated using Cox regression for correlated events (i.e., Anderson and Gill model, AG; often used in VE-studies), and Cox regression stratified by the number of recurrent infections (i.e., Prentice, Williams and Peterson model, PWP). The median VE (1-HR) and 95% confidence interval (CI) from the simulations are reported.

The simulated VE calculated with the AG model decreased constantly with increasing IRs. The simulated VE estimated using AG model decreased with increasing IRs from 36% (95% CI: 22–47) at an IR of 0.2 to 26% (95% CI: 22–29) at an IR of 2.0. However, the VEs estimated using the PWP model remained constant at 36% over different transmission intensities (Fig. 1).

In our simulation study, higher malaria endemicity is associated with lower VE for recurrent infections, an effect also seen in malaria vaccine trials. This effect can be controlled by the use of appropriate regression methods. However, they are not commonly applied in the analysis of recurrent events. While our model is based on simplified assumptions, the results underline the importance of natural immunity in clinical trials and the need to apply appropriate statistical methods.

Fig. 1



P 207

The effect of malaria mass testing and treatment on host antibody response to *Plasmodium falciparum* EBA-175 in a high malaria transmission setting in Ghana

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[2]University of Cape Coast, Microbiology and Immunology, Cape Coast, Ghana

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Background: Naturally acquired immunity against malaria is developed through repeated exposure of humans to malaria parasites. Efforts to decrease malaria incidence can potentially alter the development of immunity. This work aimed to monitor total IgG levels against *Pf*EBA-175 during the implementation of a quarterly mass testing, treatment, and tracking (MTTT) strategy in a high malaria transmission setting in Ghana.

Methods: In total, 314 individuals aged 6 months to 90 years participating in four quarterly MTTT studies were selected for this study. Finger-pricked blood was collected from each participant and used to prepare dried blood spots, which were used for molecular diagnosis of *P. falciparum* infection and elution of antibodies for serological evaluation of *Pf*EBA-175-specific antibodies.

Results: The infection prevalence by PCR was reduced from 56.2% at baseline to 46.8% at the end of the study. During the four MTTT rounds and surveys, 212 participants (67.5%) were infected at least once. Participants aged 10–14 years had the highest infection prevalence at the baseline and experienced a consistent decrease throughout the study. The overall antibody titers against *Pf*EBA175 fluctuated during the study period, reaching the highest at the end of the study. Consistent with the age-dependent acquisition of host immunity against

malaria parasites, a significant positive correlation was detected between age and anti-EBA175 IgG levels. Over the study period, infected participants also had a significantly higher anti-EBA175 IgG levels than uninfected. However, the number of positive test results had minimal impact on the IgG titers.

Conclusions: Higher anti-EBA175 antibody levels were associated with infection. The 13-month MTTT exercise in a malaria hyper-endemic community did not significantly reduce the levels of *Pf*EBA-175 antibodies.

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MultiMalModPy – A novel programmatic framework for integrating three individual-based malaria models

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Question: Mathematical models are increasingly used to inform malaria policy at global and national levels. While employing multiple models is recognized as best practice, ensemble modeling remains rare due to the expertise required, the complexity of model harmonization, and diverse software implementations. To address these challenges, we assessed the feasibility of running three individual-based malaria models within a unified platform with aligned parameters.

Methods: We developed MultiMalModPy, a Python and R based framework that enables simultaneous execution of three widely used individual-based malaria models: EMOD, OpenMalaria, and malariasimulation. The framework allows users to generate experimental scenarios and produces outcome measures at five-day, monthly, and yearly intervals. It facilitates comparative evaluation of model behavior at baseline and under system perturbations, such as interventions. MultiMalModPy is open-source, customizable, and supports any combination of the three models.

Results: Our framework successfully integrates the three models within a single computing platform, ensuring coherent execution. Pre-designed parameter options and a structured calibration setup help maintain correct alignment of inputs and outputs across models. We developed an alignment checklist to guide the model alignment process, which requires considerable and continuous effort. The framework is designed to be accessible by other modelers familiar with at least one of the three models. Special care is required when aligning the output definitions, investigating differences in model calibration, and determining which parameters are not necessary to align depending on the research question.

Conclusions: As malaria epidemiology and interventions grow more complex, and the need for modeling in decision-making expands, MultiMalModPy aims to enhance the robustness and reliability of malaria modeling while also increasing modeling capacity. Ultimately, this multi-model approach will contribute to strengthened evidence-based policymaking by enabling comprehensive cross-model comparisons.

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Impact of the combination of primaquine and chloroquine on parasite transmission to mosquitoes and clearance in *Plasmodium vivax* patients in Ethiopia

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Questions: Primaquine (PQ) targets the hypnozoite stage of *Plasmodium vivax* and helps prevent transmission by affecting mature gametocytes. Our study aimed to assess whether combining PQ with chloroquine (CQ) reduces *P. vivax* transmission from humans to mosquitoes and enhances parasite clearance compared to CQ alone.

Methods: We conducted an open-label, randomized trial involving participants with *P. vivax* mono-infection from a health facility. The study included microscopic blood film examinations, nested polymerase chain reactions (PCR), clinical assessments, and artificial membrane feeding techniques. We evaluated gametocyte clearance through microscopy, while nested PCR was employed to assess asexual parasite clearance. To examine the treatment's effect on transmission, we dissected mosquitoes on day eight to observe oocyst development and performed an ELISA on day twelve to measure the presence of circumsporozoite protein (CSP). Participants were monitored for 28 days to evaluate the clearance rates of asexual stages and gametocytes. A zero-inflated Poisson regression model and binary logistic regression with generalized estimating equations were employed to estimate the effect of treatment on transmission and clearance.

Results: Fifty-six patients completed the three-day mosquito feeding experiments, and forty-nine completed the 28-day follow-up. Before treatment, 57% of patients in the CQ group (16/28) and 82% in the CQ-PQ group (23/28) were infectious to mosquitoes (P=0.08). After one day of treatment, the CQ-PQ group showed a significantly greater reduction in infectiousness ($P < 0.0001$) and a more pronounced decrease in oocysts ($P < 0.001$) compared to the CQ-only group. The rate of CSP reduction was also higher in the CQ-PQ group ($P = 0.002$), and fewer patients had gametocytes ($P = 0.02$). However, there was no significant difference in asexual parasite clearance rates three days post-treatment ($P = 0.42$).

Conclusions: Although adding PQ reduces *P. vivax* transmission to mosquitoes, some patients can remain infectious for up to 24 hours after treatment.

Trial registration number: **PACTR202408837266041**

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Analysis of *pfhrp2* and *pfhrp3* deletions, and variability of *Pf*HRP2 and *Pf*HRP3 proteins – Implications for malaria rapid diagnostic tests in Angola

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Question: Malaria remains a major health issue, particularly in sub-Saharan Africa, where *Plasmodium falciparum* accounts for the highest burden. Early and accurate diagnosis is crucial for control efforts, with rapid diagnostic tests (RDTs) serving as alternatives to microscopy in resource-limited areas. However, the efficacy of *Pf*HRP2-based RDTs (*Pf*HRP2-RDTs) can be compromised by *pfhrp2* and *pfhrp3* gene deletions, leading to false negatives. Additionally, antigenic variability may affect sensitivity. While deletions have been reported in neighboring regions, their prevalence and genetic diversity in Angola remain undocumented. This study evaluates *pfhrp2*/*pfhrp3* deletions, *Pf*HRP2/*Pf*HRP3 variability, and their impact on RDT performance in Cubal, Angola.

Methods: 100 dried blood samples from febrile patients in Cubal (May–July 2022) were confirmed *Plasmodium* spp.-positive by real-time PCR. Diagnosis was validated via microscopy and *Pf*HRP2-RDT. Deletions of *pfhrp2*/*pfhrp3* were assessed by PCR amplification of exons 1-2 and 2. *Sequences of pfhrp2 exon 2 were translated into amino acid sequences to identify amino acid repeats and candidate epitopes, classifying samples according to their sensitivity to PfHRP2-PDRs.*

Results: 59% of the samples were positive by microscopy and 79% by *Pf*HRP2-PDR. A total of 96% of the samples were infected with *P. falciparum* and were included in the *pfhrp2* and *pfhrp3* analyses. Deletions in exon 1-2 were detected in 8.33% (*pfhrp2*) and 12.55% (*pfhrp3*), with higher real-time PCR Ct values in samples with deletions (median=38.75; mean=32.54, respectively) compared to intact samples (median=28.95; mean=26.10, respectively) (p-value<0.01), suggesting lower parasitaemia. No deletions were observed in exon 2. Protein analysis revealed high variability in histidine repeats, with the more *Pf*HRP2-PDR-sensitive samples showing more repeats and epitopes. The average number of epitopes per *Pf*HRP2 sequence was 57, and the 3A4 and C1-13 epitopes were present in 100% of the samples.

Conclusions: The absence of *pfhrp2* exon 2 deletions and good *Pf*HRP2-RDT performance support their diagnostic utility in Cubal. Continuous monitoring is essential for long-term efficacy. *Pf*HRP2 variability may influence test sensitivity, warranting further research. Findings enhance understanding of *Pf*HRP2/*Pf*HRP3 diversity and suggest *Pf*HRP2-RDTs targeting 3A4 and C1-13 epitopes could improve malaria diagnosis.

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Prevalence of *Plasmodium falciparum* parasites with *Pfhrp2 exon 2* gene deletion in symptomatic malaria patients across Ghana

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Background: *Plasmodium falciparum* histidine-rich protein 2-based RDTs (PfHRP2-based RDTs) are the most widely used malaria RDTs across Africa. The emergence and spread of *Pfhrp2* gene-deleted parasites has prompted nationwide surveillance to monitor trends and potential hotspots for mutant parasite clones. This study aimed to assess the prevalence and distribution of *Pfhrp2* gene deletions in Ghana.

Method: The First Response® HRP2 RDT (First Response RDT) and CareStartTM HRP2/panLDH Combo RDT (Combo kit) were used to screen suspected malaria individuals seeking care in 160 public healthcare facilities across all 16 regions of Ghana, between June and August 2021. DNA was extracted from the dry blood spots to confirm the presence of *P. falciparum* and subsequently, *Pfhrp2* gene deletion by PCR.

Results: The overall malaria positivity for the two RDTs was similar: 72.3% (95% CI: 71.4-73.2) for the First Response RDT and 71.5% (95% CI: 70.6-72.4) for the HRP2/panLDH Combo kit (p=0.215). There were no *Pfhrp2 exon 2* gene deletions identified in false negative RDT samples, however, deletions were identified in 0.3% (19/5,611) of samples that tested positive for both the First Response RDT and the panLDH band of the Combo kit, and 9.1% (2/22) of the missed infections, leading to an overall *Pfhrp2 exon 2* gene deletion of 0.4% (21/5,633). The present work, conducted in 2021, determined *Pfhrp2* deletions in Ghana to be less than 1% with almost equal distribution across 16 regions.

Conclusion: This finding offers assurance for the continued reliance on HRP2-based RDTs for screening in public health clinics in Ghana.

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Evaluation of a recombinase polymerase amplification assay for the detection of plasmodium parasite in the Sudan

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This study aimed at evaluating Recombinase Polymerase Amplification (RPA) for detection of *Plasmodium* parasite in clinical samples in comparison to the gold standard Giemsa-stained smear. A total of 52 blood samples were obtained from the diagnostic labs of 2 primary healthcare centres in Khartoum State after being tested (1st microscopy) for malaria by the laboratory technical staff of the centres. The samples were re-examined by Giemsa-staining (2nd microscopy) and further tested by PCR and nested- PCR using species-specific primers for *Plasmodium* spp. (*P falciparum* and *P. vivax*). According to the results of these tests, 30 samples were selected using categories random selection for testing by a real- time RPA assay. The real time RPA assay in this study could detect as little as 2 copies/µl of *Plasmodium* genome. Out of the 30 selected samples, 19 (63.3%) were confirmed to be *Plasmodium* spp. positive by RPA, 20 (66.7%) by nested PCR, 11 (36.7%) by both PCR and 1st microscopy and 14 (46.7%) by 2nd microscopy. Statistical analysis by chi-square test showed that RPA and nested PCR results were significantly different (p< 0.05 in both) when compared with the 1st microscopy, whereas no significant difference (p>0.05 in both) when PCR was compared with 1st microscopy and 2nd microscopy. The RPA assay scored 100% sensitivity when 1st microscopy was regarded as reference, 81.8% with regard to nested PCR, 45.5% with PCR and 90.9% with 2nd microscopy. On the other hand, the specificity of RPA was

57.9% when 1st microscopy was regarded as reference; 42.1 % with regard to nested PCR, 68.4 % with PCR and 79.0 % with 2nd microscopy. In conclusion, this real-time RPA assay was more sensitive for detecting plasmodium parasites in peripheral blood samples in comparison with Giemsa-stained smears and conventional PCR. It is a promising rapid and simple nucleic acid- based test for malaria diagnosis at the point of care or in field and low-resource settings in developing countries like the Sudan.

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Plasmodium falciparum HRP2/3 deletions and _Kelch 13_ variants in Central Ethiopia, 202

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Ethiopia is facing major setbacks in the fight against malaria. Cases nearly doubled from 2023 to 2024, now reaching 7.3 million and the geographical area of transmission expanding. This resurgence is likely driven by ongoing conflicts that have disrupted essential control measures.

At the same time, two main pillars of malaria control—rapid diagnosis and effective treatment—are under serious threat. Strains of *Plasmodium falciparum* with deletions in the *PfHRP2/3* genes, which allow the parasite to evade HRP2-based rapid diagnostic tests, are increasing. In parallel, strains carrying markers for artemisinin resistance in the *PfK13* gene have emerged and are spreading.

We analysed variants of *PfHRP2/3*, *PfK13*, and *PfMDR1* in 220 malaria patients from central Ethiopia in 2023. *P. falciparum* was detected in 80% of cases. The validated artemisinin resistance marker *PfK13* R622I was found in 1% (2/174) of infections, while the candidate marker P441L appeared in 2% (3/174). Deletions in *PfHRP2*, *PfHRP3*, and both genes were observed in 24% (36/150), 79% (118/150), and 23% (34/150) of cases, respectively. No significant association was found between *PfHRP* deletions and *PfK13* variants. The *PfMDR1* pattern suggested reduced sensitivity to lumefantrine.

Our findings advocate for alternative malaria diagnostics, ongoing molecular surveillance, and close monitoring of treatment efficacy.

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ARTeMIS-Africa – Artemisinin resistance training and monitoring for integrated strategies in sub-Sahara Africa

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The emergence of artemisinin partial resistance in Africa is one of today"s biggest threats to malaria control. In southern Rwanda in 2019, we confirmed and reported the presence of artemisinin resistant malaria parasites on the continent. Since then, we have founded and fostered a lively network of partners across sub-Saharan Africa to exchange the advancing knowledge on artemisinin partial resistance in Africa, train technicians, medics and scientists, and conduct epidemiology surveillance studies and *in vitro* research. Here, we present our activities, latest data, and plans.

Through the network, we organized multi-disciplinary workshops in Uganda, the DR Congo, Rwanda and Germany. We trained over 30 parasitologists and molecular biologists on techniques for artemisinin resistance surveillance and research, and we have developed and tailored capacities to continue these activities locally. We collected over 1,000 cryopreserved *Plasmodium falciparum* isolates, genomic samples, and patient data, and generated molecular surveillance data from satellite sites in both West and East Africa. We demonstrated the presence and local selection of several molecular markers for artemisinin resistance in East Africa, while noting the absence of such markers in the West African sites as of 2023-2024. Simultaneously, we observe significant regional differences regarding resistance related aspects, such as the high prevalence of HRP2/3 deletions in Ethiopia, the slow introduction of resistance markers in eastern DR Congo, and a high prevalence of a candidate marker in the *coronin* gene in Ghana. Each of these local parasite lines is now characterized *in vitro* to assess their antimalarial drug susceptibility, and fitness.

In a nutshell, we have generated a wealth of data and a biobank of real-life parasites from both the epicentre of artemisinin resistance and from previously unaffected areas, with our insights continuously evolving. Moreover, the network has led to spin-off projects, including mosquito-based surveillance, the mobility of resistant parasites through overnight transport vehicles, advanced genetic crossings with partners in the USA, validation of the NOMADS nanopore sequencing for HRP2/3 deletion detection, and streamlining of simpler sample collection in the field. We are open to expanding the network and collaborating on in-depth functional and molecular studies.

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MARS: Mosquito-based Artemisinin Resistance Surveillance in south Kivu, DR Congo

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The emergence and spread of drug resistance undermines malaria control since antimalarials have been in use, and the recent emergence of artemisinin partial resistance in Africa adds to this list. Rapid and well-covering surveillance is

essential to detect the emergence of antimalarial drug resistance, identify hot spots and tailor countermeasures and policy. Molecular markers are widely used for such surveillance for reasons of ease and cost, but sample collection can be challenging. Molecular surveillance of antimalarial drug resistance is primarily done on patient-derived blood samples. This requires trained personnel, comes with ethical and logistical constraints, and might introduce a bias based on the recruitment strategy. We are piloting the use of mosquitoes instead of human-derived blood samples for surveillance of artemisinin resistance in South Kivu, eastern DR Congo.

We have optimized and validated a cost-effective, highly sensitive, Chelex™-based method to extract DNA from (pooled) mosquitoes, for PCR-amplification of *P. falciparum* DNA in infected *Anopheles* mosquitoes and in non-*Anopheles* mosquitoes after a *P. falciparum*-infected blood meal. By this approach, antimalarial drug resistance markers can be successfully and consistently genotyped and sequenced. In parallel, we have collected approximately 5,000 female mosquitoes in households in South Kivu, DRC, in parallel to almost 1,000 malaria patient samples from the same region. Preliminary data demonstrate that artemisinin resistance markers are present in malaria patients in South Kivu but at a low prevalence of 2%. Mosquito *species* distribution is 80% *Culex*, 18% *Anopheles*, 2% other species. We will present first data on the match of antimalarial drug resistance markers in human and mosquito samples from defined communities in DRC.

We will discuss from a feasibility and accuracy point-of-view, whether surveillance of antimalarial drug resistance can be done on household-caught mosquitoes instead of using patient blood samples. Ideally, mosquito-based surveillance is fast, cheap, and accurate. In reality, we may lose sensitivity by using pooled mosquitoes, but gain coverage and scalability. This would allow us to rapidly identify artemisinin resistance hotpots and enable up-scaling of such activities.

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Plasmodium falciparum resistance to sulfadoxine – The hidden part of the iceberg

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Question: Efficacy of sulfadoxine-pyrimethamine (SP) combination, the antimalarial antifolate chemoprophylaxis used in Africa, in pregnant women, and in children when combined with amodiaquine, is threatened by the accumulation of mutations in the *Plasmodium falciparum* dihydropteroate synthase (*pfdhps*) and dihydrofolate reductase (*pfdhfr*) genes. Accurate monitoring of the prevalence of the different resistance genotypes is one of the key factors in the fight against resistance. Molecular surveillance is generally performed by sanger sequencing, a non-optimal technology in the case of multi-clonal infections. Here, we assessed the contribution of long-read sequencing in investing the *pfdhps* genotype, in particular the new emerging I431V mutation, associated with SNPs S436A, A437G, A581G and A613S to form the *pfdhps* vagKgs allele.

Methods: We collected *P. falciparum* isolates in Yaounde (Cameroon) during 2023-2024 period, from patients with symptomatic malaria included from the general population, and pregnant women under IPTp-SP or not. The frequency of *pfdhps* mutations was studied after sanger sequencing and amplicon long-read sequencing.

Results: From 143 of 174 samples, the proportion of mixed infections was 21.0% using Sanger sequencing, and 45.5% using long-read technology, with an average number of alleles of 2.6 [2 – 6]. Sanger sequencing found that the proportion of the *pfdhps* vagKgs allele in pregnant women under SP was 13% compared to the general population (1.4%; p=0.019). Using long-read sequencing, theses proportions were 22.5% and 31.6% (p= 0.36), respectively.

Conclusions: Long-read amplicon sequencing was more sensitive than Sanger technology as it detects lower proportion of *pfdhps* alleles (0.5 to 1%) compared to the reference method (≈15-25%). Compared with Sanger technology, long-read amplicon sequencing offers the major advantage to characterise alleles in multi-clonal infections. In our study, this new technology revealed that *pfdhps* vagKgs allele also circulated in the general population with a relatively high prevalence. Long-read sequencing gives us a much more detailed picture of the circulation of "resistant" minority clones and could enable us to manage changes in therapeutic strategies more accurately and, above all, more proactively.

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Haplotype study of sulfadoxine/pyrimethamine resistance in P. falciparum samples from four provinces of Equatorial Guinea and its association with preventive malaria treatments in pregnant women and children

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Background: The spread of sulfadoxine-pyrimethamine (SP) resistance in Plasmodium falciparum isolates represents an increasing threat to the effectiveness of malaria chemoprevention programs for special risk groups in malaria-endemic areas. Equatorial Guinea (EQ), located in west central Africa, reported 423000 malaria clinical cases in 2023, with pregnant women and children as the most vulnerable populations.

Objective: This study aims to analyze the frequency of mutations in the P. falciparum dihydrofolate reductase (pfdhfr) and dihydropteroate synthase (pfdhps) genes, and the resulting haplotypes, in 389 P. falciparum-positive samples from the four provinces of the Continental Region of EQ. Samples were tested with conventional microscopy and rapid diagnostic test in the field, and processed by Nested-PCR and Sanger sequencing in the National Centre for Tropical Diseases, Institute of Health Carlos III. The single nucleotide polymorphisms (SNP) and resulted haplotypes frequencies were calculated and compared between the provinces studied.

Results: Frequencies higher than 98% were identified for N51I, C59R and S108N mutations in the pfdhfr gen,

conforming the IRNI haplotype in 98.71% of the samples, while the I164L mutation was not detected. In the pfdhps gen, the A437G was the most prevalent (98.20%), while K540E (8.74%) and A581G (1.54%) remained below the WHO defined thresholds for the Intermittent Preventive Therapy (IPTp) implementation. The emerging mutations such as I431V and A613S were detected at frequencies of 4.88% and 2.31%, and were found together in the VAGKGS haplotype, detected in 0.77% of the samples in the Kié-ntem province. In addition, the partially resistance' and 'fully resistant'' pfdhfr/pfdhps haplotypes were detected with significant differences between the provinces studied, while no 'super resistant' haplotypes were found. Differences in the provincial distribution was found in IRNI+ISGKAA, IRNI+ISGEAA, IRNI+IFGKAA and IRNI+VAGKGS pfdhfr+pfdhps haplotypes.

Conclusions: These findings show that chemoprevention treatments with SP as IPTp can continue to be used without risk to this population and there is the possibility of implementing SP for the IPTi and SMC preventive strategies in the country. However, the high circulation of genetic variants in pfdhrf and pfdhps genes, associated with resistance to SP, underscores the importance of maintaining active molecular surveillance to optimize malaria prevention policies.

Fig. 1

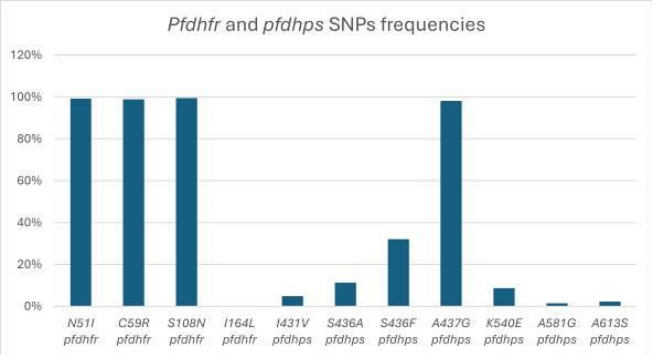

Fig. 2

SNP	*Pfdhfr+pfdhps* Haplotypes	LIT (n)	CS (n)	WZ (n)	KN (n)	Frequency	p-value
51/59/108/437 (*partially resistant*)	IRNI + ISGKAA	45	24	43	66	45.76% (178/389)	3.27×10^{-9}*
51/59/108/437/540 (*fully resistant*)	IRNI + ISGEAA	4	1	4	10	4.88% (19/389)	0.023*
51/59/108/437/540/581 (*super resistant*)	IRNI + ISGEGA	0	0	0	0	0.00% (0/389)	-
51/59/108/436/437	IRNI + IFGKAA	35	52	32	0	30.59% (119/389)	8.34×10^{-19}*
51/59/108/436/437	IRNI + IAGKAA	4	1	4	6	3.86% (15/389)	0.256
51/59/108/437/613	IRNI + ISGKAS	0	1	1	2	1.03% (4/389)	0.383
51/59/108/436/437/613	IRNI + IFGKAS	0	1	0	0	0.26% (1/389)	0.488
51/59/108/436/437/613	IRNI + IAGKAS	0	2	3	3	2.06% (8/389)	0.310
51/59/108	IRNI + ISAKAA	0	0	1	0	0.26% (1/389)	0.742
51/59/108/437/581	IRNI + ISGKGA	0	0	1	0	0.26% (1/389)	0.742
51/59/108/436/437/540	IRNI + IFGEAA	3	4	6	0	3.34% (13/389)	0.089
51/59/108/436	IRNI + IAAKAA	2	3	1	1	1.80% (7/389)	0.733
51/59/108/436/437/581/613	IRNI + IFGKGS	1	0	0	0	0.26% (1/389)	0.999
51/59/108/431/437	IRNI + VSGKAA	1	2	0	0	0.77% (3/389)	0.424
51/59/108/431/436/437	IRNI + VAGKAA	3	4	2	2	2.83% (11/389)	0.836
51/59/108/431/436/437/581/613	IRNI + VAGKGS	0	0	0	3	0.77% (3/389)	0.013*
51/108/437	ICNI + ISGKAA	0	2	0	0	0.51% (2/389)	0.118
436/437/540	NCSI + IFGEAA	1	0	0	0	0.26% (1/389)	0.999
436/437	NCSI + IFGKAA	0	0	1	0	0.26% (1/389)	0.742
59/108/437	NRNI + ISGKAA	1	0	0	0	0.26% (1/389)	0.999

LIT: Litoral; CS: Centro Sur; WN: Wele-Nzas, and KN: Kié-ntem. N: number of samples. *Haplotypes with significant differences between Equatorial Guinea provinces.

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Prevalence and factors associated with molecular markers of *Plasmodium falciparum* resistance to sulfadoxine-pyrimethamine in pregnant women in Bobo-Dioulasso, Burkina Faso

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Question: This study aimed first to investigate the prevalence and risk factors of molecular markers of *Plasmodium (P). falciparum* resistance to SP in pregnant women in Bobo-Dioulasso city, Burkina Faso.

Methods: Between October and December 2022, dried blood spots were collected from 288 pregnant women attending antenatal care visits at the Centre Médical Urbain of Lafiabougou. Samples were analysed by quantitative polymerase chain reaction (qPCR) to detect the *P. falciparum* VarATS gene. Positive samples were genotyped by nested PCR followed by restriction fragment length polymorphism for mutations in the *P. falciparum* dihydrofolate reductase (*Pfdhfr*) and dihydropteroate synthase (*Pfdhps*) genes. Multivariable logistic regression explored predictors of *Pfdhfr* and *Pfdhps* gene mutations.

Results: Mutations in the *Pfdhfr* and *Pfdhps* genes were successfully genotyped in 100% (172/172) and 74% (127/172) of *P. falciparum*-positive samples, respectively. The prevalence of *Pfdhfr* N51I, C59R and S108N mutations was 47.09%, 38.37% and 45.93%, respectively. Overall, 82.68% (105/127) of the samples carried the *Pfdhps* A437G mutation, and the *Pfdhfr* I164L and *Pfdhps* K540E mutations were not detected. The prevalence of the triple *Pfdhfr* (N51I, C59R, S108N) mutation and the quadruple mutant haplotype (*Pfdhfr* N51I, C59R and S108N + *Pfdhps* A437G) was 33.72% and 35.43%, respectively. Gestational age (adjusted OR = 2.17, 95% CI 1.05-4.48) was significantly associated with the *Pfdhfr* triple mutation.

Conclusions: The prevalence of the *Pfdhfr* triple mutation in Bobo-Dioulasso city is relatively high. Our findings suggest that SP is still efficacious, but close monitoring of molecular markers associated with SP resistance is warranted.

Keywords: Malaria in pregnancy, Sulfadoxine-pyrimethamine, Molecular markers, Associated factors, Burkina Faso.

P 221

Diversity in *Plasmodium falciparum* gene markers associated with chloroquine and artemisinin resistance in field isolates from southern Ghana

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Introduction: Case management of malaria depends heavily on antimalarial drugs that kill parasites inside the human body. Resistance to antimalarials is conferred by the presence of genetic mutations within the parasite that interfere with the function of these drugs for parasite survival. Infections harboring resistant parasites can result in increased morbidity and mortality cases. In this study, the presence of drug resistant gene markers was assessed in isolates from Ghanaian patients attending the Ewim polyclinic.

Methods and Results: Dried blood spots were available from a total of 145 isolates (95 from day of enrollment and 50 on Day 7 post-treatment). Photo-induced electron transfer polymerase chain reaction (PET-PCR) identified *Plasmodium falciparum* in 121 isolates (83.4%). Restriction fragment length polymorphism (RFLP) assays were used to identify *P. falciparum chloroquine resistance transporter* (*Pfcrt* K76T) and *P. falciparum multidrug resistance-1* (*Pfmdr1* N86Y) mutations. No mutant parasites were observed for *Pfmdr* N86Y mutation while 2 samples contained the *Pfcrt* 76T mutation. Sanger sequencing was performed to identify *Pfkelch13* polymorphisms. The mutation analysis revealed 16 mutations within 12 isolates: 68.8% were nonsynonymous. However, none of the identified mutations are WHO validated. Fragment analysis (*Pfpk2* and *TA81* genes were amplified) of pre and post-treatment isolate pairs detected the same clones in 11 paired isolates.

Conclusions: While a high proportion of wild-type parasites for the three genes were observed, data from the fragment analysis suggests delayed parasite clearance or recrudescence following treatment. This raises a need for routine molecular surveillance to identify the emergence of artemisinin-resistant parasites.

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Enhanced preventive antiparasitic treatment for better health of African pregnants and their babies

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Pregnant women in Africa are exposed to considerable health risks, with parasitic infections being a major threat. Schistosomes, soil transmitted helminths, and malaria parasites are highly prevalent and polyparasite infections are common. In pregnancy, besides iron deficiency parasites are a key factor causing anaemia associated with an increased risk of maternal and infant morbidity and mortality. More than 50% of the pregnant women are affected by anaemia and an estimated 0.8 million pregnant women globally have severe anaemia.

Antenatal care is a health program to regularly deliver health services including preventive measures with the aim of improving maternal and newborn health. In terms of fighting parasitic diseases, WHO recommends to preventively treat soil-transmitted helminths, schistosomes and malaria parasites. In many endemic sub-Saharan African countries, however, these recommendations are often only partially implemented and not consistently applied in daily antenatal care. Reasons are multifactorial but hesitation in administering multiple drugs this vulnerable population and the complexity of integrating the use of multiple drugs into the antenatal care schedule. On the other hand, data is accumulating that outweighs the potential risk of antiparasitic drug intake versus health benefits.

The newly EDCTP3JU funded TreatPreg project (University of Tübingen/Germany, BNITM Hamburg, ISGlobal/Spain, CERMEL/Gabon, KNUST/Ghana, FORS/Benin, FCRM/RoCongo) aims to increase the uptake and integration of presumptive antiparasitic treatment during pregnancy to combat anaemia and improve health outcomes for pregnant women and their babies in sub-Saharan Africa. To this end, a multi-country trial will assess the safety, tolerability and efficacy of co-administered antiparasitic drugs. Pharmacokinetic data, cost-effectiveness analysis and public health stakeholder"s involvement will further strengthen the case for future implementation of co-administered antiparasitic drugs in antenatal care schedules.

Project concept and study design will be presented to the broad audience.

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HELMSYS – The impact of helminth infections on vaccine outcomes in humans – A systematic literature review

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Background: Immunization promises eradication of infectious diseases, but helminth infections can immunomodulate vaccine response, as shown conclusively in mouse models, hindering optimal protection.

Objectives: A systematic literature review to investigate the impact of direct helminth infection (RQ1) and antihelminthic treatment (RQ2) on vaccine outcomes (immunogenicity, efficacy and effectiveness) in humans.

Methods: This PRISMA-based review was PROSPERO-registered. PubMed, Scopus, WoS, and clinical-trial registries were searched, with relevant keywords, for studies from January 1970 to June 2024. References of articles; and topical websites were hand-searched. Two-step screening with title-abstract, full-texts was done; undetermined helminth-infection, natural immunity and case-studies were excluded. Study setting, populations, helminth-diagnostics, anti-helminthic treatment, and vaccine outcomes were extracted; means and SDs were calculated or converted. Risk-of-bias was assessed by RoB 2.0 and modified Newcastle-Ottawa Scale. Study characteristics were summarized and a quantitative and narrative analysis to answer RQ1 and RQ2 was stratified by vaccine type.

Results: 41 (31 observational, 9 RCT) studies on 15 different vaccines from 19 countries investigating adults, children or both were included, all reporting immunogenicity. For RQ1, the trends in infected groups were (i) tetanus: lowered anti-TT IgG; (ii) BCG: raised IFN-γ; (iii) HBV: lowered anti-HBs IgG; (iv) polio: lowered IgG and raised cytokines; (v) HPV: lowered HPV18 IgG. A non-significant trend for lowered antibodies in infected groups for *S. typhi*, Ebola, and malaria vaccines. For RQ2, the trends in infected, immunized groups were (i) BCG: raised IFN-γ, IL-12 but lowered TGF-β post-treatment; (ii) cholera: modest boost in humoral responses post-treatment. (iii) Measles, influenza: transient raised antibodies; (iv) meningococcal: no response. RCTs showed moderate to high, while observational studies showed low to high, risk-of-bias.

Conclusion: Cumulative findings suggest a trend towards impairment of vaccine immunogenicity in helminth-infected populations with anthelminthic treatment causing potential improvement, but the evidence is inconsistent unlike animal models. More robust clinical trials optimizing study design and standardizing outcome measures for comparability can help

ascertain whether coupling antihelminthics with vaccination may offer dual benefits in endemic settings.

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Evaluating the transition to a 1+1 pneumococcal vaccination schedule for infants in Germany using a dynamic transmission model

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Pneumococcal disease, caused by *Streptococcus pneumoniae*, is a leading cause of morbidity and mortality in infants and children worldwide. Routine infant vaccination with pneumococcal conjugate vaccines (PCVs) is recommended due to the increased risk of pneumococcal disease (PD) in older adults and other vulnerable populations. Vaccination with PCVs has been effective in preventing vaccine-type PD. However, the emergence of non-vaccine serotypes has caused the disease burden to persist, highlighting the need for improvements in national vaccination policies, including strategies to increase vaccination uptake among infants. In August 2015, the German Standing Committee on Vaccination (STIKO, *Ständige Impfkommission*) revised the PCV schedule for full-term infants, transitioning from a 3+1 to a 2+1 immunisation schedule, with doses administered at 2 months, 4 months, and 11 months of age. Several studies have since demonstrated that within the first year of life, similar immunogenicity levels can be achieved using 3+1, 3+0, and 2+1 immunisation schedules. In 2015, the UK proposed a 1+1 immunisation schedule for PCV13 (13-valent pneumococcal conjugate vaccine). With a reduced dose schedule, lower vaccination costs and higher vaccination uptake can be achieved, particularly in resource-limited settings. Our study aims to evaluate the epidemiological, economic, and health outcomes of transitioning from the current 2+1 schedule to a 1+1 schedule in Germany, using a transmission dynamic model. **(WORK IN PROGRESS - generating results at the moment)**

P 226

The application of big data in modelling geographical accessibility to healthcare

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Question: Research on modelling geographical accessibility to healthcare services has witnessed rapid methodological advancements. One of the contributing factors is the increasing availability of big data detailing the link between the population in need of care and the health facility such as infrastructure, travel modes and speeds. This has allowed more granular computation of geographic access metrics. However, there are no reviews providing a comprehensive overview of the availability and use of big data for assessing geographical accessibility to healthcare. To fill this gap, we conduct a scoping review of the existing literature on the application of big data in evaluating geographical accessibility to healthcare.

Methods: The review was conducted following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses extensions for Scoping Reviews guidelines. We searched scientific databases (PubMed, Scopus, Web of Science, EBSCOhost-CINAHL, Cochrane, Embase, and MEDLINE), and grey literature. All literature in English or French without any restrictions of publication type, geographical location or year of publication was included provided it met the inclusion criteria. A thematic narrative approach was used in characterization of big data.

Results: Preliminary results show open-source and paid sources for big data services. Open-access options include OpenStreetMap, Uber Movement, WorldPop and Gaode Map Open Platform. Paid providers include Google Maps, HERE Technologies, MapQuest, SafeGraph and Mapbox, however, these providers also have a limited open access option. The open source and paid providers offer a range of datasets useful for computing spatial access. These big datasets include roads, pathways, public transport, and points of interest, population distribution, mobility, real-time traffic, transit, and global routing data, and travel speeds. Other types of big data include historical urban mobility data, congestion, mobile phone records and population movements.

Conclusions: The use of big data in modelling geographical accessibility to services has large potential to improve estimates to reflect more on ground reality for the link between the population in need and the location of services. The findings of this review provides a knowledge base to guide researchers and policymakers in leveraging big data to improve healthcare accessibility, while advancing equitable and timely delivery of healthcare services.

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Cost-effectiveness of vaccines against respiratory infections in adults in southeast Asia – A systematic review

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Respiratory infections significantly impact adult health in Southeast Asia, yet vaccine coverage remains low. This systematic review evaluated the cost-effectiveness of vaccines targeting respiratory infections in the region. A comprehensive search was conducted across several databases, including MEDLINE/PubMed, EMBASE, NHSEED, CINAHL, EconLit, Web of Science, Scopus, and Cochrane Library, up to April 24, 2024. Nineteen eligible studies were identified, focusing primarily on influenza (8 studies) and COVID-19 vaccines (7 studies), with fewer studies on pneumococcal (2 studies), varicella (1 study), and pertussis (1 study) vaccines. Overall, influenza, COVID-19, and pneumococcal vaccines were found to be cost-effective or highly cost-effective compared to no-vaccine or no-booster scenarios. The only study on maternal pertussis vaccination found it not to be cost-effective. The most common parameters considered in sensitivity analyses were vaccine efficacy and discount rates. This review highlights the cost-effectiveness of influenza, COVID-19, and pneumococcal vaccines in Southeast Asia, providing essential evidence to guide vaccine policy. Future studies should address limitations in model selection, incorporate herd immunity, ensure the validity of cost and benefit measurements, and explore the cost-effectiveness of other vaccines across the region.

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Impact of pre-treatment food intake on praziquantel absorption, metabolism, treatment-associated side effects and efficacy – A systematic review

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Praziquantel (PZQ) is the drug of choice for diseases such as schistosomiasis, opisthorchiasis and taeniasis. The World Health Organization advises administering PZQ with food to decrease side effects. However, there is a scarcity of evidence to support this recommendation and many PZQ mass drug administration programmes do not provide food. This review aims to i) examine whether studies report pre-treatment food intake and if so, characterize the types of food, and ii) assess whether the presence of, and type of, food impacts the treatment outcomes absorption, metabolism, side effects and efficacy in humans.

A systematic literature search was conducted in Embase, Pubmed, Web of Science, African Index Medicus on 26/02/2025. The search strategy was based on two key concepts: i) PZQ, and ii) Food, combined using Boolean operators. Titles and abstracts were screened for relevance to any of the key treatment outcomes: absorption, metabolism, side effects and efficacy. Full texts of potentially relevant articles were reviewed, and studies reporting on pre-treatment food were included in the final analysis.

The search yielded 9881 records, of which 4047 duplicates were excluded. In total, 655 publications were retrieved for full text search and 12.0% (78/655) explicitly reported whether food was administered alongside PZQ. Of those, 69.2% (54/78) focused on schistosomiasis, 5.1% (4/78) on opisthorchiasis, and 1.3% (1/78) on taeniasis. While 97.4% (76/78) mentioned pre-treatment food, 1.3% (1/78) specifically mentioned a fasting period of all participants pre-treatment, 3.8% (3/78) compared food versus fasting, and only one compared different food types (10h of fasting, high-fat diet, versus high-carbohydrate) regarding bioavailability. The latter was conducted with nine healthy volunteers and found that PZQ bioavailability significantly increased when given with fat or carbohydrate in comparison to fasting.

There is a scarcity of publications reporting food alongside PZQ. The absence does not necessarily indicate food was not provided but may reflect reporting. Even fewer studies compared fed versus fasting or evaluated different food types. There is a clear need for research to determine the effect of not feeding/feeding on the impact of PZQ and whether/how co-administration of PZQ with specific food types influences absorption, metabolism, side effects, and efficacy. In particular, comprehensive studies assessing these outcomes in populations endemic for the parasites PZQ targets such as *Schistosoma* spp.

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Design and evaluation of a human papillomavirus awareness-raising campaign in a limited-resource setting – Insights from difference-in-difference analysis in the Boeny region of Madagascar

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Background: Human papillomavirus (HPV) is the leading cause of several cancers, highly incident in low- and middle-income countries, like Madagascar. Vaccination is crucial for HPV-related cancers prevention, yet only 30% of low-income countries have introduced HPV vaccines in national immunization plans. Currently, Madagascar is planning a nationwide HPV vaccination program. This study describes the design and evaluation of an awareness campaign to raise community knowledge of HPV and the importance of vaccination in the Boeny region, Madagascar.

Methods: A 9-month awareness-raising campaign utilized a RE-AIM (Reach, Effectiveness, Adoption, Implementation, and Maintenance) framework and multi-channel strategy that included community outreach, lectures, radio and social media advertising. It targeted general population, healthcare workers, medical students, and community leaders. The campaign evaluation involved both process and outcome indicators, measuring the number of outreach actions and social media engagements. Change in community awareness of HPV was evaluated through repeated cross-sectional surveys, using difference-in-difference analysis with propensity score weighting.

Results: From January to September 2024, a social media campaign with 36 weekly Facebook posts reached 4457 accounts, achieving an engagement rate between 5% and 88%. The most viewed posts focused on colposcopy, HPV prevention, and lecture announcements. A mass media campaign comprised 2.5-minutes and 30-seconds discussions on HPV broadcasted on two regional radio stations covering rural areas. Twenty-five community ambassadors were trained for outreach, posters and flyers were distributed in eight healthcare facilities and at social events. Lecture series on HPV were offered to 106 students. In the pre-campaign survey, of 2139 participants, 4.6% (CI95%=4.0-5.9) were aware of HPV and 28.3% (n=28) of those had heard of HPV vaccination. Post-campaign survey data collection is currently ongoing to assess changes in HPV awareness and knowledge after the campaign.

Conclusion: Our preliminary results show that the campaign has a good potential for reach and effectiveness due to the low baseline levels of community awareness and knowledge of HPV and HPV vaccination in Madagascar. The evaluation of the impact of the campaign using difference-in-difference analysis will contribute to inform the planning for the implementation of HPV vaccination in the region and other similar settings

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Bridging gaps in tropical medicine – A collaborative outreach initiative by family physicians

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Introduction: Providing medical care to all populations needing Tropical Medicine services is a significant challenge. The COVID-19 pandemic highlighted the inequities in healthcare access, making this issue even more pressing. A group of Primary Care physicians and nurses with interest in tropical medicine has worked for years to improve healthcare access for marginalized populations. Our motivation arises from the identification of multiple barriers or challenges, including a)Structural deficiencies in the healthcare system.b) Difficulties faced by primary care professionals in addressing tropical diseases.c)Inherent challenges experienced by migrant and traveling populations, such as poor living conditions and lower trust in healthcare systems

Methods/Results: To address these issues, we have implemented initiatives to raise awareness within the healthcare system and find solutions to enhance tropical medicine care. Our activities include: Educational Programs Online and in-person accredited courses on arboviral diseases, female genital mutilation, first aid for migrant. Training workshops using gamification techniques, such as escape rooms focused on migrant healthcare, "The Chair Game," and "Vac Game." Research and Institutional Collaboration on global health projects. Assessment of healthcare professionals' knowledge in international health. Standardization of healthcare procedures. Improving awareness and detection of autochthonous arboviral diseases Participation in health conferences with presentations on tropical and migrant health. Development of Clinical Guidelines and Protocols: Contribution to protocols female genital mutilation, Chagas disease, preventive measures for migrant populations, screening for asymptomatic diseases in newly arrived individuals. Work with NGOs and Public Health Initiatives: Collaboration with NGO to develop protocols for age determination in unaccompanied minors, Creation of the Immigrant Healthcare Guide, currently in its third edition with expert contributions. We believe these initiatives have significantly improved Primary Care professionals' knowledge and capacity to address tropical medicine and International Health challenges CONCLUSIONS By disseminating our work through scientific societies, we aim to foster awareness and drive systemic change. As our group continues to grow, we remain committed to advocating for policy adjustments that will enhance healthcare access and outcomes for vulnerable populations

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Evaluation of the impact of community health workers on the performance of health districts in the Republic of Congo

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Introduction: Community Health Workers (CHWs) play a crucial role in improving healthcare access, yet their impact on health system performance remains under-documented. This study evaluates the effects of CHWs on key health district (HD) performance indicators in the Republic of Congo.

Methodology: A quasi-experimental before-and-after study with an interrupted time series design was conducted over 24 months (July 2021 – June 2023). CHWs were introduced in July 2022, and their impact was assessed using quantitative data from DHIS2. Key indicators included HIV screening rates, pentavalent vaccine coverage, vitamin A supplementation, antenatal care attendance, and malaria-related hospitalizations. Six HDs (three urban, three rural) were randomly selected after stratification. A linear regression model was used to analyze trends, controlling for seasonality and confounding factors such as concurrent health interventions and workforce variations.

Results: The results indicate a significant improvement in the utilization of healthcare services after the integration of CHWs into HDs, with an overall utilization rate of **(35.0% [21.5–48.5])**. Statistically significant improvements were observed in multiple indicators: **antenatal care (≥4 visits: +14.7% [5.6–23.8]), pentavalent 1 vaccine coverage (+165.6% [116.7–214.4]), and vitamin A supplementation**. However, no significant effect was noted on **malaria-related hospitalizations.**

Conclusion: CHWs positively influenced healthcare utilization and key performance indicators, supporting their integration into health district strategies. Further research is needed to optimize their impact on disease-specific outcomes.

Keywords: Community Health Workers, Health System Performance, Republic of Congo, Primary Healthcare, Health Districts, CHW Integration.

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One Health vector-enabled investigation of pangolin bushmeat in Gabon

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Background: Illegal wildlife trade is a major concern for biodiversity and public health. The selling of bushmeat or derived products is putting an immense pressure on wildlife and increases the risk of disease via host switching and

emergence of zoonotic pathogens. Over 70% of zoonotic spillover is associated with wildlife or bushmeat, including outbreaks of Ebola and monkeypox. As a staple source of protein, bushmeat is an important part of the rural economy in Africa and pangolins play an important role, being the most trafficked animals worldwide. The discovery of human pathogens in Asian pangolins and the high demand for these animals throughout Africa and Southeast Asia makes them important hosts for pathogen surveillance.

Methods: We used a vector-enabled metatranscriptomic approach for surveying the virome and microbiome of ticks feeding on pangolins sold in western Gabon. Ticks were pooled by species and individual hosts, then deep sequenced using a virus-optimized protocol.

Results: Most pangolins were parasitized by *Amblyomma compressum* (n=321), followed by *Ixodes rasus* (n=23) and *Rhipicephalus simpsoni*. Eukaryotic virome comprised mostly undescribed viruses from 13 families and 4 lower taxa. Jingmen tick virus was the most prevalent (>70%) and abundant virus in the transcriptome, infecting *Am. compressum* and *Ix. rasus*. A new phylogenetic clade of the *Anelloviridae* family comprising 11 distinct genogroups was described from 30 positive pools (29%). An unknown coltivirus was detected in 7 tick pools and an orthonairovirus showing the closest phylogenetic relationship to Crimean-Congo hemorrhagic fever virus among the whole *Orthonairovirus* genus known to date. In addition to the eukaryotic virome, *Am. compressum* ticks feeding on different pangolin species contained two distinct species of *Borrelia*. The causative agent of Kenya tick typhus, *Rickettsia conorii*, was detected in 54 pools (52.4%) from all three tick genera and all pangolin taxa.

Conclusion: Using hematophagous arthropods to survey the host community is an effective approach for infection surveillance. The resulting host-parasite-virus network contains both arboviruses and vertebrate-specific pathogens, as exemplified by the detection of anelloviruses. Nonetheless, some vertebrate viruses, e.g. respiratory and enteric, may elude detection due to replication in different anatomic compartments and limited blood transit.

P 234

Development of a Recombinase-Aided Amplification Assay for rapid molecular detection of *Trypanosoma evansi*

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Background: *Trypanosoma evansi* causes major economic losses in Africa, with African animal trypanosomiasis estimated to cost $4.5 billion annually, and $88 million in Somalia. Current diagnostic approaches face critical limitations where microscopy exhibits poor sensitivity and requires technical expertise, while PCR, though highly sensitive, is restricted to reference laboratories due to infrastructure constraints. In Somalia"s pastoral communities, where veterinary services are largely absent, diagnosis relies on nonspecific clinical signs, leading to inappropriate trypanocide use and contributing to drug resistance. This study describes the development of a recombinase-aided amplification (RAA) assay for *T. evansi* detection that enables rapid, real-time, and portable molecular diagnosis suitable for field deployment.

Methods: A novel RAA assay targeting the *T. evansi* RoTat 1.2 VSG gene was developed using a synthetic DNA standard for validation. Twelve primer pairs were screened, with FP3 (CCTATGGCGGCGAAGTCGCAGGGGCGATTTCATC) and RP6 (TAGCGCGTCGATTTCGTTGTTACCGTCGGCA) selected for optimal performance, generating a 134 bp amplicon detected via a FAM/BHQ1-labelled exo-probe containing a tetrahydrofuran spacer. Reactions were run using lyophilised RAA kits on the Axxin T8 device at 40 °C for 15 minutes. Analytical sensitivity was assessed using three 10-fold serial dilutions (10^5 to 10^0 copies/µL). Specificity was tested against *Leishmania spp.*, *T. cruzi* and *Babesia divergens*.

Results: The RAA assay achieved a limit of detection of 1.8 copies/µL. Amplification threshold time (Tt) showed a strong inverse correlation with DNA input, decreasing from 8.9 minutes at 10^1 copies/µL to 4.2 minutes at 10^5 copies/µL, following a log-linear relationship ($R^2 = 0.98$, $p < 0.001$). The assay demonstrated 100% analytical specificity, and the entire diagnostic workflow was completed in <30 minutes.

Conclusion: The RAA assay offers a rapid, sensitive, specific, and field-deployable molecular diagnostic solution for *T. evansi* detection in resource-limited settings. With PCR-comparable sensitivity, a short turnaround time, minimal equipment requirements integrated into a suitcase laboratory, and lyophilised reagents that require no cold chain, the assay is particularly well-suited for decentralised deployment in Somalia"s pastoral communities. It supports timely diagnosis, targeted treatment, and One Health surveillance for trypanosomiasis in endemic regions like Somalia.

P 235

Prevalence of bovine fascioliosis and economic impact associated with liver condemnation in Bobo-Dioulasso abattoir, Burkina Faso – A pilot study

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Question: Bovine fasciolosis is a disease of global veterinary and public health importance. However, data on the epidemiology of bovine fasciolosis in Burkina Faso and its economic impact are scarce and outdated. This study aimed to assess the prevalence of bovine fasciolosis, its associated risk factors, and the financial losses due to liver condemnation.

Methods: In October 2021, a pilot cross-sectional study involving 263 cattle was conducted at the Bobo-Dioulasso abattoir. Animal information, including age, sex, and weight was recorded. Post-mortem liver inspection was performed to check for adult liver flukes. Pearson chi-square or Fisher"s exact test was used to assess the possible association between the prevalence of bovine fasciolosis and the sex and age of the animals.

Results: Of the 263 cattle slaughtered at the Bobo-Dioulasso abattoir, 12 (4.56%) animals were infected with *Fasciola gigantica*. The prevalence of bovine fasciolosis was significantly higher in young animals (25%) than in old animals (4.25%) ($P = 0.048$). The prevalence of bovine fasciolosis was higher in males (6%) than in females (3.68%) ($P = 0.382$). The annual direct financial losses incurred due to bovine fasciolosis were estimated at XOF 38,283,571 ($60,937.03).

Conclusions: Bovine fasciolosis is a less common zoonosis but is an economically significant disease in the study area. Our findings highlight the need to strengthen fasciolosis

control measures through a One Health approach to minimize these economic losses.

Keywords: Cattle, fascioliosis, prevalence, economic loss, Burkina Faso

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P 236

Environmental suitability to Highly Pathogenic Avian Influenza in Kazakhstan using data on Eurasian outbreaks 2020 – 2024

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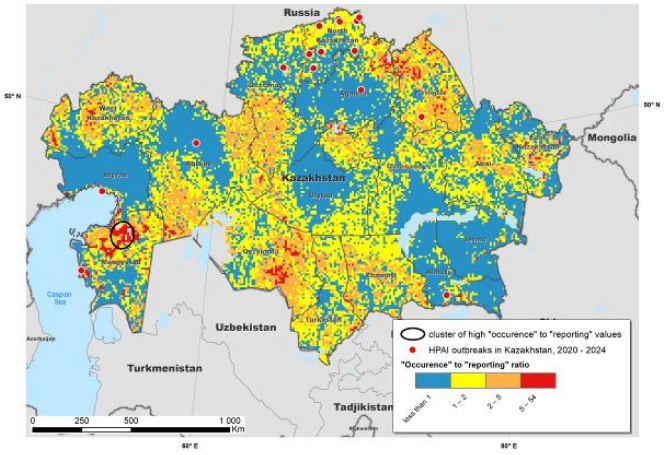
Highly pathogenic avian influenza (HPAI) is a highly contagious disease of domestic, synanthropic, and wild birds that has demonstrated a sharp rise globally since 2020. The study here is intended to examine environmental and demographic factors most significantly associated with HPAI (H5N1 and H5N8) outbreaks in Kazakhstan, 2020 – 2024, and to identify areas of potential under reporting of the disease. Two ecological niche models were developed, namely an "occurrence model" (considering climatic and environmental factors influencing the likelihood for HPAI occurrence), and a "reporting model" (that assesses the probability of disease reporting based on human and poultry population demography). Both models were trained using outbreak location in Kazakhstan neighboring countries (Afghanistan, China, Hong Kong, Iran, Iraq, Pakistan and Russia), and then tested using the HPAI outbreak locations in Kazakhstan. Results suggested good fit of both models to Kazakhstani outbreaks (test AUC = 0.894 vs training AUC=0.915 for "occurrence model", and test AUC=0.869 vs training AUC=0.872 for "reporting model"). A cluster of high occurrence-to-reporting ratio was detected in the south-western region of Kazakhstan, close to the Caspian Sea, suggesting a need for enhancing surveillance efforts in this zone as well as in some other areas of Pavlodar, Northern Kazakhstan, Western Kazakhstan, Qyzylorda, and Eastern Kazakhstan (Fig. 1). Results presented here will help inform the design and implementation of control strategies for HPAI in Kazakhstan with the ultimate goal of promoting disease prevention and control in the country.

Figure 1 legend: Occurrence-to-reporting ratio estimated for highly pathogenic avian influenza (HPAI) estimated in Kazakhstan. The black oval indicates the location of a cluster in which the ratio was significantly higher than expected

Fig. 1



P 237

Rapid and accurate pathogen identification using Nanopore sequencing to combat infectious diseases effectively

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Animal and human populations globally are affected by diverse blood and vector-borne infectious pathogens, that cause morbidity and mortality. Diagnosis can be challenging due to coinfection, concentration, emerging, and novelty. There is a need for a diagnosis method sensitive to all pathogens, with more than 65% of infectious pathogens being zoonotic. Rapid nanopore-based sequencing is cost-effective and the best option.

Method: The Oxford Nanopore Technology (ONT) MinION device was used to accurately detect pathogens from ruminant blood through sequencing of RNA using the cDNA library. Sequence analysis used WIMP (What"s In My Port) Epi2ME cloud-based pathogen identification software capable of rapid detection of metagenomic and sequence diagnostics of known and novel pathogens in a short time.

Results: Pathogens were classified and ranked according to the taxa with 205,584 (77%) reads as bacterial, 58,630 (22%) as eukaryotes, 4,153 (2%) as viruses, and 12 (<1%) as archaeal. Novel and zoonotic pathogens were detected with a high-sensitivity nanopore-based protocol. The ONT MinION device sequences long read lengths offers the best alternative diagnostic method. Blood pathogens can be correctly characterized at the species level compared to conventional methods. Hence, the technique should be used to detect pathogens in disease vectors, environment samples, animals, and humans, with the portable MinION device that can be used in the field.

Conclusion: Accurate characterization of all pathogens is critical, as it can go undetected using traditional diagnostics techniques. Deep sequencing using ONT provides a solution

by giving long reads for species-level taxonomy identification of pathogens.

KEYWORDS: Epi2ME, Nanopore, pathogens, infectious diseases

Reference

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P 238

Prevalence and antimicrobial resistance profiles of *Escherichia coli* from aquaculture environments in Kenya – A cross-sectional study of Pond Water, Nile Tilapia, and Catfish

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Background: *Escherichia coli* is of significant public health concern, contributing to illnesses globally. Rising prevalence of antimicrobial resistance (AMR) in *E. coli* is a global health threat. Aquaculture practices are potential drivers for the emergence and dissemination of AMR, affecting human and animal health. We investigated the occurrence and AMR profiles of *E. coli* isolates from pond water, Nile tilapia (*Oreochromis niloticus*), and catfish (*Clarias gariepinus*) in Kiambu, Nairobi, and Machakos to assess the extent of AMR in these aquaculture environments.

Methods: A cross-sectional study sampled 70 fish ponds, 49 Nile tilapia, and 9 catfish across the three counties. Using an Epicollect5 questionnaire; demographics, management practices, and water characteristics were collected. *E. coli* isolates were identified using selective and differential media and biochemical tests. Antimicrobial susceptibility testing was performed using the Kirby-Bauer disc diffusion method, with interpretations based on CLSI guidelines. Statistical analysis was used to determine significant differences in resistance prevalence between sample sources.

Results: *E. coli* contamination was detected in 41.4% of pond water, 34.7% of Nile tilapia, and 22.2% of catfish samples. Multidrug resistance was observed across all sample types. Notably, catfish samples from Kiambu exhibited 100% resistance to ampicillin, amoxicillin-clavulanate, and amoxicillin, and 66.67% resistance to tetracycline and trimethoprim/sulfamethoxazole. Tilapia samples showed varying levels of resistance to ampicillin (53.85%), ceftazidime (46.15%), tetracycline (23.08%), streptomycin (15.38%), amoxicillin-clavulanate (38.46%), trimethoprim/sulfamethoxazole (15.38%), and amoxicillin (69.23%). Pond water showed high susceptibility to several antibiotics, however, resistance to multiple antibiotics was also observed. There were significant differences in resistance prevalence between sample sources for several antibiotics. The AMR patterns are likely influenced by manure use, runoff, livestock farming, and misuse of antimicrobials.

Conclusions: Presence of multidrug-resistant *E. coli* in aquaculture environments in Kenya is a potential public health risk. Wise antimicrobial use in animals and humans is crucial to mitigate the spread of AMR in these ecosystems and develop effective strategies for AMR containment in aquaculture.

Keywords: *E. coli*, AMR, aquaculture, pond water, Nile tilapia, catfish, Kenya.

P 239

Trends and determinants of pig confinement, latrine use and water sanitation adoption in Tanzania – A longitudinal study

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Background: *Taenia solium* remains a persistent public health and economic burden in sub-Saharan Africa, exacerbated by inadequate sanitation, unsafe water, and poor livestock management. In Tanzania, health education interventions have targeted pig confinement, latrine use, and water sanitation. However, a prior cross-sectional study found no significant behavior change within one year of intervention, raising concerns about the effectiveness and sustainability of these efforts. This study evaluates long-term adoption trends (2019–2025) while considering external shocks such as disease outbreaks and socio-economic factors.

Methods: A longitudinal study tracked 369 households (subset of 780) using structured interviews and observational assessments. A Difference-in-Differences (DiD) model with household fixed effects was applied to assess intervention impacts, controlling for socio-economic and demographic factors. Attrition effects were accounted for, and qualitative insights supplemented quantitative findings.

Results: Pig farming participation declined from 80% in 2019 to 49.6% in 2025. Traditional latrines without doors and roofs, remained prevalent (59%), while 41% of households upgraded to improved latrines with secured doors and roofs influenced by younger household heads. Older household heads dominated the sample (88% aged over 50), which contributed to lower adoption of best practices due to resource limitations.Additionally, 69% of households consumed untreated water, often relying on unprotected wells due to the salty taste of tap water.

Conclusions: Health education interventions led to modest improvements, but inadequate sanitation infrastructure remains a barrier. The dominance of older household heads may slow adoption due to resource limitations and resistance to change. The sharp decline in pig farming raises concerns, warranting further investigation into factors such as African Swine Fever and COVID-19. Sustainable impact requires age-sensitive, community-driven interventions, financial support for sanitation and water treatment, stronger public-private

partnerships, and integration within One Health frameworks to promote long-term resilience.

P 240

The virgin lands campaign and the occurrence of foot-and-mouth disease and anthrax in the Republic of Kazakhstan (1955–1970)

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The campaign for the development of virgin lands in Kazakhstan (1955–1970) was one of the most ambitious programs implemented by the Soviet government, which, arguably, resulted in both positive and negative consequences for the country. The campaign brought, at the same time, development, environmental degradation, and a dramatic cultural change to Kazakhstan. A barely explored aspect of the virgin lands campaign is related to its impact on the epidemiology of animal diseases. We describe, for the first time, the changes experienced by Kazakhstan during the implementation of the virgin lands campaign, offering a perspective on how those changes may have affected the occurrence of foot-and-mouth disease (FMD) and anthrax (Fig. 1). Newly organized livestock premises and processing plants were created, which increased the concentration and intensification of animal production, in the absence of effective disease control plans. The initial increase in FMD prevalence may have been explained by the concentration of susceptible animals in the absence of appropriate control measures, followed by a decrease in disease incidence, probably explained by the enhancement of control measures associated with the formalization of livestock production, including improvements in vaccine quality. In contrast, soil degradation and the increase in the number of livestock, which resulted in a large number of animals buried in inappropriate conditions, may explain the sustained increase in the incidence of anthrax (Fig. 2). The results presented here help to document the history of animal diseases in the country and ultimately contribute to the design of holistic strategies to support Kazakhstan"s development.

Figure 1 legend: Geographical extension of the virgin lands campaign and distribution of foot-and-mouth disease and anthrax cases reported in the Republic of Kazakhstan during that period (1955-1970)

Figure 2 legend: Annual number of cases (solid line) and linear trend (dashed line) of foot-and-mouth disease (orange lines) and anthrax (blue lines)

Fig. 1

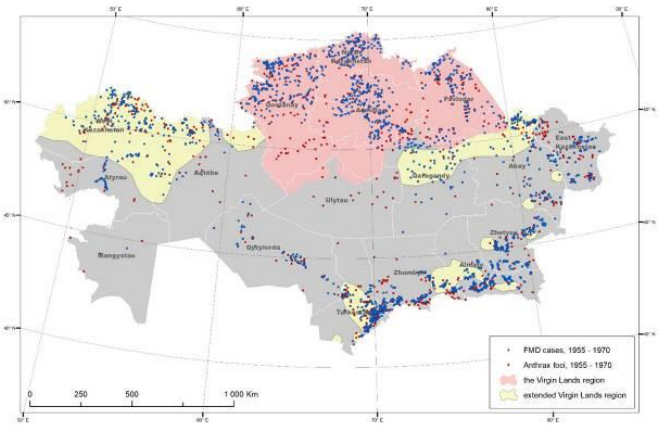
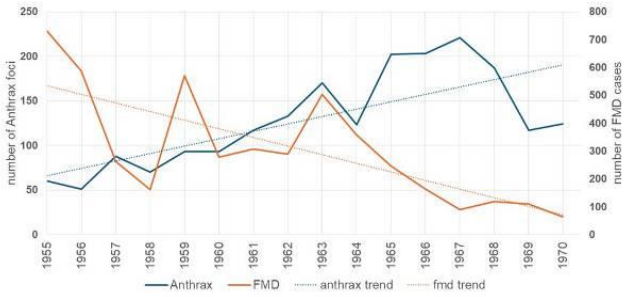


Fig. 2



P 241

Spatiotemporal characterization of the presence of stray dogs at the Águas Emendadas Ecological Station – Perspectives of interactions with native fauna

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Domestic dogs are the main invasive species that impact negatively biodiversity in several parts of the globe by directly and indirectly competing with native species and spreading pathogens to local fauna. This study evaluated potential impacts of invasive domestic dogs on local fauna in the Águas Emendadas Ecological Station (ECAE), located in the Federal District (DF), Brazil, a forest fragment under strong anthropogenic pressure. We used the database of 1127 images obtained from 13 camera traps collected in 2019 and 2020 to estimate temporal overlap coefficients and the probabilities of conditional spatial occupation between invading dogs and potential competitors (cougar, coati, wild dog and ocelot) and prey (brown brocket deer, nine-banded armadillo, agouti and tapir). The analysis was complemented by proportional circle maps and graphs of temporal overlap of activities between domestic dogs and the target species. Domestic dogs were the main species recorded (537/1127=47.65%), with peaks of activity at dawn and dusk, with high overlap with agoutis (0.801) and brocket deer (0.754) and low overlap with nine-banded armadillos (0.282) and ocelots (0.327). The conditional occupancy models indicated that the presence of dogs negatively influenced the occupancy activity of wild dogs (p=0.001), pumas (p=0.016) and positively that of brocket deer (p<0.001). The scarcity of records of agoutis throughout the reserve, combined with the high temporal overlap with domestic dogs, suggests a strong impact on this species. The results reinforce the need for

mitigating measures based on a one health approach that can reduce the pressure on ECAE associated with invasive domestic dogs.

Figure 1 legend: **–** Location of the Federal District in relation to Brazil and details of the region studied. The Águas Emendadas Ecological Reserve is in the Northeast region of the Federal District, with urban agglomerations concentrated in the North and Southwest regions.

Figure 2 legend:– Graphs of overlapping activity between dogs and potential prey animals according to the time of activity. The shaded areas correspond to the intersection between the curves. The marks along the x-axis, which indicate the location of the individual observations, correspond to the density of the data.

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Fig. 1

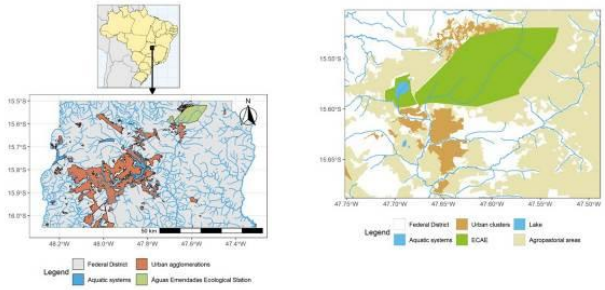
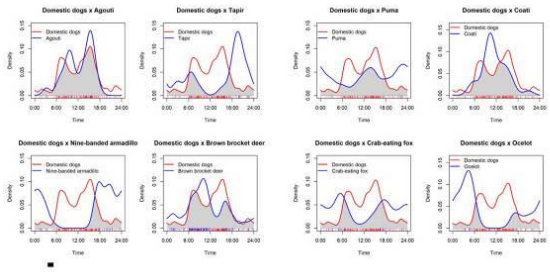


Fig. 2



P 242
Testing the dilution effect in a Bornean primate community

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[3]*Universiti Malaysia Sabah, Institute for Tropical Biology and Conservation, Kota Kinabalu, Malaysia*
[4]*Danau Girang Field Centre, Kota Kinabalu, Malaysia*
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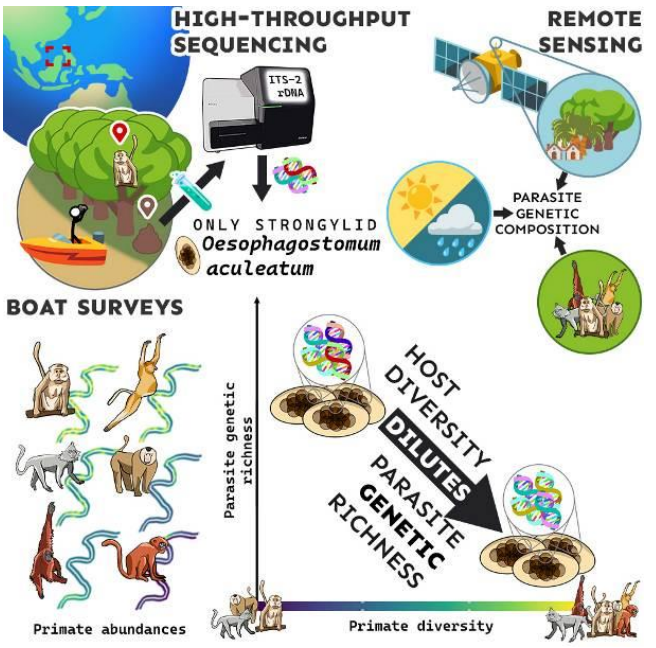
[7]*Wilder Institute, Calgary, Canada*

Biodiversity loss and emerging diseases threaten ecosystem and human health. Identifying ecological drivers of host-parasite dynamics in human-altered landscapes is crucial, including at the scale of parasite genetic diversity. We investigated genetic diversity and ecological drivers of gastrointestinal strongylid infracommunities infecting a primate community in Sabah, Malaysian Borneo. We surveyed primates in the Lower Kinabatangan Wildlife Sanctuary, and used high-throughput sequencing (HTS) of ITS2 rDNA from 250 fecal samples (five out of ten sympatric primates). Through boat-surveys and remote sensing, we assessed habitat quality, host diversity, and density effects on parasite genetic alpha and beta diversity—i.e., sample amplicon sequence variant (ASV) richness and composition. Matching previous reports, HTS confirmed *Oesophagostomum aculeatum* as the sole strongylid species, exhibiting variable ASV diversity. Primate host diversity exerted a negative effect—a.k.a. a dilution effect—on *O. aculeatum* ASV richness during the wet season, controlling for strong seasonality. Effects of habitat quality and host density were inconsistent on ASV richness. ASV composition varied by host species, season, and habitat quality, but not primate diversity or density. By demonstrating a local dilution effect at a small spatial and phylogenetic scale, our findings emphasize the importance of integrating ecological and molecular approaches. This study provides a baseline for future research on host-parasite co-evolution in Southeast Asian primates, ecological drivers of parasite genetic diversity, and insights into how phenomena like the diversity-disease relationship can operate across nested scales, with implications for disease emergence risks.



P 243
Between emerald worlds – Investigating the spiritual, ritual, and pharmacological dimensions of neuroactive substances used by humans and animals in Uganda

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This interdisciplinary study explores the largely undocumented use of mind-altering plants, fungi, insects, and animal secretions in indigenous communities of Uganda, focusing on their cultural, spiritual, ceremonial, and medicinal significance. By integrating natural and social scientific perspectives, we examine the role of these neuroactive substances in inducing altered states of consciousness—an experience considered integral to human culture across civilizations. Additionally, our research pioneers the investigation of psychoactive substance use by wild mountain gorillas and chimpanzees, aiming to uncover the first scientific evidence of intentional animal self-medication with mind-altering materials. We pursued six main objectives: (1) to document rapidly vanishing traditional knowledge, (2) to conduct a sociological analysis of the role neuroactives play in the societal well-being and happiness in Uganda, (3) to archive the chemical diversity of unexplored putatively neuroactive species for future generations, and to identify new compounds with potential for the discovery of modern medicines, (4) to report for the first time on the use of mind-altering substances by wild mountain gorillas and chimpanzees, and(6) to explore the application of the Nagoya Protocol in bioprospecting when intellectual property holders include both human and animals. Our methodology includes semi-structured interviews and surveys (120 participants to date), direct and indirect animal observation, and ethnobotanical best-practice for sample collection. To date, the use of over 50 putatively neuroactive species has been meticulously documented, and samples have been collected for pharmacological analysis. Our study holds significant promise for offering novel insights into the intersection of traditional knowledge, animal behavior, and biomedical discovery.

P 245
Impacts of climate change on liver fluke transmission risk across Africa and Europe
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Liver flukes are helminths of the genus *Fasciola* that can cause fasciolosis, a zoonotic liver disease that predominantly affects ruminants. The two most important *Fasciola* species are *Fasciola hepatica*, which is found on all continents, and *Fasciola gigantica*, which is restricted to tropical areas. *Fasciola* transmission depends on suitable climatic conditions for the parasite and its snail intermediate host, potentially making transmission patterns sensitive to climate change.

Here, we present a new risk index for *F. hepatica* and *F. gigantica* transmission that is based on hydrological data, temperature-dependent transmission strength, and environmental suitability for their main intermediate hosts, *Galba truncatula* and *Radix natalensis*, respectively. We apply this index to map fasciolosis risk across Africa and Europe under historical climatic conditions and under climate change scenarios.

To estimate how transmission strength depends on temperature, we extracted experimental data from 37 publications. We estimate that the optimal temperature for *F. hepatica* transmission is around 18°C, while for *F. gigantica* it is around 25°C. Next, to estimate snail host environmental suitability, we used species distribution models trained on thousands of occurrence records.

Our risk index shows high transmission risk for *F. gigantica* across most of Africa, but low risk in Europe. For *F. hepatica*, transmission risk was highest in the East-African highlands, and considerable in South Africa and across most of Western Europe. Under future climatic conditions, we project transmission risk for both species to decline across most of their ranges. For *F. gigantica*, this decline is most notable in West Africa and is driven by warming pushing temperatures beyond the optimum for *F. gigantica* transmission. For *F. hepatica*, declining risk is driven by decreasing suitability for its intermediate snail host *G. truncatula*. At the northernmost limits of its range, the risk for *F. hepatica* transmission is projected to increase.

The integration of experimental data, snail occurrence data, and hydrological models allows for a robust prediction of transmission risk, which can inform the development of more effective control strategies. Furthermore, new local risk forecast systems could be based on the new estimates of the relationship between transmission strength and temperature.

P 246
Varied responses to heat stress on the immune defenses and life history traits of *Fasciola* intermediate host snails – Findings from a replicate warming experiment across Africa and Europe
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Fascioliasis, an emerging global disease caused by snail-borne *Fasciola* trematodes, presents significant challenges to public and animal health worldwide. With the estimated rise in global temperatures due to climate change, the dynamics of fascioliasis could be altered by affecting the fitness of the intermediate host snails, and consequently, their ability to resist infections. However, the response to climate warming may vary substantially, not only between snail species but also depending on the geographical origin and local adaptation of populations. Understanding how intermediate host snails will respond to rising temperatures in different regions of the world is crucial for improving predictions of potential shifts in fascioliasis transmission dynamics under future climate scenarios.

To address this, we conducted a large-scale, semi-field-based replicate snail-warming experiment to investigate the variation in responses of *Fasciola* intermediate snail hosts to heat stress across a vast macroclimatic and latitudinal gradient, from Denmark, Italy, Uganda, and Tanzania to South Africa. The primary aim of the experiment was to examine the impact of heat stress on various eco-physiological traits, including immune responses and life-history traits, of two intermediate host snail species of *Fasciola* parasites (*R. balthica* in Europe and *R. natalensis* in Africa), when subjected to increased experimental temperatures.

In each country, snails collected from known field sites in 2024 were brought to the lab, acclimatized at ambient temperature, and then exposed to an experimental warming treatment of +4-6°C for ten days to induce heat stress. The snail hemolymph was collected at three time points. We assessed the immune defenses of the snails, including hemocyte

counts, phenoloxidase (PO)-like activity, and antibacterial activity of the hemolymph, as well as life-history traits such as growth and oviposition rates, comparing these measures to a control group kept at ambient temperature.

Preliminary results indicate varied responses between snail populations from different geographical origins, both in terms of survival, egg mass production, and immune defense response to the experimental warming. These findings underscore the importance of accounting for variations in responses to warming between different populations of *Fasciola*-vectoring snails in models aimed at predicting shifting patterns of fascioliasis in response to climate change

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Seasonal distribution and cercarial shedding of Bulinus spp. snails – Implications for urogenital schistosomiasis control in the Simiyu Region, northwestern Tanzania

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Introduction: Urogenital schistosomiasis is a neglected tropical disease of significant public health concern caused by the trematode species *Schistosoma haematobium*. Its transmission is localised and heterogeneous, with seasonal occurrences in Tanzania primarily facilitated by *Bulinus* spp. snails, which serve as intermediate hosts. To plan effective, data-driven control measures, it is crucial to understand the epidemiology of schistosomes in these snails. This study aimed to investigate the seasonal distribution, abundance, and *Schistosoma* spp. infections (assessed *via* cercarial emergence) in *Bulinus* spp. snails in two districts, Maswa and Meatu, in the Simiyu Region of Tanzania.

Methods: Malacological surveys were conducted at 90 sites in total, comprising sites in 35 rivers, 32 ponds, and 23 branching streams. Each study site was sampled once during the rainy season and once during the dry season. Snails were collected using a standard scoop- and handpicking technique by two people for 15 min at each site. The collected snails were morphologically identified and subjected to a cercarial emergence experiment. Water physicochemical characteristics were recorded simultaneously with snail collection using a portable multiparameter water meter. The data were analysed using STATA version 15.

Results: A total of 4997 *Bulinus* spp. snails were collected from 90 sites in the two districts. Of these, 91.4% (95% CI: 90.5–92.1%) were morphologically identified as *Bulinus nasutus* and 8.6% (95% CI: 7.8–9.4%) were identified as *Bulinus globosus*. *Bulinus* spp. snail abundance was almost evenly distributed across seasons, with 50.4% (95% CI: 48.9–51.7%) collected during the dry season and 49.6% (95% CI: 48.2–51.0%) collected during the rainy season. Water temperature and salinity were significantly negatively correlated with snail abundance (both $P < 0.001$). *Schistosoma* spp. cercarial emergence followed a seasonal pattern and was significantly higher during the rainy season ($P = 0.005$).

Conclusions: Our findings underscore that *B. nasutus* was the most abundant freshwater snail distributed at nearly all the study sites during the rainy and dry seasons. Therefore, appropriate snail control strategies are recommended to complement ongoing schistosomiasis control strategies in the Simiyu Region.

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Factors associated with fluorosis in the Tessaoua health district, Maradi Region, Niger, November 19-24th, 2023

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Introduction: Fluorosis is a chronic metabolic disease caused by fluoride ions. The main cause is the high fluoride content of groundwater. Fluorides are responsible for numerous chronic dental and bone disorders, known as fluorosis. In 2023, cases of bone deformation were observed in children under the age of 15. Multi-disciplinary and multi-sectoral investigation teams have identified the causes of these bone deformations and introduced corrective public health measures.

Methods: We conducted an analytical study of fluorosis cases recorded in Tessaoua in November 2023. Physico-chemical analyses were carried out on water from wells and boreholes. Biological and biochemical samples were taken. The data collected were analyzed using Stata 16 software. The significance level was set at 0.05. The results are expressed as adjusted OR and 95% CI. The overall fit of the multivariate model was estimated by the Hosmer and Lemeshow test.

Results: The mean age of the children was 3.9 ± 1.6 years, with a minimum of 2 years and a maximum of 10 years. After adjustment of the multivariate model, it emerged that drilling depth (adjusted OR=8.4; CI 95% =1.76 - 4.01; p<0.001), fluoride content (adjusted OR=25; CI 95% = 16- 41; p<0.001), age group (adjusted OR=18 ; CI 95% = 1- 31; p=0.043) and children's origin (adjusted OR=30; CI 95% = 1.7- 54.3; p=0.019) were significantly associated with bone fluorosis in the final model.

Conclusion: The mission to investigate suspected cases of fluorosis in the Tessaoua health district revealed shortcomings in the construction of certain facilities (boreholes and wells). Resolving these shortcomings would prevent future cases of fluorosis.

Key words: Factors, Associated, Investigation, Fluorosis, Niger

Fig. 1

Fig. 2

Variables	Final model		
	Bone fluorosis		
	ORa	IC 95%	P value
drilling depth			
> 100 m	8,4	[1.76 - 4.01]	p<0.001
< 100 m		1	
Fluoride content			
> 1 mg/l	25	[16- 41]	p<0.001
< 1 m/l		1	
Age Group			
1-4 years	18	[1- 31]	p=0.043
5-14 years		1	
Children's origin			
Dadinkowa	30	[1.7- 54.3]	p=0.019
Another villages		1	

P 249

Environmental detection of *Leptospirosis* by targeting non-pathogenic Leptospira and in contaminated areas in two metropolitan areas of South Africa

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Leptospirosis is an infectious disease caused by pathogenic *Leptospira* spp. bacteria, commonly found in river courses, ponds, sewers, and other moist environments. The disease presents with non-specific symptoms such as nausea, fever, headaches, and diarrhoea, often leading to underdiagnosis. However, severe complications, including kidney failure and Weil's disease, can occur. While *Leptospira* poses significant challenges in many developing countries, its prevalence and diversity in Africa remain underexplored.

Traditional detection methods rely on identifying symptoms in humans or animals or through invasive sampling of kidney or blood tissues from intermediate hosts like rodents, pigs, and cattle. These methods are logistically challenging and ethically complex. In this study, we conducted non-invasive sampling of urban river systems in two metropolitan areas of South Africa, characterized by heavy pollution due to anthropogenic activities and frequent use by humans, domestic animals, and wildlife. Over two years, we employed PCR-based methods to identify potential *Leptospira* hotspots.

Our findings revealed several new strains within the P1 and P2 clades, with *Leptospira* diversity extending beyond urban centers into peri-urban areas. This study provides the first comprehensive account of *Leptospira* diversity in South African river systems, highlighting a significantly greater diversity than previously recognized. The results underscore the potential public health risks and the need for further surveillance to mitigate exposure risks for local communities.

This research offers critical insights into *Leptospira* ecology in South Africa and emphasizes the importance of non-invasive monitoring strategies in understanding pathogen dynamics in urban and peri-urban environments.

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P 251

Impact of climate variability on the incidence of acute respiratory syndrome in a pediatric population in the city of Maputo, Mozambique

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Introduction: Acute respiratory infections (ARIs) are a leading cause of morbidity and mortality in children in Mozambique. This study aimed to analyze the relationship between ARIs and climatic factors in Maputo City between 2015 and 2020.

Methodology: Weekly cases of ARIs, respiratory syncytial virus (RSV), and influenza from the National Institute of Health (INS), along with climatic variables such as maximum and minimum temperature, relative humidity, total precipitation, and wind speed from the National Institute of Meteorology (INAM) were analyzed. The Generalized Additive Model for Location, Scale, and Shape (GAMLSS) was applied, incorporating climatic variables with significant lagged correlations to account for the delayed effects of climate on ARI incidence.

Results and Discussion: The estimated annual incidence rates were 148 cases per 100,000 inhabitants for Severe Acute Respiratory Infection (SARI), 13 cases per 100,000 inhabitants for influenza, and an 8% positivity rate for Respiratory Syncytial Virus (RSV). It was observed that the incidence of ARIs, influenza, and RSV is significantly higher in the summer compared to winter (P-value=0.0034 for ARIs, P-value=0.0222 for influenza, and P-value=0.0049 for RSV). During the summer, there were 848 cases of ARIs, 32 cases of influenza, and 20 cases of RSV, while during the winter, there were 692 cases of ARIs, 15 cases of influenza, and 40 cases of RSV. Significant climatic factors for ARI incidence included maximum temperature (p-value=0.0278), humidity (p-value=0.0264), and wind speed (p-value=0.0331). For influenza, the significant factors were maximum and minimum temperatures (p-value<0.001), while for RSV, humidity (p-value=0.0128) and wind speed (p-value=0.0005) were most relevant.

Conclusion: Acute respiratory infections in children under 15 in Maputo occur throughout the year, with peaks in summer. It is recommended that children adhere to preventive measures regardless of the season.

Keywords: Acute respiratory infections; Children; Maputo City; Climatic factors; GAMLSS.

Fig. 1

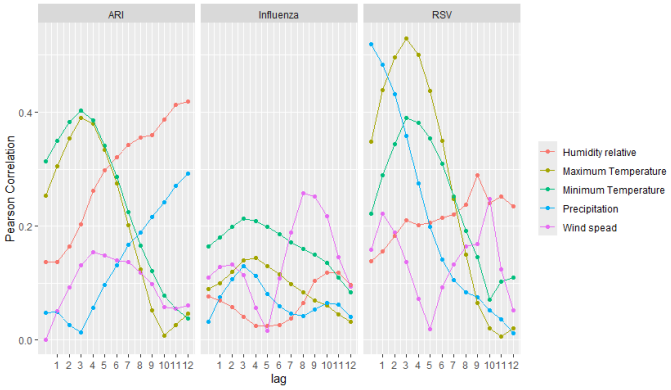
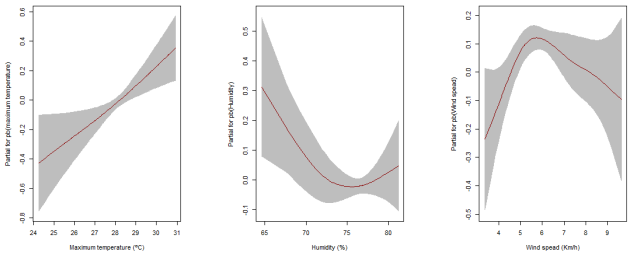


Fig. 2



P 252

Experience of using climate forecasting services to support risk mapping for rainy season preparedness and response on health sector in Mozambique

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[2]University of the Witwatersrand, Geography and Environmental Studies, Johannesburg, South Africa

[3]Eduardo Mondlane University, Department of Physics, Maputo, Mozambique

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Introduction: Seasonal climate variability impacts the health of millions of population around the world. The incidence of malaria increases in many regions of the world, including in Mozambique. Malaria is one of the main Public Health problem in Mozambique for children under five years old.

Methodology: Weekly malaria data (2008 – 2022) were provided by Ministry of Health of Mozambique and climate data were derived from the European Center for Medium-Range Weather Forecasts. Pearson Correlation Coefficient (r) was used to determine the correlation between rainfall, minimum and maximum air temperature and weekly malaria incidence for children under 5 years old. We used the Distributed Lag Non-Linear Models (DLNMs) to estimate the favorable thresholds of climate variables to increase the relative risk (RR) of weekly malaria incidence. The "Generalized Additive Model (GAM)" was applied to estimate positive cases of malaria in the rainy season (October – March) in Mozambique. Finally, the Geostatistical Spatial Interpolation model was applied to determine the risk of infection by malaria in Mozambique.

Results: In the northern region of the country, the province of Nampula is predicted to increase the positive malaria cases with the rainfall at lags around 4 and 5 (r=0.47), mainly when the rainfall reaches 250 mm (RR=85%) and 15 degrees Celsius (RR=75%) of minimum temperature in a given epidemiological week. In the central region, positive cases of malaria are going to be severely impacted by rainfall in Zambézia province, at lags 3 or 5 (r=0.20&r=0.18) and can reach their peak of malaria incidence when 400 mm of rainfall (RR=88%) are recorded. In the southern region, the province of Inhambane tend to increase the malaria incidence when the rainfall is at lags 2 and 10 (r=0.80&r=0.90) and when it reaches 450 mm (RR=98%).

Nampula (42.5%) and Zambézia (25.5%) Provinces are expected to keep increasing the malaria incidence more that average in the first (October to December) and second (January to March) rainy seasons period due to the climate variability.

Conclusion: Variability of climate factors contributes to increase the incidence of malaria for children under 5 years old in all provinces of the country.

Keywords: Forecasting, risk mapping, season; preparedness.

Fig. 1

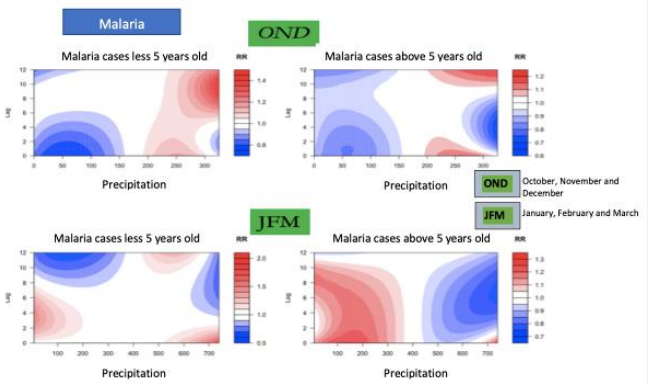
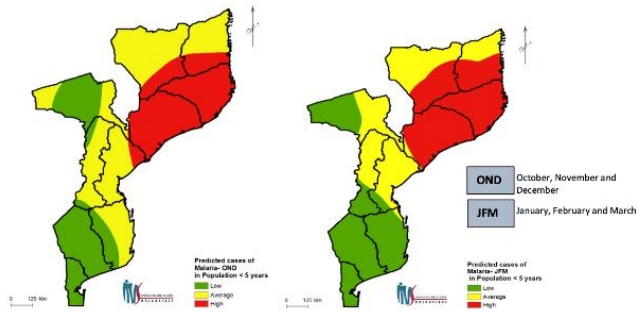


Fig. 2



P 253

Defining methods for assessing climate vulnerability in africa – A scoping review

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Introduction: Climate change and extreme weather events yield detrimental effect on environment impacts. These effects

span across regions and sectors, leading to impacts, some of which are irreversible. Due to the changing climate and extreme weather events, vulnerability assessment has become very significant. Vulnerability assessments facilitate the identification of populations and systems at most risk and inform decision-makers on priority areas for targeted interventions. Therefore, identifying the methodological approaches used to assess vulnerability across disciplines will highlight essential concepts and robust metrics to inform country and region-specific vulnerability assessment.

Methods: We searched, PubMed, Ovid Embase, Ovid Medline, Web of Science, EBSCOhost Medline, CINAHL databases, and grey literature from 1st January 2003 to 31st December 2023 restricted to publications in English. The scoping review was conducted using Covidence software. The retrieved documents were screened by a single reviewer, with a 10% sample checked for systematic errors by an independent review. Data was charted using MS Excel for the analysis. A quantitative analysis was used to evaluate the methodological approaches to assess climate vulnerability. This review followed a methodological framework established by Arksey and O'Malley.

Results: 86 studies were included in the review. Eleven vulnerability frameworks emerged with majority of the climate vulnerability assessment linked to the IPCC framework. Vulnerability methods were broadly grouped into 7 approaches including Principal component analysis (PCA), Geographic Information System (GIS) based approaches, Hazard of place model (HPM), Factor Analysis of Mixed Data (FAMD), vulnerability equations, Machine Learning (ML) approaches and Bayesian Belief Network (BBN). Majority of the methods utilized a balanced/equal weighting method. Studies incorporated mixed set of indicators with a focus on flooding and rainfall as the most studied climatic hazard and extreme weather event in Africa.

Conclusion: This review provides summary of suitable methods for estimating climate vulnerability that can be adopted to inform country specific or regional vulnerability indices. Choice of a vulnerability method may vary depending on the adopted framework, weighting method and specific vulnerability method. Vulnerability assessment is crucial for effective planning and responding to EWEs and climate change challenges.

Fig. 1

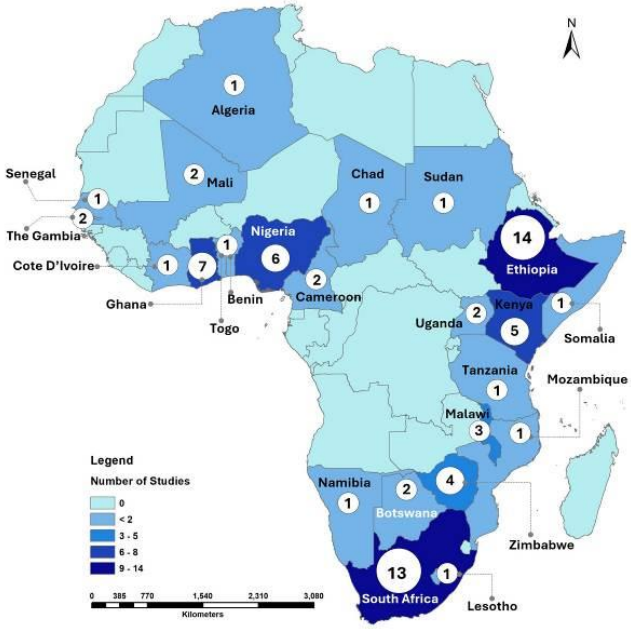
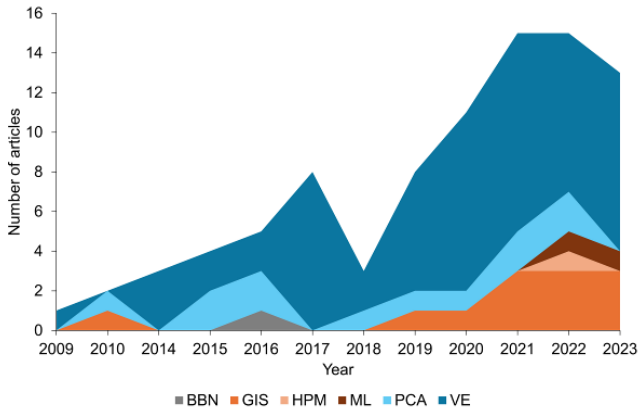


Fig. 2



P 254

Establishing a research center on climate change, infectious diseases, and antimicrobial resistance as an adaptation strategy to the climate crisis

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More than half of known infectious diseases are climate-sensitive and may spread more frequently due to climate change, particularly through rising temperatures, changes in humidity, droughts, and flooding. In addition, increased ambient temperatures can elevate the risk of antibiotic-resistant pathogen transmission. According to the WHO, antimicrobial resistance (AMR) is currently one of the greatest global threats to health, alongside climate change. Research and surveillance of climate-sensitive infectious diseases and AMR in the context of climate change are crucial for effective climate adaptation.

The primary objective of the German-Costa Rican Center for Climate Adaptation and Infectious Diseases (GC-ADAPT) is to establish a long-term, sustainable, international, and interdisciplinary research framework focused on infectious diseases under varying climate conditions in the tropics as an adaptation measure to the climate crisis. GC-ADAPT aims to provide the necessary research, technical, and financial support to conduct risk and climate vulnerability analyses for infectious diseases, ultimately informing national prevention and adaptation strategies.

GC-ADAPT will focus initially on bacterial infectious diseases transmitted by animals (zoonoses), food, and water, as well as on antimicrobial resistance. This collaboration between the Instituto Costarricense de Investigación y Educación en Nutrición y Salud (INCIENSA), the Instituto Metereológico Nacional (IMN) in Costa Rica and the Bernhard Nocht Institute for Tropical Medicine (BNITM) in Germany will be one of the first of its kind. Planned research topics include:

1) Monitoring climate-sensitive infectious diseases and antibiotic resistance under diverse environmental conditions and climatic phenomena. 2) Investigating the effects of local environmental factors such as temperature, humidity, heavy rainfall, drought, and flooding on the pathogenesis, virulence, and antibiotic resistance of bacterial pathogens. 3) Studying

the impact of climate change on the transmission of foodborne and zoonotic bacterial diseases. 4) Conducting risk assessments for infectious diseases and AMR in the context of climate change. 5) Developing automated early warning systems for eco-epidemiological risks to public health posed by climate-sensitive pathogens. 6) Assessing the effectiveness of climate change adaptation measures on the spread of climate-sensitive infectious diseases.

P 256

A mobile water laboratory

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Testing of water quality and safety is a statutory obligation of administrations and governments. However, natural disasters may disrupt water networks, and the infrastructure needed to test water quality. We here present a mobile laboratory that uses commercially available test to provide water testing were needed.

For water analytics the mobile laboratory includes the PocketPro device to test for pH, conductivity, Total dispersed solids (TDS), and salinity. Additionally, it contains rapid stripe tests to determine alkalinity, free and total Chlorine, Phosphate, Nitrate/Nitrite, and Ammonia as well as rapid tests for Manganese and Arsenic. A small 4 litre incubator allows 24h incubation of 100ml broth bottles containing indicator dye for the presence of *E. coli*, and of Petrifilm *E. coli* and Coliform Count Plates. The ranges of all tests are within WHO standards. A water concentration protocol using concentration beads allows efficient water concentration of surface water samples without the need for a centrifuge. Finally, the laboratory also contains a mobile PCR panel component to test for gastroenteritic viruses and bacteria.

The Demonstrable impacts of this mobile lab are

- Preparedness: Having mechanisms in place for rapid response to emergencies.
- Collaboration: Working together to pool expertise and resources.
- Adaptability: Utilizing innovative solutions to reach those in need.

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Impact of seasonal change on virus-rodent dynamics in Nigeria's Edo-Ondo hotspot for Lassa Fever

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The zoonotic Lassa virus (LASV) is naturally maintained in rodents but commonly virulent in humans, killing thousands across West Africa annually. Human cases of Lassa fever surge during the dry season. In a hotspot for this disease, involving seven localities from Edo and Ondo states within Nigeria, we sought to depict how fluctuation patterns of LASV prevalence in rodents and levels of infestation culminate in particularly heightened points of potential rodent-to-human transmission. We also explored how this variability may be driven by environmental and demographic factors. We determined active LASV infection by PCR and previous infection using an Indirect Immunofluorescence Assay for IgG antibodies.

Six out of the seven localities had active LASV infections, ranging between 3.7% (1/27) and 75.5 % (37/49). In Ebudin and Ekpoma, where longitudinal sampling was conducted, prevalence differences were not statistically significant across locality, habitat, season, or year. Conversely, abundance peaked significantly indoors for *Mastomys natalensis* (the major LASV reservoir) and *Praomys daltoni* either during the dry- or rainy season, depending on whether each of these rodent species occupied Ebudin or Ekpoma. Our results suggest that, since LASV occurrence is usually widespread in its natural reservoir within highly endemic areas, a more immediate component of zoonotic risk to prioritize for control would be the targeting of rodent infestation peaks when they occur inside human habitations. Over our two-year survey, these peaks in abundance were consistent in the months they occurred yearly for *M. natalensis* and *P. daltoni* per locality.

P 259

Rodent control strategies and Lassa virus – Some unexpected effects in Guinea, west Africa

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Questions: This study examined whether annual rodent control interventions—either chemical or mechanical—can effectively reduce populations of *Mastomys natalensis*, the reservoir of Lassa virus, and thereby prevent viral spillover to humans in rural areas of Upper Guinea, where Lassa fever is highly endemic.

Methods: Over a seven-year period, we implemented annual rodenticide campaigns lasting 10 to 30 days per year, and in the final year, we added an intensive three-month snap-trapping intervention across all households in one village. Rodent populations were monitored through live trapping before and after each intervention period, and infection status was assessed via Lassa virus RNA detection and IgG serology.

Results: Both rodenticide treatment and snap trapping led to short-term reductions in rodent abundance, with declines ranging from 74% to 92%. However, rodent populations rebounded to pre-treatment levels within six months after each intervention. Annual chemical control resulted in a gradual but modest reduction in Lassa virus seroprevalence, with an average decrease of approximately 5% per year. In contrast, intensive snap trapping in the final year led to an unexpected and significant rise in infection prevalence, with seropositivity increasing from 28% before to 67% after the intervention.

Conclusions: Our findings suggest that while rodent control can temporarily suppress *M. natalensis* populations, it is not sufficient to sustainably reduce Lassa virus transmission, and

may even have counterproductive effects. The observed increase in infection rates following intensive trapping may be explained by density-dependent breeding compensation and the continued presence of chronically infected rodents that facilitate viral transmission to newly susceptible individuals. These results highlight the limitations of conventional rodent control strategies and underscore the need for alternative approaches to prevent Lassa virus spillover in endemic regions.

Fig. 1

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Prevalence of Tick-borne encephalitis virus (TBEV) antibodies in blood donors living in South Tyrol (Italy)

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Keywords: Tick-borne Encephalitis (TBE), surveillance, blood donors

Question: Tick-borne encephalitis (TBE) is an emerging disease in Europe, even in non-endemic areas (1). TBE can be mainly transmitted to humans via tick bites, but also by consumption of raw milk and milk products, and by transfusions. As the potential risk of blood component contamination by TBEV cannot be underestimated (2), in this study the seroprevalence of anti-TBEV antibodies has been assessed in the local blood donor population.

Methods: From July 2018 to July 2019, blood donors were invited to take part in this voluntary study. The participants were asked to complete a consent form and a questionnaire about risk factors. Individuals who had been vaccinated against TBEV were also included in the study population. Samples were analyzed for the presence of anti-TBEV IgG antibodies using ELISA testing. Data analysis was performed utilizing Microsoft Excel and Epi-Info 7.

Results: Duplicates and incomplete data sets were excluded from the study, which included a total of 939 individuals. 90% of the respondents confirmed that they spent time outdoors at work and 80% during their free time. Furthermore, 80% of the donors had been in risk zones outside South Tyrol during the last 5 years, and 50% reported the consumption of raw milk or raw milk products. Anti-TBEV antibodies were detected in seven individuals (0.8% of the study population), while four samples showed borderline results (0.4% of the study population).

Conclusions: This is the first study on seroprevalence of anti-TBEV antibodies in blood donors in South Tyrol. The findings indicate that the antibody prevalence within the local blood donor"s community is low. Even if autochthonous infections could not be confirmed, we highlight the need for continuous local surveillance and for the implementation of control measures.

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P 261

Gender differences in *Leptospira* exposure, risk perceptions, and behaviours – Insights from a cross sectional study in Salvador, Brazil

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Vulnerability to climate hazards and infectious diseases is not gender-neutral, meaning that men, women, and other gender identities experience different risks. Leptospirosis is a **neglected**, **zoonotic**, **climate-sensitive infectious disease** caused by the bacteria *Leptospira,* and is transmitted to humans through contact with infected animals or **contaminated environments**, particularly soil and floodwater. Globally, studies report a higher risk of leptospiral infection among men than women, a trend also observed in **urban informal settlements** in Salvador, Brazil; however, the factors driving this difference are poorly understood, and previous studies suggest that the interplay of **knowledg e, perceptions, and behaviours** may shape differential infection risk among genders. This study aimed to investigate how *Leptospira* exposure differs between men and women living in **urban informal settlements** in Salvador.

We conducted a cross-sectional serosurvey among 761 adults (280 men and 481 women) in four communities previously identified as high-risk by surveillance data. We applied a

regression-based causal analysis to a two-part sex-disaggregated framework to examine: (1) the association between perceived severity of disease and known high-risk behaviours with *Leptospira* seropositivity, and (2) the association between perceived severity with high-risk behaviours.

We found that seroprevalence was 14.6% (95% CI: 10.5%-18.8%) in men and 9.4% (95% CI: 6.7%-12.0%) in women. Men who perceived leptospirosis as extremely serious had lower odds of being seropositive (OR: 0.38, 95% CI: 0.15-0.99), walking through sewage (OR: 0.41, 95% CI: 0.17-1.00), and walking barefoot outside (OR: 0.24, 95% CI: 0.08-0.76) compared with men who perceived leptospirosis as less serious. These associations were not observed in women and differed across age groups in men. Behaviours were not associated with seropositivity in either gender.

Our results identify perceived severity as a potential driver of high-risk behaviors and exposure in men, suggesting that risk perceptions should be targeted in health promotion programs. Additionally, our findings highlight evidence gaps in understanding exposure risks among women. We emphasize the importance of applying gendered lenses in future **One Health research** to better understand the risks of **climate-sensitive zoonotic diseases** across all gender identities.

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Mapping of stakeholders in the implementation of One Health in the control of the pork tapeworm in affected communities in Zambia

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Introduction: The pork tapeworm (Taenia solium) is a significant public health concern, especially in Eastern Zambia, where it poses a risk of neurocysticercosis, resulting in neurological complications such as epilepsy and mortality. In light of these challenges, a One Health (OH) approach is required, emphasizing the collaborative involvement of diverse stakeholders in controlling this zoonotic disease at community level. This study aims to identify key stakeholders involved in the implementation of OH strategies for controlling T. *solium* infections in the affected districts of Eastern Province of Zambia.

Methods: The study employed formative research methodologies that included engaging various district officials and local non-governmental organizations (NGOs). Stakeholder interests, influences and dependencies were mapped within a multidisciplinary context. The Consolidated Framework for Implementation Research (CFIR) was integrated into the stakeholder mapping to gain a deeper understanding of the complex stakeholder landscape and develop sound engagement strategies for the implementation process.

Results: The findings reveal a range of stakeholders classified by their levels of influence, from high-influence figures such as provincial administration officials and district commissioners to medium- and low-influence stakeholders like community development departments and local meat vendors, respectively. Influential community members, including traditional and religious leaders, serve critical functions in fostering positive health behaviors among households.

Conclusion: The findings highlight the necessity of recognizing and mobilizing contributions from all stakeholder groups to enhance collaboration and effectively implement OH initiatives against T. *solium*. By developing strategies that engage lower-influence stakeholders, the study advocates for a holistic approach to health, ensuring the community's full participation in addressing the challenges posed by T. *solium*. Through this collaborative model, the potential for successful control of T. *solium* and improved health outcomes in Eastern Zambia is significantly increased.

Keywords: Stakeholder; Taenia solium, neurocysticercosis, One Health

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Seroprevalence of antibodies against *Brucella* spp., *Leptospira* spp., *Coxiella burnetii* and *Rift Valley fever virus* in cattle in Zanzibar, Tanzania

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The United Republic of Tanzania, including the Zanzibar Archipelago with its two main islands Unguja and Pemba, is among the countries with the highest burden of zoonotic diseases. The capacity for surveillance and response to zoonotic diseases in Zanzibar is limited. In disease prioritisation exercises, brucellosis (*Brucella* spp.), leptospirosis (*Leptospira* spp.), Q fever (*Coxiella burnetii*) and Rift Valley fever (*Rift Valley fever virus* (*RVFV*)) are frequently identified as important pathogens in Tanzania, but data on these pathogens in Zanzibar is scarce.

Zanzibar is divided into 11 districts, three of which per island were selected for the study. Five Shehias, Zanzibar"s smallest administrative unit, were randomly chosen from each district, as was one quarantine station per island. The subpopulations included were local cattle (kept on the islands for at least three months or born there) and imported cattle from mainland Tanzania. Whole blood samples were collected between March and June 2023 and tested for antibodies against the respective pathogens using commercial ELISA kits.

A total of 721 serum samples from local and imported cattle were collected. We visited 224 farms, leading to 604 samples from local cattle. Of these, 53.8% (n=325) were taken in Unguja. The majority of local cattle was female with 69.9% (n=422) and the mean age of animals was 4 years (range, 1 month to 18 years). Antibodies against *Leptospira* serovar Hardjo were not detected and only one sample tested positive for antibodies against *Brucella abortus*. The seroprevalence of antibodies against *Coxiella burnetii* was 12.33% (95% CI: 9.8–15.2). *RVFV*-specific antibodies were detected in 24.50%

(95% CI: 21.1–28.1) of the samples. In the quarantine stations, 117 samples were taken from mainly male animals (89.7% (n=105)). 0.56% (95% CI: 0.2–1.4) and 0.86% (95% CI: 0.0–4.7) tested positive for antibodies against *Leptospira* serovar Hardjo and *Brucella abortus*, respectively. The seropositivity of antibodies against *Coxiella burnetii* and *RVFV* were 10.34% (95% CI: 5.5-17.4) and 10.26% (95% CI: 5.4-17.2), respectively.

This study provides, for the first time, data on the seropositivity of antibodies against *Coxiella burnetii*, *Rift Valley fever virus*, *Brucella* spp., and *Leptospira* spp. in cattle in Zanzibar, indicating previous exposure to the pathogens. These findings highlight the need for active surveillance of zoonotic diseases in cattle, considering both animal and public health risks.

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Seroprevalence of *Toxocara canis* infection among asymptomatic children with eosinophilia in Croatia

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Toxocara canis or dog roundworm is a parasite of wide geographic distribution. Human infection (toxocariasis) occurs through accidental ingestion of embryonated eggs found in the contaminated soil or eating contaminated raw vegetables. It is well known that eosinophilia is associated with parasitic diseases, including toxocariasis. Data on *T. canis* seroprevalence differ between countries. Children are more frequently affected than adults.

We analyzed the seroprevalence of *T. canis* infection in healthy Croatian children with peripheral blood eosinophilia.

A total of 142 serum samples collected from asymptomatic children with peripheral blood eosinophilia (more than 500 eosinophils/µl blood or ≥10% eosinophils in whole white blood cell count) in the Zagreb area.

Serum samples were tested using a commercial semiquantitative enzyme-linked immunosorbent assay for the detection of IgG antibodies to *T. canis* (NovaLisa *Toxocara canis* IgG, Gold Standard Diagnostics GmbH, Germany) according to the manufacturer's recommendations.

Initially reactive samples were confirmed using a *T. canis* western blot (WB) test (LDBIO diagnostics, Lyon, France) according to the manufacturer's recommendations.

Data analysis was performed using a Chi-square test, and Fisher's exact test when more than 20% of expected values were <5. P value less than 0.05 was considered significant.

All 142 patients were Caucasians between 3 and 18 years of age. There were 78 (54.2%) boys and 64 (45.8%) girls. Overall 31% (44/142) serum samples were positive by WB for *T. canis* IgG antibodies. Two serum samples positive by ELISA were negative by WB. Both showed low positive results in ELISA test. The *T. canis* seroprevalence rate was 32.1% (25/78) among boys, and 29.7% (19/64) among girls, which was not statistically different (X2=0.092, P=0.761).

There was a statistically significant difference in *T. canis* seropositivity between age groups both in boys (Fisher's exact test P<0.001) and girls (Fisher's exact test P=0.007). In boys, the highest seroprevalence (42.9%) was reported in 11-14 age groups. The most of the seropositive girls (44.2%) were in 7-10 age groups.

Our results showed a high seroprevalence rate of *T. canis* infection among children with eosinophilia. It is important that testing for toxocarosis should be included in differential diagnosis of eosinophilia, especially in children.

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Sustainment of health education delivery to control pork Tapeworm infections in selected districts of Tanzania – Implementation research

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Background: Pork tapeworm infections caused by *Taenia solium* continue to impose severe health and economic burdens on resource-limited communities in sub-Saharan Africa, including Tanzania. Health education (HE) is a proven intervention for enhancing knowledge necessary for improving community practices to reduce infections in both humans and pigs. However, the extent to which HE delivery is sustained to control these infections remains unclear. An ongoing study aims to assess the sustainment of HE delivery for controlling pork tapeworm infections in Tanzania.

Methods: A cross-sectional study was conducted from December 2024 to March 2025 in Kongwa and Mbulu district councils (central and northern Tanzania, respectively). The study used a Likert-scale questionnaire with 37 items across eight constructs, administered to 296 respondents, including 86 potential providers of health education (PPHE) and 210 recipients of HE. Sustainment indicators and determinants' mean scores were used to evaluate HE delivery sustainment. Inter-item reliability was assessed using Cronbach"s alpha, while convergent validity was determined using average variance extracted (AVE).

Results: The sustainment indicator exhibited a Cronbach"s alpha of 0.71, with sustainment determinants ranging from 0.46 to 0.74. The mean score for the sustainment indicator construct was 2.86 (±0.63). Responsiveness to community needs and community values were the only sustainment determinant constructs scoring above the average mean (4.16±0.70 and 4.01±0.63, respectively), while funding and financial support scored the lowest (1.25±0.42). Convergent validity was achieved for all eight constructs.

Conclusion: This preliminary analysis revealed a negligible presence of sustained HE delivery for controlling pork tapeworm infections in endemic areas. There is an urgent need for efforts to ensure sustainable HE delivery to control these infections.

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MIRNAS – New perspectives in the control of cystic echinococcosis

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Question: Cystic Echinococcosis (CE), caused by the larval stages of the tapeworm *Echinococcus granulosus*, is a worldwide parasitic disease of public health priority due to its impact on human and animal health. CE is one of the 21 neglected tropical diseases (NTDs), recognized by the World Health Organization (WHO) as requiring effective control efforts. Therefore, new diagnostic and therapeutic targets are urgently needed to improve control programs against this zoonosis. According to that, this study aimed to identify the microRNAs (miRNAs) in different parasitic stages of *E. granulosus*.

Methods: Small RNA libraries were constructed from eggs, germinative membrane and protoscoleces using the Illumina sequencing technology. Germinative membranes and protoscoleces were collected from ruminants (sheep, cattle and water buffaloes) naturally infected by CE. Eggs were isolated from faecal samples of dogs resulted positive only to *E. granulosus* infection (confirmed by molecular analysis). Finally, the expression levels of selected miRNAs were evaluated using real-time quantitative PCR (qPCR).

Results: The bioinformatic analysis revealed the presence of 145 mature miRNAs in germinative membrane and protoscoleces samples, whereas the analysis of *E. Granulosus* eggs are still ongoing. Among the mature miRNAs, egr-miR-10a-5p resulted the most abundant, followed by egr-let-7-5p and egr-miR-71-5p. The qPCR results showed that no significant differences of miRNAs level expression were found between the animal species ($p>0.05$), whereas the difference of miRNA-71 level expression between protoscoleces and membranes was statistically significant ($p<0.0001$).

Conclusions: The results of this study could form the basis for the development of innovative strategies based on RNA technology to diagnose and control CE.

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Assessing the burden of congenital toxoplasmosis in Burundi, 2020

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Question: Toxoplasmosis is a cosmopolitan zoonosis caused by an apicomplexan parasite, *Toxoplasma gondii*, which infects humans and animals as intermediate hosts, with felids serving as the definitive hosts. In humans, acquired toxoplasmosis is often asymptomatic, whereas congenital toxoplasmosis is a more severe form that can lead to foetal losses, neonatal deaths, and significant sequelae in children worldwide. This study aimed to assess the burden of congenital toxoplasmosis in Burundi for the year 2020.

Methods: We used epidemiological and economic data collected in major hospitals in Burundi, the Ministry of Public Health in Burundi, and international peer-reviewed literature to estimate the disability-adjusted life years (DALYs) and economic costs spent on prenatal consultations, diagnosis, and treatment of toxoplasmosis for pregnant women.

Results: In Burundi, the incidence of congenital toxoplasmosis in 2020 was 2.7 per 1000 children (95% UI: 1.8-3.7) and 1,180 children (95% UI: 797-1,633) were born with congenital toxoplasmosis. The health burden due to congenital toxoplasmosis in 2020 was estimated at 7,283 DALYs (95% UI: 4,469-10,920) when including and 3,671 DALYs (95% UI: 2,286-5,547) when excluding foetal losses, respectively. Approximately 550,000 USD (95% UI: 222,027-1,088,331) were economic losses due to congenital toxoplasmosis in 2020, with 690 USD (95% UI: 375-1,002) per pregnant woman receiving treatment until delivery and 31 USD (95% UI: 10-70) for an untreated one.

Conclusions: This study demonstrates that congenital toxoplasmosis is a significant public health concern in Burundi, even though estimates of DALYs and economic costs are probably underestimated. Control measures including proper meat cooking, improved hygiene and sanitation practices, better management of cats and their faeces, routine diagnostic check-ups for pregnant women, and timely treatment for infected pregnant women are crucial to reducing the health and economic burden of toxoplasmosis in Burundi.

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Rethinking leadership for One Health collaborative action

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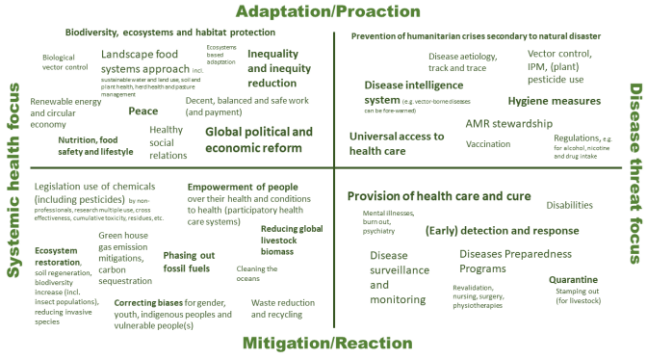
The One Health approach has evolved from medical disciplines, whereby human health, disease control and science based technocratic management play a central role. To mitigate and reverse the damaging impact of human interventions on (planetary) health, transformations of societies and systems, such as food systems, are needed. Transformations in one system may affect changes in other systems. This necessitates addressing politics, economic interests, policy and institutional development at supranational level as well as at local levels. Additionally, bringing One Health from approach and frameworks to collaborative action is an imminent challenge, requiring effective leadership. Such requires engagement of more than the current One Health disciplines and leadership, hence necessitating to rethink leadership. By analysing organization culture and leadership literature and linking the outcomes to priorities in One Health tasking, an overview of suitable leadership and leadership styles is elicited and conceptualized. Subsequently, scientific discipline, culture, gender and age are linked to the leadership styles. Four One Health task categories are identified (Figure 1). The task categories require either transformational and/or people oriented leadership styles with social-cultural, ecological or political understanding, or predominantly technical task oriented styles with (veterinary) medical understanding. Culture, gender and age can indicate preferred leadership styles, however, this cannot be inferred. Post modern schooling systems and international business management may influence how leadership style is modelled and shaped. Moving from concepts to actions paradoxically

follows from collaborations that shape knowledge rather than vice versa. In technocratic managerial settings, expertise level is generally translated hierarchically, which can maintain in silo activity instead of starting effective collaborative action. This paper serves as a guide to constructively linking the myriad of leadership styles to the range of One Health tasks and collaborative action challenges. Categorization, though a coarse-meshed tool, is useful for providing insights and language to assist in consciously prioritizing One Health leadership for different task categories and action levels to surmount global One Health challenges.

Fig. 1



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Stimulating medical innovation through expert meetings in public-private partnerships

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Public-Private Partnerships (PPPs) have played a pivotal role in medical research and development (R&D) for decades. Initially, these partnerships were focused on private and academic collaborations aimed at advancing pharmaceutical innovation. Over time, PPPs have evolved into multi-actor, impact-driven models, incorporating regulators, patient organizations, and SMEs (1). As a non-profit, Foundation Lygature serves as a broker organization in this space, facilitating seamless integration and management of various partners and resources throughout R&D programs. A key strength Lygature brings to PPPs is the organization of expert meetings, which are critical in advancing global health initiatives. Previous work has highlighted the importance of expert meetings in global health and provided guidance on best practices for organizing them (2). Here, we share two recent examples from different PPPs, working in different fields within global health, where expert meetings have added significant value: 1) Pediatric Praziquantel Consortium: This consortium seeks to develop, register, and provide access to a pediatric treatment for schistosomiasis in preschool-aged children. In 2023, Lygature organized its 4th expert meeting for this project, this time on the topic of weight-based dosing to address challenges and identify solutions for estimating body weight for pediatric drug dosing in mass drug administration programs in resource-constrained settings. One outcome of this meeting was the incorporation of a weight-based dosing study into one of our pilot implementation studies that takes place in 2025, with global experts contributing to the study design and tools. 2) GNA NOW Consortium: The GNA NOW Consortium focuses on addressing the urgent need for new antibiotics to treat Gram-negative infections, with innovative approaches to bacterial targeting. We co-hosted an expert meeting to define a Target Product Profile (TPP) for antibiotics aimed at treating enteric bacterial infections in Low- and Middle-Income Countries (LMICs). Following this meeting, experts worldwide are collaborating on an opinion piece to guide the development of antibiotics for severe enteric infections in LMICs. These real-world examples demonstrate the significant impact expert meetings can have in driving medical innovation through PPPs, bringing together diverse expertise to address complex global health challenges. [1] From Innovator Result-driven to Multi-actor Impact-oriented Public-Private Partnerships: … RLA de Vrueh … DOI: 10.1007/164_2024_730. [2] Product development programs for neglected tropical diseases:... L. Hussaarts, … DOI:10.1371/journal.pntd.0005183

Fig. 1

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Overcoming differences in One Health perspectives by designing interventions through a community lens

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The One Health (OH) approach has emerged as a comprehensive strategy that recognizes the interconnectedness of human, animal, and environmental health to tackle complex health challenges. Operational-level actors, including humanitarian organizations, often encounter challenges in aligning with the Global Health agenda and decision-making processes, highlighting gaps in coordination and community engagement. Additionally, global health measures have, during Ebola and Covid-19, inadvertently provoked fear and reinforced misconceptions, particularly in contexts where cultural beliefs and mistrust intersect with public health interventions. Therefore, in this study we examine the perspectives and collaborations between stakeholders from global to local levels and the contributions of community to OH approach implementations, including mental health. A mixed method research model was used to collect data and information through participatory observations, activity reports from OH meetings, field investigations, questionnaires, and interviews. Initially, participation in various activities at the central level. Subsequently, key informant interviews were conducted with operational-level actors, as well as mental health and community stakeholders. Livestock keepers were surveyed by administering a questionnaire to assess their knowledge of zoonotic diseases and OH interventions in their localities. In addition, a comprehensive review of OH approaches in Africa was undertaken. Preliminary results reveal a significant disconnect between central decision-makers and operational actors, compounded by political considerations and the insufficient involvement of key stakeholders, including communities, mental health actors, and the private sector. Limited knowledge of zoonotic diseases was found in local community, including with livestock keepers. Although communities seem unfamiliar with the OH concept, they do encounter and manage zoonotic diseases based on their own perspectives and practices. Challenges included limited community awareness of theses risk diseases, distrust among stakeholders, irregular and reactive meetings, inconsistent follow-up, and weak monitoring mechanisms. These issues were further exacerbated by insufficiently targeted funding

resources, which hinder community-level implementation. Preliminary conclusions demonstrate OH gaps and we propose a OH intervention design through a community lens, reconceptualizing the approach based on local perspectives and fostering community ownership.

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Challenges of mobile livestock farmers in Ghana – Solutions through One Health Approach – A participatory study

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Background: Mobile livestock farmers (MLFs) play a vital role in livestock, meat, and dairy production value chain in Ghana and across West Africa. However, their migratory lifestyle creates significant health, veterinary, and socioecological challenges for themselves, their households, livestock, and host communities. Despite their importance, these complex issues and potential solutions remain underexplored within the Ghanaian context. This study aimed to examine the challenges faced by MLFs and collaboratively identify integrated, context-specific strategies to address them.

Methods: The study adopted a participatory stakeholder engagement approach, involving 60 mobile livestock farmers of Fulbe tradition and key stakeholders including health and social service providers within the study area. The participants were purposively sampled from Ejisu, Tamale, Buipe, Kintampo, and Mampong in the Ashanti and Northern Regions of Ghana. Data were collected through focus group discussions and analyzed thematically.

Results: The study revealed that MLFs experience multiple challenges, including limited access to formal education, inadequate human and animal healthcare, poor social integration, recurrent conflicts with crop farmers, and water scarcity. Suggested solutions included establishing vocational training centers offering culturally relevant formal and informal education, integrating mobile human and veterinary health services, creating designated grazing areas, providing MLFs with identification documents to improve access to services, and promoting community-led conflict resolution mechanisms.

Conclusion: Addressing the multifaceted challenges confronting MLFs requires a holistic, culturally sensitive, and context-specific approach. The One Health framework offers a valuable platform for integrating human, animal, and environmental health systems. Collaborative action among local authorities, service providers, and community stakeholders is essential to sustainably improve the well-being, resilience, and social inclusion of MLFs and their households in Ghana.

Fig. 1

Table 2: Table of themes, subthemes and codes

Themes	Subthemes	Codes
Challenges of Mobile livestock farmers in the Fulbe community	Educational challenges	Financial constraints, Limited access to schools Lack of vocational training, Parental ignorance
	Human health challenges	Human diseases, change in human disease pattern Health facility barriers Access to health education Environmental health risks to humans such as snake bites Waterborne diseases affecting humans Human nutritional deficiencies
	Animal health challenges	Animal diseases, change in animal disease pattern Health facility barriers Environmental health risks to animals such as insect bites Waterborne diseases affecting animals Animal nutritional deficiencies, Vaccination and drug access
	Social integration challenges and conflict resolution issues	Personal identification/ registration, Taxpaying Fear of marginalization, economic marginalization False accusations, frequent reporting to authorities Unregulated fees/charges, intermediary corruption
	Climate change impacts	Pasture shortages for livestock Competition over pasture from invasion by other livestock herds Lack of potable water Water scarcity for livestock, and Water pollution
Solutions to challenges of mobile livestock farmers and Fulbe community	Solutions to education-related challenges	Access to formal and non-formal education Establish vocational training centers Community awareness programs Education on animal (livestock) husbandry
	Integrated human-animal healthcare delivery	Mobile healthcare services Recruit Fulbe personnel in health facilities Enhance food and water security Community health education Provision of veterinary services, drugs, vaccination Climate change awareness, drone delivery
	Social integration and security strategies	Strengthen community policing and protection Promote social integration initiatives Establish identity and legal recognition Conflict resolution programs Support for range creation and grazing areas

P 273
Operationalizing the use of Lot Quality Assurance Sampling (LQAS) to monitor a humanitarian health intervention in Afghanistan

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Background: In humanitarian and conflict-affected settings, ensuring health system performance requires rigorous yet lean monitoring methodologies. While Lot Quality Assurance Sampling (LQAS) has been widely used in disease surveillance and immunization monitoring, its application for health facility-level performance monitoring in a Third-Party Monitoring (TPM) framework is a novel extension.

Methods: LQAS was integrated into a TPM framework to provide a statistically robust yet operationally feasible estimates to assessing predefined performance thresholds in 34 hospitals supported by the International Committee of the Red Cross in Afghanistan over a 12 months period in 2022-2023. Monitoring was conducted on a monthly basis in all hospitals. Each hospital constituted a lot with 19 units each, with independent LQAS sampling for: 1) Patient satisfaction; 2) Staff salary payments and availability; 3) Medicine availability and quality . LQAS decision rules were applied to classify hospitals as meeting or failing predefined benchmarks, allowing for targeted corrective actions.

Results: LQAS facilitated the rapid identification of service gaps across all studied dimensions. Findings from monthly routine monitoring included: patients reporting the request for informal payments and unwarranted out-of-pocket expenditures for medicines; hospitals failing to meet the thresholds for staff availability; drug quality concerns revealed by the by visual and physical inspections of medicines. Following each monthly assessment, hospitals" failure to meet

LQAS thresholds were routinely communicated to program staff to enable targeted corrective actions. Further analyses will identify if issues were repeatedly faced by the same lot and indicate to which extent improvements were sustained.

Conclusion: By integrating LQAS into this TPM, we introduced a novel approach to health system monitoring on a wide range of indicators and sampling units. By operationalising this method in a humanitarian setting, we provide a practical, cost-effectiveness yet statistically rigorous approach to support evidence-based decision making in similar contexts.

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Caring for others – Altruism in disaster health responses

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In disaster scenarios where health and lives are at stake, one question persists: Would I help others if it risks my own safety? Hard times often reveal human nature, yet disaster response behaviours remain complex.

Disasters have significant health consequences, leading to a surge of patients. At the same time, disasters disrupt access to health systems (Labrague, 2023). Therefore, communities themselves often provide and facilitate urgent care to victims, including immediate care and bringing injured people to where further assistance can be provided (Fredriksen, 2021).

In disaster risk management, protection motivation theory (PMT) has been used to understand how people react when facing risks. By focusing on how self-preservation, threat perception and coping appraisals shape disaster response (Rogers, 1975). PMT can explain the behavioural changes that invariably come during disasters, but it does not explain why, and under which circumstances we care for others, neglecting important behavioral dynamics of disaster health responses (Balla, 2014).

In our study we address this gap by exploring what motivates communities to help others in disaster health responses, whom they help, and how their behaviour changes over time or under different levels of threats. We hypothesise that altruistic motivations that are typical for health are present in disaster response, especially at the onset.

By conducting a survey of different communities across varying scenarios in three countries, our study seeks to extend PMT by incorporating altruism and motivations to help others. Our sample includes different actors, ranging from communities to healthcare professionals and emergency responders. Our data analysis shows the main factors influencing protective behaviours, allowing us to explore the interplay between self-preservation and protection of others during different stages of the disaster cycle.

By bridging disaster health, and behavioral insights, this work provides a nuanced understanding of how altruistic behaviours shape patient logistics during disasters.

P 276

Assessing the vulnerability and adaptation of Mozambique's health care facilities to extreme weather events

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Introduction: The extreme weather events such as heatwaves, cold waves, floods, storms, sea-level rise, wildfires, and droughts create a high demand for the health sector during a climate emergency. Statistics from the Global Climate Risk Index, 2021 ranks Mozambique as the fifth most affected country in the world by extreme weather events.

Methodology: The assessment was conducted following the guideline of the World Health Organization. This assessment used the standard questionnaires elaborated by World Health Organization. The respondents were health care professionals. Data collected from 29 health care facilities (HCFs) were introduced into a WHO standard spreadsheet to determine the risk of vulnerability and adaptation of HCFs. The risks were classified into three categories: high, medium, and low. The resilience was measured across four main components such as energy, workforce and health infrastructure, technologies, products, and processes, Water, sanitation, and health waste.

Results: A total of 74 health care professionals were surveyed in 2 provinces of Mozambique, where 45% (34/74) were from Inhambane and 55% (40/74) Tete provinces. The province of Inhambane had the highest proportion of health care facilities (HCFs) at high risk of vulnerability to storms and floods, with 86% (p-value < 0.001) and 79% (p-value = 0.00014), respectively. HCFs are vulnerable to the occurrence of two extreme weather events, such as Cold waves (50%) and heat waves (29%). However, about 14% of the HCFs were resilient to extreme weather events. The assessment demonstrated a moderate resilience capacity for wildfires and droughts, with approximately 43% (p-value = 0.294) and 36% (p-value = 0.3701) respectively.

Regarding toTete province, wildfires and cold waves are the main extreme weather events, which affects the resilience of HCFs with 67% (p-values = 0.001). Heatwaves affected 47% (p-values = 0.033), and storms 40% (p-values = 0.042) of HCFs. 60% (p-values = 0.0159) of the HCFs have minimal response capacities to extreme weather events such as droughts and floods.

Conclusion: Overall, the Health Care Facilities in the provinces of Tete and Inhambane showed a high risk of vulnerability to extreme weather event and low adaptive capacity to extreme weather events.

Keywords: Vulnerability, adaptation, health care facilties; extreme weather events.

Fig. 1

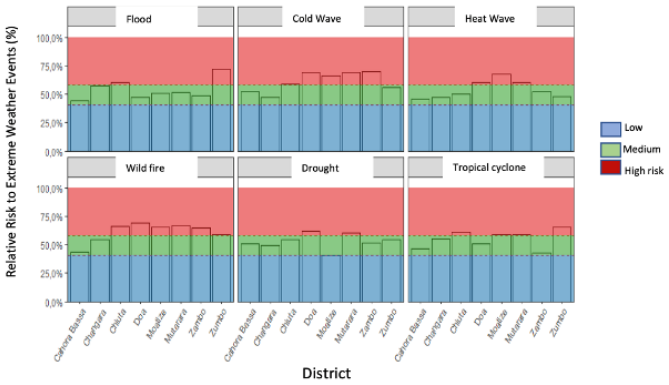
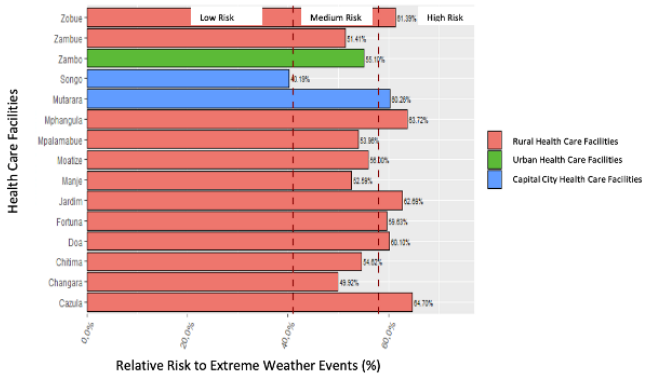


Fig. 2



P 277

Performance of the humanitarian system in Yemen – Insights from humanitarian professional interviews

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Objectives: Yemen has endured a decade-long, protracted humanitarian crisis driven by conflict and exacerbated by climate-induced disasters and epidemics. This crisis has fragmented governance and public institutions, including healthcare systems, leaving 19.54 million people in need of humanitarian assistance. This study aims to explore how Yemeni humanitarian professionals perceive the current humanitarian system.

Methods: A qualitative study was conducted using purposive sampling of humanitarian professionals based in Aden, the capital of the officially recognized government, but their duties cover parts or all of that region. Data were collected between September and December 2024 through semi-structured online interviews and analyzed using pre-defined codes.

Results: A total of 15 interviews were conducted with professionals from diverse sectors and managerial levels. The study identifies key stakeholders in Yemen"s humanitarian system, including international donors, UN agencies, international NGOs, national NGOs, local authorities, and affected populations. While donors and the UN wield significant power, national NGOs, the Yemeni government, and affected populations are marginalized or even excluded.

The humanitarian system is widely perceived as ineffective, inefficient, and inequitable. While emergency responses have saved lives, they often lack sustainability due to poor planning, weak coordination, inadequate needs assessments, and the high operational costs of international organizations. The international humanitarian system is criticized for creating a parallel structure that weakens state institutions and fosters dependency.

Interviewee recommendations include improving governance, empowering local actors, increasing transparency, and prioritizing sustainability. Localization is emphasized as essential for an equitable, effective, and efficient humanitarian response, requiring greater inclusion, capacity-building, and resource allocation for national NGOs. Strengthening local leadership is critical to breaking cycles of dependency and ensuring long-term resilience.

Conclusion: The study highlights that the current humanitarian system was designed for acute emergencies, yet systemic gaps emerge even in the early crisis stages. Over time, power dynamics and geopolitical complexities exacerbate these shortcomings, rendering the system unsuitable for sustainable responses and disproportionately impacting the most vulnerable populations.

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Health in displacement needs and challenges – Perspectives of Yemeni internally displaced persons and humanitarian professionals

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Background: Yemen"s protracted conflict has left half of Yemen's health facilities non-functional and displaced over nine million people, exacerbating healthcare access challenges. This study examines the healthcare needs of internally displaced people (IDPs) from the perspectives of both IDPs and humanitarian professionals.

Methods: A qualitative study was employed. Semi-structured interviews were conducted in Aden between August and December 2024 with 20 IDPs (face-to-face) and 15 humanitarian professionals (online). Participants were recruited through purposeful sampling. Pre-defined codes guided the thematic analysis.

Findings: IDPs reported significant barriers to healthcare, including financial constraints, service shortages, and reliance on under-resourced mobile clinics. Many sought health care from private pharmacies or public health facilities that were often non-functional due to resource shortages. While some IDPs registered for NGO-supported surgeries, none received them, relying instead on charitable support or sacrificing other needs. Humanitarian professionals acknowledged IDPs" vulnerability, particularly in hard-to-reach areas, but noted that formal healthcare structures, when operational, aimed to be non-discriminatory. While some noted positive experiences during the cholera outbreak and referral system early in the response, the majority of both IDPs and professionals perceive the humanitarian systems failed to address the health needs of the affected population with a marked reduction in aid provided in the last year. Both groups also noted challenges that exaggerated inequities and exclusion of disabled people. Both groups recommended investment in sustainable and equitable solutions and prioritizing investments in existing healthcare facilities to serve IDPs and host communities.

Conclusion: This study highlights critical healthcare gaps affecting IDPs in Yemen, emphasizing the need for long-term investments in health infrastructure. Strengthening health facilities can improve healthcare accessibility, equity, and inclusion for both displaced and host communities.

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Vaccine preventable disease serology status in migrant population in Gipuzkoa (Spain)

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Introduction: Immigration is increasing worldwide in recent decades and as is well known, diseases travel too and generate Public Health problems. For this reason, it is important to control health status in this population.

Material and methods: During 2024, we carried out a health screening research program in a migrant population in Gipuzkoa (region in northern Spain), in collaboration with ZHEAR (Euskadi"s Refugees Center). People who agreed to undergo a health screening were given a questionnaire for improving data collection before attending an Infectious diseases consultation. In consult, history, physical exploration and complementary test samples were taken. Those samples included blood for serology for several diseases including vaccine preventable diseases: mumps, measles, rubella, diphtheria, tetanus, pertussis, HBV and HAV.

Results: Screening was accepted by 115 migrants and blood sample was collected in 113. Their ethnicities were: Sub-Saharan Africa (43%), Hispanoamerica (28%), Mahgreb (23.7%) and Eastern Europe (5.3%). Most of them were male (57%) and 43% were female with a mean age of 31 years and a mean of stay in Europe of 7 months. Almost everyone (95.7%) referred being vaccinated in childhood according to the vaccination calendar of their countries. However in our results 11.4% had negative HAV IgG, 62.3% for HBV, 3.5% for rubella, 8.7% for mumps, 34.2% for measles, 31.6% for tetanus, 45.6% for diphtheria and 13.5% for pertussis. In accordance with these results, we recommended getting vaccinated in their primary health care center in 96.5%: HAV in 10.5%, HBV in 74.5%, MMR vaccine in 40%, and DTaP in 73.7%. Overall, only in 19.3% our recommendations were followed correctly and in MMR only in 29%. We have no information why recommendations were not followed, if people refused to be vaccinated, they move to other regions, or if collaboration with primary care centers failed.

Conclusion Despite most migrants (95.7%) referred being vaccinated in childhood, negative IgG was observed in several vaccine preventable diseases, which can lead to outbreaks in Europe, especially measles, taking into account its current global re-emergence (34.2% had negative IgG). Although at least one vaccine was recommended to 96.5% of participants, it was followed correctly only in 19.3% remarking a better strategy for compliance should be considered. We suggest, MMR vaccine could be offer and administered in the first visit without waiting for serology results.

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Extended screening for malaria and other infectious diseases among pregnant migrants – Results of a monocentric retrospective study in northern Italy

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Question: Malaria remains a significant public health challenge among migrant population, particularly among pregnant migrants from endemic areas, as it may contribute to adverse maternal and neonatal outcomes. This monocentric retrospective study aimed at evaluating the prevalence of malaria infection, along with the impact of other emerging infectious diseases, among pregnant migrant women attending the Department of Infectious-Tropical Diseases at IRCCS Sacro Cuore-Don Calabria Hospital, Italy.

Methods: From January 2023 to September 2024, a total of 76 pregnant migrants from 18 countries, predominantly from sub-Saharan Africa (47.3%), were screened for malaria as part of a broader infectious disease screening program targeting epidemiologically relevant conditions, including schistosomiasis, strongyloidiasis, soil-transmitted helminthiases, HTLV-1/2, and Chagas disease.

Results: Malaria screening was performed using highly sensitive diagnostic methods, including loop-mediated isothermal amplification (LAMP), microscopic examination of thin and thick blood smears, and immunochromatographic rapid diagnostic tests. The overall malaria prevalence was 14.3%, with all positive cases originating from sub-Saharan Africa (three from Côte d"Ivoire, one from Nigeria). Notably, all but one malaria-positive women were asymptomatic, yet they exhibited lower median hemoglobin levels compared to non-infected individuals, suggesting a potential impact on maternal health.

Conclusions: The high rate of subclinical infections highlights the importance of systematic malaria screening in this vulnerable population, as undiagnosed infections contribute to anemia, low birth weight, and increased risk of placental malaria. Integrating molecular diagnostic tools into antenatal care pathways for migrant women could improve early detection and timely management of malaria, ultimately reducing maternal-fetal morbidity. Further research is needed to assess the effectiveness of targeted preventive strategies to mitigate malaria-related risks in this population.

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Health screening in unaccompanied foreign minors – The experience of an Italian centre

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An unaccompanied foreign minor (UFM) is a person under the age of 18, not citizen of the European Union (EU), who lives in the EU without the assistance and representation of his parents or other adults legally responsible for him. UFMs have peculiar vulnerabilities that require targeted management. The Italian law provides dedicated reception pathways for UFMs, which also include health assessment[1] [2]. UFMs in Italy are mainly male (87.8%) aged 16 or 17[3]. The UFM health screening activity we present is performed in Brescia (Lombardy).

Since August 2023, thanks to a collaboration between the public hospital Spedali Civili and the Municipality, a systematic activity of health assessment of all UFMs placed under the responsibility of the Municipality of Brescia has begun.

During the visit, the child's migration and health history is investigated, a general clinical assessment is conducted and and evaluation for active tuberculosis and ectoparasitosis signs is performed. Finally, all patients are screened for latent tuberculosis (LTBI). Those who test positive are sent to evaluation to decide if treatment for LTBI is required. UFMs are also vaccinated according to national indications.

In its first 18 months of activity, 258 minors were assessed, all males, aged 12-17. The Country of origin in order of prevalence was Egypt (69.8%), Tunisia (10.5%), Gambia (5.8%), Albania (4.3%), fairly in line with the national data[3].

A clinical pattern of scabies was found in 36/258 (14%). Intradermal Mantoux test was performed in 257 minors of whom 253 presented for test reading; 34/253 tested positive of which 21 (61.8%) have completed their assessments, with ITL diagnosed and treated in 4 (19%) of them (2 from Pakistan, 1 from Gambia, 1 from Egypt).

Our work highlights the importance of implementing systematic health screening in UFMs in limiting the spread of infectious diseases and ensuring adequate care to UFMs. More efforts are needed to improve health screening in this vulnerable population.

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1)Regolamento concernente i compiti del Ministero del lavoro e delle politiche sociali in materia di minori stranieri non accompagnati, ai sensi dell"art.17, comma 1, della legge 23 agosto 1988, n.400

2)Linee Guida per l"accoglienza e la presa in carico dei minori stranieri non accompagnati-2024, Tribunale per i minorenni di Brescia

3)Ministero del Lavoro e delle Politiche sociali Cartella di lavoro: Presenza dei Minori stranieri non accompagnati in Italia

Fig. 1

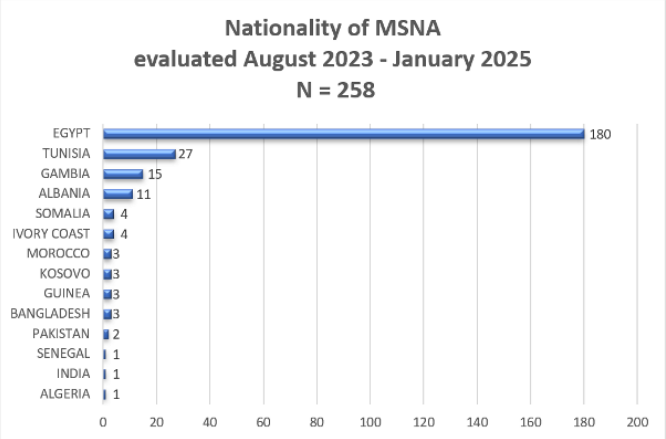
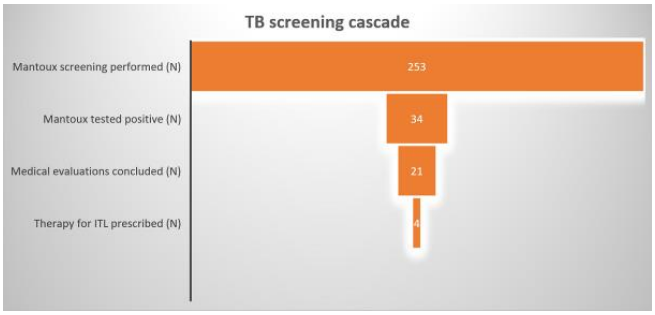


Fig. 2



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Screening for neglected tropical diseases in migrants living with HIV – Gaps, challenges, and opportunities in Florence, Italy

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Question: To assess the feasibility and effectiveness of infectious disease screening, particularly for neglected tropical diseases (NTDs), in migrants living with HIV (MLWH) in Florence, Italy, identifying screening gaps and seroprevalence to enhance early detection and intervention.

Methods: We conducted a retrospective analysis on MLWH followed at the Infectious and Tropical Diseases Unit of Careggi University Hospital, Florence, between 01/01/2014 and 31/12/2023. Serological screening results at enrollment were evaluated alongside demographic and viro-immunological data. A migrant was classified as originating from a high-risk area for *Trypanosoma cruzi*, *Strongyloides stercoralis*, and *Schistosoma spp.* (SCC) based on WHO, CDC, and PAHO guidelines. Screening ratios (ScR) and seroprevalence for SCC were also analyzed.

Results: We enrolled 251 MLWH, 46.2% (n=116) were assigned male at birth and 32.3% (n=81) were transgender women. The median age was 33 years (IQR 26-42) and 41.8% (n=105) were treatment-naïve. The predominant geographical origin was Latin America (55%, n=138), followed by Africa (21.1%, n=53). Most HIV diagnoses (55.4%, n=139) were made in Italy, with 17.1% (n=43) diagnosed with AIDS on their first visit [Table1].

Serological results showed a low prevalence of HCV-IgG positivity (5.2%, n=13), while 45.4% (n=114) tested positive for HAV-IgG, 31.1% (n=78) for HBcAb, 8% (n=20) for HBsAg, 18.7% (n=47) for QuantiFERON, and 15.5% (n=39) were newly diagnosed with syphilis. Analyzing the data by region of origin revealed many missed screening opportunities, particularly for SCC [Table 2]. Among the total number of migrants 51.8% (n=130) underwent at least one screening for SCC. The ScR was 39.5% for *S. stercoralis*, 65.2% for *T. cruzi,* and 17.6% for *Schistosoma spp.* We identified 6 cases of *Strongyloides* (2.4%), 3 cases of *Schistosoma spp.* (1.2%), 1 case of HTLV, and no cases of *T. cruzi*. *Schistosoma spp.* seroprevalence was higher in Africans (12.5%) than in Latin Americans (5.26%) [Table3].

Conclusions: This study highlights the need to improve screening strategies, particularly for SCC, as a significant number of at-risk individuals remain unscreened. The analysis underscores multiple missed opportunities, emphasizing the importance of comprehensive serological testing for timely diagnosis and targeted interventions. Further research is required to better investigate this topic and optimize screening approaches for this vulnerable population.

Fig. 1

Table 1: Clinical, laboratory, and demographic characteristics of a migrant people living with HIV population taken in care from 01/01/2014 to 31/12/2023 (N =251) in an Infectious and Tropical diseases units of a tertiary teaching hospital in Florence, Italy.

	TOTAL (n=251)	
	N	% [IQR]
GENDER (N, %)		
• *Men*	216	46.2
• *Cisgender women*	54	22.3
• *Transgender women*	81	32.3
NAÏVE PATIENTS (N, %)	105	41.8
AGE IN YEARS AT FIRST VISIT (Median, IQR)	33	26-42
RISK FACTOR (N, %)		
• *Unprotected sex (MSM)*	133	53
• *Unprotected sex (Heterosexual)*	82	32.7
• *IVDU & MSM*	5	2
• *Vertical transmission*	3	1.2
• *Transfusion*	2	0.8
• *Unknown*	26	10.4
ETHNICITY		
• Latinos	138	55
• Afro-descendant	53	21.1
• Caucasian	46	18.3
• Asians	14	5.6
FIRST HIV POSITIVE RESULT PERFORMED IN ITALY (N, %)	139	55.4
AIDS DIAGNOSIS (N, %)	48	17.1
ACUTE INFECTION (N, %)	24	9.6
NADIR CD4 cells/mmc (Median, IQR)	402	157-595
ZENITH Viral Load, Log_{10} (Median, IQR)	4.65	3.27-5.21

IQR: Interquartile range, MSM: Males who have Sex with Males; IVDU: Intravenous-Drug Users; AIDS: Acquired Immune Deficiency Syndrome

Fig. 2

Table 2: Disaggregated data for geographical origin of Serology results including Neglected Tropical Diseases in a migrant people living with HIV population taken in care from 01/01/2014 to 31/12/2023 (N =251) at the Infectious and Tropical diseases units of a tertiary teaching hospital in Florence, Italy.

	TOTAL (n=251)				
	Latin America n=198 N (%)	Africa n=53 N (%)	Asia n=14 N (%)	Europe North America n=46 N (%)	TOTAL N (%)
SIPHYLIS Ab with no history of previous treatment					
• *Positive*	29 (20%)	3 (5.7%)	3 (21.4%)	4 (8.7%)	39 (15.5%)
• *Negative*	94 (68.1%)	45 (84.9%)	10 (71.4%)	36 (78.3%)	185 (73.7%)
• *Unknow/Not Performed*	15 (10.9%)	5 (9.4%)	1 (7.1%)	6 (13%)	27 (10.8%)
TOXOPLASMOSIS					
• *Positive*	33 (23.9%)	11 (20.8%)	1 (7.1%)	9 (19.6%)	54 (21.5%)
• *Negative*	35 (25.4%)	18 (34%)	7 (50%)	19 (41.3%)	79 (31.5%)
• *Unknow/Not performed*	70 (50.7%)	24 (45.3%)	6 (42.9%)	18 (39.1%)	118 (47%)
QUANTIFERON					
• *Positive*	34 (24.6%)	12 (22.6%)	1 (7.1%)	-	47 (18.7%)
• *Negative*	63 (45.7%)	20 (37.7%)	7 (50%)	20 (43.5%)	110 (43.8%)
• *Indeterminate*	4 (2.9%)	1 (1.9%)	-	1 (2.2%)	6 (2.4%)
• *Unknow/Not performed*	37 (26.8%)	20 (37.7%)	6 (42.9%)	25 (54.3%)	88 (35.1%)
HBV					
• *Positive Anti-HBs Antibody*	63 (45.7%)	24 (26.4%)	7 (50%)	13 (28.3%)	97 (38.6%)
• *Negative Anti-HBs Antibody*	47 (34.1%)	24 (45.3%)	6 (42.9%)	23 (50%)	100 (39.8%)
• *Unknow/Not performed Anti-HBs Antibody*	28 (20.3%)	15 (28.3%)	1 (7.1%)	10 (21.7%)	54 (21.5%)
• *Positive Anti-HBc Antibody*	34 (24.6%)	27 (50.9%)	3 (21.4%)	14 (30.4%)	78 (31.1%)
• *Negative Anti- HBc Antibody*	84 (60.9%)	20 (37.7%)	9 (64.3%)	22 (47.8%)	135 (53.8%)
• *Unknow/Not performed Anti- HBc Antibody*	20 (14.5%)	6 (11.3%)	2 (14.3%)	10 (21.7%)	38 (15.1%)
• *Positive HBs Antigen*	8 (5.8%)	8 (15.1%)	2 (14.3%)	2 (4.3%)	20 (8%)
• *Negative HBs Antigen*	123 (89.1%)	42 (79.2%)	11 (78.6%)	40 (87%)	216 (86.1%)
• *Unknow/Not performed HBs Antigen*	7 (5.1%)	3 (5.7%)	1 (7.1%)	4 (8.7%)	15 (6%)
HCV					
• *Positive HCV IgG-IgM*	5 (3.6%)	4 (7.5%)	-	4 (8.7%)	13 (5.2%)
• *Negative HCV IgG-IgM*	124 (89.9%)	46 (86.8%)	13 (92.9%)	37 (80.4%)	220 (87.6%)
• *Unknow/Not performed*	9 (6.5%)	3 (5.7%)	1 (7.1%)	5 (10.9%)	18 (7.2%)
HAV					
• *Positive HAV IgG*	81 (58.7%)	19 (35.8%)	2 (14.3%)	12 (26.1%)	114 (45.4%)
• *Negative HAV IgG*	14 (10.1%)	5 (9.4%)	5 (35.7%)	8 (17.4%)	32 (12.7%)
• *Unknow/Not performed*	43 (31.2%)	29 (54.7%)	7 (50%)	26 (56.5%)	105 (41.8%)
CHAGAS DISEASES					
• *Positive*	-	-	-	-	0 (0%)
• *Negative*	90 (65.2%)	-	-	-	90 (35.9%)
• *Unknow/Not performed*	48 (34.8%)	-	-	-	161 (64.2%)
STRONGYLOIDOSIS					
• *Positive*	6 (4.3%)	0	0	0	6 (2.4%)
• *Negative*	64 (46.4%)	20 (37.7%)	4 (28.6%)	4 (8.7%)	92 (36.7%)
• *Indeterminate*	1 (0.7%)	0	0	0	1 (0.3%)
• *Unknow/Not performed*	67 (48.6%)	33 (62.3%)	10 (71.4%)	42 (91.3%)	152 (60.6%)
SCHISTOSTOMIASIS					
• *Positive*	1 (0.7%)	2 (3.8%)	0	-	3 (1.2%)
• *Negative*	28 (19%)	14 (26.4%)	1 (7.1%)	-	33 (13.1%)
• *Unknow/Not performed*	119 (86.2%)	37 (69.8%)	13 (92.9%)	-	215 (85.7%)
HTLV 1-2					
• *Positive*	1 (0.7%)	0	-	0	1 (0.4%)
• *Negative*	41 (29.7%)	6 (11.3%)	-	3 (6.5%)	50 (19.9%)
• *Unknow/Not performed*	96 (69.6%)	47 (88.7%)	14 (100%)	43 (93.5%)	200 (79.7%)

HTLV: Human T-lymphotropic virus, HBV: Hepatitis B virus; HBs: Hepatitis B surface; HBc: Hepatitis B core; HCV: Hepatitis C virus; HTLV: Human T-lymphotropic virus

Table 3: Screening ratio and Seroprevalence of Migrant at risk for Neglected Tropical Diseases in a migrant people living with HIV population taken in care from 01/01/2014 to 31/12/2023 (N =251) at the Infectious and Tropical diseases units of a tertiary teaching hospital in Florence, Italy.

	Latin America	Africa	Asia	Europe and North America	Total Migrant at risk
SCREENING RATIO (ScR)					
• *Strongyloides*	71/198 (32.44)	20/53 (37.73)	4/14 (28.57)	4/46 (8.69)	99/251 (39.44)
• *Schistosoma*	19/198 (15.76)	16/53 (30.18)	1/14 (7.14)	-	36/205 (17.56)
• *Chagas Diseases*	90/198 (65.21)	-	-	-	90/198 (65.21)
SEROPREVALENCE					
• *Strongyloides*	6/70 (8.57)	0/20 (0)	0/4 (0)	0/4 (0)	6/98 (6.12)
• *Schistosoma*	1/19 (5.26)	2/16 (12.5)	0/1 (0)	-	3/36 (8.33)
• *Chagas Diseases*	0/90 (0)	-	-	-	0/90 (0)

ScR: Screening Ratio, NTDs: Neglected Tropical Diseases, Migrant at risk: Migrant coming from a geographical area considered at risk for a NTDs

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Health screening in migrant population in Gipuzkoa, northern Spain in 2024

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Introduction: Migration processes have exponentially increased worldwide in recent years. This entails an increase in imported pathology with risks both to the migrants and to Public Health.

Materials and methods: We developed health screening for migrants arriving in Gipuzkoa (a northern Spain province with approximately 700,000 inhabitants). This includes a medical history, physical examination, blood and urine tests, stool microbiological study according to origin, chest X-ray, and offering sexually transmitted infections (STI) screening.

Results: In 2024, we evaluated 115 migrants (56.5% male, 43.5% female) with an age range of 17-59 years (mean 31 years). Most were from Sub-Saharan Africa (43.5%), 27.8% Hispano-Americans, 23.5% Maghrebians, and 5.2% Eastern Europeans. We needed a translator (13% of them were illiterate). Mean time since arrival to Europe was 5 months. Suffered some physical aggression 28.7% and 10.4% sexual aggression during the migration. 24.3% were asymptomatic and 80% had normal physical examination. Body Mass Indexes were 3.48% underweight (<18.5), 30.43% overweight

(25-29.9), and 14.78% obese (>30). We found 4 hemoglobinopathies, 1 unidentified liver disease and 9 dyslipidemias. Emotional and psychologic symptoms were frequent: 45.2% insomnia, 45.1% depression and 25.2% anxiety. Infectious diseases results: Serology: 7% positive for schistosoma, 2.6% doubtful (in one eggs were visualized by microscopy in stool). Strongyloides 8.7% positive, 5.2% doubtful, 0.9% HIV, 7% chronic hepatitis B and 3.5%HEV. Chagas, HTLV and HCV were all negative. Parasites in stools were detected in 8.3% of migrants, being *Giardia duodenalis* (6) the most frequent, and in 1.75%, malaria was diagnosed only by PCR techniques (microscopy thin smears were negative). STI: 2.6% had positive syphilis serology, previously unknown; we also detected *Trichomonas vaginalis* (1%), gonococcus (1%), *Chlamydia trachomatis* (1%) and *M. genitalium* (1%). QuantiFERON-TB® was positive in 32.2%. There were 2 active pulmonary tuberculosis cases which generated 2 secondary cases. We also found 1 bacterial pneumonia. Overall, 31.3% required some form of treatment and 29.6% needed visit other specialists.

Conclusion: An appropriate systematized health screening of migrants is important in order to diagnose and treat its health problems as well as to implement appropriate measures to deal with the potential Public Health impact of the importation of diseases by this group of people.

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Common and neglected skin diseases (NTD) in patients from Ethiopia and the challenges of their management

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Dermatological skin disorders are a significant public health concern in Africa, where climate, socioeconomic factors, and infectious diseases contribute to a wide range of conditions. Although many skin diseases are not life-threatening, they can lead to stigmatization, social isolation, or impaired ability to work (1). A major challenge for many patients from rural areas is reaching healthcare facilities due to geographic and financial barriers. Additionally, limited therapeutic and diagnostic options, as well as misdiagnosis of serious skin disorders and neglected tropical diseases, remain critical issues. Many patients also hesitate to seek medical attention due to fear of stigmatization.

Infectious skin diseases are highly prevalent in African countries. A common group of infections includes viral diseases, such as varicella. In Europe, childhood varicella vaccination is part of routine immunization programs, but in Ethiopia, adult cases are still frequently observed (pict. 1 and 2). The patient shown in these images is a 22-year-old pregnant woman who contracted varicella. Although she was prescribed aciclovir, she was not informed about the potential risks for the baby, nor were any follow-up diagnostics planned for her or the fetus. This highlights a significant issue in Ethiopia—the lack of vaccination programs and patient education. Due to limited access to modern treatment options, topical and oral corticosteroids remain the primary treatment of many skin diseases. These are often used continuously for months, leading to significant side effects. Ethiopia carries a high burden of NTDs. Skin-related NTDs, such as leprosy and leishmaniasis, are relatively often encountered in dermatological outpatient clinics. However, a major challenge is a proper diagnosis and treatment. Since only a few can afford the journey to the hospital in the capital city, many patients either remain untreated—allowing the disease to progress—or arrive too late, often with irreversible disabilities. For example, in picture 3, a young female patient presents with deformity of her right foot due to untreated leprosy. This case underscores the urgent need for better healthcare accessibility, early detection, and treatment facilities in rural areas to prevent severe complications.

1. Monari P et al. Epidemiology of skin diseases in the Tigray region of Ethiopia. Ital J Dermatol Venerol. 2021 Oct;156(5):575-579

Fig. 1

Appendix

Picture 1. and 2.

Picture 3.

The written informed consent was obtained from the patients or the guardian for taking pictures

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The need for broader clinical awareness and the importance of multidisciplinary management – A case of leprosy in a political refugee

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A.A., a 26-year-old Egyptian male with no comorbidities, arrived in Italy in 06/2021 as a political refugee. Since 03/2021, he developed hyperpigmented-erythematous lesions on his left shin, later spreading to the right leg, left knee, right gluteus, and chest, with cutaneous hyposensitivity. In 12/2021, he was referred to our Clinic for worsening symptoms, including left-hand swelling and right fourth-finger pain.

A punch biopsy of a left shin lesion showed non-necrotizing granulomas, negative Ziehl-Neelsen staining but tested RT-PCR positive for Mycobacterium leprae, consistent with cutaneous leprosy of the tuberculoid type. Nasal swab and Slit Skin Smear (earlobes, knees, elbows) were negative. He reported contact with a cousin affected by leprosy in Egypt two years prior.

Treatment with daily rifampicin, dapsone, and clofazimine was started. One week later, a type I reaction was suspected due to worsening hand pain and swelling, requiring steroid therapy and rifampicin dosing reduction to once monthly. Symptoms improved, and steroids were tapered over six months but had to be reintroduced due to worsening hand edema and vertigo.

After one year, the patient showed benefit and treatment was stopped. However, six weeks after the treatment end, he developed pain in the left fourth and fifth fingers and elbows, with new erythematous skin lesions on the left flank, back, and right arm. EMG and nerve ultrasound showed worsening left ulnar nerve conduction, suggestive of olecranon tunnel syndrome. Antimicrobial and steroid therapy were reintroduced. A new punch biopsy showed Ziehl-Neelsen and PAS-negative staining, while RT-PCR for M. leprae DNA was positive, consistent with tuberculoid leprosy.

A multidisciplinary consultation with a dermatologist and neurologist of a referral center was performed. Given the olecranon tunnel syndrome, ulnar nerve neurolysis was performed. The histological specimens were reviewed: the first one (2021) was consistent with Borderline Tuberculoid subtype, the second one (2023) was suggestive for Borderline Lepromatous subtype. Further staging via Fite-Faraco staining was not possible due to lab issues.

After one more year of therapy, the patient showed significant clinical improvement, with resolution of pain, fading of skin lesions, and near-complete neurological recovery. At one-year follow-up, EMG showed general improvement, with only residual mild left ulnar nerve dysfunction, and substantial cutaneous and sensory recovery.

Fig. 1

Fig. 2

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The WHO collaborating centre ita-116 for the diagnosis of intestinal helminths and protozoa

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In February 2020, the World Health Organization (WHO) designated the Laboratories of Parasitology and Parasitic Diseases (University of Naples Federico II) as collaborating centre for the diagnosis of intestinal helminths and protozoa (WHO CC ITA-116; https://maps.parassitologia.unina.it//). The terms of reference (TOR) of the centre for the four-year period 2024-2028 are to: 1) provide parasitological surveillance data on population of the newly immigrated to European countries for WHO"s consideration; 2) develop and improve the performance of innovative diagnostic techniques for intestinal parasites and provide specialized training to laboratory technicians in endemic countries as needed; 3) support endemic countries in monitoring preventive chemotherapy (PC) programmes for soil-transmitted helminths (STH). In this study we report the goals achieved during these activities.

Since 2020, out of 963 migrants monitored in southern Italy, 158 (16.4%) resulted positive for at least one intestinal parasite, using the FLOTAC technique (Cringoli et al., 2010, Nat. Prot.) and multiplex real-time PCR (Allplex Gastrointestinal Assays - Seegene, South Korea). The most common parasites found were hookworms (28.5%) and *Trichiuris trichiura* (18.4%) among helminths and *G. duodenalis* (8.2%) and *Entamoeba histolytica/dispar* (5.1%) among pathogenic protozoa. The WHO CC ITA-116 continuously improves the diagnostic performance for intestinal protozoa and helminths using innovative approaches such as artificial intelligence (i.e. Kubic FLOTAC Microscope) (Cringoli et al., 2021, Parasitology; Maurelli et al., 2023, Curr. Trop. Med. Rep.) and molecular biology to obtain precise and reliable results. Finally, a WebGIS was developed with four different sets of maps (Progress of implementation; Impact of intervention on STH prevalence; Impact of intervention on STH morbidity; Drugs donated) developed to assist countries in conducting surveys under the PC programmes in the six WHO regions (Maurelli et al., 2021, Geospat. Health).

All the results obtained will be useful to achieve the WHO main goals of the NTD 2021–2030 roadmap for the control and elimination of intestinal parasites.

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Evaluating Trauma-Focused Cognitive Behavioral Therapy (TF-CBT) for unaccompanied minors in Greece – A randomized controlled trial

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Background: Unaccompanied minors (UAMs) represent one of the most vulnerable group within the refugee population, frequently exposed to severe trauma and an increased risk of

developing mental health disorders, including post-traumatic stress disorder (PTSD). Trauma-Focused Cognitive Behavioral Therapy (TF-CBT) is a well-established, evidence-based intervention for PTSD in children and adolescents; however, its efficacy and applicability for UAMs remain underexplored. This gap is particularly pronounced in culturally specific contexts such as Greece, where randomized controlled trials (RCTs) assessing TF-CBT have yet to be conducted.

Objective: This study aims to assess the efficacy of TF-CBT in reducing PTSD symptoms among UAMs in Greece compared to Treatment as Usual (TAU). Furthermore, it seeks to culturally adapt TF-CBT for this population and examine its impact on comorbid symptoms, quality of life, and potential moderating factors, including age, gender, and trauma history.

Methods: A single-blinded RCT is currently underway, enrolling UAMs who are randomly assigned to either the TF-CBT intervention group or TAU. Standardized assessments are administered at baseline, post-intervention, and at a three-month follow-up to evaluate changes in PTSD symptoms, comorbid conditions, and overall psychological well-being.

Preliminary Results: Although data collection is ongoing, initial findings suggest a reduction in PTSD symptoms among participants receiving TF-CBT, alongside improvements in overall well-being relative to the TAU group. Preliminary analyses also underscore the importance of cultural adaptation in optimizing TF-CBT"s effectiveness for UAMs in Greece.

Conclusion: This study aims to establish TF-CBT as a viable and culturally sensitive intervention for UAMs in Greece, inform the development of tailored therapeutic guidelines, and enhance the training of mental health professionals working with refugee populations. By generating empirical evidence on TF-CBT"s efficacy in this unique context, the findings contribute to both clinical practice and the broader discourse on trauma-focused interventions for refugee minors. Given the significant barriers UAMs face in accessing adequate mental health care, this research aligns with the congress theme by promoting inclusive, evidence-based interventions that facilitate better health and well-being for vulnerable populations in an increasingly complex and unequal world.

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A Case of Cervical Lymphadenopathy from Cameroon – The Unexpected Guest

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Background: Loiasis is a vector-borne parasitic infection sustained by the filarial nematode *Loa Loa*. It primarily affects rural populations in West-Central Africa, with approximately 20 million people chronically affected. However, increased migration flows and international mobility make it an emerging disease also in non-endemic areas, where it often presents with atypical manifestations compared to those classically described in literature. Historically considered an indolent disease, recent evidence highlights its significant impact on morbidity and mortality. Despite this, it remains a misdiagnosed infection with non-standardized treatment and for which effective control and prevention strategies are lacking.

Case presentation: We report the case of a 38-year-old patient, born in Cameroon, living in Italy for 7 years, who was assessed for cervical lymphadenopathy of recent onset, without other symptoms. Initially suspected as tuberculosis due to a positive Quantiferon test, lymph node aspiration yielded negative results for mycobacteria on culture, molecular and direct examination. Instead, the cytological examination revealed the presence of microfilariae referable to *Loa Loa*. The diagnosis was confirmed by finding microfilariae in peripheral blood. The patient was treated with albendazole (400 mg/day for 28 days) and subsequently, after confirmation of significant reduction of microfilariae in peripheral blood, with ivermectin (single dose of 200 µg/kg). The outcome was favorable at 2-month follow-up.

Conclusion: Loiasis can present with a wide range of signs and symptoms that mimic other diseases, which underscore the importance of including it in the differential diagnosis, especially in individuals from endemic regions.

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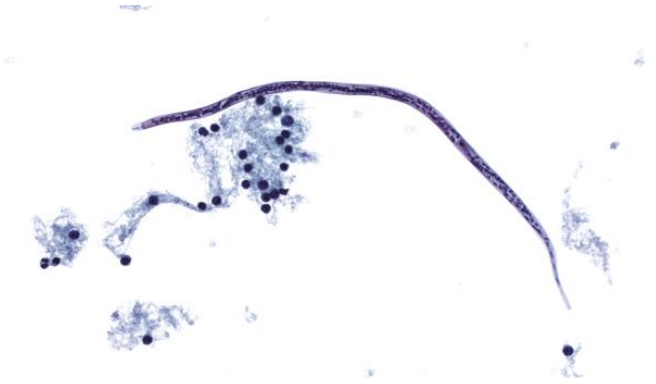
Figure 1. Parasitological identification of *Loa Loa* microfilariae on Giemsa-stained lymph node aspirate

Fig. 1



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Health condition and well-being of Cuban migrants living in United States in comparison to other Hispanic and non-Hispanic populations – A systematic review

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Question: Migration can increase people's vulnerability in terms of health. Often there are differences in profiles of disease and health risk factors between the immigrant population and the host population. Cuban Americans are the fourth-largest population of hispanic living in the United States. However, there is a lack of knowledge about the

similarities and differences of health conditions among Cuban American and other demographic groups inside that country. We tried to answer the following question: What is known about the health status of the Cuban-American migrant population in the United States of America? **METHOD:** Following PRISMA Statement for Reporting Systematic Reviews and Meta-Analysis we searched in three databases (Web of Science, PubMed, and Google Scholar) applying selection criteria. Studies were considered if they contained samples of Cuban Americans in comparison with other nationalities. Results were categorized for each country in three main areas: health status, risk/prevention factors and access/use of healthcare services. The data were synthesized using descriptive statistics and content analysis. **RESULTS:** Forty-six documents were extracted, of which 31 full-texts were finally reviewed and 22 were included. Nine documents belonged to risk factors and three related to well-being or protective factors. Twelve papers refer to social acculturation as part of health variables. Health status of Cuban Americans is better than the Mexican American population, but worse than that of non-Latino white populations, African Americans, and Puerto Ricans. However, in terms of toxic habits and addictions, Cuban Americans have worse indicators regarding tobacco, but better in alcohol consumption. Access to health coverage and preventive and/or curative services seems to be better for Cuban Americans than for other Latino groups. The variable length of stay in the country seems to play an important role in the indicators studied. Social cohesion of the Cuban American migrant community acts as a protective factor against negative health consequences. **CONCLUSION:** Our study contributed to a better understanding of the health condition and well-being of Cuban migrants living in the United States in comparison to other Hispanic and non-Hispanic populations. This information is useful for politicians in both countries to design, implement and evaluate public policies focused on promoting and protecting the right to health for Cuban migrants.

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Transit-specific determinants of health of people on the move outside regular asylum centres in Serbia – A photovoice analysis from the perspective of humanitarian actors

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Background: Restrictive migration policy and the externalization of borders in Europe have impeded safe and legal migration of forcibly displaced people. Therefore, transit countries such as Serbia became relevant, as people on the move undertake precarious routes, ultimately influencing their health outcomes. Our goal was to identify and visualize determinants of health of people on the move outside regular asylum centres in Serbia from the perspective of humanitarian aid actors.

Methods: A qualitative, participatory research design using photovoice method was applied. Data were collected between July and October 2024 in different locations in Serbia. For this, photographs were taken by participating actors of humanitarian organizations according to the research question and discussed according to a systematic content procedure in subsequent focus groups. Discussions were audio recorded and transcribed verbatim, and a combined qualitative content analysis was performed, using the framework on social determinants of health by Solar and Irwin.

Results: Three photovoice focus groups with a total of 12 participants took part. As intermediary determinants of health, psychosocial factors were ranked highest, thought to be influenced by individual agency, dignity and perceived value of life; material circumstances were ranked second, specifically concerning lack of adequate and safe housing. Among structural determinants of health, mainly the topics of border governance, public policy regarding humanitarian assistance, and culture and societal values, such as solidarity with refugees and increasing trends of dehumanization, were discussed. Another main finding was that intermediary social factors are often systematically produced by structural conditions. Therefore, approaches to further develop options for actions at the structural level in the socioeconomic and political context were developed (see Table 1).

Conclusion: This study revealed the complex social determinants of health on the individual and structural level, impacting equity in health and well-being of people in complex flight transit contexts. Humanitarian actors go beyond regular care structures by creating community-based interventions and demonstrating solidarity with those in need. In the lack of policies supporting the health of transit refugees, such holistic approaches are needed to empower the agency of people on the move including integrated provision of care and intersectoral approaches.

Fig. 1

Table 1. Evaluative analysis of structural determinants of health: options for action regarding people on the move outside regular asylum centres

Code	Focus Groups	Evaluative Analysis
Governance	• Political intention to create a legal framework that enables humanitarian organizations to act in order to create access to care for people on the move outside of regular asylum centres • Create a legal framework for "safe passage"	Border system • Humane and just realization of migration policies [P] • Political decisions of nationwide placement of asylum centres without further implications [R] • Safe moving conditions [R] Political power • Political intentions to provide access to asylum centres [P] • Equitable allocation of resources [P] • Framing/Changing the narrative [P/R] • Human rights and maintaining processes to articulate their interests and exercise their legal rights [R] Transparency • Transparency about the structure of asylum centres [R]
Public Policies	• Legal framework for the work of humanitarian organizations providing healthcare • Improvement of professional conditions for healthcare • Resource allocation for the local community • Legal framework to improve living conditions in abandoned buildings • Establish cooking areas in asylum centres • Provide mental health support in asylum centres	Asylum centre • Adapting activities to the conditions of the asylum centre, i.e. curfew [P] • Improve environmental conditions of the asylum centre, i.e. parcs [R] • Provision of sanitation [R] Asylum procedure • Need for an effective asylum procedure as it provides access to services [P] • Choice of country for the asylum application [P] Health organization • Legal framework for the work of humanitarian organizations providing healthcare [R]
Culture and Societal Values	• Visualize welcoming messages for people on the move • Sharing values of humanity	• Sharing values of humanity [P/R] • Providing a sense of dignity and community [P/R] • Decision-making authority and responsibility of people on the move [P]

[P] Options for action derived from the potentials and promoting factors of health.
[R] Options for action derived from the risks and inhibiting factors of health.

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Pushback practices and violence towards migrants crossing European borders – A systematic review of academic and grey literature

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Background: Pushbacks are state measures aimed at forcing migrants out of a territory while obstructing access to legal and procedural frameworks and violating the principle of non-refoulement. Despite numerous media and NGO accounts on pushbacks, reports systematically analyzing the health consequences of pushbacks are non-existent. This review synthesizes the health effects of pushbacks and related violence (physical, sexual, psychological, and structural) against migrants crossing the EU borders and estimates the magnitude of pushbacks, considering the diversity of practices.

Methods: A systematic review of peer-reviwed and grey literature, using PRISMA guidelines. Data extraction included: type of violence (according to WHO typology), type of pushback, health outcomes and/or health service utilization. Border Violence Monitoring Network data analysis was also performed.

Results: 42 peer-reviewed articles and 197 reports from reputable organizations were included. Following quality appraisal, 182 of the papers were analysed. Twelve forms of pushback were identified, involving at least 14 and eleven EU and non-EU countries. All four types of violence occurred simultaneously with pushbacks, mostly accompanied by unlawful detention and ill-treatment. The data analysis of Border Violence Monitoring Network data from January 2017 to March 2023 identified 1,709 pushback incidents and 31,049 individuals exposed.

Conclusions: Pushbacks and related violence are frequent at EU borders among migrants, and indicate the existence of a systematic problem in the EU border management approach. Migrants subjected to pushbacks experienced considerable health issues, including deaths and mental health issues. The available analyzed data was inconsistent and incomplete, suggesting that the true scale of the problem may be much larger.

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The nexus of health and labour exploitation among migrant populations in the eastern Mediterranean region and Türkiye – A scoping review

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Labor exploitation is a pervasive global issue affecting migrant populations disproportionately and is recognised as a key social determinant of health. In the WHO-designated Eastern Mediterranean region (EMR) and Turkiye, labour exploitation is evident, yet there is a limited understanding of its implications for migrants' health. This scoping review aims to identify health outcomes of migrant victims of labour exploitation and barriers to accessing healthcare in the EMR and Türkiye, and identify gaps in evidence for future studies.

Methods: The review follows the updated Joanna Briggs Institute (JBI) guidelines for designing scoping reviews. We include English and Arabic language peer-reviewed publications and grey literature between March 2011 and present. A full search of Cochrane, PubMed, Web of Science, SCOPUS databases, and Google Scholar, and Overton for grey literature and screening of references of previously published reviews will be conducted. Using COVIDENCE, three independent reviewers will screen the titles, abstracts, and full texts for eligibility and inclusion. Relevant information will be extracted using a tailored extraction data sheet.

Analysis: Data will be analysed using descriptive statistics and an inductive content analysis approach. This review employs an intersectional framework, as well as a structural, symbolic, and interpersonal violence framework, alongside Tanahashi's health service coverage framework to analyse and synthesise the data.

Results: We will illustrate key themes and relationships between labour exploitation, health outcomes, access to healthcare dimensions, and influencing factors using appropriate summaries and visual tools. A comprehensive populated labour exploitation continuum framework will be developed.

Expected outcomes: This review will fill a gap in understanding how, where, and when exploitative labour practices affect migrant health in the EMR and Türkiye, and provide an overview of promising practices and interventions. This review will contribute to the evidence towards a better understanding of the role of exclusion in health outcomes, and inform policies and interventions to improve migrants" lives and well-being in the EMR and Türkiye. Our intersectional and holistic approach ensures that our research identifies labour exploitation health-related issues and offers tangible recommendations to address them, fostering a more inclusive and supportive environment for migrants in the EMR and Türkiye.

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Local task force to address female genital mutilation Prevention – How it works

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Keywords: Community Networks, Female Genital Mutilation, Public Health

Objectives: Explain the process of creating the local task force to address Female Genital Mutilation (FGM) its main objectives, how we operate and lessons learnt.

Description: FGM"s prevention and approach cannot be done from a single perspective; it must be approached from an integrated perspective that includes prevention, care, protection, recovery, and safety of women and girls at risk. It emphasizes networking, training, and transversal actions, as well as continuous updates on both medical and legal issues. We present the experience and results of 2 local working groups, one created in 2019, and one in 2014, Both are formed by professionals from primary care, mental health,

gynecology, social services, education, Police Victim Support Group and law enforcement. The first step was to draft the Local Protocol for Addressing and Preventing FGM, unify criteria, and create referral pathways. This diverse and multidisciplinary group was key to incorporating all the necessary perspectives and resources into the protocol for addressing FGM.

Main tasks are:identify girls at risk, follow up on cases, evaluate actions taken, plan training and awareness actions in town. Three training sessions were conducted, two for healthcare personnel and one for educational centers.

The local task force meets once per year face to face but is in constant communication that include 8 referrals done from school to Primary Care services, 3 notifications from Gynecology to pediatric services, and 2 from pediatric to gynecology.

Conclusions: Currently, there are more than 70 local task forces in our autonomous community. These task forces provide a global view of FGM and allow all involved actors to work together. The creation of these shared local resources allows us greater control over this issue and helps us find solutions by addressing each case individually with all available resources and an interconnected local team working together. There has been an increase of detection in both cases, last year data shows the success of the acts done, referrals and coworking between all the services creating a positive environment between all the services and families. Avoiding tension and awkwardness usually linked to FGM.

Applicability: The creation of a local task force to address FGM can be replicated in any municipality through local councils.

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Addressing the health consequences of female genital mutilation/cutting in primary care – Challenges and opportunities

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Aim: Female genital mutilation/cutting (FGM/C) can cause physical, mental and sexual health complications. Around 600,000 women living in Europe have been subjected to FGM/C[1], for whom the provision of support and health care is endorsed. In spite of the existence of protocols, guidelines and training, the clinical care for women/girls with FGM/C is sub-optimal. This study aims to explore healthcare professionals" perceptions on the barriers and enablers for addressing FGM/C at primary care in Catalonia, Spain.

Methods: A cross-sectional online survey was distributed to primary care providers of adult care (adult-PCP) and paediatric care (paediatric-PCP) from April 2024 to February 2025. It included questions on knowledge about FGM/C, barriers and facilitators when addressing FGM/C in their clinics, education and training needs. Frequencies and inferential statistics were generated with Stata-16.

Results: 297 responses were obtained – 198 (66.7%) of adult-PCP and 99 (33.3%) of paediatric-PCP, including general practitioners, nurses, midwifes, paediatricians and social workers. The vast majority of respondents recognized the importance of detecting cases of FGM/C, although a number of barriers were pointed, including language barriers, difficulty in discussing FGM/C in a respectful manner, limited knowledge and lack of time in consultations. Our results showed that 62.1% of adult-PCP were not familiarized with the detection or referral of FGM/C cases, which was associated with a lower percentage of migrant patients in their quota (p-value<0.001). Of those who had detected a case of FGM/C, less than half reported assessing the presence of health complications or providing information/sensitization. In fact, 62.6% had not received training on FGM/C. All paediatric-PCP respondents agreed that paediatric consultations provide an opportunity to detect cases of FGM/C in adult women (caregivers), with the main facilitator being a well-established referral pathway. Ultimately, paediatric-PCP seemed to be more familiarized with FGM/C protocols and guidelines – 66.7% had read them, versus 17.2% of adult-PCP.

Conclusions: Based on the findings, the perceived priority areas of intervention for PCP were sensitization among FGM/C-practising migrant communities and PCP, as well as treatment of FGM/C complications in adult women.

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Barriers to abortion care for recently arrived migrants and asylum seekers in Germany

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Question: Access to abortion is recognized as a key component of the right to healthcare. In Germany, to this day, abortion without medical or criminal indication is illegal and treated under the penal code, although not punished in the first 12 gestational weeks if following a formalized process including mandatory counselling. Navigating this highly regulated pathway may be particularly challenging for recently arrived migrants such as asylum-seekers, who often face

specific vulnerabilities. We aimed at exploring abortion care access barriers for recent migrants in Germany from a service provider perspective.

Methods: In this qualitative study, we conducted 17 in-depth interviews with abortion-related service providers regarding specific barriers for recent migrants to access abortion care. We focussed on the federal states of Berlin and Brandenburg to include urban and rural scenarios. Interviewees included social workers, gynaecologists and civil society advocates. For data analysis of transcribed interviews, we applied a thematic approach using MaxQDA.

Results: Providers described main barriers to arise from the current legal frameworks for both abortion and migration in Germany. Specifically, this related to the mandatory counselling required to obtain an abortion, and to living circumstances in collective accommodation facilities for asylum-seekers with little access to information and limited mobility. Considering the complexity and fragility regarding asylum procedures, asylum-seekers were overall described as hesitant to confidently undergo a procedure formally representing a criminal act. Barriers regarding health system capacity, directly resulting from the limited availability of information and services in the languages spoken by clients, also played a large role. We found large differences in provision of care between Brandenburg and Berlin regarding availability of services, diversity among healthcare providers and language needs, all of which are more systemically addressed in Berlin.

Conclusion: Our study illustrates that the heavily regulated and complex pathway to abortion operated under the German Penal Code produces a state-induced barrier to a fundamental reproductive health service, especially for a highly vulnerable group like asylum-seekers. Our findings underscore the importance of international and national recommendations for decriminalisation of abortion, and of the diversification of healthcare providers.

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Assessment of the healthcare burden of Dengue disease in Germany – A retrospective analysis of statutory health insurance data (2014-2023)

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Question: Dengue, a mosquito-borne viral disease, is rising globally. Travelers from dengue-endemic countries to Germany are at risk, raising health and travel safety concerns. Dengue has been a notifiable disease in Germany since 2001. Its medical impact is often underestimated. This study investigated the following question: what is the healthcare burden of dengue disease in Germany?

Methods: Anonymized data were analyzed from approximately 7 million insured persons/year (2014-23) to estimate the incidence of dengue in Germany. The outpatient and inpatient healthcare use and cost associated with dengue (with and without hospitalization) were also investigated. Analyses were performed on a disease episode level, with 1-year preindex period. Each dengue disease period had an individual index quarter (3-months) during which a diagnosis was made. The follow-up period after the index quarter was 3 months.

Results: From 2015 to 2023, of the 10,151,240 insured persons, 887 dengue episodes were recorded. Patients had a median age of 33 years (IQR 26-46y); 52% were male. Each year, 103-182 episodes were reported (COVID-19 pandemic period [2020-22]: 10-62). Excluding the pandemic years, the incidence was 1.4-2.5/100,000 persons, with an estimated total number of 1453-2639 cases/year. Of the 37% hospitalized (37.6% male, 37.3% female), 4% required ICU care. The mean hospital stay was 3.3 days; most were discharged after 1 day (mean sick leave: 8.8 working days). No deaths due to dengue were reported. Overall, 41% of patients took sick leave during their episode. For those not hospitalized, the average sick leave was 38%, lasting 6.9 working days on average. Patients with dengue had 2-fold healthcare visits, resulting in a 162% increase in costs (mean costs/episode/quarter: €930) compared with the preindex period. These costs were mainly driven by outpatient care (23%) and hospitalization (64%). Compared with the preindex period, hospitalized patients had a 4-fold rise in costs (quarterly costs/episode: €1700; inpatient care accounting for 80%). In the hospitalized group, postdengue costs remained 39% higher than prehospitalization.

Conclusions: This study shows that dengue impacts the healthcare system in Germany, leading to higher costs, more hospitalizations and physician visits, as well as sick leave.

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"Only My Allah and I Know How I am Surviving" – Understanding the health impact of statelessness among Miya Muslims in Assam, India

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Background: I examine the negative health outcome of statelessness among the Miya Muslim in Assam, India. More than a million of them are experiencing statelessness manifested structural and physical violence, including detention and deportation. While existing scholarship has addressed the legal and political dimensions of statelessness, in this I article foregrounds its negative health consequences. Building on Daniel Dawes" framework, I argue that statelessness should be understood as a political determinant of health that triggers and shapes the social determinants of health.

Methods: I adopted a qualitative ethnographic approach grounded in an emic perspective to understand health outcomes of statelessness. I conducted participant observation and in-depth interviews with stateless individuals, families affected by exclusion or detention, community health workers, and civil society actors. I spent time inside detention camps, families who lost members to suicide, hospitals and public spaces, listening closely to people"s narratives of fear, illness, and survival. My followed a grounded theory approach to analyse my interview transcripts and field notes.

Results: I found a disturbing pattern of negative health outcomes tied to the statelessness regime. Living under the constant threat of detention and deportation has produced widespread chronic stress, anxiety, depression, and trauma. I documented over 50 cases of suicide linked to statelessness regime. Physical health challenges were manifested through

mobility injustice, forced displacement, torture and violence. In the char areas, predominantly resided Miya Muslims, I found structural neglect poor infrastructure, understaffed clinics, and near-absent public health investment.

Discussion/Conclusion: My finding contributes to global health and statelessness literature by framing statelessness as a political determinant of health, especially how it shapes the social determinants of health for the stateless population. This finding will help activists and academics to better articulate protection of health rights of the stateless population.

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"I had to be strong and not get sick until I was in a safe place" – Exploring the impact of displacement on refugee women"s sexual and reproductive health using photovoice

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Objective: Sexual and reproductive health (SRH) outcomes of refugee women are consistently poorer than those of host populations, yet their specific SRH needs remain poorly understood. Despite calls for meaningful participation, involving refugee women in research about their own healthcare remains rare. This study used photovoice, a participatory visual research method, to explore the impacts of displacement on SRH.

Method: From February to May 2024, six refugee women who had lived in a refugee camp on Lesbos, Greece, documented their SRH experiences through photography. Images were discussed in three focus groups and five in-depth interviews using photo-elicitation and narrative inquiry. Thematic analysis of photographs and transcripts was conducted collaboratively.

Results: Thirty-six photographs were collected, with fifteen selected for exhibition. Photographs depicted narratives of gender-based violence, family planning, and menstrual, maternal, and gynaecological health, with mental health emerging as a cross-cutting issue. Eight overarching themes were identified: bodily autonomy, instability, living conditions, social support, celebrations, healthcare access, resilience, and finding purpose. Healthcare access was characterised by hope for greater bodily autonomy, yet language barriers, financial constraints, and discrimination impeding access. Health-seeking behaviour was compromised by the instability of the asylum process, leading to deprioritisation of health, even as women reported falling ill once they felt safe. Intersectional identities compounded health outcomes. Social support was central to resilience and establishing belonging in new environments. Strong nature imagery emerged throughout the study.

Conclusion: The photographs offer a compelling advocacy tool. Findings highlight the need to streamline asylum processes, improve access to mental health and SRH services, and enhance language assistance in asylum centres. Leveraging support networks is essential for responsive interventions that reflect refugee women's lived realities. This study underscores the importance of incorporating refugee women"s voices in health research to promote policy changes that genuinely address their needs.

P 300

Submicroscopic malaria among unaccompanied minor refugees in Berlin, Germany

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Plasmodium infections can persist for months at low parasite density or even submicroscopic level causing no or hardly overt clinical symptoms[1]. As part of a routine screening program for unaccompanied minor refugees (UMRs) at the Institute of International Health (IIH) in Berlin, *Plasmodium* infection was detected either by positive blood films or rapid diagnostic test (RDT) in 9 of 205 (4,4 %) largely asymptomatic minors from sub-Sahara Africa (SSA). In these, *Plasmodium* infection was diagnosed at a median of 5 months (range, 1-13) after arrival in Germany with a parasite density below 0.1%.

In further six male adolescents, 15 to 17 years of age, originating from Benin (3), Burundi (1), Gambia (1), and Guinea (1), initial malaria screening by microscopy and RDT was negative. However, we detected schistosomiasis (5), strongyloidiasis (3), filariasis (1), acute (1) and chronic (2) hepatitis B, latent tuberculosis (1), iron deficiency (1), hookworm infection (1) and *Blastocystis hominis* infection(1). During follow-up because of these conditions and because of unspecific signs and symptoms, e.g. headache, abdominal pain, loss of appetite, the diagnostic work-up was repeated now applying *Plasmodium*-specific PCR assays. Again, microscopy and RDT were negative but PCR assays were positive (*P. falciparum*, 4; *P. malariae*, 2). These cases of submicroscopic *Plasmodium* infection were diagnosed at a median of 9 months (range, 2-18) after arrival in Germany. Atovaquone-proguanil (5) and artemether/lumefantrin (1) over three days cleared the infection in four adolescents, confirmed by negative follow-up PCR. One patient is still under follow up and another was lost to follow up excluding a post-treatment PCR.

Conclusion: In our screening program, UMRs from SSA have the highest burden of infectious diseases as compared to other regions of origin, and the highest proportion of comorbidities. In this group of adolescent refugees from SSA, 7.3% had *Plasmodium* infection (40% of which was submicroscopic), persisting for up to 18 months and lacking acute or specific symptoms. These data argue for the inclusion of *Plasmodium*-specific PCR assays in the routine screening program for UMRs from SSA.

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***Trichophyton tonsurans* cases in returning travelers in the Institute of international health in Berlin, Germany**

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Background: *Trichophyton tonsurans* is a common cause of Tinea capitis and Tinea gladiatorum in the Americas and Great Britain, although rarely found in Germany, recent data suggests an increase of cases in this region (1). It is often transmitted via direct skin contact or contaminated objects, especially in communal facilities or barbershops (2). Occasionally, *T. tonsurans* presents as concentric rings, mimicking tinea imbricata, complicating diagnosis. This report describes two such cases observed in our tropical medicine outpatient clinic in 2024.

Cases: A 25-year-old male returned from Southeast Asia in April 2024 with a 15 cm concentric lesion on the posterior neck. He had a haircut prior to the beginning of symptoms. Initially diagnosed as erythema migrans, the lesion enlarged despite doxycycline and amoxicillin treatment. The patient developed fever, headache, asthenia, and joint pain. Skin scrapings cultured *T. tonsurans*. Topical ciclopirox 1% twice daily improved symptoms significantly within a week, with therapy extended for two additional weeks. Subsequent testing confirmed high Dengue antibodies. (Image 1)

A 18-year-old male student attended our clinic in September 2024 after a one-month trip from Germany to Senegal, noticing a lesion on his right forearm a week after his return. The lesion began as small red papules, progressing to confluent erythema with a scaly surface, measuring approximately 3 cm in diameter, accompanied by itching and swelling. Skin scrapings were cultured, and treatment with topical terbinafine ointment was begun. By day eight, the lesion showed clear improvement with reduced swelling and erythema. Ten days later, *T. tonsurans* was cultured. (Image 2)

Conclusion: These cases highlight the need to consider dermatophyte infections, especially in travelers from tropical regions. *T. tonsurans* can present with atypical features, such as concentric rings of erythema, requiring diagnostic vigilance. Early antifungal therapy should be initiated even before cultures confirm the diagnosis. The frequent occurrence of comorbidities, such as concurrent tropical infections, underscores the complexity of managing such cases.

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Fig. 1

Fig. 2

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Reactogenicity and safety of the Dengue vaccine TAK003 in German travellers – 2-year data of active surveillance

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Global numbers of Dengue fever have been steadily increasing over the last decades. It can now be safely stated that the infection has reached pandemic proportions. Consequently, the risk of infection in travelers has increased significantly over the last years. This is depicted by rising numbers of notified cases in Europe as well as by increasing numbers of travelers with dengue who are treated in destination countries.

In early 2023, TAK003, a novel, attenuated vaccine against dengue became available in Germany. At the Berlin Centre for Travel & Tropical Medicine, we vaccinated 59,591 doses between February 2023 and February 2025. In order to gain data on the tolerability of the vaccine in travellers, we initiated an active surveillance survey. Four weeks after each dose, vaccinees who agreed to the survey were contacted by letter, asked to lock in on a web site and to complete a short, anonymized questionnaire assessing their travel destination, potential vaccine reactions, and other details.

In 2023, 13,845 vaccinees agreed to being contacted and 5,262 completed the questionnaire. Out of these, 3,086 (57.7%) were female. 237 subjects (4.5%) had a prior dengue infection. Age range was between 4 and 74 years with a median of 86 years. 3,352 subjects received TAK003 in combination with other travel vaccines.

In regards of adverse reactions, 2,521 subjects (47.9%) answered that they had local reactions, mostly local pain, with 160 (6.4%) scaling them as strong or very strong. Systemic reactions were indicated by 2,112 subjects (40.1%), mostly fatigue and flu-like symptoms. A macular rash was described by 881 subjects (16.7%), typically during the second week after the vaccination. The vast majority of adverse events lasted 1-3 days, with single subjects reporting a duration of up to 30 days. A dengue infection during the journey was reported by 2 subjects, complications indicating an antibody dependent enhancement were not reported.

To our knowledge, this is the largest ongoing follow-up study on TAK003 vaccinees in a primarily adult population, and also the largest in travellers. We will present a complete data set covering the first two years (end of February 2023 until end of February 2025) of vaccination with TAK003 in Germany.

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Dengue virus-specific humoral and cellular immunity after Qdenga vaccination in a non-endemic country

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Question: The live attenuated tetravalent dengue vaccine Qdenga was licensed in December 2022 for both seropositive and seronegative individuals >4 years of age. Knowledge on specific cellular and humoral immunity towards dengue virus (DENV) after Qdenga vaccination in individuals from non-endemic regions, and on the effect of a previous infection on vaccine-induced immunity is limited. Therefore, this ongoing observational study will focus on a combined analysis of vaccine-induced antibodies and T cells in vaccinated individuals from non-endemic regions with and without prior infection.

Methods: Blood samples from healthy individuals are drawn before and 13-21 days after first and second Qdenga vaccination, respectively, as well as one year after the first vaccination. Quantitative, phenotypical and functional analysis of DENV-specific CD4 and CD8 T cells is performed directly from whole blood, or from peripheral blood mononuclear cells (PBMCs) isolated using Ficoll density gradient. Samples are stimulated with viral peptides for 6 hours in vitro followed by combined analysis of intracellular cytokines and cell surface markers using flow cytometry. DENV-specific antibodies are analyzed using an indirect immunofluorescence test.

Results: So far, 12 healthy individuals (31.7±6.6 years of age, 6 female) have completed follow-up, of which three had a confirmed and one had a suspected history of prior DENV infection. Of note, DENV-reactive IgG at baseline were only detectable in the four individuals with confirmed or suspected history of infection. Longitudinal analyses showed a clear induction of DENV-reactive IgG after the first vaccination and a further increase after the second vaccination, with no significant IgG-titer decrease until month 12. DENV-reactive IgM were not detectable in all tested samples. Preliminary data of DENV-specific CD4 and CD8 T cells directly from whole blood samples of four individuals after the first vaccination showed an induction of specific CD8 but not CD4 T cells.

Conclusion: Our ongoing study shows a measurable effect of Qdenga vaccination on DENV-specific humoral and cellular immunity. Together with a more detailed characterization of cytokine profiles of reactive T cells, the study will provide comprehensive information on immunogenicity of Qdenga vaccination in non-endemic regions.

Funding: Takeda

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Molecular epidemiological characterization of enterotoxigenic and enteroaggregative *Escherichia coli* causing traveller's diarrhoea and their relationship with clinical features

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Background: Traveller"s diarrhoea (TD) is one of the most common health issues reported after travellers from high-income countries visit subtropical low-middle income countries (1). The main cause of TD is infectious-related, with a remarkable presence of two pathotypes of *Escherichia coli*: *E. coli* enteroaggregative (EAEC) and *E. coli* enterotoxigenic (ETEC) (2). The aim of the present study is to asses the worldwide epidemiological distribution of TD caused by *E. coli* by means of Sequence Type (ST), as well as to elucidate if there has been a shift over the years comparing two periods of time.

Methods: 181 ETEC or EAEC strains isolated from stools of patients with TD attending the Tropical Medicine Unit of Hospital Clinic of Barcelona, were investigated. *E. coli* ST identification was assessed by PCR amplification and sequencing of the 7 selected genes according to the Achtman scheme on 90 samples (2001-2014) while ST identification by Whole Genome Sequencing was assessed in 91 samples (2018-2023). In addition, the distribution according to country visited was also analyzed.

Results: The results showed clear differences between pathotypes, with ST10 and ST4 as the main STs for EAEC

and ETEC, both belonging to the main Clonal Complex found, CC10. These STs together with ST34 and ST1491 shown to be high risk clones as they have been found in Asia, Africa and Latin America. The distribution across the continents was very diverse, with ST10 and ST4 being the most prevalent STs found worldwide, with a remarkable representation in Latin America. The comparison between periods showed a reduction of ST10 percentage together with a significant increase of ST4 in the second period.

Conclusions: This study has shown the distribution of the actual STs acquired by international travellers and the existence of a dynamics evolution of the *E. coli* causing TD. It can be concluded that both EAEC and ETEC show a high distribution of STs, however ST4 and ST1491 (ETEC) and ST10 and ST34 (EAEC) can be considered pandemic clonal complexes.

References: 1. Steffen R, Hill DR, DuPont HL. Traveler"s Diarrhea: A Clinical Review. JAMA. 6 de enero de 2015;313(1):71.

2. Riley LW. Distinguishing Pathovars from Nonpathovars: Escherichia coli. Blanton RE, editor. Microbiol Spectr. 31 de diciembre de 2020;8(4):8.4.1.

Figure 1. Global strain distribution (Continent/CC/ST).

Figure 2. Clonal evolution through time.

Fig. 1

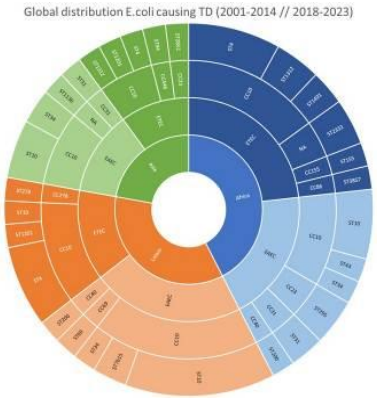
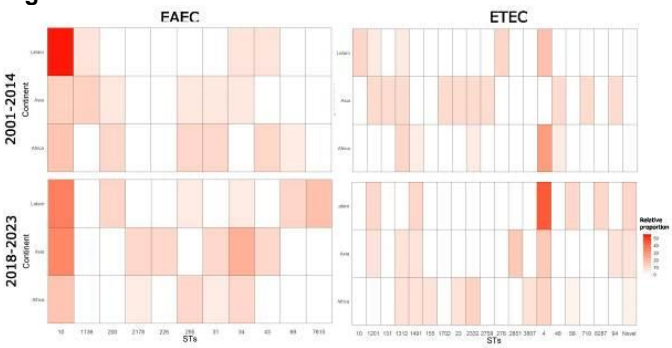


Fig. 2



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Travel-related skin and sexually transmitted diseases imported to Germany

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Background: Returning travelers often consult tropical medicine clinics for suspected dermatological conditions or sexually transmitted diseases (STD). Still, data on imported skin diseases and STDs in travelers returning to Germany remains limited.

Methods: A retrospective analysis of patient records was conducted at the Institute for Tropical Medicine, Travel Medicine, and Human Parasitology in Tübingen, Germany. All cases with a travel history and presenting between 2020 and 2024 with suspected skin disease or STD were reviewed for demographic data, travel history, disease entity, clinical spectrum and management.

Results: Overall, 186 cases presenting for suspected skin disease or STD were identified and accounted for 7.9% of the outpatient clinic"s cases. Most commonly the patients had travelled to Southeast Asia, South America, or Southern Europe. In 107 (57.5%) patients, an infectious etiology was confirmed. The most frequent diseases were cutaneous larva migrans (18.8%), followed by pyoderma (10.2%), and cutaneous leishmaniasis (8.6%); in 16.7% cases a suspected skin disease was not confirmed. A STD was confirmed in only one patient. Overall, the discordance between referral and final diagnoses was high. Systemic and topical treatments were prescribed to 79 (42.5%) and 74 (39.8%) patients, respectively.

Conclusions: This analysis highlights the considerable burden of travel-related skin diseases imported to Germany. With around half of patients presenting for an imported skin condition of infectious etiology and many patients requiring systemic or topical treatment, it is important to improve referral systems to ensure correct and timely diagnosis and initiation of appropriate treatment.

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Use and disposal of stand-by emergency medication prescribed by Dutch Travel Clinics – A retrospective study

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Research objective: This study aimed to explore usage and disposal patterns of stand-by emergency treatment (SBET) prescribed by Dutch public health travel clinics and assess their potential implications for public health and environmental safety.

Methods: We conducted a retrospective observational study involving travellers who received SBET prescriptions in 2024 through Dutch public health travel clinics. Eleven of the 25 clinics participated. Eligible individuals were invited to complete an online survey (April 27–June 20, 2025). Inclusion criteria were receipt of at least one SBET prescription and completion of travel before the survey. Descriptive statistics were presented and uni- and multivariable analyses conducted to identify variables related to SBET use.

Results: The response rate was 11.4%, 448 travellers were included with 478 prescriptions. Most were female (57.4%) and 34.5% were aged 60+. Common regions were Southeast Asia (45.2%) and Latin America (31.7%), with vacation as primary travel purpose (88.6%). Malaria SBET was most frequently prescribed (36.6%), followed by acetazolamide (28.7%) and antibiotics (14.3%). Notably, 5.0% did not take the prescribed medication with them, citing non-necessity and cost. During travel, 7.6% sought medical care; 0.9% were

tested for malaria, one tested positive but did not use SBET. Medication usage varied by type (Table 1): acetazolamide was used by 44.7% of recipients, malarone SBET by 9.6%, azithromycin by 25.5% and ciprofloxacin by 30.0%. In the multivariable model, emergency medication use was more common among non-leisure travellers, and less common among those traveling to South-East Asia, East Asia & Pacific, and Latin America. Use was also strongly associated with bringing acetazolamide or antibiotics. Most unused medication was kept at home (67.7%), other methods were less common (Table 2). Only 24.9% received disposal instructions from the clinics, potentially increasing the risk of inappropriate waste management.

Conclusion: A substantial share of prescribed SBET remains unused, particularly malaria medication. Disposal practices are variable and often poorly guided. Improving patient selection for SBET prescription based on travel region, purpose, and type of medication prescribed, in addition to education on responsible use and disposal may help reduce environmental risks and improve public health outcomes.

Legend

Table 1. Medication use per type

Table 2. Disposal of unused medication

Fig. 1

Table 1. Medication use per type

Medication	Prescribed (% of total)	Taken on trip (% of prescribed)	Used (% of taken on trip)	Not Used (% of taken on trip)	NA (% of taken on trip)
Malarone	163 (34.1)	157 (96.3)	15 (9.6)	142 (90.4)	-
Riamet	12 (2.5)	12 (100)	0 (0.0)	12 (100)	-
Acetazolamide	137 (28.7)	132 (96.4)	59 (44.7)	72 (54.5)	1 (0.80)
Azithromycin	48 (10.1)	47 (97.9)	12 (25.5)	35 (74.5)	-
Ciprofloxacin	20 (4.2)	20 (100)	6 (30.0)	12 (60.0)	2 (10.0)
Amoxicillin	1 (0.2)	1 (100)	0 (0.0)	1 (100)	-
Flucloxacillin	0 (0.0)	0 (-)	0 (-)	0 (-)	-
Unknown	78 (16.4)	66 (84.6)	13 (19.7)	49 (74.2)	4 (6.10)
Other	18 (3.8)	18 (100)	5 (27.8)	13 (72.2)	-
Total:	*477*	*453*	*110*	*336*	*7*

Fig. 2

Table 2. Disposal of unused or partially used medication (n = 266 prescribed medications)

Action	Count (%)
Kept at home	180 (67.7)
Returned to pharmacy	31 (11.7)
Given to friends/family	17 (6.4)
Left at travel destination	8 (3.0)
Brought to recycling center	6 (2.3)
Thrown away in household trash	4 (1.5)
No idea	4 (1.5)
Other	16 (6.0)

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Epidemiological characteristics of imported malaria in Belgium – A longitudinal study spanning 2012-2024

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Introduction: Malaria remains a significant cause of imported infections in Europe, with 6131 malaria cases reported in 2022 (1). This study analysed malaria incidence trends in Belgium from 2012 to 2024, with a focus on the post-COVID-19 pandemic period.

Methods: Surveillance data from the Belgian reference laboratory for malaria at the Institute of Tropical Medicine (ITM) were collected and analysed. Species identification was confirmed by PCR. One result per patient per disease episode (defined as a period of 30 days in which the same *Plasmodium* species was detected) was considered.

Results: Except for 5 cases of airport or luggage malaria, all the cases were travel-related. After a sharp decline in 2020 due to COVID-19 lockdown restrictions, malaria cases in Belgium rebounded significantly, peaking at 491 cases in 2022, and 503 in 2023, before a slight decrease to 445 cases in 2024. *Plasmodium falciparum* was the predominant species, accounting for 76.33% of cases, consistent with the majority of patients traveling to Africa. The proportion of *P. falciparum* increased steadily from 68.28% in 2016 to 83.30% in 2023 and declined to 77.75% in 2024. Since 2022, the absolute number of *Plasmodium vivax* infections increased, with in 2024, 67.74% of the infections diagnosed in patients coming from Afghanistan.

Discussion: After an increase in malaria cases in 2022 and 2023, exceeding pre-pandemic levels, the number declined in 2024. This observation reinforces our hypothesis that the increase in 2022 and 2023 was the result of the resumption of travel, particularly among immigrants visiting friends and relatives in malaria-endemic countries, following the easing of COVID-19 restrictions. After a peak of *P. vivax* cases in 2016, the number is rising again, with an equal majority of infected patients coming from Afghanistan in 2016 and in 2024, probably related to migrants coming from this region. Our findings underscore the importance of targeted pre-travel advice, robust prevention strategies, and continued surveillance to address this persistent public health challenge.

(1) European Centre for Disease Prevention and Control. Malaria. In: ECDC. Annual epidemiological report for 2022. Stockholm: ECDC; 2024.

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Rabies and travelers – Analysis of post-exposure cases attended in an international health unit

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Rabies is a zoonotic neurotropic viral infection affecting over 150 countries, mainly in Asia and Africa. All mammals are susceptible, and the disease is transmitted through contact with the saliva of an infected animal. Without treatment, rabies is fatal.**Background**:Prevention involves avoiding

unnecessary contact with animals. Pre-exposure prophylaxis (PrEP) and post-exposure prophylaxis (PEP), including human rabies immunoglobulin (HRIG), are based on exposure level. Pre- and post-travel health assessments are essential to identify risks and offer preventive measures. For travelers, PrEP is recommended for stays longer than 30 days in endemic areas or shorter stays with potential exposure or limited access to PEP.**Objectives**:To describe the demographic and clinical characteristics of PEP cases attended at the Drassanes-Vall d"Hebron International Health Center.**Materials and Methods**:A retrospective study of individuals attended after potential rabies exposure between June 2023 and July 2024. Data were obtained from clinical records and analyzed using SPSS V23.0. Variables assessed included: gender, age, immunodeficiency, aggressor animal, injury location, severity, geographic area, trip duration, trip type, pre-travel consultation, and prophylaxis (PrEP, PEP, HRIG)**Results**:Fifty-three cases were attended (8 excluded for not being international travelers). Of the 45 cases, 55.6% were male, with a median age of 31 years (IQR: 44.5 - 24.0), and all were immunocompetent. The aggressor animals were dogs (44.4%), cats (28.9%), monkeys (15.6%), and others (11.1%). Forty percent of injuries were on lower limbs. Injuries were grade III (66.7%) and II (26.7%). Twenty-eight percent occurred in Southeast Asia. Seventy-one percent were short trips (<30 days), and 60% were for tourism. Only 15.6% sought pre-travel advice, and 11.1% had received PrEP. Regarding PEP, 20% began treatment at our center (2 cases evaluated at destination with no intervention, 1 due to stock shortage, and 6 sought assessment upon return), while 75.5% continued treatment started at the destination. Thirteen percent required HRIG.**Conclusions**:Most cases were young adults from Southeast Asia on short tourism trips without pre-travel consultation. The most common aggressor was the dog, with grade III injuries, especially in the lower extremity. Most received rabies prophylaxis at the destination, but 9 were assessed upon return, increasing the risk of viral progression to the central nervous system.

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Schistosomiasis in the Czech Republic – A case report and a 20-Year overview

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Background: Human schistosomiasis is a rare but chronic and potentially severe parasitic infection imported into the Czech Republic, primarily from Africa and Southeast Asia.

Methods: We present a case of intestinal schistosomiasis caused by *Schistosoma mansoni* in an asymptomatic individual diagnosed 17 years after infection in Yemen. Additionally, we provide an overview of schistosomiasis cases diagnosed and managed at the University Hospital Bulovka in Prague between 2004 and 2024. Schistosomiasis was diagnosed using stool and/or urine microscopic examination, biopsy of the large intestine or urinary bladder, and serological testing.

Results: A 53-year-old man presented with acute watery diarrhea in November 2023 after a one-week visit to Morocco. Stool examinations for pathogenic viruses and bacteria were negative; however, microscopic examination unexpectedly revealed *S. mansoni* eggs. His travel history included visits to Yemen (2007) and Corsica (2008), both endemic for schistosomiasis. Based on egg morphology and documented freshwater exposure in Yemen, this was identified as the most likely site of infection. The patient exhibited no eosinophilia but had significantly elevated IgE levels (2,255 kU/L) and positive schistosomiasis serology. Treatment consisted of two doses of praziquantel (40 mg/kg body weight), administered one month apart. Between 2004 and 2024, 28 patients (9 females, 19 males) with schistosomiasis were diagnosed at our department. Acute schistosomiasis, diagnosed based on travel history, clinical presentation, and positive serology, was confirmed in 17 patients (13 from Africa, 4 from Southeast Asia), with 14 developing Katayama fever. Intestinal schistosomiasis was identified in 7 cases (5 from Africa, 2 from Yemen). Urine examination and/or bladder biopsy confirmed *S. haematobium* infection in 3 cases (2 from Malawi, 1 from Angola). Serology was positive (26 cases) or borderline (2 cases) in all patients, and high eosinophilia was detected in 20 patients. All patients were treated with praziquantel.

Conclusions: Schistosomiasis remains an overlooked but serious tropical helminthiasis. Symptoms may be mild and nonspecific, yet chronic untreated infection can lead to severe intestinal, hepatic, urinary, and systemic complications. High eosinophilia in travelers with freshwater exposure in endemic areas should raise suspicion for schistosomiasis.

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Imported intestinal parasitic infections – An 8-year experience in diagnostics and management

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Introduction: Intestinal parasitic infections are a common cause of chronic diarrhea in travelers. We present a retrospective analysis of the epidemiological and clinical characteristics of patients diagnosed with laboratory-confirmed intestinal parasitic infections at the National Reference Laboratory for Diagnostics of Tropical Parasitic Infections, Bulovka University Hospital, Prague, from 2017 to 2024.

Methods: Diagnosis was based on parasitological stool examination and PCR from unfixed stool samples using commercial multiplex kits.

Results: *Entamoeba histolytica* intestinal infection (IA) was diagnosed in 19 patients, and amoebic liver abscess in 15, five of whom also had IA. All cases were imported. Giardiasis was diagnosed in 132 patients (female:male ratio 0.86), with infections primarily acquired in the Indian subcontinent (61

cases; 46.2%), followed by Sub-Saharan Africa (23 cases; 17.4%) and Southeast Asia (19 cases; 14.4%). Seven patients had autochthonous infections. Diarrhea and/or bloating were reported in 109 (83%) cases. Treatment response data for metronidazole were available for 79 patients, with 36 (45.5%) experiencing treatment failure. Notably, among those returning from the Indian subcontinent, 26 of 41 (63.4%) did not respond to metronidazole. Second-line treatments, including tinidazole with albendazole or paromomycin, were successful in all cases of metronidazole resistance. *Cryptosporidium sp.* was diagnosed in 23 patients (11 imported), *Cyclospora cayetanensis* in 4 persons (all travelers), and *Dientamoeba fragilis* in more than 350 patients, with most cases detected by PCR. Strogyloidiasis was diagnosed in 4 patients (1 imported), and hookworm infections in 9 travelers with eosinophilia. Molecular analysis revealed *Ancylostoma cayetanensis* in 5 of them.

Conclusions: Our study highlights the low effectiveness of metronidazole in the treatment of giardiasis, particularly in travelers returning from South Asia, emphasizing the need for alternative treatment strategies. The expertise of an experienced parasitologist is crucial for diagnosing rare intestinal parasitic infections that may not be detected using routine multiplex PCR kits. High eosinophilia serves as a key diagnostic marker for hookworm infections, and PCR with sequencing should be considered to identify zoonotic hookworm species.

Funding: This study was supported by the Czech Ministry of Health grant NU23-05-00441.

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Role of point-of-care multiplex real-time RT-PCR for acute respiratory illness surveillance among airport personnel at Suvarnabhumi airport in Bangkok, Thailand, January – December 2024

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Background: Airport personnel illness is the important proxy of early detection for spreading of communicable disease both from oversea and domestic. Since they are daily contacting with some infected passengers. Suvarnabhumi airport (IATA code: BKK) has an approximately 60,000 personnel and has nearly 80,000 arrival passengers. Thus, Port Health and Quarantine at BKK airport established the surveillanceof acute respiratory illness (ARI) among airport personnel since January 2024 by using point-of-care multiplex RT-PCR.

Methods: The case definition of ARI is a person who working in the airport and has one of the following symptoms; sore throat, runny nose,cough and shortness of breath or dyspnea. Combined nasopharyngeal and throat swabs were collected from the suspected case. All specimens were tested for 23 respiratory pathogens by point-of-care multiplex RT-PCR machines which are installed inside the arrival terminal. The turn-around-time is 70 minutes. we also have aim to early detection of unsubtype influenza A.

Results: Total 50 cases were met case definition from January to December 2024. Female was 62%. Median age was 46 years old (25-69). The most clinical presentation was cough, runny nose and sore throat. The most common detected pathogens (%, Ct) were Rhinovirus/Enterovirus (14%, 26.4-35.4), SARS-CoV-2 (14%,14.27- 31.3), Respiratory Syncytial virus (4%, 27.5 – 34.9). Adenovirus, human coronavirus HKU1 and NL63, influenza H1N1 2009, parainfluenza virus was detected in each one case. Interestingly atypical bacteria were detected for 3 cases including
Bordetella pertussis (2%), *Legionella pneumophila* (2%) and *Mycoplasma pneumophila* (2%). The confirmed atypical bacterial cases were referred to clinic and received proper treatment. There was no secondary case amongclosed contact in the airport. But we confirmed 2 secondary cases of pertussis among family members.

Conclusions: Airport ARI surveillance by point-of-care RT-PCR demonstrates usefulness in term of rapid containment the spreading of communicable outbreak in the airport. The secondary usefulness is preventing the shortage of staff from outbreak. We still be focused the unsubtype influenza A among the airport community.

Fig. 1

Viruses	Adenovirus
	Bocavirus
	Coronavirus 229E
	Coronavirus HKU1
	Coronavirus NL63
	Coronavirus OC43
	Human Metapneumovirus A+B
	Influenza A
	Influenza A H1
	Influenza A H1N1 pdm09
	Influenza A H3
	Influenza B
	Parainfluenza virus 1
	Parainfluenza virus 2
	Parainfluenza virus 3
	Parainfluenza virus 4
	Respiratory Syncytial Virus A+B
	Rhinovirus/Enterovirus
	SARS-CoV-2
Bacteria	*Bordetella pertussis*
	Chlamydophila pneumoniae
	Legionella pneumophila
	Mycoplasma pneumoniae

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Assessing viral metagenomics for the diagnosis of acute undifferentiated fever in returned travellers

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Background: Up to 45% of febrile returning travellers remain undiagnosed after a thorough diagnostic work-up, even at referral centres. Metagenomic next-generation sequencing

(mNGS) has become a promising tool, yet evidence of its usefulness in resolving cases of imported fever is limited.

Methods: Travellers returning with fever were prospectively recruited in three referral clinics from November 2017 to November 2019. An mNGS protocol optimised for virus detection was used to analyse serum samples of participants with acute undifferentiated febrile illness (AUFI) and results were compared to those obtained by reference diagnostic methods (RDM).

Results: Among 507 returned febrile travellers, 433 (85.4%) presented with AUFI. Dengue virus (n = 86) and Plasmodium spp. (n = 83) were the most common causes of fever. 103/433 (23.8%) AUFI remained undiagnosed at the end of the follow-up. Metagenomic next-generation sequencing unveiled potentially pathogenic microorganisms in 196/433 (38.7%) AUFI, including an unknown orbivirus in a male patient with mild disease. Identifications by mNGS were more common in patients with a shorter duration of fever (42.3% in ≤5 days vs 28.7% in >5 days, P = 0.005). Potential causes of fever were revealed in 25/103 (24.2%) undiagnosed AUFI and 5/23 (21.7%) travellers with severe undiagnosed AUFI. Missed severe aetiologies included eight bacterial identifications and one co-infection of B19 parvovirus and *Aspergillus* spp. Additional identifications indicating possible co-infections occurred in 29/316 (9.2%) travellers with AUFI and in 11/128 (8.6%) travellers with severe AUFI who had received a diagnosis via RDM. The most common co-infections detected in severe AUFI were caused by Gram-negative bacteria. Serum mNGS was unable to detect >50% of infectious diagnoses achieved by RDM and yielded 607 non-pathogenic identifications.

Discussion: mNGS of serum can be a valuable diagnostic tool for selected travellers with undiagnosed AUFI or severe disease in addition to reference diagnostic techniques, especially during the first days of symptoms. The interpretation of sequencing results presents significant challenges. Further evaluation of mNGS in clinical contexts is needed, using different sample types and tailoring to non-viral agents.

Fig. 1

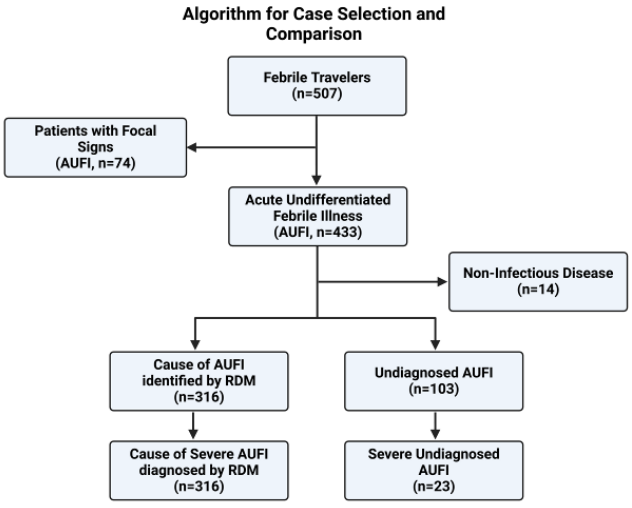
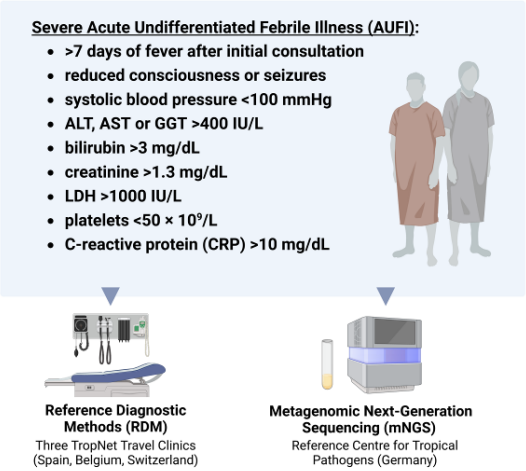


Fig. 2



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Eosinophylic meningitis and pneumonitis – A case report from Seychelles

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Background: angiostrongyloidiasis is a rare although emerging parasitic disease. Humans get infected through ingestion of *Angyostrongilus cantonensis* L3 larvae in raw or undercooked snails or slugs, contaminated uncooked vegetables, or paratenic hosts. The nematode is the primary cause of eosinophilic meningitis worldwide, with clinical presentation ranging from mild headache to coma and death. The lung may also be involved, and subpleural pulmonary nodules and ground-glass opacities are characteristic signs on chest CT. Endemic regions were previously limited to South-East Asia and the Pacific basin; however there has been an increase in global distribution. We report the first case of infection acquired in the Seychelles islands.

Case report: a 27-year-old caucasian woman was hospitalized in July 2024 complaining of severe holocranic headache and neck stiffness. The symptoms started 2 weeks after the return from a 14-day stay in the Seychelles islands, where she reported eating fresh salads. Neurological evaluation was unremarkable. Blood count revealed marked eosinophilia (2.2x10⁹ cells/L). CSF analysis showed pleocitosis (339 cells/uL, 66% eosinophils). Brain MRI revealed white matter lesions (Fig. 1). She underwent PET-CT showing multiple ground glass pulmonary lesions (SUV 4.6) (Fig. 2). Extensive microbiological and immunological evaluations excluded common causes of meningitis. Treatment for infectious eosinophilic meningitis was started with albendazole and methylpredisolone. The clinical course was favorable and symptoms remitted soon. CSF analysis 2 weeks later showed 37 cells/uL, no eosinophils. A HRCT 10 days later showed complete remission of pulmonary lesions. A brain MRI one month later showed reduction of the cerebral lesions. Albendazole was continued for 2 weeks and steroids were tapered gradually. *A.cantonensis* western blot serology on CSF and blood turned out negative and positive respectively. At 3-months follow-up the patient was asymptomatic and blood count was normal.

Discussion: to our knowledge this is the first report of *A. cantonensis* infection from the Seychelles islands. In the

context of evolving epidemiology, clinicians could suspect angyostronngyloidiasis despite no history of travel to an endemic country, in the presence of supportive clinical and laboratory findings.

Figure 1. SWI MRI sequences showing left frontal, temporal and hippocampal lesions.

Figure 2. Bilateral peripheral ground glass opacities.

Fig. 1

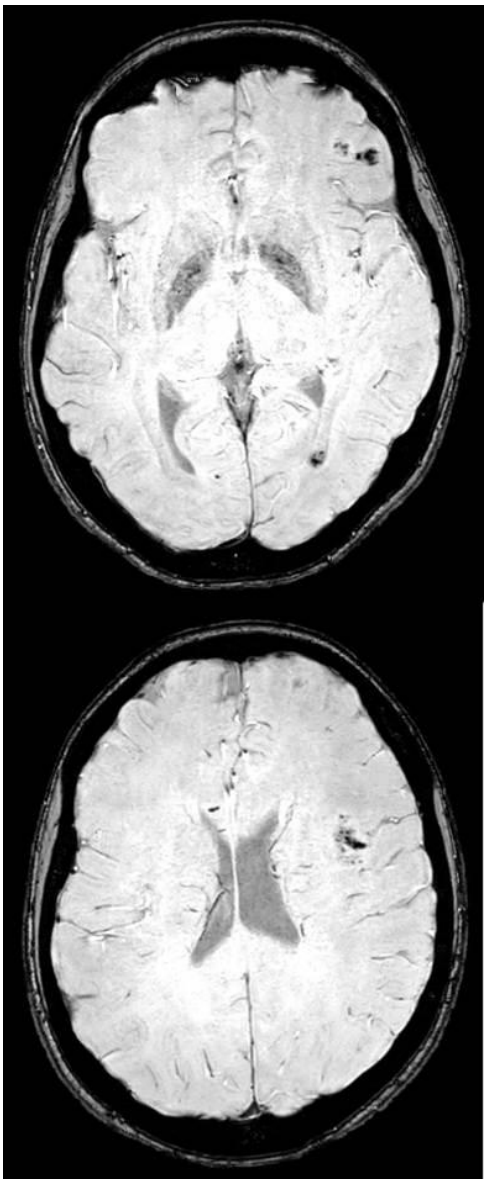
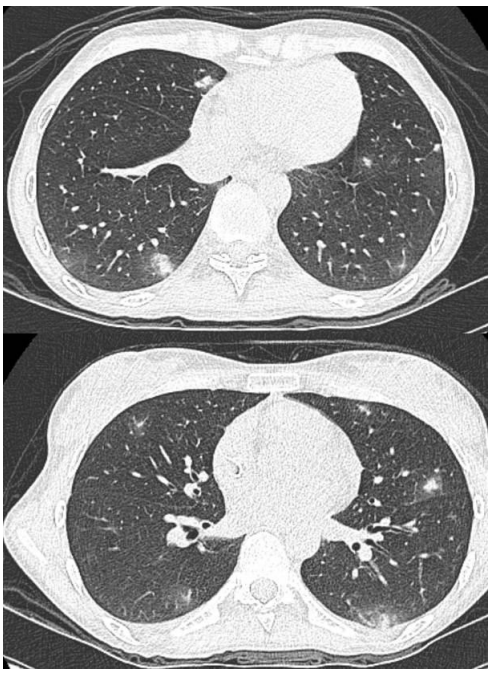


Fig. 2



P 315

Atypical case of traveler's Diarrhea after a trip to Egypt in primary care

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Introduction: Traveler"s diarrhea is a common condition, but certain pathogens can cause severe complications, particularly in immunocompromised patients. Vibrio fluvialis, a Gram-negative bacterium associated with cholera-like diarrhea, is often overlooked in primary care settings. We report an atypical case of V. fluvialis gastroenteritis in a diabetic patient, emphasizing the importance of travel history in diagnosing infectious diarrheal diseases.

Case Report: A 72-year-old male presented to primary care with watery diarrhea (8–10 episodes/day with mucus) lasting 8 days, without fever or family cases. His medical history included type 2 diabetes mellitus, hypertension, and a previous thoracic aortic aneurysm repair. Initial management included hydration and glycemic control, with no alarm signs warranting hospitalization. However, due to persistent diarrhea and weight loss, a detailed travel history was obtained. The patient reported a recent trip to Egypt with a Nile River cruise and consumption of unknown white fish. A stool culture confirmed Vibrio fluvialis. He was treated with ciprofloxacin 750 mg for three days, leading to full symptom resolution.

Discussion: Vibrio fluvialis thrives in warm, saline, and brackish waters (9–31°C, optimal growth >18°C) and can be transmitted via contaminated seafood or water. It causes gastroenteritis with nausea, vomiting, diarrhea (sometimes bloody), abdominal pain, dehydration, and, in severe cases, hypovolemic shock. Extraintestinal manifestations include peritonitis, cellulitis, and sepsis, particularly in immunocompromised individuals. While V. fluvialis infections are rare, they can lead to severe outcomes if unrecognized.

Conclusion: This case highlights the crucial role of travel history in diagnosing infectious diarrhea in primary care. Immunocompromised travelers are at higher risk of complications, making early identification essential. Clinicians should maintain a high index of suspicion for non-endemic bacterial pathogens in returning travelers with persistent diarrhea. Primary care settings, due to their accessibility, play a key role in early detection and management of travel-related infection

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P 316

Urogenital schistosomiasis in travelers – A family with Vulvar and Bladder involvement after freshwater exposure in Malawi

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Schistosomiasis is one of the most important neglected tropical diseases. If untreated, chronic infection can lead to irreversible complications. The risk of schistosomiasis is not negligible travelers, often after a single brief exposure to contaminated freshwater [1].

Case presentation: In november 2024, a 40-year-old female patient reports swelling of the left labium minus and an ulcerated painful lesion. She attempted treatment with Acyclovir, topical antibiotic and steroid therapy without benefit. The patient mentions that in August 2024, she went on a group trip to Malawi with her family, where they went on a safari and swam in a lake.

She eventually underwent vulvoscopy with biopsy: histology showed mucocutaneous fragments with acute and chronic inflammation and granulation tissue, identifying foreign bodies consistent with ectoparasite sections. Her parasitological urine test was negative, while IgG schistosoma were positive. She was treated with Praziquantel and is currently under follow-up.

Since November 2024, her 10-year-old daughter had presented hematuria, with negative urine culture and an antibiotic cycle had given no improvement. On ultrasound, a focal hyperechoic wall thickening of the bladder was noted. In December, the daughter underwent cystoscopy, which showed a bladder appearance compatible with Schistosoma infection. IgG Schistosoma was 143U/L, and a 24-hour urine collection was positive for *Schistosoma haematobium*. Histological examination showed bladder mucosa with diffuse granulomatous reaction associated with marked eosinophilic infiltration and oval multinucleated eggs with terminal spines. She underwent a pediatric infectious disease evaluation and was treated with Praziquantel for two times.

The mother mentioned that also three Mozambicans who swam near the lakeshore with her and her daughter had tested positive for schistosomiasis.

Discussion: Schistosomiasis remains a frequent infection in travelers and migrants to Europe. Travelers should be made aware of the risk of schistosomiasis infection when traveling to sub-Saharan Africa [2].

1.Schistosomiasis in immigrants, refugees and travellers in an Italian referral centre for tropical diseases V. Marches, Infectious Diseases of Poverty, 2018

2.Schistosomiasis in European Travelers and Migrants: Analysis of 14 Years TropNet Surveillance Data, T. Lingscheid The American Journal of Tropical Medicine and Hygiene, 2017

P 318

Defining boundaries of conurbations as experienced by women of child-bearing age when seeking healthcare in Sub Saharan Africa

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Background: While urban areas in sub-Saharan Africa (SSA) have historically enjoyed a wide range of advantages in maternal health (urban health advantage), this advantage is diminishing or reversing. Concurrently, SSA is witnessing the fastest urbanisation rates in the world. Therefore, there is need for an improved understanding of maternal healthcare utilization in conurbations (an extended urban area, consisting of several towns merging with the suburbs of a central city) that captures the lived experiences of women. However, current definitions of conurbation boundaries vary between countries and international entities and may not fully reflect the reality of women seeking healthcare. Here, we define boundaries of 23 conurbations in 22 different countries across SSA by incorporating the lived experiences of women. Further, we compare the coverage of three maternal health indicators based on the existing and enhanced conurbation boundary.

Methods: To define the boundaries of conurbation we assembled secondary data on local administrative and health boundaries, data from city-specific sources and satellite based data from 5 different sources. We spatially overlaid these sources to create a preliminary conurbation boundary. To reflect the lived reality for maternal health, we then adjusted the resulting boundary following feedback from researchers and/or health professionals with expert or lived-experience knowledge of each conurbation. We then computed and compared the coverage of three maternal and child health indicators based on 3 original definitions of conurbation boundary (health boundary, satellite-based boundary, and the enhanced boundary). We used the most recent demographic and health survey (DHS) and accounted for its complex, multilevel cluster survey design.

Results: Preliminary results show that there were 5 sources of global and regional satellite based sources of data that were then used to define a conurbation. However, these sources provided varying spatial extents of conurbations. The coverage of the maternal and child health indicators were variable across the different definitions of conurbations. The coverage based on the modified boundary reflected more realistically the lived experience of women when seeking healthcare.

Conclusions: The results shed light on the impact of conurbation definitions on maternal and child health indicators and on the role of urbanisation in the evolving landscape of maternal healthcare in SSA.

P 321

Digital access to information on sexual and reproductive health and rights (SRHR) for teenagers in Kisangani (DRC)

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The rise of digital technologies and social networks has transformed access to information, opening up opportunities to reach a wide audience, particularly young people.

In the province of Tshopo, a group of young people has created a digital platform called Elengue Fungwama (EFU), which means "youth without taboos": (https://www.facebook.com/profile.php?id=61568803544731&mibextid=rS40aB7S9Ucbxw6v) to promote SRHR and the fight against gender-based violence (GBV), through 2 objectives: Provide teenagers/young people with easier access to information, and direct teenagers/young people towards the appropriate structures for care.

It addresses sexuality issues through six main topics: Adolescence and Puberty, Sexuality, Rights and Gender Equality, Gender-Based Violence, Diseases with Epidemic Potential and Health, including mental health.

The management of this platform is integrated into the Ministry of Health's provincial Adolescent Health Program. This guarantees the institutionalization and regulation of the management of this platform with a view to disseminating the right information to young people/adolescents.

Launched on December 24, 2024, 2 videos have been published on the page. The reach of publications is growing all the time. To date, there are 2,500 views, 819 likes and 192 subscribers.

Fig. 1

P 322

Leveraging mHealth applications to enhance adolescent and youth sexual and reproductive health and rights in Lodwar's youth-friendly clinics, Kenya

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Background: Adolescents and youth in Lodwar face significant barriers to accessing Sexual and Reproductive Health and Rights (SRHR) services, including stigma, limited healthcare resources, and geographical challenges. Youth-friendly clinics have been established to address these issues, but gaps in service delivery remain. Mobile health (mHealth) applications such as Nivi and SMS offer a promising solution to enhance SRHR by providing discreet, accessible, and youth-centered information and services. This study investigates the role of mHealth applications in improving SRHR outcomes among adolescents and youth in Lodwar.

Methodology: A mixed-methods approach was used, combining quantitative and qualitative data. Surveys were conducted with 300 adolescents and youth attending youth-friendly clinics to measure mHealth app usage and impact on SRHR knowledge and behaviors. Focus group discussions and interviews with healthcare providers explored the perceived benefits and challenges of integrating mHealth into SRHR service delivery. Usability testing evaluated app design and user experience.

Results: Preliminary findings show that mHealth applications have increased SRHR service utilization by 40%, particularly in contraceptive access and STI prevention education. Key features valued by users include confidentiality, localized content, and ease of access. Barriers include limited internet connectivity, digital literacy gaps, and cultural stigmas surrounding SRHR topics.

Knowledge Contribution: The study highlights mHealth applications as effective tools for bridging SRHR service gaps among adolescents and youth in resource-constrained settings like Lodwar. Recommendations include incorporating offline functionality, expanding digital literacy programs, and fostering community acceptance of technology-driven SRHR interventions. These findings provide a foundation for scaling up mHealth innovations in similar contexts.

P 323

Contraceptive Use among Adolescents and Young People in Sierra Leone

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Introduction: Adolescent pregnancy and birth rates remain a significant public health concern in Sierra Leone, with one of the highest adolescent pregnancy rates in sub-Saharan Africa. Despite global efforts to improve sexual and reproductive health services, modern contraceptive utilization among sexually active adolescent girls and young women (AGYW) aged 15-24 years in Sierra Leone has not been prioritized. We conducted a study to assess the prevalence and predictors of modern contraceptive use among older adolescent girls and young women in Sierra Leone.

Methods: This study analyzed secondary data from the 2019 Sierra Leone demographic and health survey. Our study comprised 2,338 sexually active AGYW. Weighted data analysis was done using a statistical package for Social Science version 22, Stata version 16, and R version 4.0.0. Stepwise backward binary firth logistic regression was implemented. The results were presented as proportion and adjusted odds ratios with a 95% confidence interval.

Results: Out of the 2,338 sexually active AGYW, half lived in rural areas (50.1%), and the majority were young women (57.6%). Modern contraceptive use among AGYW was optimal (43.1%) (95% CI 40.3-46.0%). The frequently used modern contraceptives were injectables (43.1%), implants/norplants (41%), and combined oral pills (12.1%). The predictors of modern contraceptive use among AGYW were knowledge about modern contraceptives (AOR=12.12; 95% CI 6.42-18.55), having one to three children (AOR=2.43; 95% CI 1.89-3.12), and more than three children (AOR=5.14; 95% CI 2.03-13.02), not in a union (AOR=5.52; 95% CI 4.32-7.05), completed higher (AOR=3.66; 95% CI 1.95-6.86), secondary (AOR=3.35; 95% CI 2.54-4.42) and primary (AOR=1.66; 95% CI 1.19-2.32) education, being Muslim (AOR=0.80; 95% CI 0.64-0.99) and belonging to the middle (AOR=1.58; 95% CI 1.14-2.21) and the richer (AOR=1. 60; 95% CI 1.14-2.24) wealth quintile.

Conclusion: Our study revealed an optimal use of modern contraceptives among AGYW. The frequently used contraceptives were injectables, implants, and combined oral pills. We recommend continued SRH initiatives to maintain or increase contraceptive uptake among AGYW and the establishment of adolescent and youth-friendly services to provide quality healthcare services.

P 324

Evaluation of the effectiveness and use of reusable menstrual kits in northern Tanzania

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[2]*Endulen e.V., Münster, Germany*
[3]*University Clinic of Aachen, Department of Intensive and Intermediate Care, Aachen, Germany*
[4]*Lutheran Diocese of Meru, Nkoaranga Lutheran Hospital, USA River, Tanzania, United Republic Of*
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Objective: Reusable menstrual kits are an environmentally friendly and reusable alternative to commercially available kits to deal with menstruation. We showed in 2021 that the distribution of reusable menstrual kits reduced sick days in school (Schneider *et al.* 2021). To evaluate the satisfaction and the effectiveness of the reusable menstrual kits in female adolescents in Northern Tanzania we distributed and evaluated 400 questionnaires in April 2024.

Methods: 850 menstrual kits were distributed between November 2023 – April 2024. The questionnaires contained 31 open and close ended questions. The adolescents were between 9 and 21 years old (median 16 years). 373 questionnaires were filled out and returned. 30 out of the 373 female adolescents have not started with their menstruation. The median age of menarche was 14 years (max. 19 years, min 9 years).

Results: Overall, 66.5% didn"t think it was difficult to deal with the menstruation (n=155). Most of the female adolescents were afraid to get pregnant during adolescence (87.4%, n=372). Mostly mothers (29.8%, n=373) and other family members (33.5%, n=373) were the ones to talk to when menstruation started. Interestingly, the female adolescents thought that also boys in school should know about menstruation (63.2%, n=372). The reusable menstrual kits were easily available (70.0%, n=333) for the adolescents. 38.9% of the adolescents used them to deal with their menstruation (n=373). However, the kits were not always (11.0%, n=218) but occasionally used during menstruation (46.8%, n=218). If not available mostly commercial pads (46.4 %, n=373) and clothes (11.3%, n=373) were used. Most of them used the reusable kits for less than 3 months (59.3%, n=189). Mostly no leaks were experienced (52.8%, n=373), they were mostly comfortable to wear (72.8%, n=254) and the satisfaction was good (99.5%, n=373). The median satisfaction was 5 (on a scale from 1 to 5, 65.4%, n=373). The reusable kits were mostly easy to clean (81.6%, n=244). It was mostly convenient (66.4%, n=226) to use the reusable kits than commercial pads. Mostly it saved expanses, and it protected the environment.

Conclusion: We could show that the reusable menstrual kits were used after the distribution. The adolescents were satisfied with the menstrual kits itself and it saved expanses and reduced hard ship in school. However, long term data needs to be collected to proof if the use of the menstrual kits last.

P 325

Enabling the voices of marginalized adolescents in decision making and taking actions for health-related quality of life, safety and wellness – Opportunities and Challenges – A study in West Bengal, India

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Marginalization occurs due to imbalanced power dynamics. Marginalized adolescents are experiencing threats and inadequate public-action for their health, safety and wellness. The creation of adolescent groups is for inclusive, sustainable community advancement that actively engage them as change makers by enhancing local capacity, self-esteem/efficacy, participation, trust, accountability and enabling them to raise voice to take leadership and adolescent-focused actions to health system strengthening and tackling the issues encountered by communities/individuals.

The Basic Health Care Support Program (BHCSP) is working in close partnership with marginalized adolescents in unserved/underserved areas of 5 districts of West Bengal, India - an overarching approach of capacity-building or capacity-bridging for adolescents and health providers to effect behavioural change, promote good practices and collaboration which helps in integrating skills/knowledge of adolescents, health providers and decision makers to achieve better health, safety and wellness. People having power from advocacy perspectives and people without power through the empowerment process, which gives space and opportunities to express, lead & create by respecting their autonomy and choices.

BHCSP is engaging adolescent to sensitize about their right, make informed decisions and demand for quality health, safety and wellness, by coordinating to act together, by identifying problems and negotiating with health providers for resolution, experience and exercise influence on their own lives and provides insight into presence, role and raising voice

of marginalised adolescent in advocacy/interfaces between health providers and decision makers.

The decisions of marginalized adolescents were expressed by organizing, participation in committees, submitting charter of demands, advocacy and interface meetings etc. Score Cards were used, before setting up interface meeting which facilitated good governance by promoting participation, transparency, social-public accountability, informed decision and fostering more responsive health providers.

Marginalized adolescent empowerment provided opportunities to create new power and their voices demand recognition and correction of power imbalances, which promotes face-to-face interactions, enhance governance by fostering mutual trust and hastens problem-solving and to trigger intermediate improvements for health-related quality of life, safety and wellness.

P 326

The influence of roman catholic church on law reforms on access to contraception for adolescent girls – A case study of Rwanda

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Introduction: The Roman Catholic Church profoundly influences Rwanda"s Sexual Reproductive Health and Rights(SRHR). Its opposition to artificial contraception and premarital sex creates tensions with international SRHR commitments. This study examines these impacts, highlighting barriers adolescents face due to societal norms and religious doctrines while offering strategies to mitigate these challenges.

Methodology and Study Limitations: This qualitative study integrates doctrinal legal analysis, literature reviews, and media analysis to explore the Catholic Church"s influence on Rwanda"s SRHR policies. Using the socio-ecological model, it identifies barriers across individual, institutional, and societal levels. Limitations include reliance on secondary data and focus on the Catholic Church, possibly excluding other cultural factors. Despite constraints, the study offers valuable insights into addressing religious barriers to adolescent SRHR.

Results: The study highlights the Catholic Church"s significant influence on adolescent SRHR in Rwanda. Opposition to artificial contraception limits contraceptive access and Comprehensive Sexuality Education (CSE), particularly in Church-affiliated healthcare and education systems. Barriers include societal stigma, parental and peer pressures, and institutional objections. Government initiatives, such as youth-friendly health services, face resistance from religious institutions. Legal inconsistencies, such as an unharmonized age of consent for SRHR services, further hinder progress.
Despite these challenges, Rwanda has achieved advancements in family planning and maternal health through community health worker programs and performance-based financing. However, these programs inadequately address adolescent needs. Recommendations include legislative reforms, fostering partnerships with progressive religious leaders, and educational campaigns to promote adolescent SRHR. Integrating SRHR into broader health agendas is essential for sustainable progress.

Conclusion: Addressing adolescent SRHR in Rwanda a multisectoral approach including legislative reforms, community engagement, and education to balance religious considerations with human rights. By balancing religious considerations with human rights, Rwanda can enhance adolescent SRHR and contribute to global efforts promoting equitable reproductive health access.

P 329

Factors associated with PENTA 3 vaccination non-completeness in children aged 3 to 11 months in the Bababe health district, Mauritania, 2022-2023

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Introduction: Vaccination is an effective way to prevent infectious diseases in children. In 2021, data from the reference health center in the Bababé health district shows a dropout rate of 20% between penta 1 and penta 3 with a coverage rate in penta 3 at 72.67% compared to 91.54 % for penta 1 according to district data. This research aimed to study the factors associated with non-completeness of Penta 3 vaccination in children aged 3 to 11 months in the Bababé health district in Mauritania from 2022 to 2023.

Materials and Methods: This was a cross-sectional analytical study. We obtained a sample of 248 children and mothers using the Schwartz formula. Interviewing mothers and using children's vaccination records were used to collect information using a questionnaire. A multivariate logistic regression analysis was done for the variables that obtained a p value < 0.2 in the univariate analysis using Epi-info® software version 7.4.2 and SAS® version 9.4. An association was significant when $p < 0.05$.

Results: Multivariate logistic regression showed that lack of knowledge of Penta target diseases (p=0.02) was significantly associated with non-completeness of Penta3 vaccination among children in the Bababe health district.

Conclusion: Vaccination coverage in the Bababé health district is below objectives. To improve it, we recommend strengthening parent education, a reorganization of vaccination services and the correct implementation of advanced and mobile strategies in the Bababé health district.

Key Words: Vaccination coverage, associated factors, penta3, Bababé district, Mauritania.

Fig. 1

Cadre conceptuel

Notre cadre conceptuel est une adaptation de celui de Gavin Yamey sur la diffusion des interventions de santé globale [17].

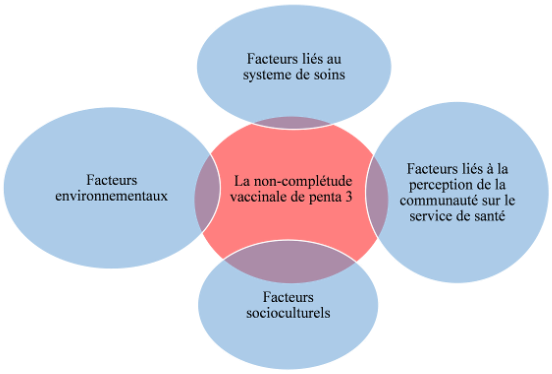

Figure 1: Cadre conceptuel des facteurs associées à la non-complétude vaccinale de PENTA 3 chez les enfants de 0 à 11 mois dans le district sanitaire de Bababé en Mauritanie.

Fig. 2

➢ **Répartition des enfants selon le statut vaccinal penta3, district Bababé, Mauritanie**

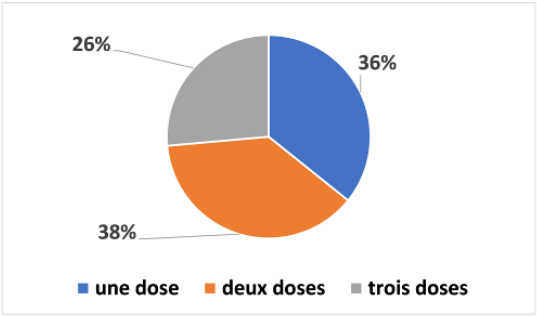

Figure *5* : Répartition des enfants selon le statut vaccinal penta3, district Bababé, Mauritanie 2022à2023

P 330

Effect of audio-visual animation on Mothers' knowledge, attitude and intention to complete childhood vaccination – A quasi-experimental study in Calabar, Nigeria

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Background: Immunization remains one of the most cost-effective interventions against preventable childhood diseases. Despite this evidence, there is poor uptake as a result of poor knowledge and attitude of mothers towards childhood immunization With recent calls for interventions to improve knowledge and attitude, this study aims to assess the effect of an innovative audiovisual animation on the knowledge attitude and intention of mothers to complete their children" vaccination.

Methods: This is a non-equivalent quasi-experimental study that involved 302 mothers visiting two health facilities in Calabar, Nigeria for vaccination of their children (Intervention-group:77 vs 72, Control-group:97 vs 56). Mothers in the intervention arm watched the video-animation on television at each visit while their counterparts received the traditional face-to-face health education as routinely practiced in the facility. Quantitative outcome on knowledge, attitude and intention to complete vaccination was assessed at 0 and 14 weeks. Data analysis using Stata version 18 was conducted and a difference in difference analysis was carried out at $p<0.05$ and 95% confidence interval.

Results: This study was conducted from January 2024 to October 2024. Baseline mean age (SD) was 28.05 (5.26) vs 29.14 (5.14) for the audiovisual and face-to-face group respectively. At baseline, mean knowledge in the audiovisual and control group increased from 7.35 and 9.59 to 15.08 and 12.02 respectively. There was a 4.97 units increase in mean knowledge in the IG after the intervention after adjusting for occupation, level of education and time effect (95% CI 2.2-7.7 ; p=0.028). There was no statistically significant difference in attitude towards vaccination among mothers in both arms, but intention to complete child"s vaccination increased significantly from 84.4% at baseline to 91.7% in the audiovisual arm after intervention(p=0.016).

Conclusion: A locally developed and tailored audiovisual animation on childhood immunization can significantly increase the knowledge of immunization among mothers and intention to complete child"s vaccination.

Fig. 1

Fig. 2

P 331

Factors influencing quality of care in Burundi – Study on the determinants of the quality of care for children under five, pregnant women and women giving birth

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Introduction: Since 2006, Burundi has introduced Performance-Based Financing (PBF) coupled with targeted free care (FBP-G) for children under 5 and pregnant women and women giving birth, in order to address the low quality of care and service. The average quality score decreased from 67% in 2018 to 66% in 2020 in health centres (HCs), and from 81% to 78% in district hospitals (DHs). The study aims to identify the determinants of quality of care in health facilities and to formulate recommendations

Materials & Methods: Descriptive, quantitative and qualitative cross-sectional study organised in 2022. Semi-structured interviews with various partners and healthcare providers, focus groups and audits of patient records. The target included 8 DHs and 16 HCs. The selection of health facilities (HF) was based on the performance criteria of the evaluation grid (FBP-G), with 50% of HF performing better and 50% worse, and according to the four geographical zones of the country. Kobo collect and SPSS software were used for data collection, analysis and processing

Results: Several factors affect the quality of health services. Inadequate funding and the ratio of doctors/capita and midwives/women of childbearing age, which are below WHO standards, are major obstacles. Integration of care is poor, especially for pregnant women (only 26% of women receive an early prenatal care) and women giving birth (A partogram is used in 54% of cases). Only 23% of neonatal deaths are audited. Socio-cultural barriers (hidden pregnancies, inadequate reception) and the lack of integration of care also affect quality (integrated childcare is practised in only 50% of HCs). Supervision by hierarchical levels is considered unsatisfactory by 75% of beneficiaries, and the referral system needs to be improved. These challenges hamper access to quality health services and require adequate interventions

Conclusion: Quality of care depends on good health system governance, the organisation of care and the availability of financial and human resources

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Pooling of multi-donor funds for health financing in Burundi – Study to develop a model to support the transition to universal health coverage

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Introduction: Several payment policies and public insurance schemes have been introduced in Burundi, including Financing Based Performance and Free Care (FBP-G) for pregnant women, women who have recently given birth and children under five. It has improved access to care, but faces operational challenges due to complex payment policies and insufficient cross-subsidies. The study, carried out in 2022 aimed to develop a financing model based on the pooling of PBF-G funds, thereby contributing to the move towards universal health coverage (UHC).

Materials & Methods: A retrospective mixed analysis was conducted on funding data from 2017 to 2021, including funding volumes, target populations and care packages covered. The quantitative analysis was carried out using R software, while the qualitative analysis was carried out by triangulation on the basis of interviews with stakeholders and focused on the political, legal, technical, economic, social and

temporal feasibility of the FBP-G pool. These variables were subjected to an equivalence grid based on the criteria of design, feasibility, effectiveness, impact and viability. Three models were analysed: the virtual pool, the physical pool with targeted resources and the physical pool with fungible resources.

Results: The volumes mobilised show the existence of political will, but with delays in funding, fragmentation of funding, dependence on external funding (38.9%), a significant contribution from households (30.1%), a mismatch between funding and needs, and inadequate definition of care packages. In terms of the feasibility of pooling, the virtual pool has an equivalence rate of 90%, compared to 40% for the physical pool with targeted resources and 20% for the physical pool with fungible resources. However, pooling requires a high level of trust between donors and a shared vision. Six conditions have been identified to strengthen the virtual pooled fund model: a common plan for donors, a leader among partners to mobilise them, a functional consultation framework, an official pooled fund framework, periodic reviews, and donor and beneficiary accountability.

Conclusion: In the context of the study, the virtual pool fund was considered the best financing model. However, pooling requires a high level of trust and a shared vision between donors to improve people's health

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P 333

Consumption of sugar sweetened beverages among school aged children in the Hohoe Municipality, Ghana

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Question: What are the consumption patterns, Sugar Sweetend Beverages (SSBs) preference, factors influencing SSBs consumption and preference and the common sources of SSBs among primary school children in the Hohoe Municipality?

Methods: This was a cross-sectional study in 16 primary schools in the Hohoe municipality. Data was collected among 449 school children aged 6 years to 12 years, using a structured questionnaire deployed on Kobo Toolbox, exported to Excel and analyzed using STATA Version 17. Descriptive statistics and logistic regression were performed to identify consumption level, preference for SSBs, factors influencing consumption and preference and SSBs sources among school children at 95% confidence level.

Results: High SSB consumption level was 273 (60.8%). Most 277 (61.7%) had more preference for SSBs. The home was the main source of SSBs 299 (66.6%). School children in public schools were less likely to have more preference for SSBs (aOR=0.56; 95% CI: 0.38-0.82). School children in upper primary (aOR=0.50; 95% CI: 0.29-0.87) were less likely to consume SSBs while school children from a high socio-economic background (aOR=2.60; 95% CI: 1.26-5.39) were likely to consume SSBs. Also, availability of SSBs (aOR=2.07; 95% CI: 1.32-3.26), peer influence (aOR=1.96; 95% CI: 1.26-3.07) and those whose source of SSBs were the home (aOR=2.89; 95% CI: 1.78-4.70), and school (aOR=7.48; 95% CI: 2.93-19.06) were more likely to consume SSBs.

Conclusion: There is a high consumption of SSBs among school children in the Hohoe Municipality. Most school children had more preference for SSBs. Factors that influenced SSBs consumption were being in upper primary, having a high socio-economic background, availability of SSBs, peer influence, and the source of SSBs. The findings reveal the need to intensify school and community-level health education on SSBs to address high consumption among school children. Given the influence of socio-economic status and the availability of SSBs at homes, interventions should focus on educating the parents on the health risks associated with SSBs and encourage healthier substitutes at home. School-based programs must also focus on creating supportive environments that limit access to SSBs and foster healthier peer norms.

Fig. 1

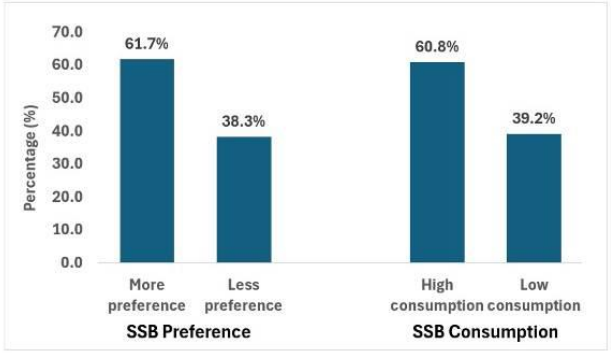

Figure 1: Preference and Consumption of Sugar Sweetened Beverages among School Aged Children

Fig. 2

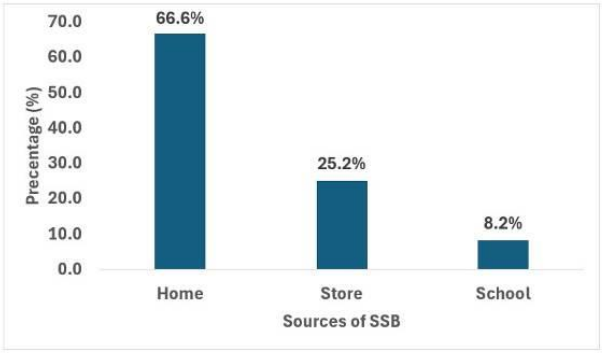

Figure 2: Sources of Sugar Sweetened Beverages

P 334

Methodological quality and reporting characteristics of anthropometric measurements in studies assessing the nutritional status of children in Ethiopia – A scoping review

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Questions: Acquiring accurate anthropometric data is essential to assess nutritional status. To ensure the quality of the data, careful planning of instruments, training and supervision of enumerators are mandatory. In Ethiopia, where malnutrition rates are high, investigating the methodological quality of anthropometric measurements of primary studies is crucial for ensuring the credibility of the study findings. Therefore, this review assesses the reporting on the methodological quality of anthropometric measurements in primary studies conducted in Ethiopia focusing on the nutritional status of school children.

Methods: A comprehensive systematic search was conducted to include primary studies that have reported on children's growth from Medline, AJOL, Embase, and CINAHL. Additional sources like Google Scholar, ProQuest, Addis Ababa, and Jimma University's repositories were also accessed. Studies whose primary objective was to evaluate the nutritional status of children using anthropometric measurements were included in the review. The results were organized in EndNote, screened in Covidence, extracted in Excel and analyzed in Stata.

Result: Out of 678 retrieved records, 30 (n=18,059) studies were included in the review. Of which, twelve (46.1%) studies excluded children with physical deformities, five (19.2%) excluded children who took anti-parasitic treatment within a specified time and three (11.5%) excluded children who were taking nutritional supplements. Three-quarters (73.3%) of the studies did not mention the standardization, while more than half (56.7%) did not mention calibration of instruments. Furthermore, about 40% of studies did not report the setting where the measurements were obtained.

Conclusion: Inconsistencies in reporting key methodological details of anthropometric measurements were identified, highlighting the need for a reporting checklist for studies that measure anthropometry to assess the nutritional status of children. Therefore, we recommend strengthening the STROBE-nut checklist by incorporating the quality assurance aspect of anthropometric measurements.

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A mixed-methods assessment of the mother-child interaction during the STIMNUT intervention (psychosocial stimulation of severely malnourished children) in Koutiala, Mali

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In Mali, the prevalence of global acute malnutrition reached 30.1% in 2024, while severe acute malnutrition (SAM) was 4.2%, placing the country in a concerning situation overall (1). MSF implemented a brief psychosocial stimulation intervention targeting 36 children between 6–23-months of age with SAM in Koutiala, Mali, and their primary caregivers to enhance mother-child interaction to support recovery from SAM. Mother-child interaction is often at risk when the mother or the child are severely malnourished, and it is difficult to measure. For the assessment of the mother-child interaction, we used an adapted version of the Parenting Interactions with Children: Checklist of Observations Linked to Outcomes (PICCOLO) tool pre- and post-intervention. Also, we administered *Dusukasi* scale to assess a local perinatal depression-like syndrome for mothers. For the quantitative part, we calculated Cohens d effect sizes to assess changes and used a bootstrap resampling approach (10,000 iterations) to estimate 95% CI, using quantitative data from the observations and caregivers" questionnaire. For the qualitative part, we analysed field notes and debrief sessions with the observers, and in-depth interviews with caregivers. PICCOLO scores indicated a large effect size (Cohens d = 0.97, 95%CI: 0.55, 1.40), suggesting substantial improvement in mother-child interactions. Also, maternal perinatal depression decreased (Dusukasi tool Cohens d = -0.69, 95%CI: -1.19, -0.22). Qualitative findings suggested stronger emotional bonds and interactions between mothers and children in all PICCOLO domains (affection, responsiveness, encouragement, teaching) at post-intervention. Caregivers reported that once children were in a better nutritional and health status, the quality of their interactions improved. Participants noted an increased in self-confidence and autonomy towards the child, and decreased of sadness, and depressive emotions in themselves. Integrating psychosocial stimulation into SAM treatment programs improved mother-child relationships. Although a validation of the tool is required, PICCOLO has the potential to facilitate the assessment of complex dynamics among mothers and children.

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2. Ballarotto, G., et al. (2021). Mother-child interactions during feeding: A study on maternal sensitivity in dyads with underweight and normal weight toddlers. Appetite 166: 105438

P 337

Understanding the medical challenges for the diagnosis and treatment of bilateral pitting oedema in children – A qualitative study

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Severely malnourished patients can present with bilateral pitting oedema, which is a common sign of Kwashiorkor (1). However, bilateral pitting oedema can also be an expression of other pathologies (2). In Mali and DRC, the number of children presenting with bilateral pitting oedema at MSF (Médecins Sans Frontiers/Doctors Without Borders) hospitals are up to 30% (Mali) and 49% (DRC) higher than in other countries, however, the reasons underlying this trend are unknown (3).

Through this qualitative study, we aimed to explore the perspectives and lived experiences of health professionals on the diagnosis and management of children with bilateral pitting oedema. Using a participatory approach, we conducted 21 in-depth interviews, and 2 focus groups with health professionals at MSF health facilities who had worked in the settings of Koutiala (Mali) and Rutshuru (DRC) for at least 6 months (Fig 1).

The understanding of the bilateral pitting oedema phenomenon is complex. Health workers described clinical obstacles to reducing mortality, including: i) difficulties making the diagnosis due to a lack of specialized staff and insufficient resources, ii) challenges treating complications that may arise due to the complexity of the diseases associated with bilateral pitting oedema, and iii) lack of scientific evidence in the literature explaining the physiopathology of bilateral pitting oedema. Study participants shared several key recommendations for reducing mortality among children

presenting with bilateral pitting oedema, including prevention of bilateral pitting oedema at the community level, standardization of the diagnostic process, strengthening of medical training, and better collaboration both within the medical teams and between teams and the children"s families.

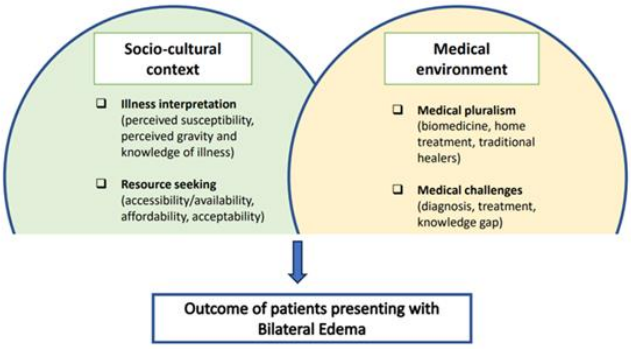
1. Alvarez J, Dent N., Browne L., Myatt M., Briend A. Putting child Kwashiorkor on the map. 2016.

2. Hisano S, Hahn S, Kuemmerle NB, Chan JC, DeSanto NG. Edema in childhood. Kidney Int Suppl. 1997;59:S100-4. Epub 1997/06/01. PubMed PMID: 9185114.

3. Ben Farhat J, Hanson, K., Shams Eldin, M. Description des cas d"œdèmes bilatéraux chez les enfants hospitalisés dans les structures de Médecins Sans Frontières (MSF). Epicentre, MSF, 2019.

Fig 1. Framework used for the data collection and analysis of this study, adapted from the PASS model (https://doi.org/10.4081/malaria.2012.e3).

Fig. 1



P 339

Mazboot Bunyad – Early outcomes of Pakistan's first digital nutrition registry for malnutrition management

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Introduction: Malnutrition remains a significant concern in Pakistan. As per the National Nutrition Survey, Sindh has the highest burden of undernutrition in the country, with 45.5% of children stunted, 23.3% wasted, and 41.3% underweight. To address this, Pakistan's first digital nutrition tracking system, the Mazboot Bunyad Registry, was introduced to improve child nutritional outcomes. This research aimed to evaluate the registry"s effectiveness in combating malnutrition.

Methods: The Mazboot Bunyad registry is a mobile application-based digital health system. It was launched in July 2024 and implemented in 33 private healthcare facilities across two high-risk districts, East and West of Karachi. Trained social counsellors register all children aged 6–59 months who visit these facilities, assessing their nutritional status using mid-upper arm circumference (MUAC) and Z-scores. Based on the assessment, children are classified as healthy, moderately-acutely malnourished (MAM), or severely acutely malnourished (SAM). Those with MAM receive multi-nutrient powder (MNP), while those with SAM are provided with ready-to-use therapeutic food (RUTF), following Community-Based Management of Acute Malnutrition (C-MAM) guidelines. Follow-ups occur every two weeks until the child recovers.

Results: Over the first six months following the registry"s implementation, 6,565 children were registered. Among them, 73% (n=4,790) were classified as normal, 21.8% (n=1,431) had MAM, and 5.2% (n=344) had SAM. The sample comprised 58% males and 41% females. Among children with SAM, 69.4% (n=239) were male, while 30.5% (n=105) were female. A similar trend was observed in MAM cases, where 55.2% (n=790) were male and 44.7% (n=641) were female.

Children diagnosed with SAM received RUTF along with biweekly follow-ups, resulting in 51% (n=177) improving to the MAM category. Similarly, children classified as MAM received MNP and biweekly follow-ups, leading to a 41% (n=593) recovery rate, transitioning to the normal category.

Conclusion:
The initial results from the Mazboot Bunyad digital nutrition registry are promising, indicating its potential to enhance child nutritional outcomes in Karachi. Future research will focus on the long-term sustainability of these outcomes, identifying factors influencing recovery rates, and assessing the registry"s scalability in resource-limited settings.

Fig. 1

Table 01. Basic Demographic data for children registered in digital registry in first six months. (July 2024 to December 2024)

Variable	Nutritional Status						Total Cases	
	Normal (n=4790)		Moderate Acute Malnutrition (n= 1431)		Severe Acute Malnutrition (n= 344)			
	n	%	n	%	n	%	n	%
Gender								
Male	2800	58.4	790	55.2	239	69.4	3829	58.3
Female	1990	41.5	641	44.7	105	30.5	2736	41.7
Total	4790	73	1431	21.8	344	5.2	6565	

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Breastfeeding practices in Madagascar – Results of a secondary analysis of the freeBILy trial

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Background: Breastfeeding is an integral part of the human experience and an essential public health intervention. It benefits both child and maternal health and provides key support for child development. The World Health Organization (WHO) recommends exclusive breastfeeding (EB) until six months (mo) of age and continued breastfeeding (CB) up to two years or beyond.

Methods: To assess breastfeeding practices (BPs) in Madagascar we performed a secondary analysis of a phase III, two-armed 40 cluster Randomized Clinical Trial (CRCT),

"**f**ast and **r**eliable **e**asy-to-use-diagnostics for **e**liminating **bil**harzia in **y**oung children and mothers" (freeBILy). The study was implemented in three different regions, Itasy, Bongolava, and Amoron"i Mania, among pregnant women and their offspring. BPs were assessed during postpartum visits, scheduled nine mo after delivery (T3), and 24 mo after birth (T4). EB, CB and month of interruption were investigated. Factors associated with the prevalence of EB were investigated at T3 using a Generalized Linear Mixed Model (GLMM) for binomial response with log link. A Cox proportional hazards model was used to assess factors associated CB cessation. Hazard ratio (HR) with 95% confidence intervals (95%CI) were estimated.

Results: A total of 1863 women were evaluated at T3, and 2332 at T4. At T3, 1848 (98.8%) reported that they were breastfeeding and 479 (25.6%) were practising EB. At T4, 1269 (54.4%) were breastfeeding, 78 (3.3%) exclusively. The median time for breastfeeding cessation was 21 mo (range 2 to 29 mo). Secondary education (prevalence ratio, PR=0.67, 95%CI 0.48-0.93) and anaemia (PR=0.75, 95%CI 0.65-0.88) were associated with a lower prevalence of EB at T3, being a farmer with a higher one (PR=3.44, 95%CI 1.89-6.25). In the survival analysis, age between 30 and 50 years was associated with a later breastfeeding cessation (HR= 0.68, 95%CI 0.49-0.96).

Conclusion: The breastfeeding rate at 24 months is close to the WHO target of 60% by 2030, consistent with estimates for eastern and southern Africa and higher than the global rate of 44%. The association between anaemia and EB, which has previously been found by some with different meanings and trends, underscores the direct potential impact of maternal health on offspring health. These findings suggest two main lines of public health action: health education, particularly for target groups such as educated women, and the improvement of women's health programmes.

P 341

The impact of human Immunodeficiency Virus and antiretroviral therapy on circulating maternal MicroRNAs and preterm birth in South African women

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Question: Preterm birth (PTB) is the leading cause of neonatal mortality and increases the risk of cardiometabolic disease later in life. PTB is also more common in women living with Human immunodeficiency virus (HIV). Circulating maternal microRNAs (miRNAs) during pregnancy hold promise as biomarkers for PTB, but there is limited data on the impact of HIV infection and antiretroviral therapy (ART) in South Africa where HIV infection is common. This study aimed to identify miRNAs associated with PTB and assess the impact of HIV status and ART regimen in South African pregnant women.

Methods: This nested case-control study included 76 pregnant women, matched by age and body mass index (BMI), comprising 38 with PTB and 38 with term births. Participants included women living without (n=28) and women living with HIV receiving either dolutegravir (n=24) or efavirenz combination therapies (n=24). MiRNAs (n=179) were profiled in serum collected between 24 and 28 weeks of gestation using miRNA PCR array panels.

Results: MiR-320d, miR-29b-3p, miR-22-5p and miR-30e-5p were associated with PTB in women without HIV and those receiving efavirenz ART with receiver operating characteristic Area-Under-the-Curve (AUC) values ranging from 0.85 to 0.92. These miRNA were not associated with PTB in women receiving dolutegravir ART however, where only miR-154-5p was associated with PTB (AUC 0.86).

Conclusions: Our findings highlight that HIV/ART may impact the use of miRNAs as biomarkers for PTB, offering valuable insights for biomarker discovery in populations with high HIV prevalence.

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Antibiotic use in preterm infants in three neonatology units in Brazzaville, Republic of Congo

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Objectives: To assess antibiotic use in Congolese preterm infants according to WHO recommendations in three neonatology units in Brazzaville.

Methods: This was a cross-sectional study involving preterm infants admitted within 72 hours of birth in three neonatology units in Brazzaville between January 2019 and November 2020. Following WHO recommendations, preterm infants were categorized based on the presence or absence of maternal risk factors for neonatal infection (three items), with each factor assigned a score of 1. Risk factors for early neonatal bacterial infection (ENBI) specific to the newborn (seven items) were also assessed, with each factor scored as 1 if present and 0 if absent. Maternal risk was classified into four categories (0, 1, 2, and 3), and ENBI risk into eight categories (0, 1, 2, 3, 4, 5, 6, and 7). Preterm infants were first grouped by maternal risk and then by ENBI risk within each maternal risk category. The proportion of preterm infants receiving antibiotics was determined for each group.

Results: A total of 448 preterm infants were included. The proportion of antibiotic use based on risk categories was as follows: maternal risk 3 (ENBI risk 2, 3, and 5: 100%; ENBI risk 4: 67%), maternal risk 2 (ENBI risk 1, 2, 3, 4, and 5: 0%, 64%, 92%, 91%, and 100%, respectively), maternal risk 1 (ENBI risk 1, 2, 3, 4, 5, and 6: 88%, 66%, 88%, 93%, 100%, and 100%, respectively), maternal risk 0 (ENBI risk 1, 2, 3, 4, 5, and 6: 29%, 57%, 76%, 82%, 96%, and 100%, respectively). Multivariate analysis identified the following factors as being associated with antibiotic use outside WHO recommendations: being born in a health facility different from the hospital of admission (OR: 0.16; 95% CI: 0.03–0.94) and being born in an Integrated Health Center (OR: 23; 95% CI: 2.9–190).

Discussion and Conclusion: The indication for antibiotic therapy was 100% effective only when all maternal or neonatal risk factors were present, contrasting with WHO recommendations. The establishment of an antibiotic stewardship program is essential.

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Prevalence and intensity of helminths, protozoal infection and its associated factors among primary school going children in Shebedino district, Sidama, Ethiopia – A school based cross sectional study

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Background: Intestinal parasites remain a significant global health issue. The negative health effects of Iintestinal parasites infectionsamong school aged children are diverse, of which which undernutrition, including stunting and iron deficiency anemia are presen.Even though there was evidence on prevalence of intestinal parasite there is a limed data on protozoal infection and the use of count model to see the intensity of helminths. The aim of this study was to assess the prevalence, intensity of helminths, protozoan infection, and associated factors among primary school going children in Shebedino district, Sidama, Ethiopia in 2024.

Method: School based cross sectional study design was used.Multistage stratified sampling techniques were employed and We recruited 609 study participants in the study Stool samples were collected from study participants and examined using a wet mount and Kato- Katz method. Bivariable and multivariable logistic regression were conducted assessing factors associated with presence of IPI and zero inflated negative binomial regression to identify factors associated with intensity of parasites in STATA 17

Result: The overall prevalence of intestinal parasite was 342/609 (56.2%). The mean age of study participant was 8 years. Most of the households in the study area used pit latrine and tap water as a source of drinking water. Boys (AOR= 1.47, 95% CI: 1.04– 2.07), utilization of tap water as a sources of drinking water (AOR = 1.86, 95% CI: 1.05 – 3.29), children who had no hand washing practice after toilet (AOR = 3.86, 95% CI: 1.86 – 8.00) as compared to thier counter part are significantly associated with intestinal parasite infection

Conclusion: Intestinal parasite infection is still a major public health problem Improving sanitation and giving attention to the quality of tap water, health education addressing proper self-hygiene for primary school going children would be important and analyzing of tape water is important

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P 346

Acceptability of a hand hygiene intervention for newborn-care in eastern Uganda

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Question: Neonatal mortality remains a significant concern globally, with sub-Saharan Africa (SSA) exhibiting the highest rates. Poor access to water, sanitation, and hygiene (WASH) exacerbates the spread of infections like pneumonia, diarrhoea, and sepsis among newborns. The BabyGel trial assessed the effectiveness of using community-based alcohol-based hand rub (ABHR) in reducing infection rates among newborns in Uganda. As part of this trial, this study assessed the acceptability of the intervention using the Theoretical Framework of Acceptability (TFA) to explore factors influencing ABHR implementation.

Methods: This qualitative study was conducted in Eastern Ugandan districts participating in the BabyGel trial. Semi-structured in-depth and group interviews were conducted with 20 mothers involved in the intervention. Thematic analysis was performed using both inductive and deductive approaches and structured according to the seven TFA constructs: affective attitude, burden, perceived effectiveness, ethicality, intervention coherence, opportunity costs, and self-efficacy. Data were analyzed using NVivo software.

Results: Mothers found the ABHR intervention largely acceptable, appreciating its ease of use and perceived effectiveness in preventing infections. Key themes included high demand for ABHR, its convenience compared to using soap and water, and perceived social status benefits when using ABHR in public. However, some participants expressed concerns about potential harmful effects and perceived conflicts with their belief systems. Overall, the intervention led to improved hygiene practices, with many participants reporting continuation of hygiene practices beyond the trial period.

Conclusion: The BabyGel intervention was highly acceptable among participants, driven by perceived health benefits and ease of use. Addressing cultural concerns and providing clear education on ABHR safety and use could further enhance the intervention"s acceptability and sustainability in similar settings.

P 347

The effectiveness of providing alcohol based handrub to mothers for the prevention of severe illness and death in Ugandan infants – A community cluster randomised trial

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Question: Neonatal sepsis is a common cause of neonatal deaths globally, but efforts to reduce it are hindered by challenges in diagnosis, antibiotic availability, and the rise of antibiotic resistance. There is an urgent need for cost-effective interventions not reliant on anti-microbials. This trial aimed to assess whether community use of alcohol-based hand rub (ABHR) before touching a baby can effectively prevent severe illness or death during the first three months of life.

Methods: This was an open label, two-arm cluster randomised trial. We enrolled pregnant women from 34 weeks" gestation residing in 72 villages in Eastern Uganda, with half of the villages publicly randomised to receive ABHR. All women in the trial received a birthing kit and a single application of chlorhexidine to prevent cord infection. Additionally, women in the intervention arm received ABHR for household members to use before touching their baby from birth onwards until three months postnatally. The primary outcome was severe illness (validated by an expert committee) or death; while secondary outcomes included specific maternal and neonatal infections and community hygiene practices.

Results: We enrolled 6102 pregnant women; follow-up data were available for 5791 (2749 in the intervention and 3042 in the control arm). Demographic characteristics were similar between the two groups at baseline. The were 104 stillbirths. In an intention to treat analysis, the rate of severe illness or death was 17.4% (477/2749) in the intervention arm compared to 16.4% (499/3042) in the control arm (adjusted risk ratio 1.05, 95% confidence interval 0.91 to 1.21). There was no difference in the incidence of any individual outcomes contributing to the composite primary outcome.

Conclusion: When providing a single application of chlorhexidine on the umbilical stump, providing ABHR to women for home use in Ugandan villages did not reduce severe illness or death in infants up to three months of age.

Pan African Clinical Trial Registry number PACTR202004705649428.

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Access to care and the relevance of awareness strategies – The case of childhood cancer

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Introduction: Access to healthcare consists of five components: approachability, acceptability, availability, affordability and appropriateness of care. This cascade reflects the patient journey from onset of symptoms to receiving treatment and ultimately survival. Awareness programs play a vital role in shaping health behaviors and encouraging timely healthcare-seeking. In the case of childhood cancer, many children remain undiagnosed or access care late, leading to poor chances of survival. Awareness activities might improve this. This abstract describes a methodology that explores different approaches to increase awareness of childhood cancer care focusing on Sub-Saharan Africa (SSA).

Methods: Implemented awareness activities will be identified by contacting active non-profit organizations (NGOs), national cancer institutes, and hospitals that provide pediatric oncology care. These organizations and institutions will be reached via email and asked to complete a survey regarding their awareness activities. Accordingly, they will be invited to participate in an online interview to create deeper context. Publicly accessible sources will be used to verify and complete the collected information.

Results: We hypothesize that the effectiveness of awareness activities in SSA depends on several factors which will be explored in this study, including type of healthcare workers involved, the timing and duration of programs, the used evaluation methods, and the frequency of training.

Conclusion: Understanding the key relationships between the different factors influencing access to care and the impact of awareness activities will provide valuable insights into how awareness activities can be tailored to different settings and target groups and ultimately improve timely access to appropriate childhood cancer care.

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Health-insurance influence on treatment outcomes of childhood cancer in western Kenya

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Question: Only few government leaders in low and middle-income countries have responded favourably to the international plea for Universal Health Coverage by the UN, WHO and over 500 health-organizations. Survival of childhood cancer in low and middle-income countries (LMIC) is often below 20%. Limited health-insurance coverage may contribute to these poor survival rates. Our study explores the influence of health-insurance status on childhood cancer treatment outcomes in a Kenyan academic hospital.

Methods: Medical records of all children diagnosed with cancer between 2010 and 2016 at Moi Teaching and Referral Hospital were reviewed retrospectively and data on treatment outcomes and health-insurance status at diagnosis were collected.

Results: Of 763 patients, 28% abandoned treatment, 23% died and 17% had progressive or relapsed disease resulting in 32% event-free survival. In total 280 patients (37%) had health-insurance coverage at diagnosis and 483 patients (63%) did not. Of patients without health-insurance coverage, 299 patients (62%) enrolled during cancer treatment, leading to a total health-insurance registration level of 579 patients (76%). Treatment outcome of patients differed per health-insurance status (P<0.001). The most likely treatment outcome in uninsured patients was death (49%), whereas in those with health-insurance at diagnosis and those who enrolled during treatment it was event-free survival (36% and 41% respectively). The overall survival (P<0.001) and event-free survival (P<0.001) was significantly higher for patients with health-insurance compared to those without. Hazard-ratio for treatment failure was 0.30 (95% CI: 0.22-0.39; P<0.001) for patients insured at diagnosis in relation to those without health-insurance and 0.32 (95% CI: 0.24-0.4,1; P< 0.001) for patients insured during treatment in relation to those without
insurance.

Conclusions: Our study highlights the need for Universal Health Coverage in LMIC. Children without health-insurance had significantly lower survival. Childhood cancer treatment outcomes can be ameliorated by strategies that improve health insurance access.

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Technical suitability of portable ultrasound devices in low-resource settings – A mixed method study

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Question: Portable ultrasound devices (PUDs) are affordable and marketed as adaptable to low-resource settings (LRS). But are they technically suitable for LRS? This study assessed the technical performance of 2 PUDs (Figs. 1 & 2) used in pediatric healthcare within the International Pediatric Ultrasound Network in LRS.

Methods: In 2022/23, a convergent parallel mixed methods study was conducted in Nepal and Tanzania to evaluate Vscan Air CL and Mindray MX7 using 6 criteria targeting usability and fitness for purpose. An anonymized online survey of 40 pediatricians with varied ultrasound skills and semi-structured interviews with 8 of them were conducted. Data analysis included descriptive statistics and inductive reasoning. A schematic traffic light system summarized their ratings (Fig. 3).

Results: Vscan Air CL and Mindray MX7 were most frequently rated "good" (42%) and "excellent" (33%) in terms of image quality, respectively. For user-friendliness, Vscan Air CL was most frequently rated "good" (39%), while Mindray MX7 was rated "very good" (41%). Battery performance emerged as a key concern for Vscan Air CL users, with 58% rating its battery duration less than "good". 41% reported significant heating whilst scanning. Other challenges of Vscan Air CL were mobile app download restrictions in some countries and restricted intra-departmental access due to concerns about device loss. Adjusting system settings on Mindray MX7 was an initial challenge for beginners and intermediate-level users; however, Mindray MX7 offered the advantage of compatibility with neonatal-sized probes. The top 5 priority features of PUDs used in LRS were: image quality, portability, user-friendliness, color Doppler quality, and battery duration. Available local technical support and low-bandwidth telemedicine capabilities were also crucial aspects.

Conclusion: Both PUDs appear suitable for use in pediatrics in LRS. Optimal usage requires portability, user-friendliness, a long battery life, available neonatal-sized probes, and training on advanced ultrasound functions in addition to high overall image- and color doppler quality. Sustainability requirements include resilience to extreme temperatures and power fluctuations, access to local technical support and telemedicine on low-bandwidth internet. Including perspectives from LRSs could lead to the design of PUDs sensitive to LRS needs, enhancing their usability and acceptability in efforts to attain health equity.

Fig. 1

Fig. 1: Vscan Air CL

Fig. 2: Mindray MX7

Fig. 2

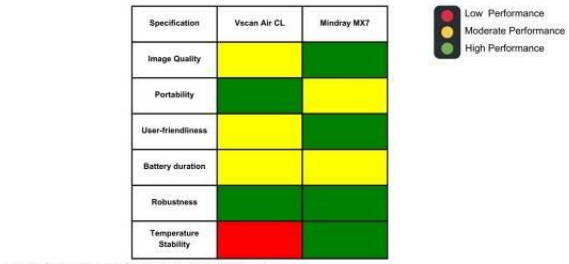

Fig 3: Traffic Light Rating of Vscan Air CL and Mindray MX7

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Childrens exposure to insecticides linked to vector control in Benin

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Long-Lasting Insecticide Treated nets (LLINS) using pyrethroids are the main tools for malaria prevention. Other tools are also commonly used, such as coils and sprays containing pyrethroids, but are not recommended by WHO. In Europe and in the United States, recent literature shows evidence of the adverse impact of pyrethroids on children"s neurocognition. Pregnant women and children may be exposed to pyrethroids through skin contact, inhalation, or food consumption. However, it is unknown to what extent LLINs and coils expose these populations to pyrethroids.

Our goal was to describe the exposure to pyrethroids and to investigate the association between pyrethroid metabolites in 166 six-year-old children and use of bednets, sprays and coils. Data come from a birth cohort in the district of Allada, a semi rural area in south Benin, where first-morning void urine samples were collected. Four pyrethroid metabolites were measured (cisDBCA, specific to deltamethrin; cisDCCA and transDCCA, known metabolites of cypermethrin, cyfluthrin, permethrin; and 3PBA, metabolites of numerous pyrethroids). Questionnaires on bednet use the night prior to the sample collection, and use of coils by the family were administered.

Out of 166 children, 85% of them had slept under the bednet the night prior to urine sample; 22% of families were using coils and 7% were using sprays indoor. The medians (minimum; maximum) for cisDBCA, cisDCCA, transDCCA, and 3PBA were 0.42 micrograms/liter (0.04; 27.4), 0.26 (0.03; 23.8), 0.66 (0.03; 58.8), 1.34 (0.09; 48.0), respectively. After adjustment for use of coils and presence of pesticides in crops around households, urinary concentrations of three pyrethroid metabolites (log-scale) were positively associated with use of bednet (p-value<0.03): CisDCCA, TransDCCA, 3PBA.

Our results are preliminary and suggest that use of insecticides for vector control may expose populations to pyrethroids. Studies should be pursued on whether LLINs directly expose populations to pyrethroids in order to better estimate their benefit/risk balance and, if required, ways to reduce exposure.

P 353

Free services are not enough! Theory of change for effective implementation and evaluation of free maternal health services in African LMICs

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Although most countries made great improvements in maternal mortality, many African LMICs are still on the list of the highest burdens in the world. African countries implemented different forms of Free Maternal Health Services (FMHS) to increase women's use of life-saving maternal healthcare services. Unfortunately, the free services offered suffered from severe shortages and poor quality, and families had to bear significant direct and indirect costs. The aim of this paper was to analyse the challenges and lessons learnt from implementing FMHS in LMICs in Africa.
The author conducted a literature review. The analysis adopted the results chain model to draft an evidence-based Theory of Change (ToC) for effective implementation and evaluation of FMHS. The inclusion criteria included availability of the full text, English language, primary data or systematic review articles published after 2000, relevance to the review objective, discussion of inputs, and implementation of the FMHS. After exclusion, 33 articles were utilised to analyse inputs and implementation.
Contextual and health system weaknesses hindered current FMHS implementation. Well-informed decision-making that addresses social determinants of health in the design of FMHS policies would allow targeting and reaching the most vulnerable populations. Moreover, policymakers should consider mixed resource pooling, data-driven allocation, and efficient management as part of their FMHS plans. Policymakers should not neglect strengthening the health system by implementing strong governance, financial management, HRH leadership, stakeholder engagement, and oversight of clear performance indicators. Robust monitoring is, therefore, a must, measuring different indicators of utilisation and mortality rates, the quality of care, and health equity.

Fig. 1

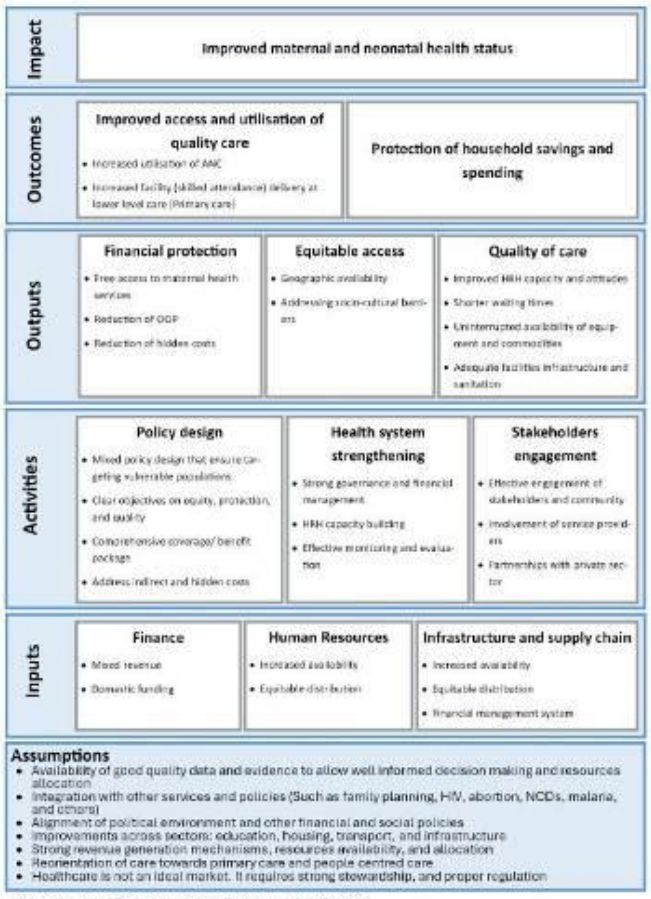

Figure 5. Theory of Change for effective implementation of FMHS.

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Assessing the health workforce in Afghanistan – A situational analysis into the country's capacity for universal health coverage

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Background: Universal health coverage (UHC) is a key component of Afghanistan's health plan, but the country faces significant challenges due to decades of conflict and instability. A fit-for-purpose health workforce is crucial for achieving UHC, yet there is a lack of quality data on human resources for health (HRH). The latest HRH estimates from 2018 are outdated due to the ongoing conflict and COVID-19 which affects health worker retention and attrition. In addition, the 2021 government transition led to gender discriminatory policies impacting female health workers. This study presents a comprehensive situational analysis of Afghanistan's health workforce, focusing on distribution by geography and gender, as well as trends in health worker production.

Methods: A multi-stage assessment of the active health workforce was conducted through a national census-style count using active registries and facility-level verification through visits to sampled facilities. Verification coefficients were developed to adjust workforce counts by cadre and dual-practice prevalence. Health worker production was estimated

through an analysis of enrollment and graduation figures from public and private institutes from 2019-2023.

Results: We estimated 63,632 health workers in Afghanistan in 2023, with 73% in the public sector and 27% in the private sector. Key health workers (physicians, nurses and midwives) total 10.3 per 10,000 population, falling significantly short of the UHC threshold of 44.5. Substantial geographic disparity exists between provinces, with remote provinces reporting far fewer key health workers to the national average. In addition, Kabul province accounted for 50% of the country"s specialized physicians and an over-representation of the nurses and midwives. Significant gender imbalances exist, as only 18% of specialized physicians and 29% of nurses are female.

Health workforce production has declined for certain cadres due to restrictions on female education, which have increased in severity. Thus, cadres with majority female staff, such as obstetrics/gynaecology, are anticipated to have significant declines in active staff.

Conclusion: Afghanistan faces critical challenges in its health workforce, including shortages, gender imbalances, and unequal geographic distribution. These challenges are further exacerbated by gender discriminatory policies. The findings provide essential insights to guide human resources for policies aimed at achieving UHC.

Fig. 1

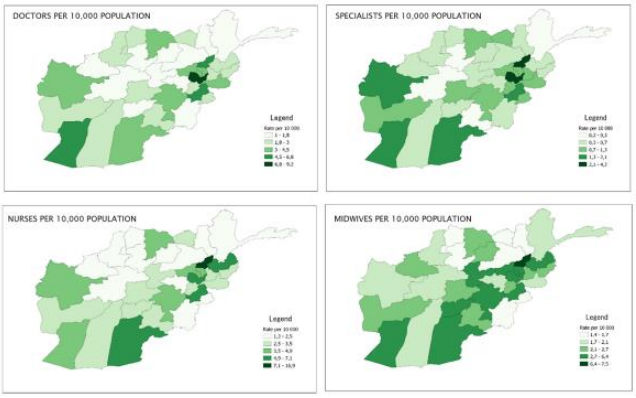
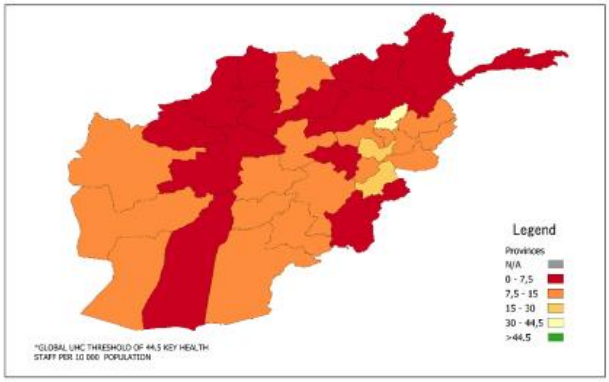


Fig. 2



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Setting universal health coverage and social health protection apart towards conceptual clarification, better coordination and less fragmentation

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Question: Universal Health Coverage (UHC) and Social Health Protection (SHP) are two major pillars of the Sustainable Development Goals, promoted respectively by the World Health Organization (WHO) and the International Labour Organization (ILO). Often perceived as similar or complementary, emphasis is frequently placed on their potential synergies and the importance of pursuing these two agendas simultaneously. However, are UHC and SPH truly complementary or even similar or do important differences exist? What are the implications of such differences for governance and policy?

Methods: Based on an in-depth analysis of WHO and ILO normative documents, we clarify these two concepts before examining their implications in terms of policy fragmentation, governance and other health system issues. This is illustrated with concrete examples from several sub-Saharan African countries (Benin, Democratic Republic of the Congo, Senegal, Uganda).

Results: UHC encompasses two dimensions – service provision and financial health protection – and includes private and voluntary coverage mechanisms. In contrast, SHP deals only with public and compulsory coverage mechanisms and includes compensation for the loss of income and falls within the scope of employment and universal social protection policies. SHP is also part of the decent work agenda, particularly aiming at the formalization of the informal sector. These differences lead to fragmented governance: UHC is generally steered by the Ministry of Health, while SHP is the competency of other institutions (Ministries of Labour, Social Affairs, or an interministerial coordination), resulting in conflicts of power and resources.

Conclusion: Long considered interchangeable, UHC and SHP exhibit fundamental differences. These conceptual distinctions directly influence governance, coverage mechanisms, and intersectoral coordination. Clarifying these differences is essential to avoid strategic confusion and establish coordination mechanisms adapted to national contexts.

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Extending social protection to progress towards universal health coverage in Sub-Saharan Africa

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Question: The informal sector constitutes a large portion (85%) of the labor force in Sub-Saharan Africa. However, informal sector workers face significant health vulnerabilities due to their exclusion from formal social protection initiatives, often lacking access to affordable healthcare due to high out-of-pocket healthcare costs. Despite the expansion of social protection programs and Universal Health Coverage (UHC) policies, countries still struggle to extend social protection for

health to the informal sector. While the vulnerabilities of informal sector workers have been extensively studied, there is a need to understand how social protection initiatives can be extended to the informal sector. This study aims to map, understand and analyze how, why and for whom social protection initiatives have been extended to the informal sector in Sub-Saharan Africa.

Methods: A scoping review of literature on social protection in health and UHC schemes for the informal sector in sub-Saharan Africa was conducted. The review was guided by the updated Joanna Briggs Institute (JBI) methodological guidance for conducting a scoping review. Both peer-reviewed and grey literature were searched using various search engines, including PubMed, Web of Science, Science Direct and relevant websites. Articles were screened by two independent researchers based on title and abstract, followed by full text screening. Data was analyzed thematically.

Results: This review sheds light on several existing social protection initiatives for the informal sector, such as social assistance programs such as cash transfer, social insurance mechanisms, social security, labor market policies and interventions, development and empowerment programs. These are however challenged by poor legal frameworks, limited awareness and trust, limited coverage and scope. Various strategies have been used to extend coverage of these initiatives to the informal sector; subsidization of premiums, flexible payment and registration mechanism including outreaches, digital and mobile payments modalities.

Conclusion: Social protection initiatives are critical resource to addressing vulnerabilities and accelerating progress towards UHC among the informal sector. However, coverage of the informal sector remains an issue. There is need for context specific strategies to extend coverage of social protection to the informal sector.

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Financial accessibility of essential maternal and child health services in a setting with high poverty and mortality – An observational study in rural Guinea-Bissau

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Introduction: User-fee waivers are a key strategy to promote access to essential maternal and child health (MCH) services, increase maternal and perinatal survival, and increase health equity in vulnerable populations. Guinea-Bissau is a West African low-income country where >40% of the rural population lives on <2€ per day and maternal and perinatal mortality are amongst the highest in the world. Here, user-fee waivers covering service provision, essential materials, diagnostics, and medicine have been implemented for essential MCH services at public health facilities. We evaluated the effectiveness of the policy and quantified the prevalence and levels of out-of-pocket payments (OOPs) for antenatal care (ANC) and childbirth in rural Guinea-Bissau.

Methods: We nested a cross-sectional study in Bandim Health Project's rural Health and Demographic Surveillance System (HDSS). Between August 2023 and April 2024, we interviewed on OOPs for the most recent ANC consultation among HDSS-registered pregnant women and OOPs for childbirth among HDSS-registered women who had recently given birth. We described prevalence and levels of OOPs by ANC consultation and peripartum care utilisation (facility-based birth vs. homebirth with/without a postnatal care (PNC) contact immediately after birth). We also described OOP levels by cost component (service provision, materials, diagnostics, medicine, transportation).

Results: Among 1,197 pregnant women with initiated ANC, 90% (n=1,073) reported OOPs for the most recent ANC consultation. OOP levels amounted to a median of 5€ (interquartile range (IQR) 2-8€). OOPs were highest for the first ANC consultation and declined for subsequent consultations. Among 1,441 births, 60% (n=864) had a health system contact (facility-based childbirth: 56% (n=803); homebirth with PNC: 4% (n=61)). Among these, OOPs were reported by 92-93% of the women (facility-based childbirth: 93% (n=750); homebirth with PNC: 92% (n=56)). Forty percent (n=577) were homebirths without a PNC contact; among these, 52% (n=299) reported OOPs. Median costs were 9€ (IQR 3-17€) for facility-based childbirth, 6€ (IQR 2-9€) for homebirths with PNC, and 0.08€ (IQR 0-0.30€) for homebirths without a PNC contact. Medicine was the key cost driver for both ANC and births with a health system contact, accounting for 31-47% of OOPs.

Conclusion: Despite formal user-fee waivers, OOPs for MCH services are highly prevalent in rural Guinea-Bissau and raise severe equity concerns.

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Assessing the effective use of the *index tool* in performance-based financing in Burundi – Findings based on an cross-sectional analytical study

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Introduction: As part of the implementation of performance-based financing and free health care in Burundi, a financial planning tool was introduced to improve transparency and financial management of health facilities.This tool allows for the monitoring of income, expenditure and bank balances, and the determination of staff performance bonuses. The Ministry of Health has identified problems in the use of the tool, including different versions and misinterpretations, leading to errors in the calculation of bonuses. A study has been launched to assess how the tool is being used and to identify barriers to its use.

Materials & Methods: The descriptive and analytical cross-sectional study was conducted in 50 health centres and 14 districts hospitals in 16 health districts in 8 provinces. The study was conducted in April 2022 and covered data from January to March 2022. Quantitative data collection forms and individual interview forms were used to collect information

Findings: Examination of the index tool revealed disparities between health facilities. The tool was more available in hospitals (92-100 %) than in health centres (68-76 %). Use of the updated version was higher in hospitals (88.5%) than in health centres (60%). The correct version was used by around 100% of provincial and health district administrations. While the data on income and expenditure were more complete in the hospitals, the opposite was true for data on individual performance assessment and evaluation. Performance bonuses were awarded according to the principles of the tool

in 44% of health centres and between 21% and 57% of hospitals. There was a lack of information about the tool for 40% of health centre providers, 36% of hospital staff and more than 50% of regulators

Conclusion: The index tool is a good instrument to achieve the desired transparency in the financial ma nagement at the level of the health facilities, but it is not being used in an effective way. The MoH should capitalise on this innovative tool and take further measures to make it sustainable in order to strengthen the management of health facilities

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Confident results-based financing – Improving the statistical robustness of pay for performance decisions in Afghanistan

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Background: Pay-for-performance (P4P) schemes aim to improve service delivery by financially incentivizing providers based on their performance. P4P decisions typically rely on point estimates obtained from samples of patients or health facilities, which can lead to both Type I (failing to remunerate providers who achieved targets) and Type II errors (remunerating providers who did not meet targets). Against this backdrop, we piloted a methodology to generate confidence intervals for the P4P indicators within Health Emergency Response (HER) program implemented in Afghanistan in 2024-2025.

Methods: We piloted the construction of confidence intervals for one quarter of intervention on the service provision verification metric, which is one of nine metrics used to assess service provider contracts in the HER program and determines 10% of the service providers" payment. It is a percentage calculated for 11 indicators pertaining primarily to mother and child health interventions by checking health facility records and patient verification at household level. This score was calculated for the 15 service providers delivering basic health services care across all 34 provinces of Afghanistan based on data from a sample of 375 health facilities and just under 18000 household visits nation-wide.

Results: Service verification scores ranged between 60-95%. By applying a bootstrap resampling method we created confidence intervals whose upper limit did not exceed 100%. Using the upper limit of the confidence interval rather than the point estimate for decision-making led to an approximately 50% increase in the number of service providers achieving the 85% performance threshold. This decrease in the ability to discriminate between service providers could be compensated by increasing the performance threshold to 95%.

Conclusion: Integrating increased expectations regarding performance with confidence intervals for P4P decisions represents a significant advancement in performance-based financing. Adopting such methodologies can lead to more statistically robust and fair health financing strategies.

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Community perception about quality of care and expectations of health insurance in the rural district of Gothèye in Niger

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Question: The Ministry of Health and Enabel (Belgian agency of development) plan to implement a health insurance to contribute to the universal health coverage(UHC) in Gothèye district where a results-based financing (RBF) was implemented since 2019. We report a community qualitative survey about perception of quality of care and expectations of health insurance.

Methods: We used a convenience sample. We randomly selected 420 patients(30 patients registered at outpatient department in 12 health centers and 60 at the Gothèye District Hospital) from July to December 2023. An independent community-team including a team leader, communication officer, a data entry clerks (previously trained) interviewed these patients from 12 to 18 march 2024. Data were collected by opensource app, sent to a password secured server accessible only to investigators.

Results: We enrolled 392/420(93%) from the sample size, 17 were excluded because have not used health services, being 375 interviewed. Among 375 persons median age was 15, interquartile range (2-25), 187(50%) being between 15-84 years, 258(69%) females, 287(77%) agricultures, 248(66%) illiterate, and 349(93%) married.

Regarding quality of care, waiting time was perceived short 294(78%), and 367(98%) were globally satisfied. Suggestions for improvement were : reinforce (1) equipment 259(69%), (2) availability of drugs 195(52%), (3) qualified staff 149(40%) and (4) the referral system (ambulance) 97(26%).

Overall, 279(74%) were interested in health insurance, willing to register all members; 301(81%) would trust a health insurance supervised by community representatives. The preferred frequency of payment for health insurance was 157(42%) annually, 99(26%) not mentioned, 68(18%) quarterly and 51(14%) bi-annual.

Conclusions: The majority of persons interviewed are highly satisfied with the quality of care. Also, most of the persons interviewed were interested to register all family members and preferred annual payments within insurance scheme supervised by community representatives. Suggestions for improvement of quality of care were related to health system strengthening (availability of qualified health staff, equipment, ambulance, and drugs availability).

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Community participation to design a health insurance scheme in Gaya health district of Niger

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Question: From 2017-2021, the Ministry of Health and Enabel (Belgian agency of development) implemented a health system strengthening in Gaya health district focused in a results-based financing to improve the quality of care in

preparation for a health insurance scheme. We aimed to involve community in designing of an efficient and effective health insurance by interviewing users of healthcare services in Gaya health district.

Methods: Sample size was calculated with a level of confidence of 99%, and estimating that 30% of the population of Gaya will adhere to a health insurance scheme, and a margin of error of 0.05%, a total of 3277 persons need to be interviewed.

We invited community representatives of all the villages of Gaya that provided inform consent to participate. Data was collected through focus group discussions lead by the investigators. Data was analyse by thematic and summarized using an Excel database accessible only to the investigators.

Results: We enrolled 2991 persons (93% of the sample size) from 182 villages of Gaya. The characteristics of participants were: median age 43, interquartile range 35-54years, 1594(53%) between 31-50years old, 2551(81%) men, 2619(88%) illiterate, 2646(88%) married, and 1598(53%) agricultures, 898(30%) used curative services for under five,1546(52%) used curative services in above 15years, and 2732(91%)trust the health system. There were 2998(99%) willing to adhere a health insurance scheme, and 2513(84%) would trust in a health insurance scheme, 2258(75%) willing to pay annually, 1749(59%) prefer to pay in quarter 4, and 2894(97%) wanted to adhere through a community collectors. The average intended contribution per person with compulsory membership for household members was 1,891 CFA, and average affordability threshold estimated for compulsory household membership: was 3,716 CFA.

Conclusions: The vast majority of persons interviewed trust health system which is the basis for implementing a health insurance. Most of the services used were curative for children under five and adults. The persons are highly interested in adhering a health insurance scheme, paying annually an estimated average of 3,716 CFA for compulsory household memberships.

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Cost-effectiveness of verification process under Performance-Based Financing in Burundi – Lessons learned

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Background: To improve the efficiency and equity of their health systems, several low-income countries have adopted Performance-Based Financing (PBF) policy. This approach, which focuses on improving access to health services for the most vulnerable populations, aims to attract health professionals to the most remote areas by offering performance-based bonuses. While verification to ensure the accuracy of health facility reports is a key component of this policy framework, some argue that this process incurs very high transaction costs. The objective of this study was to assess whether the verification process is cost-effective in Burundi and to propose recommendations and/or alternatives.

Methodology: A cross-sectional cost-effectiveness analysis was conducted from the perspective of the Ministry of Public Health. The study compared the implementation of verification versus its absence. Data on the costs and effectiveness of this intervention were extracted from five health provinces for the period from January 1 to December 31, 2020. These data were obtained from the database managed by the technical unit in charge of implementation of Performance-Based Financing. To assess effectiveness, the number of false reporting cases averted was used as the outcome indicator.

Results: The total cost of implementing Performance-Based Financing was estimated at USD 57,025,825 in 2020. Monthly quantitative verification in health facilities accounted for 4.4% of this amount (i.e., USD 2,501,011). Falsely reported amounts that were ultimately not disbursed totaled USD 3,464,427. The incremental cost-effectiveness ratio was USD 0.79 [USD 0.73 – USD 0.85] per false report averted through verification, which was well below the acceptability threshold of USD 2.28—the unit cost of the cheapest reported indicator.

Conclusion: Verification within the Performance-Based Financing framework in Burundi is cost-effective compared to its absence. Integrating a verification process into the design of service purchasing policies is justified and should be a priority to ensure their effective implementation.

P 365

Re-evaluating catastrophic health spending by incorporating hidden out-of-pocket expenses – A population-based study in Vietnam

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Introduction: Measuring financial hardship from healthcare is vital for tracking Universal Health Coverage (UHC) under SDG3. WHO and World Bank define out-of-pocket (OOP) expenses as direct payments to providers or pharmacies. This narrow definition excludes indirect OOP expenses—transport, meals, lodging for caregivers, and insurance premiums—potentially underestimating catastrophic health spending (CHS). In Vietnam, where family caregiving often substitutes for professional nursing, indirect OOP expenses may impose significant financial pressure. This study quantifies how excluding these costs underestimates CHS incidence.

Methods: A cross-sectional survey was conducted in Phu Tho Province, Vietnam, covering both rural and urban areas (Fig 1). Using two-stage cluster sampling, 1,339 households were selected from 20 clusters. Trained interviewers administered a locally adapted World Bank LSMS questionnaire via REDCap. OOP expenditures were calculated using both the conventional WHO/WB definition (direct OOP only) and an expanded definition (direct plus indirect OOP). CHS incidence was assessed using three thresholds: 10% and 25% of total household expenditure (CHS10, CHS25), and 40% of total non-food expenditure (CHS40).

Results: Including indirect OOP significantly raised CHS estimates. Using the conventional definition, CHS10, CHS25, and CHS40 were 33.8%, 11.5%, and 7.3%, respectively. With the expanded definition, these rose to 53.1%, 25.8%, and 19.7% (Fig 2). All increases were statistically significant ($P<0.001$). Notably, 258 households (19.3%) were newly identified as CHS10 cases only when indirect OOP expenses

were included. Depending on the threshold, CHS was underestimated by a factor of 1.57 to 2.69. These findings reveal a substantial unrecognized burden affecting vulnerable households and excluded from official statistics.

Conclusion: The current global definition of OOP fails to capture the full financial burden in contexts where informal caregiving is prevalent. In Vietnam, indirect OOP expenses are not incidental—they are integral to household health expenditure. This study highlights the need to revise global OOP metrics to reflect indirect OOP expenses, ensuring CHS indicators align with on-the-ground realities. Without such revision, health monitoring risks overlooking those most impacted by financial barriers to care.

Fig. 1

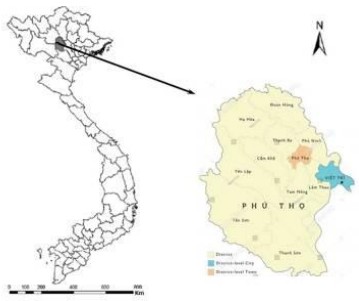

Figure 1 Study area: Phu Tho province, Vietnam

Fig. 2

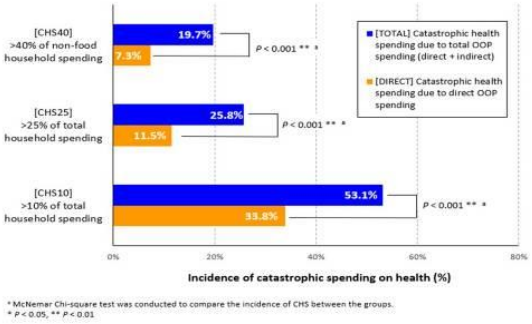

Figure 2 Comparison of incidence of catastrophic household spending (CHS)

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Gender disparities in financial inclusion – The potential of digital loans in empowering female health entrepreneurs in Kenya

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Introduction: In Sub-Saharan Africa, female entrepreneurs are well-represented in the healthcare sector but face significant challenges in accessing financial services. Digital financing technologies have the potential to close this gender-gap. This study aimed to assess the readiness, perspectives and gender disparities in (digital) loan characteristics among Kenyan health Small and Medium Enterprises (SMEs).

Methods: An exploratory qualitative phase consisting of IDIs (N=24) with health SME owners informed the development of the tool for the subsequent quantitative phase in which we surveyed 410 health SME owners. A logistic regression model was applied to gain insights into factors associated with digital loan uptake. Additionally, we analyzed real-world loan-history data from 850 health SMEs to compare loan profiles of traditional versus digital loans, with a focus on evaluating gender disparities.

Results: The IDIs identified low trust in digital lenders, yet the survey results showed high satisfaction among those who had used digital loans and a strong demand for loans in general was found among health SMEs, regardless of gender. Health SME owners were more likely to take up a digital loan if they were prepared to take a risk, had monthly financial needs and a positive perception of digital loans. The loan-history data showed a gender difference in the initial traditional loan amount, with women-owned businesses receiving the lowest amounts and partnerships the highest. In contrast, this gender-gap disappeared for digital loans. We also found that women-owned businesses benefit significantly from digital loans, since over 50% experienced substantial growth over time, indicating an increase in their digital revenues likely associated with these loans.

Conclusion: This study shows that there is a financing gap among health SMEs in Kenya and demonstrates the potential of digital loans to boost financial inclusion in the healthcare sector. There is a need for tailored loan products and strategies that account for firm characteristics, risk attitudes and gender-specific barriers to ensure equitable access to finance. Additionally, financial literacy training for female entrepreneurs could help overcome risk aversion and increase their willingness to seek external financial support during times of significant financial need.

P 367

Digitizing pregnancy care journeys for provider-driven quality improvement – The ValuePoints Approach in Tanzania

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Q: Africa bears 21% of the global disease burden but receives only 2% of healthcare financing, leaving vulnerable populations underserved. Limited budgets and fragmented data hinder high-quality, patient-centered care. PharmAccess developed MomCare, a digital Value-Based Healthcare (VBHC) program in Tanzania to address this gap in maternal care access and quality. A key challenge in maternal care is the lack of complete, actionable data to track care quality. Traditional reporting tools provide aggregate indicators but lack patient-level insights. This study examines how ValuePoints (VPs), a patient-centric quality metric, enhance maternal care utilization, provider motivation, and patient outcomes.

M: VPs were introduced in 2023 as an innovation within MomCare. VPs quantify care quality by assigning points to key maternal services (e.g., early antenatal visits), making care completeness visible and actionable. Up to 10 VPs were assigned per pregnancy, based on international and local guidelines. VPs were integrated into 30+ clinics in Hanang, Tanzania, using existing digital tools to minimize reporting burden. Real-time dashboards display achieved, remaining, and missed VPs, allowing providers to track improvements (Figure 1). The system supports:

Interoperability – Links to DHIS2 using FHIR standards for national integration.

Performance-Based Financing (PBF) – Links VPs to financial incentives for better care.

R: From Jan–Dec 2023, total VP scores tripled (9.7% → 31.8%) across the 9,759 completed pregnancy journeys (Figure 2). The reported care delivery showed a significant increase across all key indicators. Patient-experience surveys (n=5,588) showed 95.5% healthy newborns and 98% maternal care satisfaction. Provider surveys (n=60) confirmed VP dashboards improved feedback and teamwork. One provider noted: "This program guides us in areas to improve, making us better."

C: MomCare bridges maternal care data gaps in Tanzania, providing real-time insights for quality care. Unlike static DHIS2 reports, VPs track individual patient journeys for data-driven decision-making. The VPs improve care delivery, provider collaboration and motivation. The PBF model further incentivizes value-driven care. Despite infrastructural challenges, the findings demonstrate the feasibility and impact of digital VBHC models. These findings support national adoption of digital VBHC models for advancing maternal health outcomes across low-resource settings.

Fig. 1

Fig. 2

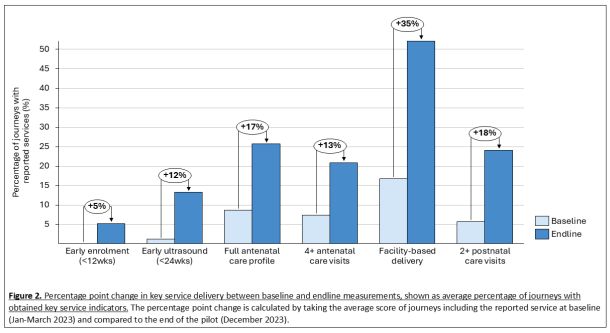

Figure 2. Percentage point change in key service delivery between baseline and endline measurements, shown as average percentage of journeys with obtained key service indicators. The percentage point change is calculated by taking the average score of journeys including the reported service at baseline (Jan-March 2023) and compared to the end of the pilot (December 2023).

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How is social health insurance implemented in Benin? A multiple case study in three health districts

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Introduction: The Beninese government has committed to improving access to health services for the entire population. It launched in 2019 a new social health insurance (SHI) programme specifically targeted to the poorest population. This study aims to assess how this SHI programme is implemented in different contexts and how stakeholders perceive it.

Methods: Multiple and contrasted case studies were conducted in three health districts, selected based on their geographical, demographic, cultural, economic and health diversity (Djougou-Copargo-Ouaké, Dassa-Glazoué and Abomey Calavi-Sô Ava). Data were collected from April to July 2024. Data were collected through documentary analysis, 140 semi-structured interviews, 18 focus group discussions and non-participate observations with the SHI programme"s beneficiaries, health workers, community leaders, and non-beneficiaries of the programme. Data were analysed using deductive and inductive thematic approaches with NVivo software 14.

Results: The main SHI intervention components were: (1) raising awareness, (2) identifying beneficiaries, (3) setting up benefit package, (4) strengthening health services, (5) healthcare services delivery, and (6) reimbursement of health facilities. Our results show several implementation gaps, issues and challenges: targeting of the poor faced inclusion and exclusion errors; community awareness efforts did not result in sufficient knowledge of the benefits package by beneficiaries; some health workers were insufficiently trained; card readers for beneficiary identification were often lacking; a multiplicity of forms have to be filled out; delays were observed in the reimbursement of healthcare facilities. Adaptation mechanisms were locally implemented to ensure the continuity of services to beneficiaries. However, strained relationships, including frustrations and conflicts between health workers and beneficiaries, were raised.

Conclusion: This study highlighted the challenges of implementing social health insurance in Benin. It also confirms the importance of conducting implementation studies to ease bottlenecks on the path towards universal health coverage.

Keywords: Social-health insurance, Implementation study, Benin

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Influences of equity in the universal health coverage (CMU) on the general mutual insurance for civil servants and state agents in Côte d'Ivoire (MUGEF-CI)

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The integration of CMU into the health system in Côte d'Ivoire represents a major turning point in improving equitable access to healthcare for the population. How do the equity criteria of CMU influence the organization of MUGEF-CI services? In short, what is the structure of equitable contributions? What are the consequences for MUGEF-CI"s benefits? And how do the public servants react to new service offers? The main objective is to analyse the effects of the advent of the CMU on the MUGEF-CI and its members.

To do this, a qualitative study was conducted in Bouaké with a population of mutualists. They are leaders of the MUGEF-CI, leaders of unions affiliated to the mutual, and men and women mutualists. The population surveyed is 100 people based on the information saturation criterion.

The findings indicate that civil servants are subject to a 1.5 euro deduction on their monthly levies in accordance with fair

contributions. The basic regime of MUGEF-CI and CMU are aligned, with generic drugs being generalized for all first aid purposes. Similarly, some of the prestige programs previously offered by the Mutual have disappeared, and the new proposals from the Mutual have become less attractive to some public servants. The officials view the CMU as an instrument for destabilizing the MUGEF-CI.

Some trade union associations set up new mutual groups and some mutual members turn to private insurance in the hope of catching up on the benefits lost with the advent of the CMU.

Keywords: Côte d"Ivoire, CMU, Equity, MUGEF-CI, Healthcare.

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Transforming emergency readiness at lower-level health facilities in Uganda

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Transforming Emergency readiness at lower-level Health facilities in Uganda

By Lillian Barungi, Margeret Katusiime, Nakisuyi Cissy

Background: Despite the critical importance of emergency care, 64% of healthcare facilities in Uganda lack a dedicated emergency area,[1] and the capacity to deliver emergency services at lower-level facilities remains significantly inadequate.[2] In 3 select districts of Busoga, zero HCIVs of the 7 had a functional emergency unit. In addition, there was no dedicated health worker, space, equipment or medicines coupled with poor referral connections limiting patient triage steps and appropriate care. While the benefits of Emergency Medical Services (EMS) in Uganda are well-documented,[3] there is a noticeable gap in published evaluations of interventions to address the issue. To bridge gap, an action research model that documents implementation processes of an intervention focused on improving emergency crisis prevention and management has been applied.

Methods: From the assessment, the facilities dedicated space, human resources, mobilized the necessary equipment and medical commodities. To strengthen emergency preparedness and readiness critical staff were trained; 21 health workers in Emergency Triage Assessment and Treatment (ETAT) and 15 nurses in Community First Aid Responder (CFAR), targeted follow up mentorships were conducted and a total of 55 staff were mentored, guidelines and tools were distributed, and additional medical equipment were delivered. Of all the 7 HCIVs, in three select districts, Namwendwa stepped up to functionalize the EMS unit.

Results: All the 7 HCIVs have designated emergency units or space at each of the facility and this has led to timely access to care. At Namwendwa specifically, the cumulative emergency attendances have been registered at 295 in 5 months compared to zero. On average the emergency response time for the critically ill is less than 30 minutes within the facility.

Conclusion: When health facilities are provided with adequate resources, tools, skills for emergency care, targeted support supervision, coupled with a dedicated team, the units are functionalized, ultimately providing immediate quality care for the critically ill and reducing the risk of harm to patients, staff and attendants.

[1] Uganda National Emergency Medical Services Strategic Plan 2020/21- 2024/25

[2] Ibid.

[3] Building emergency care Workforce in a low resource setting; The seed Global Health Experience in Uganda.

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Drivers of health system resilience – Community actors and the pathway to health equity

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Communities are at the forefront of experiencing and responding to diverse shocks and stressors. However, some face additional vulnerabilities as systemic failures exacerbate disparities and create structural barriers to accessing effective care. The COVID-19 pandemic demonstrated not only how these shortcomings in health systems can intensify inequities in populations but also how communities significantly contribute to mitigating and responding to health crises by bridging these systemic deficiencies (Witter, 2023; Saulnier, 2021; Gilson, 2017). It further highlighted that health systems do not operate in isolation; they are deeply embedded within communities" social, economic, and environmental contexts. As such, communities are critical drivers of resilience and essential for strengthening health systems (Witter, 2023; Bhandari, S., & Alonge, 2020).

Despite their crucial role, a fundamental gap remains in understanding the relationship between health system resilience and community resilience, particularly how both navigate local shocks and stressors while managing broader systemic challenges (Saulnier, 2021; Gilson, 2017; Patel, 2017). This study investigates how community resilience is conceptualised within health systems and explores the key actors involved, their roles, and how they drive resilience. Clarifying this dynamic is essential for designing health systems that address the needs of communities disproportionately affected by structural inequities, resource limitations, and geographic isolation.

Grounded in findings from a scoping review, we present a conceptual framework to explore the role of formal and informal community actors in health systems resilience. The framework will guide an empirical study investigating the health-related actions and contributions of actors within a vulnerable community and their impact on the health system's resilience. This study will examine how these contributions navigate systemic deficiencies and identify areas where health systems can address gaps without overburdening communities. We welcome feedback on the framework, discussion about its application to real-world contexts, and explore future use cases. Ultimately, this research aims to inform the development of health systems that are both adaptive to community needs and responsive to systemic challenges, ensuring equitable and sustainable health outcomes.

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Absenteeism of healthcare workers in primary healthcare in sub-Saharan Africa – A scoping review

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Introduction: Sub-Saharan Africa is facing a severe crisis in medical human resources. Primary healthcare is the most affected. This problem is aggravated by absenteeism, implying that healthcare workers are absent on duty during scheduled working hours. This scoping review maps existing literature on absenteeism among primary healthcare workers in Sub-Saharan Africa.

Methods: This scoping review complies with Population Concept Context guidelines of Arksey and O"Malley and PRISMA 2020 checklist. A literature search (Medline, Embase, Scopus, Africa Index Medicus) was performed from inception up to December 2023, in collaboration with a medical information specialist. Peer-reviewed English published literature was considered. Screening of titles, abstracts and full-texts was done by two independent reviewers.

Results: Twenty-four studies were included from 7 of 46 Sub-Saharan countries (15%). Prevalence of absenteeism varied from 14% to 49%. Causes at individual and health-system level were explored in 16 studies (67%) and included: physician dual practices (75%), low wages (69%), insufficient supervision (56%). Consequences at healthcare worker and patient level were described in 14 studies (58%) and included: hindered/delayed access to care (64%), high workload (29%), increased treatment costs when patients are forced to attend private facilities (22%). Recommendations to address absenteeism were provided in 18 studies (75%) and included: regular supervision (33%), performance-based rewards/punishments (33%), augmented salaries (33%).

Conclusion: Absenteeism is highly prevalent among primary healthcare workers in Sub-Sahara Africa. Its adverse impact on both healthcare workers and patients is profound. The complexity of different individual and health system causal factors shows that a multi-factorial approach to address absenteeism is warranted.

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Identifying demand-side indicators for health workforce planning models – A scoping review

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Background: Despite advancements in health workforce planning, there remains a lack of clarity regarding the demand-side indicators utilized in workforce projection models and the rationale for their application. This scoping review aims to identify, categorize, and analyze demand-side indicators currently used in health workforce planning.

Methods: This scoping review is being carried out in accordance with the framework developed by Arksey and O"Malley, and the guidelines set forth by the Joanna Briggs Institute. We searched Medline/PubMed, SciELO, Google Scholar, Embase, and Web of Science, and included studies that explore or mention demand-side indicators in the context of health workforce planning. Studies published in English, Portuguese, and Spanish from 2015 to 2025 were included.

Preliminary results: Thirty-one articles were included in this review. The types of professionals studied included palliative care specialists (3/31), dentists (3/31), doctors (5/31), general enterprise workforce/health professionals (12/31), health and social care professionals (1/31), midwifes (1/31), oncologists (3/31), physical therapists (1/31), cardiac surgeons (1/31), pathologists (1/31). The most frequently mentioned demand-size indicators related to population size and demographics (90.3%; 23/31) and disease prevalence/incidence and health status (83.9%; 26/31). Indicators related to access, quality, or administrative factors (12.9%; 4/31), insurance or economic variables (19.4%; 6/31), and patient preferences and behavioural factors (22.6%; 7/31) were among the less addressed indicators. This review is ongoing and aims to contribute to map existing demand-side indicators used in health workforce planning, identify gaps in the literature, and support evidence-based policy development in the European context.

Keywords: Workforce, Health workforce, Human resources, Forecasting, projection, Health Planning, Health Planning Guidelines.

Main messages:

1) Health workforce planning is essential for ensuring healthcare systems meet population needs by integrating supply and demand factors.

2)A scoping review on workforce planning that relies on dynamic demand-side factors will help track the evolution of methodologies used to anticipate future workforce needs.

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News media shaping health policy decisions in Nepal – Insights from journalists and health policymakers

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Background: News media play a crucial role in framing public issues, setting agendas, and influencing audience opinions and policies. While media are growing in numbers, there are insufficient scientific evidence on how the media contribute to inform health policy and program decisions in Nepal. This study aims to explore the influence of news media on urban health policy decision-making.

Methods: We conducted a mixed-methods study in Nepal. A quantitative online survey was administered to 525 journalists across all provinces using a self-constructed survey tool, while 11 in-depth interviews (6 journalists and 5 health policymakers) were conducted. The survey data were analyzed descriptively using SPSS, while the qualitative data were analyzed thematically using NVivo. Both data types were triangulated to inform the final interpretation.

Findings: The vast majority of journalists covered multiple beats, including health in Nepal. Specialized health reporting was limited with 92% reporting on multiple beats and 8% practicing health journalism only. Online news portals were found to be the primary news outlet for health reporting. Government reports and expert interviews were the most

common source of evidence, while scientific research papers were less frequently used. Both journalists and policymakers highlighted that the media has a notable impact on health policy, particularly in areas of tobacco control and malaria outbreaks. Some respondents reported an informal ally between journalists and policymakers to address corporate non-compliance with tobacco laws. Journalists faced barriers of financial constraints, access to accurate information, lack of specialized training, and threats for reporting sensitive issues. Policymakers largely recognized media as one of major source to shape their opinion. However, they also pointed out need for being selective and verifying the accuracy of news. Particularly, policymakers expressed concerns about misinformation, lack of credibility, and the insufficient expertise of journalists in appropriately covering health issues.

Conclusion: This study highlights the important role of news media in influencing health policy, despite challenges of limited access and understanding of scientific research and financial constraints. Strengthening collaboration between journalists, health organizations, and policymakers is key to improving the media's role in influencing policy decisions and actions.

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Introducing Planetary Health teaching for MBBS students, Malawi

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Background: Malawi is prone to extreme weather events. Cyclone Freddy caused major disruption in health services in Malawi in 2023: 16 affected local health authorities with loss of PHC & WASH infrastructure, increase in waterborne diseases, mental illnesses, lack of chronic care access. Estimated $14.4 Million in health costs. Escalated cost of care access (mobile clinics & air lifting ambulances), rebuilding, engaging more staff. Additional costs of poor access to regular services such as NCDs, maternal and newborn health. 79 health facilities were affected; 74 of them were functional, but inaccessible, while 5 had suspended operations altogether because of a significant disruption of infrastructure, water or electricity supply, and medical equipment or supplies.

Family Medicine could be key in Malawi for integrating planetary health into primary and community care. Challenges that Malawi is facing requires medical education to transform with more attention into building resilience of communities and reducing vulnerability of the healthcare system.

In 2024 a teaching program was initiated for undergraduate students on Planetary Health, disaster preparedness and environmental conservation initiatives. This initiative aims to equip medical students with knowledge on climate-health connections.

We aimed to evaluate the structured teaching sessions on climate change and health, delivered by Family Medicine registrars and faculty to undergraduate students.

Method: Intervention: 1 day of didactic lectures, 1 day class-based scenario simulation ("mock village visit") teaching sessions covering climate impacts, mitigation, and adaptation.

Participants: Undergraduate medical students on a 4-week Family Medicine rotation.

Facilitators: Postgraduate family medicine registrars, family medicine lecturers as supervisors/mentors

Assessment: voluntary pre/post knowledge self-assessment and student feedback.

Descriptive data analysis using Excel.

Results:

- Pre-module self-scored knowledge average 1.8/5; post-module self-score average 4.3/5, showing raised understanding of concepts.
- Quality of teaching scored as 4.6/5, indicating effectiveness of teaching method.
- Overwhelmingly positive feedback by students.

Discussion:

- Integrating climate change education in Family Medicine enhances holistic patient care.
- Focused teaching sessions effectively educate future doctors.
- Future steps: Expansion in curricula and assessment of long-term knowledge retention.
- Family Medicine registrars can be key advocates for climate-conscious healthcare.
- Need for capacity building among faculty
- Postgraduate family medicine registrars are well-placed to teach planetary health to medical students.
- The exposure incites interest in the nexus between climate change and health
- Better integration of concepts with clinicals scenarios students see every day needed
- Students show the ability to find solutions to reduce vulnerability and improve resilience of their communities

Fig. 1

Fig. 2

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Utilizing an innovative digital hub to address research barriers among medical students and early-career doctors in Africa

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Background: Medical students in Africa face significant barriers to participating in research, including limited access to skills training, mentorship, and opportunities for publication. These challenges hinder their contribution to global health knowledge and their ability to compete in international research settings. The Global Health Research Lab (GHRL) Online is an innovative, digital solution to bridge this gap by providing a comprehensive, inclusive, and accessible platform for research capacity building.

Methods: GHRL Online functions as a dynamic online hub, offering free learning resources, access to grants, skill-building courses, workshops, and webinars on critical research topics. It facilitates mentorship and collaboration by connecting Nigerian medical students and early-career medical professionals with global researchers and peers from low- and high-income countries. Additionally, GHRL offers an open-access peer-reviewed journal to enable students and early-career medics to disseminate their research outputs. Strategic partnerships with universities, research institutions, and speciality groups further enhances access to resources and mentorship opportunities.

Results: The platform significantly enhances the research capacity of medical students in Africa. Students gain essential skills in research methodology, academic writing, and data analysis. Increased opportunities for mentorship and peer collaboration foster mutual learning and innovation. The GHRL journal will provide students and early-career medical professionals with a platform to publish their work, enhancing their visibility and recognition within the global health research community.

Conclusion: By addressing the barriers to research participation through a tailored digital platform, GHRL has the potential to transform research engagement among medical students in Africa. This initiative can foster a new generation of global health leaders equipped with the skills and experience to advance medical research and address critical health challenges in low- and middle-income countries.

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E-learning for capacity building of nurses in district surgery in Burundi – A pilot project

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Introduction: The MoH introduced district surgery to improve access to surgical care. Faced with limited human resources, an e-learning programme was set up to strengthen the skills of health centre nurses (HCs) in terms of surgical referrals, early diagnostic and pre-transfer patient care. This presentation aims to review the effectiveness and feasibility of this approach.

Methods: A Moodle platform was used to deliver a 30-day online training course to 70 nurses from 35 HCs. Ten medical specialists were trained as trainers. Follow-up visits were made to each HC and a pre- and post-training evaluation was carried out. The results were compared with a control group who had received face-to-face training.

Results: E-learning was very well appreciated, with 96% of trainers and 98% of nurses considering it as an innovative approach. The average assessment scores (pre- and post-training assessment) increased from 56% to 72% for e-learning and from 60% to 74% for face-to-face, an improvement of 28% and 23% respectively. The participation rate increased from 66% to 82% for e-learning. The cost of e-learning was significantly lower than that of face-to-face training. The cost was significantly reduced by 16,000 euros, from 19,000 euros to 3,000 euros. Access to e-learning and participation in online training may have been affected by unstable electrical infrastructure and lack of reliable internet connection in some regions.

Conclusion: E-learning is an effective and promising strategy for in-service training of district surgical nurses in Burundi. It can improve skills at a lower cost, reach a large number of professionals at the same time and allow them to access training materials at their own pace and convenience. It also enables the development of sustainable teaching resources (virtual libraries). Scaling-up requires solid basic infrastructure, reliable connectivity and adequate access to electricity.

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Advancing research and development in sub-Saharan Africa – The SAHRI Fellowship Program

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Question: How can collaborative training networks strengthen clinical research and biomedical innovation capacities in sub-Saharan Africa, to address pressing infectious disease challenges? The Sub-Saharan Africa Health Research and Innovation (SAHRI) Fellowship Program has been conceived to enhance clinical research and

biomedical innovation capacities in sub-Saharan Africa (sSA). The program aims to address global health inequities by developing a skilled workforce through specialized training in clinical research and methods, laboratory techniques, and regulatory processes.

Methods: SAHRI counts three pillars:

R&D capacity building: Fellows complete a 60 ECTS master-after-master in Tropical Medicine (MTM) at the Institute of Tropical Medicine (Belgium) and the *Systems Thinking in Biotech Development* course at KU Leuven (Belgium). They also receive hands-on training at a biotechnology company facility in Germany, learning to navigate the drug and vaccine development pipeline.

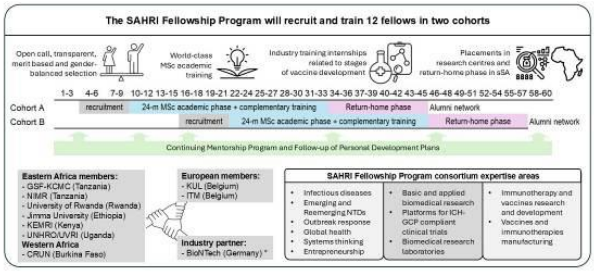
Mentorship and collaboration: Fellows are paired with senior researchers from leading African institutions, such as the East African Consortium for Clinical Research (EACCR) and the Clinical Research Unit of Nanoro (CRUN), with South-South and North-South partnerships, enhancing knowledge exchange.

Applied research and innovation: During a structured "return-home" phase fellows lead a research project, applying acquired research skills, strengthening local research networks. Fellows will secure PhD positions, research grants, and senior scientific roles.

Results:The SAHRI Fellowship Program will train 12 fellows over five years, with each fellow completing a master-after-master degree in Tropical Medicine, six months of hands-on training in biotech R&D, six months placements in research centers of excellence in sSA, and the completion of two collaborative research projects with mentors from sSA and Europe (MTM thesis; "return-home" research project).

Conclusions: By expanding the pool of skilled researchers and fostering partnerships, the SAHRI Fellowship will strengthen research self-sufficiency and contribute to innovation and health system resilience in sSA. The program ensures long-term impact by equipping fellows with the expertise, networks, and leadership skills needed to drive vaccine and medicine development in their home countries.

Fig. 1



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Are digital health initiatives in Pakistan understeered? A stakeholders' perspective

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Background: The long-term sustainability of digital health interventions (DHIs) in Pakistan faces significant challenges related to policy frameworks, financial sustainability, and health system integration exacerbated by poverty and poor infrastructure in remote areas. This study explored stakeholders" perspectives on barriers and opportunities to sustain DHIs.

Methodology: 38 stakeholders participated in sequential explanatory study, conducted in Karachi, Pakistan. Participants included government policymakers, academicians, primary healthcare practitioners and multilateral organization representatives. The study consisted of survey designed to explore policy options for sustainability of DHIs, followed by 4 focus group discussions (FGDs). The interview guide included questions on key areas: 1) Policy & advocacy support; 2) Funding models; and 3) Integration with existing systems. Data were analyzed using STATA and NVivo

Results: Survey findings indicate that majority respondents, i.e. 89.4% (34/38) viewed comprehensive updating of the National Digital Health Policy as impactful tool for promoting and sustaining DHIs. 78.9% (30/38) stakeholders believed that Public-Private Partnerships (PPPs) could be highly useful for integration of DHIs into existing public sector health facilities. 52% (20/38) believed funding of DHIs through Global Health Initiatives (GHIs) such as GFATM and GAVI could have a high impact on health systems strengthening. In FGDs, barriers identified to the sustainability of DHIs in Pakistan included lack of sustained funding commitments, gaps in policy frameworks, limited utilization by healthcare providers and limited awareness among target users. Participants recommended inclusion of guidelines on quality assurance, cost of service, data sharing and data security in the National Digital Health Policy.They also identified the need for capacity building of healthcare professionals to ensure smooth integration within the existing health system. The critical role of robust monitoring and evaluation framework and multisectoral coordination was also highlighted for ensuring sustainability of DHIs.

Conclusion: Effective governance and robust policy frameworks are crucial for sustaining and integrating DHIs in Pakistan"s healthcare landscape. PPPs, comprehensive telehealth policies, and global funding commitments can pave way for sustained digital health eco-system, reducing health inequities for underserved populations.

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Lessons learned from 2 decades of digital health failures in Senegal, Mali, Guinea, DRC, Congo-Brazzaville, Rwanda, Burundi, Ethiopia and Peru

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Introduction: Despite growing investments, many digital health projects in low- and middle-income countries (LMIC) fail due to key structural and operational challenges.

Aim: Investigate the key reasons for failure from experiences with digital health implementations in the past 20 years in Senegal, Mali, Guinea, DRC, Congo-Brazzaville, Rwanda, Burundi, Ethiopia and Peru.

Methods: During more than 120 HIS implementation projects, implementation logbooks have systematically been kept that document a wide range of problems, solutions, and workarounds, as well as the results that were obtained from implementing the solutions. Qualitative analysis of the

logbooks was performed for (partially) failed projects and feedback has been obtained from the local project managers.

Results: The analysis resulted in the identification of ten classes of issues.

A major issue is poor infrastructure, including unreliable electricity, internet, and hardware availability, especially in rural areas. Without these, electronic health records, telemedicine, and mobile health solutions struggle to function effectively.

Limited digital literacy and inadequate training among healthcare workers also hinder adoption. Many projects are introduced without proper capacity-building, leading to low engagement and resistance to change.

Financial constraints and donor dependency further threaten sustainability. Many initiatives rely on short-term funding, and when it ends, they collapse due to the lack of government support or financial models for continued operation.

Another critical barrier is lack of interoperability, with many platforms operating in silos and failing to integrate with national health information systems. This fragmentation limits data sharing, decision-making, and patient continuity of care.

Socio-cultural and regulatory challenges have the biggest impact on adoption. Communities may distrust digital health solutions, particularly those involving telemedicine or AI diagnostics. Additionally, weak legal frameworks around data privacy, security, and medical liability create uncertainty.

Conclusions: To ensure success, stakeholders must focus on infrastructure development, workforce training, financial sustainability, system integration, and strong regulatory policies. But mostly, a community-driven, government-supported approach is crucial for the long-term impact of digital health in LMIC.

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Technological innovations to improve mortality surveillance – Community, local leaders, and health authorities perspectives in southern and central regions of Mozambique

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Background: Sub-Saharan Africa lacks timely, reliable, and accurate national data on mortality and causes of death (CoD). This gap is due to the weak Civil Registration and Vital Statistics system, which makes it difficult to understand the dynamics of mortality in the country. Technological innovations such as Minimally Invasive Tissue Sampling (MITS) and Verbal autopsy (VA), have been introduced in Mozambique to ensure the availability of CoD information. However, little is known about how communities, local leaders, and health authorities perceive the implementation of these innovations. We assess the scalability of implementing MITS and VA as post-mortem innovations by exploring the perspectives of individuals, families, local leaders, and health authorities as producers and users of cause of death information.

Methods: Qualitative case study was carried out in two provinces in the south and center of Mozambique. 28 semi-structured interviews combined with 10 focus group discussions were conducted in two phases (December 2016 to August 2019 and September to November 2024). Audio material from interviews and focus groups was transcribed, systematically coded, and analysed using NVivo12®, following the Diffusion of Innovation theory.

Results: The study results suggest that innovative post-mortem procedures are crucial because they provide accurate and timely data and reduce the mortality data gap. However, participants emphasised that MITS and AV are simple and quick procedures that provide the necessary CoD information. They also pointed out that MITS and VA procedures in the context of mortality surveillance are consistent with local priorities and needs. They meet the need to collect and document mortality information in remote areas where health systems and civil registries often fail to capture or record such events. On the other hand, they meet the willingness of communities to know the CoD that these procedures determine. MITS and VA were considered key innovations for bridging the data gap in Mozambique. MITS was seen as a complex procedure and its scalability requires high financial investment, infrastructure and training. In contrast, VA was considered more flexible, cheaper, and feasible, although it does not provide more accurate and reliable information

Conclusion: MITS and VA were considered innovations to provide a necessary opportunity for mortality surveillance systems to record mortality and determine CoD in a simplified manner. To maximize their impact, a combined strategy integrating both procedures within Mozambique's mortality surveillance system is recommended.

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How community level healthcare workers in India are using their mobile phones informally to support their work – A qualitative study

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Healthcare workers face numerous challenges in their daily work due to health system weaknesses, including inadequate digital management and communication tools. To address these challenges, healthcare workers are informally using mobile phones and social media applications, such as WhatsApp and Facebook, to support their work. These informal, unregulated practices are initiated by the healthcare workers themselves, and offer a familiar and quick way to respond to their day-to-day work needs and plug gaps in the healthcare system at ground level.

This project explores the informal use of mobile phones by community-level healthcare workers and their supervisors in India. Informal use of mobile phones by healthcare workers is an under-researched topic, and theory-informed findings will provide insights on how these workers are using mobile phones and mobile phone applications to overcome existing geographical barriers, strengthen healthcare service delivery, and provide immediate access to information to fellow healthcare workers, patients, and other actors in the healthcare system. It examines the interactions between the informal solutions created by healthcare workers and formal health system governance arrangements.

Using a qualitative, ethnographic approach, this research centers on the practices and behaviors of frontline healthcare workers, ASHA and Anganwadi Workers, and their

supervisors in India. These are the all-female community-level workforce that delivers maternal and child health care services in India. The fieldwork and data collection for the research will take place in rural areas of Kalhandi, Orrisa, and urban data collection in Delhi. Data collection methods include observation of and semi-structured interviews with healthcare workers in their work settings. The project is conducted according to the Norwegian and Indian data privacy and research ethics regulations. The research builds on several theoretical approaches, including Lipsky"s work on street-level bureaucracy, Backes" work on the humanization of care, and Mörike"s work on workarounds.

The research findings will inform discussions on how health systems can better support the positive aspects of informal use of mobile phones, e.g., easier bi-directional communication between patient and healthcare workers, while managing the downsides, like how sharing and storing information in informal digital channels leads to loss of data from formal channels and privacy concerns.

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Decentralised maintenance model on functionality and availability of medical equipment in health care facilities in Burundi

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Decentralised maintenance model on functionality and availability of medical equipment in health care facilities in Burundi

In Burundi, biomedical maintenance remains a challenge for improving health services. In response, the Ministry of Public Health has developed a decentralised maintenance model.

This study analyses the impact of a decentralised maintenance model in the Burundian health system between January 2023 and February 2025 in the Buhiga health district, with the assumption that the model would have a measurable impact.

The main objective was to analyse the impact of implementing the model and to see whether the provision of appropriate premises (maintenance workshops), control and test measurement equipment would increase the quantity and quality of care within 16 health centers and 2 hospitals in the Buhiga health district.

Methods: The initial model was tested in two pilot provinces in Kirundo and Muramvya between 2017 and 2020, before being improved and extended to the provinces of Bujumbura and Rumonge between 2020-2023.

The model comprised four main, coherent and indissociable axes: i) Human resources: building the skills of maintenance technicians; ii) Financial resources: allocating a dedicated maintenance budget; iii) Material resources: building and equipping maintenance workshops with logistical resources; iv) Computerised Maintenance Management System.

Results: During the study period, the rate of functional equipment in use in Buhiga Health District increased by 1.85%. The number of preventive maintenance operations performed on medical equipment increased from 1,704 to 2,474, impacting 1,012 functional devices compared to 778 functional devices recorded before the implementation of the maintenance model.

The response time for corrective maintenance requests was reduced from 17 days to 7.69 days.

Conclusion: Although there is no biomedical engineering programme in Burundi to meet existing needs, the model developed showed that in a context of scarce resources, targeting preventive maintenance levels could have an impact on equipment functionality and ultimately on the quality of care.

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Sealing the leaky pipeline – A qualitative study on barriers and chances in achieving female leadership in global health research in Germany

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Introduction Despite women constituting the majority of the global health workforce, they are significantly underrepresented in leadership positions. Previous studies have identified various structural, institutional, and individual barriers to women's career advancement, but such research has been lacking for the German academic context. The objective of this study is to explore barriers and facilitators to women´s leadership in global health research in Germany.

Methods In June 2024, a workshop on female leadership in global health research was conducted in Berlin, Germany. The workshop was used to purposively recruit a sample of 20 female global health researchers with >5 years of work experience. We employed a qualitative design comprising five focus group discussions during the workshop and eight in-depth follow-up interviews conducted between June and November 2024, performing content-structuring qualitative data analysis.

Results We identified five themes and 16 sub-themes. (1) Personal qualities, such as a lack of self-confidence and leadership skills, make advancement difficult, while personal initiative has a supportive effect. In the (2) work environment, competition, hierarchies, and the inadequate implementation of the gender quota represent obstacles, while the support of mentors and supervisors as well as flexible working hours have a facilitating effect. With regard to (3) disciplinary specificities of the global health sector, structural impediments such as temporary contracts and international business trips hamper women's career advancement. Conversely, women-specific funding programs exert a positive influence. Furthermore, (4) patriarchal societal structures that lead to male privilege and sometimes misogyny result in often intersectional barriers manifesting as gender discrimination. Additionally, (5) gender-based socialization exerts a significant influence on individual behavior, leading to implicit bias among both males and females. It contributes to barriers through societal stereotypes, such as expectations associated with care work even in the workplace.

Conclusion This study demonstrates the necessity of a multi-layered approach to the promotion of gender equality in leadership positions in global health research in Germany. Changes in societal and workplace structures are required that effectively foster women's leadership, and a critical

examination of social gender roles remains of paramount importance.

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Future Studies in health policymaking. Using strategic foresight to inform a new policy on 'personal responsibility for health' in Cuba

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Question: Cuba is a low-middle income country with outstanding results in health. However, responsibility for health in Cuba has been traditionally defined as a government area of action. A strongly centralized approach to health led to "paternalistic" practices which in turn may have problematic consequences for citizen participation in health and for the long-term sustainability of health outcomes. There is a shared perception among scholars, policy-makers and the public of the need to increase personal responsibility for health in Cuba. It is expected that high levels of personal responsibility for health increases practices of healthy behaviors, individual participation, with consequently a positive impact on health for all Cubans. Nonetheless, the question of "how to do it"? is a source of debate in current Cuban society.

Method: Twenty-four representatives of five social actors (health sector, academics, government, NGOs and citizens) were consulted through individual and group techniques. Content analysis was carried out and foresight tools (Micmac, Mactor, Smic Prob Expert, Multipol) were used to carry out the structural analysis of the problem, map actors, build future scenarios and formulate strategies. **RESULTS:** A definition of personal responsibility for health was developed and validated, supported by a theoretical-conceptual framework. The levels of self-responsibility in a population and its relationship with several variables were evaluated. Key variables related to the levels of self-responsibility with health in the Cuban population were identified. Objectives and strategies for its promotion were agreed upon and the actors involved and their possible alliances or points of conflict were identified. A proposal for a strategic action plan was made to promote self-responsibility with the health of the Cuban population in the 2017-2030 horizon.

Conclusion: Our study contributed to a better understanding of the concept of "personal responsibility for health" as a complex phenomenon and to developing a strategic plan to enhance "personal responsibility for health". Additionally, this study has proven that the Strategic Foresight is a useful methodology for broadening horizons, exploring shared mindsets and mobilizing stakeholders towards actions. It is a recommended advocate for a greater dissemination and extensive use of this methodology in Public Health research.

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How the convergence of community promotes healthcare utilization in Rural West Bengal

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Indian healthcare delivery system is a complex, riddled with multiple powerful players, lack of a common vision, very low public funding and a host of insufficiencies. Rural healthcare is one of biggest challenges especially in unserved and underserved rural areas. Weak voices of people and low accountability are constraints to effective healthcare delivery. Health for all is a global strategy which gave high priority to community participation (WHO 1978). Awareness generation and change in behavior on public health issues are achieved through various capacity building activities. Participatory health development process involved relevant partners for health at all levels – individuals/community/service providers etc and promotes joint decision-making, implementation and accountability.

In this context, the West Bengal Voluntary Health Association initiated the Basic Health Care and Support Programme (BHCSP) in 2003. This people-centred program coordinated local CBOs and community groups/individuals to work together as a People"s Forum to identify excluded communities and health problems and negotiate with the healthcare providers for the resolution of these problems and the way people experience and exercise influence on their own lives, which involves collective engagement of influential stakeholders with varied interests, demands a deeper analysis of how power is manifested at the various levels (GP/Subdistrict/District levels) and also assists government in fulfilling its commitments to people by identifying operational/policy gaps and providing services in un-served/under-served areas. The program succeeded as there are five People"s Forums in 5 districts, which covers 1.5 million people in remote rural areas. And also assists the government in fulfilling its commitments to people by identifying operational/policy gaps and providing services in unserved/underserved areas. Everyone should receive adequate health, education, participation, equal treatment, and freedom. BHCSP and the People"s Forum are engaging with community members and citizens to sensitize them about their right to health to make informed decisions and demand their right to free and quality health services. A multi-stakeholder dynamic is developed to promote healthcare utilization by the People"s Forum, promoted by the BHCS program, sheds more light on the nature and outcomes of the interactions between local governments and health services.

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The burden of substandard and falsified medicines in central and west Africa – A systematic review of prevalence, detection methods and regulatory gaps

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Background: Substandard, falsified, unlicensed, and unregistered medicines threaten public health, particularly in West and Central Africa, where weak regulatory frameworks and informal pharmaceutical markets contribute to their widespread distribution. This systematic review assesses the prevalence, dosage forms, analytical techniques, and regulatory challenges associated with poor-quality medicines in the region.

Methods: A systematic review was conducted following the Medicine Quality Assessment Reporting Guidelines (MEDQUARG) criteria. A Medline, Embase, and PubMed search identified 467 articles published between January 2015 and December 2024. After abstract and title screening and full-text assessment, 17 studies met the inclusion criteria. Studies were evaluated based on methodological quality, medicine sampling techniques, and analytical approaches.

Results: The median prevalence of substandard and falsified medicines across the 17 studies is 26.9%, ranging from 0.5 % to 74.2%. The prevalence of substandard and falsified (SF) medicines was significantly higher in informal markets (up to

74.2%) compared to regulated pharmaceutical outlets (as low as 0.5 %). Tablets and capsules were the most analyzed dosage forms, particularly antimalarials, antibiotics, and maternal health medicines, with high failure rates in API content and dissolution tests. Despite their lower sensitivity, HPLC emerged as the most reliable analytical technique, while TLC and Minilab screening were widely used in resource-limited settings. The lack of regulatory enforcement, weak supply chain monitoring, and inadequate post-market surveillance remain major challenges, with significant variations in regulatory capacity across different countries.

Conclusions: This review underscores the urgent need for harmonized pharmacovigilance systems, stricter regulatory enforcement, and improved access to advanced screening technologies to combat the circulation of SF medicines in West and Central Africa. Strengthening collaborations between governments, regulatory agencies, and global health organizations will be critical to ensure medicine quality, patient safety, and pharmaceutical supply chain integrity in the Region.

Keywords: Substandard medicines, falsified medicines, pharmaceutical quality, regulatory enforcement, analytical techniques, West Africa, Central Africa, pharmacovigilance

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Group B streptococcus in Gabon – Vaginal carriage and phenotypic resistance profiles in Franceville

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Question: Group B Streptococcus (GBS), known to colonize the vaginal and rectal tracts, is a significant cause of neonatal mortality and morbidity. This study aims to determine the phenotypic antibiotic resistance profiles of GBS and to evaluate the prevalence and associated risk factors of colonization in outpatient pregnant women at the medical lab analysis of the Interdisciplinary Center for Medical Research of Franceville in Gabon.

Method: This retrospective and prospective study examined GBS vaginal carriage and resistance phenotypes among pregnant women (ages 14-45) living in Franceville over six months. Vaginal swabs were cultured on GRANADA selective medium. Antibiotic susceptibility tests were performed on the Vitek 2 Compact system. Data gathered in Franceville were redesigned at the Centre de recherche de Lambaréné (Cermel, Gabon) and statistically analyzed using R studio version 4.3.3 to examine the relationships between exposure factors and GBS carriage, using the Chi-square test, Pearson correlation, and Odds ratio, with a risk α set at 50%.

Results: Vaginal secretions from 100 women were analyzed. The prevalence of GBS colonization was 13%, with parity being the only associated risk factor. Antibiotic susceptibility tests revealed high resistance to clindamycin (77%), tetracycline (54%), and oxacillin (31%), and a reduced susceptibility to penicillin (23%). GBS strains were frequently resistant to tetracycline and clindamycin, with 46% being multi-drug resistant.

Conclusion: These findings highlight a significant concern in Franceville, with potentially severe implications such as spontaneous abortions, premature deliveries, and neonatal infections, potentially increasing neonatal mortality rates. It is crucial to use antibiotic susceptibility tests to guide the management and treatment of GBS colonization.

Fig. 1

Fig. 2

Antécédents gynécologiques		SGB+	SGB-	Spearson Cor (t, df)	p
Pregnancy age (weeks)	[1-12	7 (7%)	40 (40%)	0.786 (t=1.27 ; df=1)	0.425
	[16-28	3 (3%)	31 (31%)		
	[30-34	3 (3%)	16 (16%)		
Parity	Nulliparous	2 (2%)	22 (22%)	0.998 (t=20.29 ; df=1)	**0.031**
	Primiparous	1 (1%)	17 (17%)		
	Multiparous	10 (10%)	48 (48%)		
Abortion history	Yes	7 (7%)	45 (45%)	-	0.886
	No	6 (6%)	42 (42%)		
Preterm birth	Preterm+	0 (0%)	5 (5%)	-	0.375
	Preterm-	13 (13%)	82 (82%)		

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Developing a Triple Pillar-Triple target approach to increase contraceptive use in the Klouekanmè-Toviklin-Lalo health zone (ZS KTL) in Benin

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Question: Maternal mortality is high in Benin (391per 100,000 LB) and low contraceptive prevalence is one of the leading causes. In Benin, in 2019, in the KTL health zone, contraceptive prevalence was 4.5% compared with 12.1% at national level. Lack of affordability, low quality of services and socio-cultural constraints explain this situation. The question was what strategy should be used to increase contraceptive use in KTL health zone. Action research was conducted to improve the situation.

Method: This is a Triple Pillar-Triple-Target (TPTC) strategy implemented in the KTL Health Zone from 2020 to 2023. The three pillars of the model implemented were: i) removing financial barriers through a policy of completely free supply, including the management of side effects; ii) improving the quality of contraceptive supply through the training and mentoring of maternity health care providers; and iii) reducing socio-cultural barriers through a positive masculinity approach with the establishment of model men's clubs, trained and involved in community mobilization for contraception. The target groups were men, women and adolescents/young

people. Contraceptive prevalence was assessed before and after implementation of the TPTC strategy.

Results: In the KTL health zone, the model led to increased use of long-acting reversible contraceptive methods, that were perceived as inaccessible, with an increase of 67.3% between 2019 and 2022 (38.2% to 63.9%), while at the same time the national average decreased by 17.1% (53.3% to 44.2%). In addition, contraceptive prevalence increased from 4.5% in 2019 to 22.4% in 2021 and 34.8% in 2023, compared to more modest progress at the national level: 12.1% in 2019 vs. 24.2% in 2023.

Conclusion: The model developed, which improves the quality of care and reduces financial and socio-cultural barriers, has boosted contraceptive use. It should be the subject of policy recommendations to promote contraceptive use.

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Promoting well-being in mothers of children with intellectual disability – A Feasibility study of brief yoga and compassion meditation intervention for managing psychological distress in a resource-limited setting, Nepal

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Introduction: Mothers of children with intellectual disabilities (CWID) in Nepal face high stress, anxiety and depression, negatively impacting family quality of life and well-being.

Aim: This study aimed to explore the feasibility and preliminary effectiveness of a brief yoga and compassion meditation program (YCMP) in reducing perceived stress, anxiety, and depression, and improving emotional well-being and family quality of life.

Methods: A mixed-methods feasibility study was conducted. First, a feasibility randomized controlled trial (feasibility RCT) with pre- and post-intervention assessments involved 90 mothers of CWID (intervention: n=40, control: n=50). The intervention group received a 1.5-hour YCMP, including guided yoga, breathing exercises, and compassion meditation, with take-home materials to practice at home. A refresher training session was provided at 14 weeks after the initial YCMP training. Outcomes were measured using the Perceived Stress Scale, Hopkins Symptom Checklist-25 (anxiety and depression), and Beach Center Family Quality of Life Scale. Differences were tested using McNemar tests. Second, three focus group discussions (FGDs) with 24 intervention participants explored the intervention"s acceptability, practicality, and appropriateness using thematic analysis.

Results: The feasibility RCT demonstrated significant reductions in anxiety and depression and improved emotional well-being and parenting-related family quality of life in the YCMP group ($P<0.001$) compared to the control. FGDs revealed that mothers found that the YCMP improved their emotional and physical well-being, was culturally appropriate, and adaptable. However, time constraints were noted as a barrier to regular practice.

Conclusions: The YCMP is feasible and shows promising preliminary effectiveness in improving mental health and quality of life among mothers of CWID. The intervention is valued as a culturally appropriate, low-cost, and non-invasive approach. Larger trials and longitudinal studies are needed to confirm these effects and explore long-term benefits. Insights from the FGDs will inform further customization and implementation

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Women's empowerment and modern contraceptive use in poor-rich segment of population – Evidence from south Asian countries

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Background: Less than half of women of reproductive age in South Asia (SA) use modern contraceptives, leading to a huge burden of unwanted pregnancies, unsafe abortions, and inadvertent maternal deaths. Previous research suggests that women"s empowerment shows a pivotal role in improving various health seeking behaviours, including contraceptive use. The objective of this study was to explore the association between women's empowerment and utilization of modern contraceptives among both rich and poor women in SA.

Methods: We used the most recent Demographic Health Survey data of five South Asian countries (Afghanistan (2016-18), Pakistan (2017-18), Bangladesh (2017-18), India (2019-21), and Nepal (2016) to examine the current utilization of modern contraceptives. The main exposure variable was a combination (interaction) of socio-economic status (SES) and women"s level of empowerment (low, medium, and high), where SES was dichotomized into poor and rich; and women"s empowerment was divided into three categories: decision making, attitude toward violence, and social independence. Moreover, an overall women"s empowerment indicator was created by summing up the three dimensions of women"s empowerment. We applied both descriptive statistics and multivariable logistic regression techniques for data analyses.

Results: Most of the women possessed an overall "medium" level of empowerment across South Asian countries. When looked at by domain, attitude toward violence was lowest in Afghanistan, and social independence was lowest in Bangladesh. Decision-making autonomy was lowest among Pakistani women. The lowest modern contraceptive use (22.1%) was found in Afghanistan and the highest (53.2%) in Bangladesh. The multivariate results depict that the overall measure of women empowerment does not affect modern contraceptive use among either poor or rich women in most South Asian countries except India and Afghanistan. However, decision-making empowerment plays a significant role among both poor and rich women in the utilization of modern contraceptives in India.

Conclusions: The effect of women"s empowerment on utilization of modern contraceptives is not consistent across SA countries, and among poor and rich segments of the population. Of the three dimensions of women"s empowerment, the decision-making empowerment in household affairs emerged as the strongest determinant of modern contraceptive uptake in both poor and rich households in India.

P 396

Male perceptions and decision-making in contraceptive use – A study of Suriname"s interior"s maroon community

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Suriname faces one of the highest unmet needs for modern contraceptives (MC) in the Caribbean (22.8–28.4%), contributing to high rates of high-risk, unintended, adolescent pregnancies, and elevated maternal mortality—particularly among Maroon women in the rural interior. Despite constitutional guarantees of gender equality, women"s autonomy in reproductive decision-making is often limited by social and financial dependence on male partners, who typically hold decision-making power. Although men play a crucial role in contraceptive uptake, their perspectives remain underexplored, especially within Maroon communities. This qualitative study aimed to identify men"s perceptions of MC and their involvement in decision-making in Suriname"s interior, to inform future strategies for increasing male engagement and promoting gender equality. Thirty-four semi-structured interviews were conducted with Maroon men in three villages, and thematic analysis was performed using Atlas.ti. Four key themes emerged: knowledge of MC, reasons for use and non-use, and social norms and traditions. Findings show men"s knowledge of MC is limited, with a focus on condoms for self-protection against STDs, especially in extra-marital contexts. Misconceptions and taboos around female contraceptives (FC) persist, making open discussion difficult and limiting acceptance—except for family planning when partners are still in school or face health risks from multiple pregnancies. Economic concerns, such as the inability to provide for many children, also motivate support. While some men acknowledge the benefits of MC, use remains inconsistent. Despite most men highlighting joint decision-making, negative opinions and strong social norms emphasize the importance of offspring and reinforce gendered barriers to contraceptive use. In conclusion, men predominantly hold negative views on MC, especially FC, shaped by cultural values, fears of promiscuity, concerns about side effects, and taboos. Although many men claim decisions are made by women or jointly, their attitudes—together with women"s financial dependence—may influence decision-making, potentially limiting contraceptive uptake and reinforcing gender inequality (GI). Targeted education, community engagement, and open dialogue are essential to increase male involvement and promote gender equality in family planning. Limitations include limited generalizability due to the selection of villages near the capital and potential selection bias in participant recruitment.

P 398

Motivation of community health workers in Burundi, what lessons for their performance in maternal and child health?

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Context: Community health workers (CHWs) defined as « any health worker carrying out functions related to health care delivery; trained in some way in the context of the intervention, and having no formal professional or paraprofessional certificate or degree in tertiary education » constitute a cheap and low-skilled response to challenges in the primary health care system, in many african countries.

Since 2018, Burundi has undertaken a progressive scaling up of the CHWs Performance-Based Financing (PBF), which is currently, implemented in 13 provinces. Five provinces have experienced the use of monetary transfers to CHWs over time.

Alongside this, some recent studies identified that « PBF offers a nice to have opportunity to earn extra income », among other categories of motivational mechanisms.

Question: What is the relationship between the amount of bonus perceived by CHWs as financial incentives and their performance?

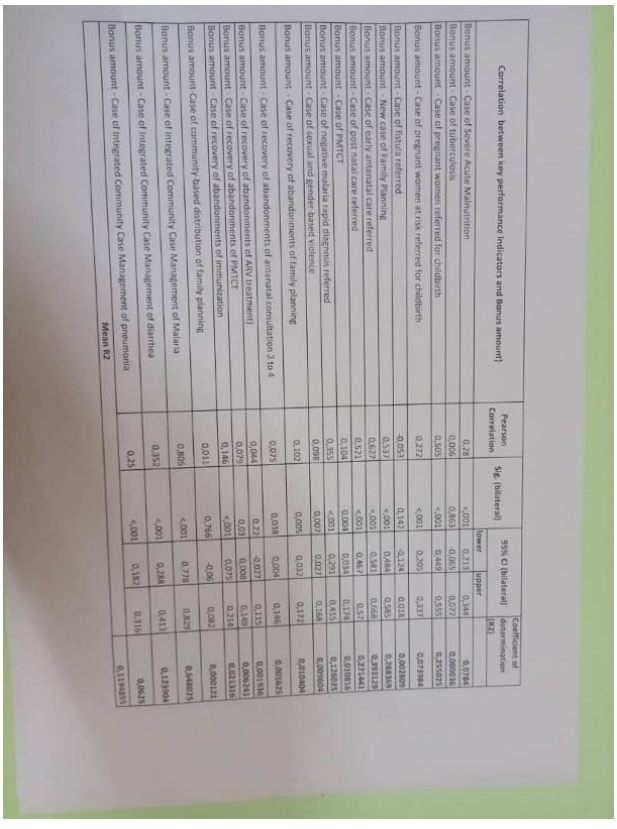
Methods: Performance was based on CHWs' achievements in maternal and child health (20 indicators extracted from DHIS2 database for 2023). Those indicators are related to referral of malnutrition cases, pregnant women for antenatal consultation, childbirth or post natal consultation, recovery of abandonments in family planning, vaccination or prevention of mother-to-child transmission of HIV, community management of cases of malaria, diarrhea, pneumonia or malnutrition.

The amount of bonus perceived by CHWs in 2023 has been extracted from the PBF database for 13 provinces and from the money transfert invoices for 5 provinces. We computed, using SPSS, the correlation between the amount of the bonus and each indicator, calculated the coefficient of determination (R^2) and then their mean.

Results: We found that 11,9% of the performance is explained by the amount bonus received by CHWs (R^2=0,119).

Conclusion: Further research ongoing aim to identify composition of the motivation as well as the other factors to explain all of CHWs performance. Indeed, recent studies suggested that overall PBF did not have an impact on the intrinsic motivation of health workers, but that the different motivational mechanisms triggered by PBF both positively and negatively affected health workers" basic psychological needs satisfaction.

Fig. 1



Correlation between key performance indicators and Bonus amount)	Pearson Correlation	Sig. (bilateral)	95% CI (bilateral)		Coefficient of determination
			lower	upper	R^2
Bonus amount - Case of Severe Acute Malnutrition	0,28	<,001	0,213	0,344	0,07844
Bonus amount - Case of tuberculosis	0,006	0,863	-0,065	0,077	0,000036
Bonus amount - Case of pregnant women referred for childbirth	0,505	<,001	0,449	0,555	0,255025
Bonus amount - Case of pregnant women at risk referred for childbirth	0,272	<,001	0,205	0,337	0,073984
Bonus amount - Case of fistula referred	-0,053	0,142	-0,124	0,018	0,002809
Bonus amount - New case of Family Planning	0,537	<,001	0,484	0,585	0,288369
Bonus amount - Case of early antenatal care referred	0,027	<,001	0,581	0,668	0,393129
Bonus amount - Case of post natal care referred	0,521	<,001	0,467	0,57	0,271441
Bonus amount - Case of PMTCT	0,104	0,004	0,034	0,174	0,010816
Bonus amount - Case of negative malaria rapid diagnosis referred	0,355	<,001	0,291	0,415	0,126025
Bonus amount - Case of sexual and gender based violence	0,098	0,007	0,027	0,168	0,009604
Bonus amount - Case of recovery of abandonments of family planning	0,101	0,005	0,032	0,172	0,010404
Bonus amount - Case of recovery of abandonments of antenatal consultation 2 to 4	0,075	0,038	0,004	0,146	0,005625
Bonus amount - Case of recovery of abandonments of ANV treatment)	0,044	0,22	-0,027	0,115	0,001936
Bonus amount - Case of recovery of abandonments of PMTCT	0,079	0,03	0,008	0,149	0,006241
Bonus amount - Case of recovery of abandonments of immunization	0,146	<,001	0,075	0,214	0,021316
Bonus amount Case of community based distribution of family planning	0,011	0,766	-0,06	0,082	0,000121
Bonus amount - Case of Integrated Community Case Management of Malaria	0,365	<,001	0,779	0,826	0,448035
Bonus amount - Case of Integrated Community Case Management of diarrhea	0,352	<,001	0,288	0,413	0,123904
Bonus amount - Case of Integrated Community Case Management of pneumonia	0,25	<,001	0,182	0,316	0,0625
Bonus amount - Case of Integrated Community Case Management of pneumonia Mean R2					0,1194855

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Effect of implementing quality assurance in maternity care in the Collines Department of Benin on the quality of care and maternal and neonatal mortality

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Context: Reducing maternal and neonatal mortality remains a challenge for the health system in Benin, particularly in the Collines department where, in 2021, 207.9 maternal deaths per 100000 live were recorded. The low quality of care in maternity is one of the main causes. In 2022, the EQUITE project, funded by AFD and implemented by Enabel, organized the implementation of quality assurance in maternity care to improve the quality of obstetric and neonatal care (EmONC) and reduce maternal and neonatal mortality.

Objective: To evaluate the effect of implementing quality assurance in maternity of the Collines department of Bénin on maternal and neonatal deaths.

Methodology: This is a prospective before-and-after study. Quality assessment criteria for EmONC based on WHO recommendations were developed and validated. A baseline assessment was conducted in 2022 followed by two semi-annual evaluations. Each evaluation led to the development and implementation of problem-solving plans. These include activities to strengthen skills or the technical platform, reorganize the provision of care, in response to the needs of clients whose satisfaction level is measured semi-annually. Two annual reviews are conducted to share results and best practices. Indicators related to obstetric complications and deaths were measured before and one year after the implementation of quality assurance.

Results: In total, 18 healthcare facilities were included, including 3 district hospitals. Only 22% had a quality score above 75% at the baseline assessment compared to 83% after 1 year ofter the implementation. Factors associated with good performance were regular (quarterly) supervision of activities (OR=2.8 p=0.002), periodic evaluation of staff technical skills (OR=1.7 p=0.03), sharing of best practices within the team (OR=10.5 p=0.03), equipment maintenance (OR=4.9, p=0.01), adherence to hygiene and sterilization procedures (OR=1.6, p=0.01), and measurement of client satisfaction (OR=4.1 p=0.02). The in-hospital mortality ratio per 100,000 live births decreased from 91.5 in 2022 to 81.7 in 2023. 190 neonatal deaths were reported in 2022 compared to 154 in 2023.

Conclusion: The quality level of EmONC has an impact on reducing maternal and neonatal mortality. However, success depends on the quality of the implementation of the problem-solving plan with key actions such as updating staff skills, effective equipment maintenance, and adherence to hygiene procedures.

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Strengthening accountability mechanisms to improve maternal health outcomes and establishment of ANC High Risk Clinics in CEMONC Sites Greater Rwenzori, Uganda

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Introduction: Maternal mortality remains a global concern and in Uganda is at 189/100,000 (UDHS 2022) with a target of less than 70/100,000 by 2030. The Uganda Ministry of Health launched region-led accountability mechanism through Local Maternity and Newborn Systems (LMNS). Reports indicated that most of the maternal deaths had attended ANC at least 4 times and could have easily been identified during ANC. It was realized that in as much as the establishment of ANC high-risk clinics had been adopted and rolled out countrywide, the Rwenzori region had not rolled out this national strategy. To address this, all CEmONC sites in Rwenzori Region were tasked establish ANC high-risk clinics. The approach aimed at identification of mothers with impending morbidities, retaining them into care and responding to the morbidity thus averting an obstetric emergency; ultimately improving maternal and newborn health outcomes.

Methodology: LMNS adopted a quality improvement collaborative nationally to identify, respond to, and retain high-risk mothers attending antenatal care. This was initiated in the Rwenzori region in January 2024 and implemented over one year. A census of High-Risk Clinics was conducted, Staff were identified and their skills strengthened on how to establish a high-risk clinic, all CEMONC sites established ANC High-Risk Clinics, personnel were aligned to run the High-Risk Clinics services delivery, a specific clinic day was schedule, Provision of tools and registers to track the collaborative; the clinics run a medical officer, laboratory personnel and a midwife . Weekly learning sessions on QI and MPDSR were initiated.

Results: Screening for High Risk during ANC increased from 0% to 80%; ANC attendances and birth preparedness plans by 74% from 1936 to 2599. Skilled deliveries by 72% from 867 deliveries to 1213 deliveries. Maternal deaths reduced from 3 to 1; and Fresh Still births from 7 to 1.

Conclusion: Establishing ANC high-risk clinics improves outcomes prevents maternal morbidities and mortalities. It provides for early identification of the risk mother, retention into care and quickly respond through early intervention. There is improved quality of ANC care and skilled birth attendance. This approach also improves coordination between levels of care, especially facility preparedness to respond to obstetric emergencies and early referrals.

Fig. 1

ANC visits

	2023	2024
January	155	155
February	133	150
March	172	201
April	150	171
May	190	229
June	163	197
July	162	258
August	205	232
September	173	244
October	168	273
November	158	263
December	107	226
	1936	2599

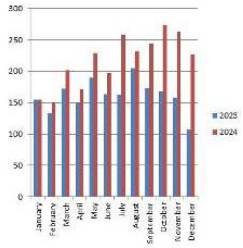
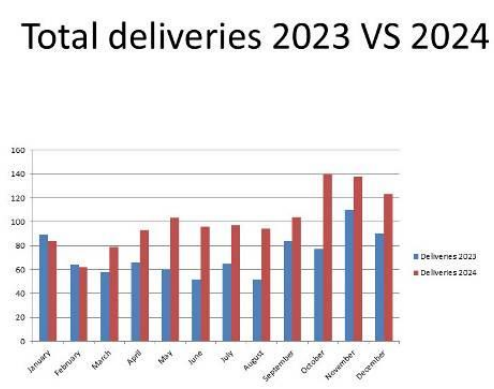


Fig. 2



P 402

Capacity building of health workers in various health packages resulting in improved clinical management in Uganda

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Introduction: Capacity building for health workers focuses on enhancing the skills and resources of health organizations and communities. The Rwenzori Local Maternity Newborn System (LMNS) embarked on strengthening the capacity of Midwives and Doctors from Comprehensive Emergency Obstetric and Newborn Care (CEmONC) sites. During regional support supervisions it was realized that health workers revealed a capacity gap in the management of obstetric emergencies. To address this a training and mentorship was conducted for frontline health workers on healthcare packages aiming to improve management of emergency obstetrics at CEmONC sites.

Methodology: A competency-based training package, adapted from the Uganda Safe Motherhood Life-Saving Skills materials, was utilized. This aimed at equipping healthcare workers with the necessary knowledge and skills to manage emergencies related to pregnancy, childbirth, postpartum care, and newborn management. Emphasis was on Post Partum Haemorrhage (PPH), pre-eclampsia, and newborn care, and how to improve health indicators. The content also included a review of national and regional indicators related to Maternal and Perinatal Death Surveillance and Response (MPDSR). Participants explored the differences between BEMONC and CEMONC. A post-training assessment looked at patient records assessing the management of women referred for emergencies until December 2024, particularly concerning PPH and pre-eclampsia and newborn care. 166 health workers were trained on essential maternal and newborn care package, while ETOO involved 20 Medical Officers

Results: At facility level, there is improved practices in early referrals from lower-level health facilities and enhanced foetal monitoring. Improved management of PPH and pre-eclampsia with improved outcomes. Also noticeable is improved management of PPH, pre-eclampsia and newborn care according to guidelines and an 80% increase in skilled birth delivery.

Conclusion: Capacity enhancement and repeated mentorships for health workers improves on patient management and hence patient outcomes. PPH and pre-eclampsia are the leading causes for referrals and obstetric emergencies however, by enhancing health worker capacity to mitigate these effects and subsequently reducing emergencies for those with indication.

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Tracking events to inform a health systems model of maternal healthcare outcomes in urban settings – Lessons learned from Lubumbashi, DRC

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Rationale: In urban settings, provision and use of maternal healthcare services is affected by complex dynamics and events, such as natural disasters, traffic, policies, and community activities. By systematically tracking such events, we can develop a health systems" model for simulating how disruptions influence provision and access to maternal healthcare. The model will inform strategies that anticipate system shocks and ensure accessibility to timely urban maternal healthcare services, thus improving health outcomes. This study presents the first phase of model development, describing documentation of events at micro, meso and macro levels in Lubumbashi (DRC), sharing lessons on data collection and the impact of events on maternal healthcare, which will serve as a foundation for model development.

Method: Since August 2024, primary data collection of events has been carried out by trained investigators. Information was collected at health facilities, city, regional and national levels from various sources **(**media, government announcement, healthcare facilities, etc.). Data is entered on a KoboToolbox form and weekly meetings are organized to review this data and evaluate the data collection process. Descriptive analysis is performed, providing an overview of events and their foreseen effect on maternal healthcare provision and use.

Result: We documented 125 events over 26 weeks, with a median of 2 events per week. Most events occurred in Lubumbashi city (n=43) and at national level (n=39). Disruption events included health policy changes (n=26), infectious disease outbreaks (n=15), election campaigns (n=12), and demonstrations (n=12). Most events lasted one day (n=55), with sources of information from healthcare facilities (n=83), government announcements (n=75) and media (n=36). Events had direct and indirect impacts on healthcare, e.g., early discharge of patients from hospitals due to doctors" strike, geographical inaccessibility to services due to blocked bridge, etc. Lessons learned include the importance of real-time data entry, documenting lag in effect, and reflections on event-health system links.

Conclusion: Collecting event data is time-consuming and requires a skilled team with tools adaptability, and task allocation. This vital information helps us understand how events disrupt maternal healthcare services and will be used to develop a model for testing strategies that promote system resilience to shocks and continued healthcare access.

P 404

Evaluation of the level of implementation of the reference system and counter-reference of obstetric emergencies in the save-ouesse health zone in Benin in 2024

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Context: Referral and counter-referral mechanisms (RCR) are essential in the healthcare system, ensuring proper care for patients. The Savè-Ouessè health zone is located in central Benin, covering an area of 2,534 km², and has two ambulances for medical evacuations. Intra-zone referrals are free for obstetric emergencies. The objective was to assess the effectiveness and quality of medical referral services for obstetric emergencies in 2024.

Study Methods: The study was conducted in the Savè-Ouessè health zone, which comprises 48 healthcare facilities, including 2 reference hospitals. It was a cross-sectional study with data collection over a period of 6 months (January-June 2024) using a form for processing RCR register records. Descriptive and analytical analysis was performed using Stata software with a significance threshold of 5%.

Results: A total of 273 cases were included, all related to obstetric emergencies. The average age was 26 years ± 6 years. The primary reason for referral was mainly the inadequacy of technical facilities (81.7%), and the causes, in decreasing order, were dystocias (42.5%), high-risk pregnancies (20.2%), immediate postpartum hemorrhages (11.4%), and complications of hypertension (13.2%). Only 32.6% of referrals were carried out with an ambulance, with the median arrival time at the reference center being 170 minutes. The outcome was favorable in 96.5% of cases for the parturient and 70.3% for the newborn. Bivariate analysis showed no significant difference between the causes and the evacuation duration (RC=1.5; p=0.6). The evolution of the mother-child couple also did not appear to be significantly influenced by the duration of evacuation (RC=2.4; p=0.75). Ambulance transport significantly reduced the average time it took for the pregnant woman to arrive at the referral centre (96 minutes VS 156 ; P = 0.008)

Conclusion: This study revealed that the average referral time in the area remains largely above 1 hour. However, the availability of ambulances significantly reduced this duration. The free service promoted referrals. Nevertheless, the neonatal morbidity and mortality rate (29.7%) remains very high. Additional efforts are needed in terms of human resources, equipment, and technical facilities to reduce these deaths in the area.

P 405

Single twist factor for improved uptake of maternal health services in selected health facilities in Uganda

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Introduction: Globally, improving the quality of health of nationals in any country is an international priority and a Sustainable development goal. Uganda has registered improvement in maternal indicators case in point is the Maternal Mortality Ratio; in 2011 it was estimated at 438, 336 in 2016 and 2022 has reduced to 189 maternal deaths per 100 000 live births. It is unlikely that the 2030 targets will be met in a system with lots of challenges. Electricity coverage is estimated at 47.1% of the population and Walukuba HCIV located in the city still suffers unstable power supply, frequent power outages, inadequate fuel to power the generator when the main grid power is off or unstable. Yet the budget allocated to the health facility is insufficient to meet needs resulting in poor service quality and increased referrals even for patients that should be managed at the level.

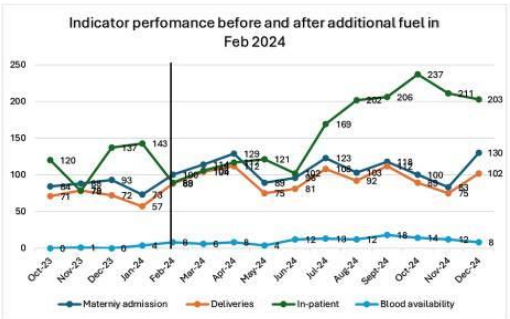
Methods: In February 2024, a decision to complement the facility fuel by providing additional fuel to run the generator was taken so that the recommended package for the level can be delivered to ensure 24/7 power availability, blood storage at facility when there is power outage, and a memorandum of understanding has been signed.

Results: There has been improved performance across the tracked indicators as shown in the graph. Maternity admissions have increased from 100 to 130, translating into 30% increase, inpatient admissions increased from 89 to 203 showing 128% increase and health facility deliveries increased from 88 to 102 (15.9% increase) in nine months. Additionally, the health facility improved blood availability from an average of 2units to 10 units in 9 months and reduced referrals decongesting regional hospital. The observed variations are due to the renovation of the wards, lapse in fuel supply, stock out of commodities including blood and seasonal variations in the region.

Conclusion: Constant power availability can increase up take of services and improve management outcomes. This ought to be accompanied by a good accountability mechanism to avoid misuse. It is therefore recommended that each health facility has a reliable alternative source of power to manage the patients according to the standards.

Ref
MOH 2022: SHARPENED PLAN AND INVESTMENT CASE II

Fig. 1



P 406

Rolling fast to save mothers' lives – A key innovation in Kamuli district, Uganda

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By Margaret Katusiime, Jonathan Musana and Moses Lyagoba

Introduction: Globally, 15% of all women of childbearing age develop complications in pregnancy, childbirth, and post-partum. In Uganda, it is estimated that the maternal mortality ratio of 189 maternal deaths per 100,000 live births yet these can be prevented with a functional ambulance system. In Busoga region, only 7.7% of the emergency cases arrive at the referral sites in ambulances quarterly. This can be attributed to lack of ambulances and/or fuel, coupled with lack of an effective coordination mechanism.

Methodology: In 2022, upon receiving an ambulance and having learnt from the previous ambulance mismanagement and miscoordination, the district constituted an ambulance coordination committee for ambulance evacuations from the 71 health facilities within Kamuli district. Additional financial resources were pooled from referring health facilities and all evacuations coordinated by the committee. Each health facility pays the quarterly agreed amount and in case of an emergency, the coordinator is alerted to dispatch the ambulance. An accountability mechanism exists, monthly reconciliations done with the fuel station, and regular updates provided to stakeholders.

Results: In 15 months (5 quarters), 363 evacuations have been registered compared to zero before the model and only 0.5% of the evacuated cases had poor outcome. This improvement can be attributed to leadership, transparency, accountability, timely communication and the overall coordination. As a result, the response time is 45 minutes during day and 1 hour 10 minutes in the night. No evacuations were done before the model, so no comparison data is available.

Recommendation: With limited resources in low- and middle-income countries, the money allocated for ambulance fuel is adequate, therefore a local accountability mechanism and pooling of funds have demonstrated to give good results. For it to be sustainable, streamlining coordination, building capacities of staff and improving data management is paramount.

Ref

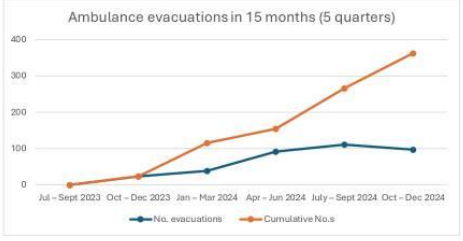
Babughirana G, Gerards S, et.al: Assessment of the uptake of lifesaving services in , Uganda, 2020

Okong Doreen Alaleit et.al: Description and analysis of the emergency obstetric interfacility ambulance transfers to Kawempe Hospital in Uganda, 2023.

WHO 2017 Second Edition: Managing complications in pregnancy and childbirth

Fig. 1

Figure 1



P 407

What was the contribution of coaching & mentoring of primary health providers to the quality of care of reproductive health in the districts of Dioundiou and Gaya (Dosso Region) of Niger?

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Question: In Niger access to emergency obstetric and neonatal healthcare is weak, including availability of qualified staff and infrastructure. To cope with this, the Ministry of Health and Enabel (Belgian development agency) implemented a coaching/mentoring strategy for capacity building on reproductive health. This was combined with a health-insurance scheme, results-based financing(RBF) approach and formative supervisions by quality of care teams in the 2 districts.

Methods: We included health-staff not trained from 33 primary health facilities. Coaches were selected if relevant expertise/responsibility on training/supervising health staff. Coaches focused on four objectives: 1) Mastering partograph, newborn reanimation, and family-planning methods; 2) Mastering infection prevention/control; 3) Promptitude and exactitude in reporting/recording; and 4) Services organization: planning, and availability of medical materials/programmatic tools. These objectives were taught in service coaching using teaching materials (i.e. newborn-mannequin, and programmatic tools), and were quarterly assessed by mentors, RBF, and quality of care teams composed by health experts.

Among trained coaches, mentors were selected if reached and maintained 85% score for at least one year in each four objectives.

We assessed key reproductive health-indicators before(December 2022) and after(July 2024).

Results: Among 185 staff trained, 8 coaches and 4 mentors were identified. In Gaya, average score among 127 staff before for objectives 1-4 was 23%, 17%, 80%, and 4% compared to 58%, 35%, 81%, and 43% after coaching/mentoring respectively. In Dioundiou, the average score of 58 staff before was 2%, 1%, 19%, and 1% for objectives 1-4 compared to 44%, 36%, 63%, and 2% after implementation. In Gaya, coverage of 4-antenatal visit was 8034/17,353(46%) before vs 10,914/21,102(52%) after, compared to Dioundiou with 2,557/8,306(31%) before and 3,524/8,841(40%) after. In Gaya district hospital, successful newborn reanimation was 207/241(86%) before vs 553/604(92%) after compared to Dioundiou with 73/97(75%) vs 176/193(91%).

Conclusions: Overall clinical skills for maternal and newborn health were substantially improved among health staff, but few reached target score of 85% with limited number of coaches and mentors identified. Coaching embedded to a quality of care system contributed to improvement of key reproductive health-indicators.

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Quality of maternal and child health data at select health facilities in Uganda

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Introduction: Accurate maternal and child health (MCH) data is essential for monitoring advancements toward achieving Sustainable Development Goal 3. This study evaluated the accuracy of MCH data recorded at 20 selected healthcare facilities in Uganda.

Methods: This was cross-sectional study design. We assessed the accuracy of monthly MCH data reported by health facilities during April to September 2024. The study assessed five MCH key performance indicator (KPIs): 1) Number of pregnant women who attended first antenatal care (ANC) in the first trimester, 2) Number of pregnant women who attended four ANC visits, 3) Number of women who received at least 3 doses of Intermittent Preventive Treatment of Malaria in pregnancy, 4) Number of deliveries in-unit and 5) Number of caesarean births.

Using the verification factor (VF), we verified numerical accuracy of data reported in the 1) registers, 2) monthly aggregated form generated from the registers and 3) data entered into DHIS2.

For each indicator, we divided the number of data recounted from the registers by number of data reported in the forms/DHIS2 multiplied by 100 to obtain the VF. If the value of the VF is 1, this represents ideal situation. If the VF value>1, it denotes under-reporting and if the VF<1 it shows over-reporting. Data was considered accurate if the VF was within ± 10 precision (between 0.9 and 1.10), and inaccurate if the ratio of recount and reported were < 0.9 or > 1.10. We therefore calculated three VFs: 1) recount from register/reported in forms, 2) recount from register/reported in DHIS2 and 3) reported in forms/DHIS2.

Result: The overall data accuracy was: recount from registers/reported in forms: 112.2% (95% CI = 101.2%-123.2%); recount from registers/DHIS2: 96.8% (95% CI = 89.9%-103.7%); reported in forms/DHIS2: 86.7% (95% CI = 82.5%-90.9%). Data for recount from registers/reported in forms and reported in forms/DHIS2 was inaccurate as it were outside the acceptable tolerance threshold of 100% ± 10%. This data is of poor quality and cannot be considered reliable for use.

Conclusion: The study revealed the poor quality of health data in healthcare facilities. It is essential to enhance data management practices within healthcare facilities to produce high-quality data reliable for use. In addition to data accuracy, data completeness, timeliness and consistence need to be strengthened.

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Effective coverage of births in health facilities in Nepal – Cross-sectional study combining demographic and health survey 2022 and health facility survey 2021

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Background: In Nepal, despite the increasing percentage of births in health facilities, maternal mortality remains a concern. While accessibility of healthcare services is crucial, there is also a pressing need to improve enabling environments to ensure quality of childbirth care. This study aimed to estimate effective coverage of facility-based childbirth in enabling environments in Nepal.

Methods: We used data from Nepal"s Demographic and Health Survey (DHS) 2022, including 1,977 women with a birth in the preceding two years, and the 2021 Health Facility Survey (HFS), which sampled 804 health facilities offering childbirth services. We calculated the percentages of births by facility type (DHS) and the percentage of facility types with enabling environments for childbirth services (HFS). We combined the results from two surveys to estimate effective coverage of births for routine childbirth, basic and comprehensive emergency obstetric and newborn care (BEmONC and CEmONC).

Results: Around 80% of all births occurred in health facilities nationwide. This reduced to 18.5% nationwide when only births in facilities equipped for routine childbirth were considered, and further to 12.9% and 12.2%, respectively, for BEmONC and CEmONC. The reduction between crude and effective coverage across facility types varied from 36.8% to 13.5% in government hospitals for routine childbirth to less than 9% for BEmONC and CEmONC, and from 16.1% to 4.7% in private hospitals for routine childbirth to less than 4% for BEmONC and CEmONC. While 20.1% of births were in health posts, no health posts had enabling environments for routine childbirth.

Conclusion: This study revealed a deficit in essential indicators across health facilities, hindering the provision of enabling environments for both routine and complicated childbirths in Nepal. Fewer than one in five births occur in health facilities with enabling environments that ensure acceptable quality care. This emphasizes the need for policymakers to prioritize the quality of childbirth services in well-equipped and well-staffed facilities to improve maternal and neonatal outcomes. Continued efforts are crucial to standardize indicators of enabling environments and to thoroughly assess care quality.

P 412

Prevalence and risk factors associated with maternal complications of caesarean delivery in Rwanda – Insights from a retrospective study

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Background: The global prevalence of Caesarean Section (CS) has significantly risen from 6.7% in 1990 to 21% in 2018, far exceeding the acceptable World Health Organization"s recommended CS rates of 10-15%. In Rwanda, CS rates have significantly increased from 2.2% in 2000 to 15.6% in 2020. Maternal complications of CS remained largely unstudied in Rwanda. This study aimed to determine the prevalence of CS, the risk factors associated with maternal complications following CS and evaluate healthcare providers" adherence to clinical guidelines.

Methods: A retrospective study was conducted in 16 public hospitals across seven Districts in Rwanda (Gisagara, Gakenke, Rulindo, Karongi, Nyamasheke, Rusizi and Nyarugenge).The data were collected using Criteria Based Clinical Audit procedure for CS practices. The outcomes of 3,982 women who underwent CS over a one-year period from July 2022 to June 2023 were analyzed.Maternal complications of CS were defined as the presence of at least one intraoperative or postoperative surgical complication. Ethical approval was obtained from Rwanda National Ethics committee. A multivariate logistic regression analysis was performed to identify risk factors associated with maternal complication of CS.All the analyses were conducted using SPSS (IBM Version 26).

Results: Among the 3,982 CS cases, 48.7% of women were aged between 25 to 34 years, 55.3% had no previous CS, the CS rate across districts was 25%, surpassing the national average, and the prevalence of maternal complications relate to CS was 3.6%. Women with advanced age from 35 to 39 years had an increased risk of complications compared to those under 25 years (AOR=3.8; 95% CI: 1.692-8.983, P=0.001). Women high parity especially those with six or more pregnancies had double risk to have complications [AOR=2.41; 95%CI: 1.032–5.637, p=0.042]. Having two or more prior CS was identified as an increased risk factor for CS complications (AOR=1.7; 95% CI: 1.050-2.943, P=0.032). Women diagnosed with hypertension had significant increased risk of maternal complications of CS (AOR=1.80; 95% CI: 1.153–2.830, p=0.010). Preoperative care was adequately provided, with 93.7% receiving preanesthetic assessments.A high compliance with standards for prophylactic antibiotics and antiseptic skin preparation performed in 96.5% and 97.6% cases respectively. However, corticosteroid use for pregnancies below 35 weeks was notably low at 35.5%, indicating a critical gap in protocol adherence.

Conclusion:improved care reduces maternal complication of CS.

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The cost of accessing maternal and child healthcare services in Sierra Leone's failing free healthcare system – findings from a cross-sectional case study

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Background: Sierra Leone's maternal and child mortality rates are among the worst in the world. Despite the Free Healthcare Initiative (FHCI) introduced by the Government of Sierra Leone in 2010 to provide free healthcare to pregnant women, lactating women and children under 5 years old, access to free healthcare remains challenging.

This research aims to understand the impact of unsalaried health workers' status on maternal and under-5 health outcomes.

Methodology: An instrumental, cross-sectional qualitative case study design was conducted. This enabled the inclusion of in-case diversity: three locations (Bo, Freetown, Port Loko); different ethnic groups and languages (Krio, Mende, Temne); and differing socio-economic statuses.

A total of 66 interviewees participated, all adults entitled to free healthcare. Six Focus Group Discussions (FDGs) were organised beforehand to discuss the research topic and aims using a participatory approach. Ten key informant interviews and 2 FDGs were completed. Data was analysed thematically by using NVIVO15 software.

Ethical approval was obtained from Dublin City University and the Sierra Leone Ethics and Scientific Review Committee. Dissemination to local and international health actors was conducted in Sierra Leone for preliminary findings. Final results will also be shared with healthcare decision-makers to support the translation of findings into policy; and to the wider general public via radio broadcast.

Results: Five themes emerged from the initial data analysis based on data from one site, Port Loko: unpredictable costs of care; role of all nurses in the practice of charging irregular fees; dysfunctional supply of medicines; turndown of patients can pose a threat to their health; and patients" reliance on public healthcare providers.

Conclusions: The study found little difference in propensity to charge fees between salaried and unsalaried health workers. However, fees, drug shortages, and inefficiencies in the FHCI hinder access to healthcare for the fee-exempted group, jeopardising their health. Unpredictable healthcare costs pose a key challenge, potentially leading to patients being denied care due to lack of funds. Despite these issues, patients valued nurses" competence.

This study demonstrates that it is not the unsalaried status of health workers that affects patient access; instead, it is the structural dysfunction of the FHCI that hinders healthcare accessibility.

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Predominance of private, lower-level, low volume facilities – Results of a census of health facility providing childbirth care in Lubumbashi, Democratic Republic of Congo

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Introduction: By 2030, over 60 million births will occur in urban settings in sub-Saharan Africa (SSA). Childbirth care in large SSA cities presents challenges, partly linked to rapid urbanization pressuring health systems with limited capacity, and inequities in geographic accessibility. The landscape of provision of childbirth services in urban settings is dynamic and availability of up-to-date, geolocated, detailed health facility lists is limited in rapidly expanding cities, such as Lubumbashi in the Democratic Republic of Congo where the most recent facility census dated 2006. This study describes the landscape of provision of childbirth care in Lubumbashi, Democratic Republic of Congo.

Methods: A census of all health facilities providing childbirth services in the city was conducted in November 2023. Starting

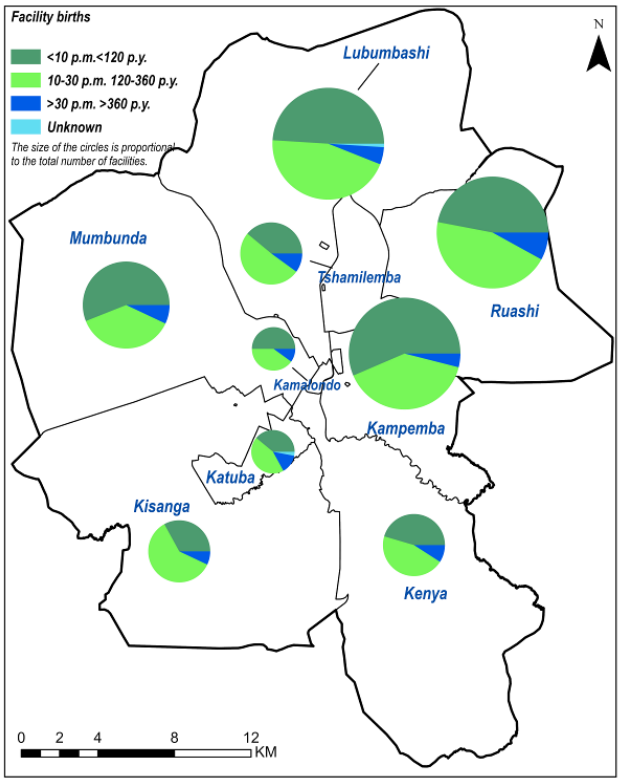
from a list of facilities provided by the Provincial Health Division and the 11 health zones, we identified additional facilities using snowballing. Using a questionnaire, we collected data on facility characteristics. Facilities were described using numbers and percentages by health zone, sector, level, birth volumes. In facilities with >30 births or at least one caesarean section (CS) in the month before the survey, routine annual data on births and CS was analysed.

Results: 1,267 facilities answered the survey, of which 971 provided childbirth care. The highest numbers of facilities were in Lubumbashi and Ruashi (Fig 1). Facilities were mostly private for-profit (85.0%), lower-level (87.8%), and reported 500 births/year and only one reported>1,000 (1080 births). Of these, two were public, and two were tertiary hospitals. CS were concentrated in 101 facilities.

Discussion: Provision of childbirth care in Lubumbashi has changed markedly since 2006, with a 500% increase in facility numbers. It is mostly composed of private for-profit, lower-level facilities with few births; only a small number of facilities manage complications of childbirth. The nature of this landscape suggests potential inequalities and inadequacies in access to appropriate quality childbirth care. Policy makers should review optimal organization of childbirth care in the setting for safety and quality of care.

Fig 1 – Birth volume distribution per health zone in facilities (number of facilities)

Fig. 1



P 415

The role of behavioural and psychological characteristics in women's preferences for childbirth places in Nigeria – A discrete choice experiment

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Objectives: While extensive research has explored the socioeconomic and infrastructural barriers to skilled birth attendance in low-resource settings, limited attention has been given to the role of behavioural and psychological factors in shaping women's childbirth decisions. To enhance evidence-based policy design in maternal healthcare, it is crucial to identify and explicitly incorporate these behavioural and psychological determinants into choice models. This study proposes a framework for assessing how factors such as locus of control, personality traits, and cognitive biases interact with key healthcare attributes to influence women's preferences for childbirth places in Nigeria using a discrete choice experiment (DCE). Additionally, it examines variations in women's choices and preferences based on their risk perceptions and decision-making autonomy, offering valuable insights for designing tailored maternal health interventions.

Methods: This study adopted a mixed-methods approach to develop a DCE survey, integrating insights from literature reviews, focus group discussions, and expert consultations. The DCE presented hypothetical childbirth scenarios, allowing participants to choose between two healthcare facilities with varying attributes. An opt-out option was included to avoid forced choices and better reflect real-world decision-making. To assess preference heterogeneity, latent class and mixed logit models were applied, facilitating the segmentation of women based on their psychological profiles and decision-making patterns.

Results: Preliminary findings indicate that childbirth preferences are significantly influenced by internal locus of control, trust in healthcare providers, risk aversion, and social influences. Women with an external locus of control and strong cultural beliefs were more likely to opt for home births with unskilled providers. In contrast, those who were more risk-averse and had positive past experiences in hospitals demonstrated a stronger preference for skilled birth attendance.

Conclusion: Incorporating behavioural and psychological insights into maternal health interventions is essential for increasing facility-based childbirth rates in Nigeria. This study offers a novel contribution to maternal health research by illustrating how behavioural economics and psychology can enhance stated preference methods, leading to effective, context-specific maternal health policies in low-resource settings.

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Cultural and supernatural beliefs as determinants of women's preferences for childbirth places in Nigeria – Implications for maternal health interventions

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Background: Maternal mortality remains a critical public health challenge in Nigeria, with many women opting for home births either alone or with traditional birth attendants (TBAs). Cultural norms, religious beliefs, and supernatural perceptions significantly influence these choices. This study explores how deep-rooted cultural traditions, supernatural beliefs, and religious influences shape women's preferences for childbirth places in Nigeria. Understanding the role of cultural and supernatural beliefs in maternal healthcare decision-making is essential for designing effective, culturally sensitive interventions that promote safe childbirth practices.

Methods: Qualitative data was collected from November to December 2024 from six focus group discussions with women with previous childbirth experiences in four semi-urban communities in Southern Nigeria. All participants were selected according to stratified purposive sampling. The material was tape-recorded, fully transcribed, and coded to identify relevant themes and sub-themes.

Results: Findings reveal that many women in the study setting perceive hospital births as spiritually unsafe due to fears of evil spirits, curses, or medical interventions such as caesarean sections. Family pressures, especially from husbands and mothers-in-law, further reinforce traditional birthing practices. Despite awareness of hospital benefits, factors such as distrust in healthcare professionals, preference for female doctors, and spiritual protection rituals strongly deter institutional births. However, when respectful care, spiritual accommodations, and trust-building measures are integrated into facility-based maternal care, women express a higher willingness to deliver in hospitals.

Conclusion: Addressing cultural and supernatural barriers to maternal healthcare requires integrated, community-driven approaches. Engaging religious leaders, traditional birth attendants, and family decision-makers is crucial for shifting norms. Additionally, preference-based research methodologies offer valuable insights for designing tailored interventions that balance cultural beliefs with biomedical recommendations. Future maternal health policies must prioritize respectful, culturally competent care to enhance facility-based childbirth uptake and reduce maternal mortality in Nigeria.

Keywords: maternal healthcare preferences, cultural beliefs, supernatural influences, traditional birth attendants, facility-based childbirth

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Prevalence and associated factors of maternal near miss events in Upper East Region of Ghana

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Background and Objectives: Maternal Near Miss (MNM) event is a severe life-threatening maternal morbidity that reflects quality of obstetric care. It is considered a proxy of maternal mortality and predictor of quality obstetric care. The major underlying causes of MNM are hypertensive disorders, obstetric hemorrhage, sepsis and abortion complications. MNM is a more frequent event than maternal mortality and share several features together. This inquiry into MNM was conducted to provide critical assessment of health care quality, identify health system deficiencies and help develop robust strategies for maternal care.

Methods: We conducted a cross-sectional descriptive study to determine the prevalence and underlying causes of MNM. The study respondents were women aged 15 - 49 years with pregnancy experience in 2020 who had health facility care. Primary and secondary data were collected at households and health facilities respectively using electronic platform, KoBoCollect. STATA 15.0 was used to analyze the data.

Results: The prevalence of MNM was 11.30%. The main underlying causes of MNM events were complications of caesarean section, hypertensive disorders, anemia, obstructed labor and antepartum hemorrhage. The main signal functions of Emergency Obstetric and Newborn Care (EmONC) employed to avert a maternal death were parenteral antibiotics, blood transfusion, caesarean section and magnesium sulphate.

Conclusion: The prevalence of MNM in Upper East region was high. The region can reduce severe maternal morbidity and mortality by strengthening health systems, improving access to high-quality obstetric care and training healthcare providers to prevent and treat the major underlying causes. The main areas of focus should be provision of high-quality caesarean section, early detection and better management of hypertensive disorders, early confinement for health facility delivery and quality monitoring in labour and postpartum, high quality antenatal care to address nutritional issues and improved management of obstetric haemorrhage.

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Why women die – Findings from a regional confidential enquiry into maternal deaths in eastern Ethiopia

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Questions: Despite having high maternal mortality, Ethiopia has no confidential enquiry into maternal deaths (CEMD) system to date. In this study, we described the introduction of a regional CEMD in Ethiopia as a pilot programme, as well as causes of maternal deaths and their preventability, and key methodological considerations from the country"s first regional CEMD implementation.

Methods: By adapting the Mothers and Babies: Reducing Risk through Audits and Confidential Enquiries across the UK (MBRRACE-UK) system to Ethiopia, we initiated a regional CEMD in eastern Ethiopia. A multidisciplinary CEMD committee was established and trained on the principles and methodology of CEMD. Two plenary CEMD sessions were held to review maternal deaths that occurred from April 1,

2021, to March 31, 2022 in 13 hospitals in eastern Ethiopia. The CEMD committee identified the underlying causes, contributing factors, and delays in care using the three-delays model, as well as rated preventability of women"s deaths, and proposed recommendations for preventing future maternal deaths.

Results: A total of 59 women who died were included in the CEMD. They had a mean age of 27.9 (±5.7) years at death. Almost seven in ten women died from obstetric hemorrhage and hypertensive disorders of pregnancy, each contributing to 27/59 (46%) and 15/59 (25%) of deaths, respectively. The committee identified delays in seeking care (delay 1), reaching an appropriate health facility (delay 2), and receiving appropriate care (delay 3) in 48/59 (81%), 52/59 (88%), and 54/59 (92%), respectively. Overall, in nine out of 10 deaths, at least one of the three delays contributing to women"s deaths was identified. Delays in diagnosis, management and monitoring 29/59 (49%), limited pre-referral maternal resuscitation and stabilization 16/59 (27%), no antenatal care 10/59 (17%, inappropriate referrals 6/59 (10%), and lack of (compatible) blood for transfusion 5/59 (8.5%) were top leading contributing factors.

Conclusions: Almost all the women"s deaths were considered preventable. Training for improving providers" clinical skills, improving availability of blood and basic supplies, strengthening postpartum maternal monitoring, and strengthening inter- and intra-facility referrals were recommended for saving lives through reducing preventable maternal deaths.

Keywords: Confidential enquiry into maternal deaths, Ethiopia, maternal mortality, maternal death review

Fig. 1

Table 1: Comparison of women who were included vs not included in the CEMD report

Variables	Category	Included (N=59) n(%)	Not included (N=11) n(%)	p*
Age (in years)	<20	3 (5)	1 (9)	0.029
	20-29	25 (42)	9 (82)	
	30-40	31 (53)	1 (9)	
Referral status	Referred	48 (81)	4 (36)	0.002
	Not referred	11 (19)	7 (64)	
Residence	Urban	17 (29)	6 (54.5)	0.095
	Rural	42 (71)	5 (45.5)	
Date of death	Weekdays	41 (69)	7 (63.6)	0.701
	Weekend/holiday	18 (31)	4 (36.4)	
Admission to intensive care unit	Yes	13 (22)	3 (27.3)	0.704
	No	46 (78)	8 (72.7)	
Antenatal booking	Yes	20 (34)	3 (27.3)	0.668
	No	39 (66)	8 (72.7)	
Place of birth	Home	7 (14)	3 (33.3)	0.164
	Health Facility	42 (86)	6 (66.7)	
Mode of birth	Vaginal	40 (68)	4 (44.4)	0.289
	Caesarean section	19 (32)	5 (55.6)	

*Chi-square test

Fig. 2

Table 2: Details of deceased women in eastern Ethiopia whose care was reviewed (n=59)

Variables	Category	n(%)
Cause of death	Hemorrhage	27 (46)
	Hypertensive disorders of pregnancy	15 (25)
	Sepsis	5 (8)
	Anemia	4 (7)
	Anesthesia-related	3 (5)
	Amniotic fluid embolism	2 (3)
	Diabetic ketoacidosis	1 (2)
	Uterine rupture	1 (2)
	Unspecified	1 (2)
Date of admission	Weekdays	47 (80)
	Weekend/holiday	12 (20)
Parity	1	16 (27)
	2-4	29 (49)
	≥ 5	14 (24)
Death period	Antepartum	6 (10)
	Intrapartum	6 (10)
	Postpartum	47 (80)
Admission to intensive care unit	Yes	13 (22)
	No	46 (78)
Antenatal booking	Yes	20 (34)
	No	39 (66)

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Female Genital Mutilation and Cutting (FGM/C) and birth outcomes – A cross-sectional multicenter study in Sierra Leone

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Introduction: Female Genital Mutilation/Cutting (FGM/C) is both a grave violation of the rights of women and children and a deeply rooted cultural practice in countries like Sierra Leone, where nearly 90% of adult women have undergone FGM/C. Despite ongoing debate over the physical and psychological harm it causes, there is a notable lack of research from Sierra Leone examining the specific health outcomes associated with FGM/C. This study aimed to evaluate obstetric and neonatal outcomes in relation to maternal FGM/C status in Sierra Leone.

Methods: We conducted a cross-sectional study among delivering women in five different hospitals in Freetown, Makeni and Bo between 09/2023 and 10/2024. A questionnaire was administered post-delivery to collect sociodemographic data, delivery outcomes, and neonatal health indicators. We performed descriptive analysis and compared outcomes according to FGM/C status, employing univariate logistic regression to provide odds ratios (OR) and 95% confidence intervals (CI).

Results: The cohort included 1,330 women; 67.5% (n=898) had undergone FGM/C and 32.5% (n=432) had not. The cohort showed a median age of 24 years (SD=5.6). The majority were married or cohabiting (75.9%), lived in urban areas (78%), and had at least secondary education (54.9%). Most participants belonged to households with a lower wealth score (75.5%). Women with FGM/C were more likely to live in rural areas (OR=3.57, 95% CI: 2.51–5.09) and have lower educational attainment (OR=2.50, 95% CI: 1.96–3.19). (Table 1) Regarding obstetric health outcomes, women with FGM/C had a higher chance of intrapartum hemorrhage (OR=4.23, 95% CI: 1.49–12.0) and postpartum hemorrhage (OR=2.61, 95% CI: 1.63–4.19). Adverse newborn outcomes were also increased among mothers with FGM/C, including lower APGAR scores after 5 minutes (OR= 2.44, 95% CI: 1.65–3.60) and intrapartum neonatal death (OR=3.19, 95% CI: 1.56–6.50). (Table 2)

Conclusion: This study offers compelling evidence that women with FGM/C have higher chances for adverse maternal and neonatal outcomes. Conducting further multivariable analyses of the data is needed to determine if the link with FGM/C is causal, or if underlying factors that are substantially different between the two groups play a role. Regardless, our findings highlight the urgent need for continued efforts to eliminate FGM/C and protect the health of women and children from preventable harm.

Fig. 1

Table 1: Sociodemographic characteristics of the cohort

Variable	Total n (%) or median [SD]	FGM/C n (%)	No FGM/C n (%)	OR*; 95% CI
Age median (SD)	24 [5,6]	25 [5,5]	22 [5,6]	
Marital status	N = 1320	N = 889	N = 431	2.17 1.68; 2.82
Married/cohabiting	1002 (75,9)	718 (80,8)	284 (65,9)	
Single/widow/divorced	318 (24,1)	171 (19,2)	147 (34,1)	
Residence	N = 1321	N = 890	N = 431	3.57 2.51; 5.09
Urban	1037 (78)	647 (72,7)	390 (90,5)	
Rural	284 (21,4)	243 (27,3)	41 (9,5)	
Educational status	N = 1318	N = 887	N = 431	2.5 1.96; 3.19
Up to primary education	594 (45,1)	463 (52,2)	131 (30,4)	
Secondary education or higher	724 (54,9)	424 (47,8)	300 (69,6)	
Lower Wealth score	N = 1324	N = 893	N = 431	1.91 1.47; 2.47
No	999 (75,5)	710 (79,5)	289 (67,1)	
Yes	325 (24,5)	183 (20,5)	142 (32,9)	

*OR and 95% CI calculated by univariate logistic regression

Fig. 2

Table 2: Maternal/neonatal health outcomes according to women´s FGM/C status

Variable	Total n (%)	FGM/C n (%)	No FGM/C n (%)	OR*; 95% CI
Perineal tear/episiotomy	N = 1207	N = 811	N = 396	1.68 1.31; 2.17
No	721 (59,7)	452 (55,7)	269 (67,9)	
Yes	486 (40,3)	359 (44,3)	127 (32,1)	
Intrapartum hemorrhage	N = 1326	N = 894	N = 432	4.23 1.49; 12.0
No	1288 (97,1)	860 (96,2)	428 (99,1)	
Yes	38 (2,9)	34 (3,8)	4 (0,9)	
Postpartum hemorrhage	N = 1328	N = 896	N = 432	2.61 1.63; 4.19
No	1196 (90,1)	786 (87,7)	410 (94,9)	
Yes	132 (9,9)	110 (12,3)	22 (5,1)	
Prolonged second labor stage	N = 1186	N = 799	N = 387	2.96 1.66; 5.30
Normal	1092 (92,1)	719 (90,0)	373 (96,4)	
Prolonged	94 (7,9)	80 (10,0)	14 (3,6)	
APGAR Score 5 minutes	N = 1323	N = 892	N = 431	2.44 1.65; 3.60
≥7	1135 (85,8)	738 (82,7)	397 (92,1)	
<7	188 (14,2)	154 (17,3)	34 (7,9)	
Birth asphyxia	N = 1307	N = 879	N = 428	1.94 1.29; 2.92
No	1156 (88,4)	760 (85,5)	396 (92,5)	
Yes	151 (11,6)	119 (13,5)	32 (7,5)	
Intrapartum neonatal death	N = 1329	N = 897	N = 432	3.19 1.56; 6.50
No	1263 (95)	840 (93,7)	423 (97,9)	
Yes	66 (5)	57 (6,3)	9 (2,1)	

*OR and 95% CI calculated by univariate logistic regression

P 420

Mama Rescue – Pioneering cloud-based solutions to overcome transportation barriers and enhance maternal and newborn health in Rural Uganda

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Background: In rural Uganda, transportation challenges severely hinder timely access to maternal and newborn healthcare, contributing significantly to high mortality rates. The Mama Rescue Project (MRP) was implemented in Rakai and Kyotera districts to address this critical issue using cloud-based technology.

Objectives: 1. Assess the impact of MRP on maternal and neonatal health outcomes. 2. Evaluate the effectiveness of transport interventions in increasing health facility deliveries and emergency obstetric care. 3. Document best practices and lessons learned.

Methods: A cross-sectional design incorporating both quantitative and qualitative methods was employed. Data sources included project reports, health facility records, focus group discussions, and key informant interviews.

Results: The MRP yielded substantial improvements in maternal and neonatal health outcomes. Maternal complications were reduced by 6%, the maternal mortality ratio decreased by 60%, and perinatal mortality was reduced by 69.2%. Health facility deliveries increased by 15.4%, and newborn complications declined by 4.5%. The project transported 27,373 women and conducted 3,229 emergency referrals.

Conclusion: The MRP effectively addressed transportation barriers, making notable improvements in maternal and neonatal health outcomes. Its integrated approach significantly reduced delays and increased access to skilled care. The project's success has been further validated through its replication and scale-up in the Rwenzori Region (Kasese and Kabarole Districts), showcasing its scalability and potential for widespread impact.

Implications: Sustained stakeholder engagement and capacity building are crucial for the long-term success and scaling of the Mama Rescue model. Expanding such interventions can play a pivotal role in achieving maternal and child health targets in rural Uganda.

Keywords: maternal health, transportation barriers, emergency referrals, rural healthcare, maternal mortality, Uganda

Fig. 1

BAMA Babies and Mothers Alive

Fig. 2

P 421

Accountability mechanism for improving perinatal death surveillance and response – A case study of Kasese District Local Government, Uganda

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Introduction: Perinatal deaths are a major public health concern in Uganda, with an estimated 25,473 deaths annually between 2021 and 2024. The Ministry of Health (MoH) uses key performance indicators, including the percentage of audited perinatal deaths, to monitor the Maternal and Perinatal Death Surveillance and Response (MPDSR) system. In 2023, 60.8% of perinatal deaths were audited within 7 days of occurrence. Kasese District, which has one of the highest perinatal mortality rates in Uganda, reports an average of 498 perinatal deaths each year. In 2023, 65% of these deaths were notified within 24 hours, and only 25% were audited within the mandated 7-day period, falling short of the national target of 50%. To address this, Kasese District developed an accountability mechanism aimed at improving perinatal death tracking, notification, and audits.

Methods: Data were extracted from the District Health Information System (DHIS2) for 36 health centres in Kasese District that provided maternal and newborn care in 2023. The baseline data highlighted gaps in death notification and audits. 5 District mentors and 49 MPDSR committee members received training and mentorship on their roles. A digital tool was introduced to track weekly perinatal death, notification and audit status, which was aggregated by the district and shared with District Health Teams and facility managers. A WhatsApp platform was established to facilitate communication, and weekly virtual MPDSR meetings were held to provide updates, share lessons learned, and follow up on previous recommendations.

Results: By December 2024, the total number of perinatal deaths reported in Kasese District slightly decreased from 426 in 2023 to 417. The death notification rate improved significantly, rising from 65% in 2023 to 82% by 2024, a 17% increase. The percentage of perinatal deaths audited within 7 days also improved substantially, rising from 25% in 2023 to 67% in 2024. These improvements were attributed to the implementation of the MPDSR accountability mechanism, with weekly meetings fostering a sense of ownership and collaboration among health facility managers.

Conclusion: Through strong communication, stakeholder engagement, and a structured monitoring system, this initiative highlights the potential for improving perinatal death surveillance and response at the district level, while using a low-cost affordable system

references

MoH (2024), Annual Health Sector Performance report

Fig. 1

Perinatal Death data 2021 - 2024					
Indicator	**Yr 2024**	**Yr 2023**	**Yr 2022**	**Yr 2021**	**Average**
National Perinatal Death data	24665	24346	25901	26977	25473
Kasese Perinatal Death data	417	426	554	594	498
Kasese PD Notified	343	277	315	29	
Kasese PD Audited	278	108	184	223	
Kasese Audit rate	67%	25%	33%	38%	
Kasese Notification rate	82%	65%	57%	5%	
Data source: DHIS2					

P 422

Factors associated with non-use of iron and folic acid supplementation among pregnant women in Burundi

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Introduction: Although nearly 42% of women of reproductive age worldwide are affected by anemia and 75% do not meet the recommended daily intake for essential nutrients, the use of iron and folic acid supplements remains low worldwide, increasing the risk of serious health consequences for both mothers and their children. This study aims to contribute to improving maternal and child health by identifying factors associated with non-use of iron and folic acid supplementation among pregnant women in Burundi.

Methodology: A facility based cross-sectional study on a sample of 383 women during postpartum in Ngozi and Kiremba hospitals in Burundi from December 11, 2023 to January 26, 2024. Using R software version 4.3.2, a multivariate logistic regression through has been performed to identify those factors.

Results: Results showed that 76.2 percent of women did not take iron and folic acid supplements during their most recent pregnancy, and five factors were statistically associated with the non-use of supplementation, namely urban residence (OR: 2.2 [2.0 -19.6]), absence of a history of anemia during pregnancy (OR: 22.5 [8,9 ; 30,9]), limited geographic access to health facility (>5km) OR: 13.38 [2.2 - 99.5], unavailability of iron and folic acid at the health facility during antenatal care visits (OR : 109.10 [30.9 - 495.7], and not attending at least one health education session on iron and folic acid supplementation (OR: 9.9 [8.3 to 131.1]).

Conclusion: Identified factors are related to a low levels of maternal and child health literacy among pregnant women. Addressing these challenges requires the implementation of effective policies that strengthen health promotion and education, and ensure better accessibility and availability of maternal health services.

Keywords: Factors, non-use, iron and folic acid supplementation, pregnant women, Burundi

P 423

HIV and syphilis testing at antenatal care in Lubumbashi, the Democratic Republic of Congo – Insights from public and private facilities

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Untreated HIV and syphilis during pregnancy may lead to vertical transmission, contributing to adverse maternal and perinatal outcomes. Integrating HIV and syphilis testing into antenatal care (ANC) is crucial for reducing transmission, yet evidence from the Democratic Republic of Congo remains limited. This study explores HIV and syphilis testing coverage through ANC across healthcare facilities in Lubumbashi. Between July 29 and December 1, 2024, data were collected from 187 maternal healthcare facilities across Lubumbashi"s 11 health zones. Weekly data on ANC visits and HIV/syphilis tests were extracted from facility registers. Testing coverage was calculated as the percentage of ANC visits with HIV or syphilis testing and described per healthcare facility sector, level of care, and health zone. Most healthcare facilities were private (86.6%; 162/187), 64.2% (120/187) were primary-level. Overall, 28,146 ANC visits, 13,725 HIV and 7,164 syphilis tests were recorded. HIV testing coverage was 48.8% and syphilis coverage 25.5%. Public (56.5%; 2,249/3,979) and private-for-profit (51.5%; 8,165/15,861) healthcare reported higher HIV testing coverage compared to private-non-profit (39.9%; 3,311/8,306) facilities. Syphilis testing coverage was highest in private-for-profit (30.4%; 4,823/15,861) facilities compared to public (18.7%; 746/3,979) and private-non-profit (19.2%; 1,595/8,306) facilities. HIV testing coverage was similar between higher-level (49.6%; 4,831/9,742) and primary-level facilities (48.3%; 8,894/18,404), while for syphilis coverage was 33.1% (3,229/9,742) in higher-level compared to 21.4% (3,935/18,404) in primary-level facilities. Tsamilemba health zone recorded the highest HIV coverage (82.4%; 3,177/3,854), Kenya health zone led syphilis (71.2%; 1,030/1,446). Closing the syphilis testing gap through broader adoption of dual HIV/syphilis rapid diagnostic tests could enhance testing access and maternal and perinatal health outcomes.

Keywords: HIV, syphilis, testing, DRC, pregnancy, antenatal care

Fig. 1

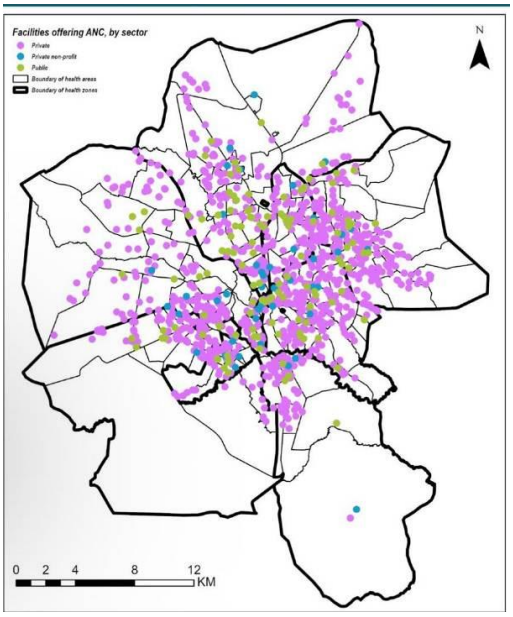
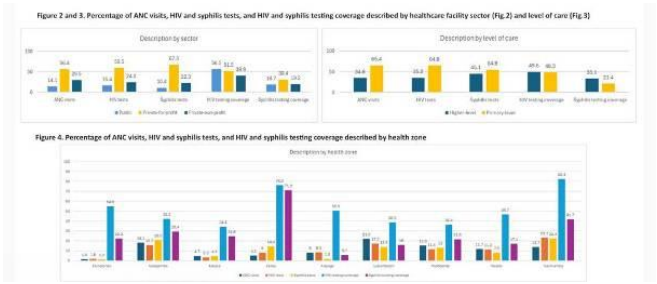


Fig. 2



P 424

Engaging husbands to tackle undernutrition during pregnancy – Validation of the couples' forum in rural Ethiopia – A mixed-methods study

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Introduction: Despite efforts to address malnutrition in low- and middle-income countries like Ethiopia, undernutrition in the first thousand days of life remains a persistent issue, especially in rural areas. Existing programs often fail to involve husbands or partners. This study aimed to validate a couples' forum to tackle undernutrition among pregnant women in rural Ethiopia.

Methods and Materials: This study used a mixed-methods design in two districts of Sidama National Regional State, involving 120 participants (60 pregnant women and 60 husbands). The couples" forum intervention was piloted and implemented using a contextualized manual by trained educators. Thirteen in-depth interviews, eight focus group discussions, and a survey were conducted to assess the intervention's relevance, feasibility, acceptability, scalability, and sustainability. Thematic and descriptive analyses were performed using ATLAS.ti (v24) and IBM SPSS (v25), with results triangulated for validation.

Results: The integrated results showed that the couples' forum was relevant in improving knowledge and practices related to pregnancy nutrition, gender equality, and husband support. Ninety-nine percent of participants found it ideal for pregnancy nutrition, with 76% reporting no difficulty in attending and only 7% finding it challenging for couples to attend together. The forum was culturally respectful and seen as sustainable and scalable, with 93% agreeing it was culturally not sensitive and 99% wishing other couples would attend. Seventy percent wanted it integrated into the ANC program offered by HEWs.

Conclusion and Recommendation: The couples" forum showed promise in improving nutrition knowledge, household work involvement by husbands, and reducing gender inequalities. However, its effectiveness should be further evaluated through randomized controlled trials and integrated into maternal health services.

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A review of policy landscape for maternal immunization in Pakistan – Barriers to effective implementation

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Question: Pakistan has limited coverage of maternal vaccines, contributing towards high Maternal mortality rate of 154 per 100,000 live births in 2022. With aim to introduce new maternal vaccines against Respiratory syncytial virus and group B streptococcus, a desk review was conducted to identify and analyze maternal immunization policies, gaps and challenges for effective introduction.

Methodology: The WHO workbook for conducting a situation analysis for an immunization program performance was used to map the evidence and determine potential barriers to implementation. The documents reviewed included the National Immunization Policy 2022 and other relevant policy and program documents, published literature and media files. The review was conducted from November 2024 to Feburary 2025.

Results: The barriers identified were categorized into health system, policy and implementation level barriers. The inequitable distribution of healthcare workers particularly in rural areas, operational inefficiencies in cold chain management, logistical delays, and limited trained staff were identified as health system barriers impacting vaccine service delivery. There is also a lack of integration between Expanded program on immunization (EPI) and Reproductive, Maternal, Newborn and child health (RMNCH), limiting maternal vaccine delivery through existing healthcare. At the policy level, Tetanus-Diphtheria (Td), being the only maternal vaccine available, shows a lack of focus on maternal immunization in the National Immunization Policy. There were also regional disparities (e.g. Balochistan has the lowest coverage) owing to fragmented policy coordination between national and provincial levels. There is a lack of a sustainability framework for immunization programs, heavily relying on donor-based funding for vaccine procurement. On the ground level there is limited awareness about maternal vaccines and vaccine hesitancy due to misinformation, cultural barriers, and lack of healthcare worker counselling on maternal immunization.

Conclusion: Pakistan's Maternal immunization efforts remained constrained, with limited coverage, regional disparities and weak EPI-MNCH integration. Addressing workforce constraints, operational bottlenecks and reliance on external funding through robust policy frameworks, and strategic community engagement is pivotal for achieving equitable, comprehensive vaccine coverage.

P 426

Developing vaccine demand and uptake strategies for maternal immunisation in Pakistan

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Question: Pakistan's neonatal mortality rate has increased from 40.6 to 42 per 1000 potentially derailing it from SDG targets of 2030. Study conducted on maternal and fetal health highlights the need to explore dietary, immunization and genetic vaccination strategies to enhance maternal and neonatal immunity. This study aims to develop nationally tailored maternal vaccine demand strategies to support uptake and sustained demand for new maternal vaccines, particularly for Respiratory Syncytial Virus (RSV) and Group B streptococcus (GBS) in Pakistan.

Methods: A mixed-method convergent parallel study design, incorporating surveys and FGDs with women of childbearing age (WCA) 15-49 years, and KIIs with key stakeholders, including household decision-makers (HDMs), healthcare workers (HCWs), community influencers (CIs), and government officials (GOs) is conducted. Data collection was initiated following ethical approval from AKU-ERC and necessary permissions from relevant authorities and facilities. Framework analysis by applying blended framework approach, including SEM, BESD and 6As"Taxonomy. For survey data, frequency and percentages would be reported for categorical data, for inferential analysis chi-square and t tests will be used.

Result: The study is currently on-going till December 2025. Preliminary qualitative findings from Karachi, based on an FGD and interviews with five GOs, one HDM, and one CI, are categorized into three main themes—barriers, facilitators, and recommendations—using the 6A"s Taxonomy framework. Key barriers to maternal immunization include its low priority, the requirement for male accompaniment, restricted operational hours, indirect vaccination costs, cultural myths, a predominantly male vaccinator workforce, low ANC attendance, and limited engagement with religious leaders. Facilitators include a strong LHW network providing regular awareness to women, widespread availability and acceptance of the tetanus vaccine, understanding that vaccines reduce expenditure on healthcare, and doctors being the most trusted source for vaccine recommendations.

Conclusion: Strengthening multi-sectoral collaboration, improved surveillance, healthcare access for ANC, and increasing female workforce capacity is key to improving maternal immunization. Community engagement and persistent advocacy by leveraging social media are crucial for effective immunization outreach and to counter vaccine myths and enhance awareness among household decision makers and religious leaders. These strategies can increase and sustain new maternal vaccine uptake across Pakistan.

P 427

Implementation of policies for access to safe abortion care in Africa – A scoping review of preparedness and outcomes

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Background: Unsafe abortion is a significant cause of maternal deaths worldwide. Most of these abortions are induced. As few countries have legalized abortion in Africa, it is the region with the highest incidence of abortion-related complications and deaths. In legalized context, implementation strategies ensure the access to safe abortion services. Several studies carried out in Europe, North America, and Asia, highlight strategies of implementation of access to safe abortion and its outcomes. The objective of this review was to explore current knowledge on preparedness and outcomes of safe abortion policy implementation in Africa.

Methods: We conducted a scoping review using the Joanna Briggs Institute approach to synthesize findings. We searched in PubMed, Scopus, and ProQuest databases. The inclusion criteria were articles published from January 2004 to the present, conducted in African countries, reporting preparedness and outcomes of safe abortion policy implementation, and using quantitative, qualitative or both methodologies. Data were extracted and assessed concurrently by two researchers.

Results: In total, 639 articles were identified from databases. Of these, only 9 articles met the inclusion criteria and were included in the review (7 qualitative and 2 mixed methods).These studies focused on implementation of abortion care policies with variations in the legal status of abortion across countries, from total to partial or no legality.The preparedness of implementation was based necessarily on providers training, on communication through development of guidelines and protocols, on sensitization of stakeholders during training sessions, workshops or informational campaigns and on the leadership shown by the health system managers. The outcomes of implementation such asacceptability, adoption, appropriateness, feasibility, fidelity, penetration and sustainability depended on good preparedness for implementation. No study clearly has carried out a cost analysis of the implementation process.

Conclusion: Available evidence show that abortion policies implementation needs structured and coordinated preparedness for effective and sustainable results. The involvement of all stakeholders is important for the successful implementation of safe abortion care services. Therefore, in Africa, advocacy efforts are needed for more commitment to standardized implementation strategies for access to safe abortion care with decriminalized abortion laws.

Fig. 1

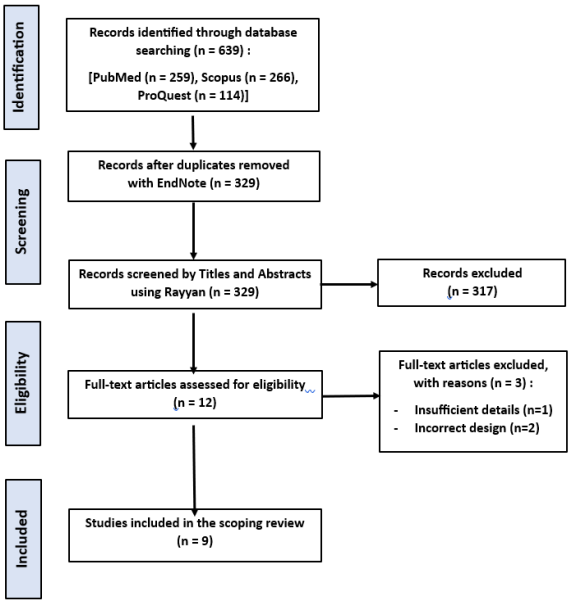

Figure 1 : PRISMA Flow Diagram for inclusion process of the articles in the scoping review

P 428

Research translation in gender-responsive health research – A comparative institutional case study of personal values, approaches and institutional strategies

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There is growing interest and lively debate on how research can be designed, conducted, and translated to meaningfully address sex and gender inequities in health. Historically, approaches to improve gender equity in health research focused on improving the inclusion of women in research designed largely by men for male bodies. Over the past two decades efforts expanded to incorporate gender-diverse perspectives and people throughout the research process, resulting in improved representation in research participation and in the disease areas studied. However, there has been limited research into the unique factors that can catalyse or hinder the *translation* of gender-sensitive research into practical reforms in clinical guidelines, health systems, or wider public understanding.

This talk will report research findings from two qualitative case studies from the Equity & Difference study sponsored by Wellcome. Data include interviews with health research professionals (n=20) at two institutes engaging with sex and gender in their work, focusing on how they and their institutions engage with non-academic stakeholders in both public and community spaces to translate their findings into positive reform in health systems and beyond. Participants discuss the oft-neglected emotional challenges and backlash faced by those attempting to engage with and advocate for work on sex and gender which can often be politically charged or undervalued. They also share successful strategies for engagement and research translation, including creating communities of practice both internally and externally, as well as continual engagement with knowledge users across the entire research pathway and beyond into policy and public coproduction.

P 429

Fatherhood, masculinity, and male infertility – Experiences from Bangladesh

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This study highlights the often-overlooked experiences of male infertility in Bangladesh, focusing on the profound desire for fatherhood within a society where masculinity is deeply intertwined with procreation. While societal discourse often focuses on blaming women for infertility and seeking solutions through them, both scholarly research and health services have similarly concentrated more on women than men. Infertile men, in Low and Middle-Income countries, where patriarchy often dominates, may experience intense emotional distress, including depression, anxiety, and feelings of inadequacy, compounded by immense family and societal pressure to have children. This research illuminates the inequitable burden placed on men, who face significant personal, social, and economic consequences.

This is a two-year ongoing project that began in October 2023, with data collection completed over six months. The qualitative study was conducted in urban areas of two Bangladeshi districts: Dhaka and Khulna. Researchers conducted in-depth interviews with 30 clinically diagnosed infertile men, alongside interviews with 25 key informants, including healthcare providers from public and private fertility clinics and health policymakers.

While exploring the meaning of fatherhood, the study found that infertility profoundly impacts men's desire for fatherhood, reflecting the intersection of masculinity and infertility. The findings also illustrate how social and familial pressures lead to stigma, hurtful remarks, and even marital strain, though some couples reported strengthened bonds. Suppressing emotions, relying on spousal support, avoiding socialisation, and engaging in spiritual practices emerged as key coping mechanisms for infertile men, though these often conflict with traditional masculine identities in a patriarchal society. By examining the desire of fatherhood, the impacts of infertility and its coping strategies employed by infertile men, this study draws attention to critical equity gaps in understanding and addressing male reproductive health. It advocates for more inclusive support systems and calls for a cultural shift in narratives surrounding infertility in Bangladesh.

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Digital health applications to support the management of snakebite envenoming – A scoping review

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Background: Digital health interventions (DHIs) offer an enormous potential to address some of the obstacles in combating neglected tropical diseases (NTDs), particularly in areas with resource-limited health infrastructure. However, there is limited evidence of DHIs being effectively implemented in this context. One NTD that could greatly benefit from relevant DHIs is snakebite envenoming. In this scoping review, we aimed to systematically identify and describe DHIs currently available that can be used to combat snakebite burden.

Methods: We conducted searches using PubMed, the Apple App Store, and the Google Play Store, as well as an extensive internet search in English and 13 additional languages. We identified and described currently available digital tools that include features relevant to the management of snakebite envenoming in humans (e.g., snake identification, information about snakes, first aid, and treatment interventions). Data extracted from the included applications were grouped and summarised by WHO region and type of application.

Results: This scoping review included 52 digital tools covering all WHO regions: Africa (n=3), the Americas (n=9), the Eastern Mediterranean (n=1), Europe (n=1), Southeast Asia (n=11), and the Western Pacific (n=5), as well as six apps not limited to a specific region, and 16 apps with an unclear region of focus. Many tools covered only a single or few functions of a comprehensive snakebite management framework. Most tools included features for snake identification (n=41) and about half (n=27) included first aid information, while only seven tools included information on advanced treatment for health professionals. A preliminary assessment of single functions revealed shortcomings, including inaccurate claimed artificial intelligence functions and incorrect or incomplete first aid recommendations in some tools.

Conclusion: Our scoping review establishes the foundation for the first comprehensive list of currently available digital health applications addressing snakebite envenoming. It highlights these applications' heterogeneous nature and varying quality, underscoring the need for further scientific evaluation and guidance. Furthermore, our methodology for this scoping review is adaptable and can be applied to other NTDs, which similarly lack substantial scientific evidence on digital health applications.

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The Venomous Incident Prevention, Education and Response (VIPER) project - designing a prototype digital resource for snakebite in Vietnam

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Between 1.8 and 2.7 million people are bitten by venomous snakes each year, resulting in up to 138,000 deaths and many survivors suffering permanent disabilities. Efforts to reduce the burden of snakebites are needed. With a growing interest in the use of digital health tools, this project investigates how to develop a user-driven digital snakebite tool. The study site is Vietnam, where 73.5% of adults use smartphones and 79% of adults use the internet (status 2022). In recent years, Vietnam has expanded its digital transformation and developed various apps during the COVID-19 pandemic. However, no digital snakebite resource is so far available in Vietnam. Thus, this project explores what such an app could look like for Vietnam.

This project began in October 2024 and will run until September 2026. It is divided into five work packages and four rounds of surveys. To gain a broad understanding of the need for snakebite materials in Vietnam, this project will be conducted in three provinces: Ho Chi Minh (South), Quang Ngai (Center), and Vinh Phuc (North). In Work Package 1, we conduct semi-structured interviews to collect information on the needs of the different target groups for snakebite resources. In Work Packages 2 to 4, we ask individuals from the target groups to rank potential app features (Work Pack*ƒ*age 2), assess the concept and visual outline (wireframe) of the app conceptual prototype (Work Package 3), and assess the interactive conceptual prototype (click-dummy) of the app (Work Package 4).

The survey data collected in this project highlight the gaps in snakebite resources currently available in Vietnam and are used to identify features that could be offered in a digital tool to help reduce the burden of snakebites in the country. The process of deciding on the concept and contents of the conceptual prototype app is ongoing. However, the research efforts until now highlight the importance of a user-centred development process.

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Snakebite knowledge among healthcare workers in Ogooué et des Lacs, Gabon – A cross-sectional survey

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Introduction: Snakebite is an important but under-recognised public health problem, particularly in tropical regions. We recently conducted a study in Ogooué et des Lacs, Gabon, and found an incidence of 246 cases per 100,000 people per year, with 60% of victims seeking care at health facilities. However, significant gaps in healthcare worker (HCW) knowledge of snakebite management (SBM) have been reported in Africa. In this study, we aimed to assess the knowledge of HCW in the management of SBM in Gabon.

Methods: In this cross-sectional study, HCW from 28 health facilities in Ogooué et des Lacs were surveyed using a structured questionnaire. Demographic and professional data were collected, and a knowledge score was calculated based on correct responses to questions in the categories of symptoms (venom effects, snake specific symptoms), treatment (first-aid, general treatment), and snake identification (name and venomous status), then classified as limited (<50%), moderate (50–70%), or good (>70%). An overall score combined symptom and treatment knowledge. We used a linear regression model to assess the impact of participant characteristics on overall knowledge scores.

Results: In total, 176 HCW were interviewed. The majority (72.4%) had more than six years of work experience, and 56% had previously treated snakebite patients. More medical doctors reported having received training in SBM (63.6%; 21/33) than nurses (49.6%; 70/141). Regarding snakebite treatment, only 15.9% correctly answered that antivenom is not needed for all venomous snake bites, while 69.1% incorrectly answered that a tourniquet is recommended. Overall, only 7.4% (13/176) of HCWs had a "good" (>70% correct) combined knowledge of snakebite symptoms and treatment. Nurses had an 8.7% lower mean knowledge score (95% CI: -14.2%, -3.3%) compared to medical doctors. On average, knowledge of snake species was poor (13.8% correct responses).

Conclusions: The results highlight significant knowledge gaps in a high-incidence region, emphasizing the need for targeted training and national guidelines to improve snakebite management and patient outcomes in Gabon. Differences in knowledge levels between doctors and nurses suggest the need for adapted training approaches.

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Clinical presentation and management of snakebite envenoming in Ghana – A retrospective review of medical records

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Background: Snakebite envenoming is among the top five emergency health conditions in northern Ghana. Among the four genera of snake species classified to be of highest medical importance, the West African carpet viper (*Echis ocellatus*) is responsible for about 90% of all snakebite case presentations in the region. However, there is a dearth of clinical data on symptoms of envenoming, treatment practices and health outcomes. We retrospectively examined the symptoms of envenoming and clinical management practices at two referral hospitals in northern Ghana.

Methods: Medical records of patients presenting with snakebite between 2016 and 2020 at the Wa Municipal Hospital in the Upper West region and the Baptist Medical Centre in the North East region of Ghana were reviewed. Demographic characteristics, patients" clinical data and management practices were analysed and evaluated taking into consideration the national standard treatment guideline.

Results: A total of 2,684 records of patients diagnosed with snakebite were accessed at both health facilities over the five-year period. 91% of the patients were admitted to the ward. Swelling, severe pain and bleeding were the most common clinical symptoms upon presentation. A total of 1,670 (64.7%) of all the patients tested had at least one abnormal blood clotting result suggesting haemotoxicity. Antivenom was administered to 84.3% of the patients. Antibiotics were administered to 70.5% with amoxicillin with clavulanic acid, flucloxacillin and metronidazole being the most commonly administered antibiotics. The recorded case-fatality rate was 1.9%.

Conclusion: The medically important snake species in northern Ghana are mainly haemotoxic. Mortality was low with antivenom available to most of the patients. More evidence is needed on the indication and dosing of antivenom. Existing evidence can improve appropriate ancillary care among snakebite patients.

Key words: Snakebite, clinical presentation, antivenom, treatment guideline, Ghana, mortality

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Snakebite distribution, incidence, envenoming, disability, and mortality in West African Savannah – A population-based cohort study in northern Ghana

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Background and objectives: Snakebite is a tragedy of injury, disability and death. Globally, snakes bite 4.5-5.4 million people, kill over 95,000 and maim about 400,000 annually. Snakebite is most neglected in sub-Saharan Africa. West African savannah has the highest snakebite in sub-Saharan Africa but the true burden is unknown due to paucity of data.

Objective: This study was conducted to determine the incidence and risk factors of snakebite, envenoming, disability, and mortality. Study results will contribute to better health for all in a changing world.

Methods: This was a retrospective cohort study. A single population cohort was followed from 2017-2019 for snakebites. The study setting was Upper East region of northern Ghana. Concurrent community and health facility surveys were conducted for primary and secondary data respectively. Pretested structured tools in Open Data Kit collect were used for data collection. Data analysis was done with Stata Software and ArcGIS software used for cluster mapping analysis.

Results: There were 581 primary respondents and 127 abstracted snakebite cases. Over 96% of snakebites were rural residents. The mean community and health facility (HF) incidence were 115.51 and 25.25 bites per 100,000 person-years respectively. Almost 88% of bites were envenomed and 12 % dry. The community local and systemic envenoming was respectively 101.59 and 37.38 per 100,000 person-years. The HF local and systemic envenoming was 100% and 18.11% respectively. Community and HF level mortality were 2.19 deaths and zero death per 100,000 population respectively. The community and HF snakebite-induced disabilitywas 10.66% and 3.2% respectively due to scars, disfigurement, blindness and post snakebite stress disorders with no case of amputation. *Echis ocellatus* was responsible for over 78% bites. Risk factors included rural residence, low educational status, rainy season, walking on footpath, working on farm, poor housing, feet and leg exposure and *Echis ocellatus*.

Conclusion: Northern Ghana has very high burden of snakebite envenoming than previously known and health system underreported community burden. Over 80% of snakebites were preventable using protective clothing at feet and legs. The principal envenoming was haematotoxic. To reduce snakebite mortality and disability, anti-snake venom deployedshould have efficacy and effectiveness in neutralizing at least haematotoxic venom toxins.

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Usefulness of real-time PCR for diagnosing urogenital schistosomiasis in adults from Cubal, Angola

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Question: Urogenital schistosomiasis (UGS), caused by *Schistosoma haematobium*, is hyperendemic in the municipality of Cubal, Angola. The microscopic detection of *S. haematobium* eggs in urine samples is the reference diagnostic technique; however, its low sensitivity limits its diagnostic performance. Molecular techniques, such as PCR, offer greater sensitivity and specificity. This study aimed to assess the usefulness of real-time PCR for the diagnosis of UGS in the adult population of Cubal, Angola.

Methods: A cross-sectional study was conducted from February to April 2024 in the municipality of Cubal. Epidemiological and clinical data were collected from the participants, and a urine sample was obtained from each. The samples were analysed using a dipstick test, macroscopic and microscopic examination, and real-time PCR. The diagnosis of UGS was established based on the detection of de *S. haematobium* eggs by microscopy (gold standard).

Results: A total of 263 participants were included, of whom 51.33% (135/263) were women, with a median age of 35 years (interquartile range: 25). Real-time PCR *S. haematobium* DNA in 28.52% (75/263) of the samples, whereas microscopy identified *S. haematobium* eggs in 22.05% (58/263). Compared to microscopy, real-time PCR showed a sensitivity of 85.17%, a specificity of 86.34%, a positive predictive value of 62.67%, and a negative predictive value of 94.15%. The kappa index between both techniques was 0.61, indicating moderate agreement. A total of 39/263 (14.83%) samples were discordant, 28 of which were positive by real-time PCR but negative by microscopy.

A positive real-time PCR result was significantly associated with a younger age (median of 28 years), but no significant differences were found based on sex. The presence of abdominal pain, pollakiuria, and haematuria was not associated with PCR positivity. However, dysuria and the presence of erythrocytes, leukocytes, and proteins in urine were significantly related to a positive PCR result

Conclusions: Real-time PCR identified a higher proportion of positive samples compared to microscopy, allowing for the detection of more UGS cases. The use of this molecular technique could improve diagnosis, enabling earlier treatment and reducing morbidity associated with schistosomiasis in its early stages. Additionally, its application could enhance epidemiological surveillance in endemic areas.

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Applicability of real-time PCR for the diagnosis of imported schistosomiasis

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Questions: Schistosomiasis, a neglected tropical disease, is endemic in tropical and subtropical areas, however continued migratory movements are contributing its introduction into non-endemic areas. Detection of *Schistosoma* DNA by PCR could improve diagnosis accuracy, low-parasite-load settings typical of non-endemic countries. The aim of the study was to compare real-time PCR with microscopy for the diagnosis of imported schistosomiasis.

Methods: A cross-sectional study was performed including 75 patients screened for imported schistosomiasis. Urine and stool samples were collected and analyzed by microscopic examination for visualization of Schistosoma eggs and real-time PCR for detection of *S. haematobium* DNA in urine, and *Schistosoma* spp., *S. mansoni* and *S. intercalatum/guineensis* DNA in stool. Schistosoma infection was determined as the presence of eggs by microscopy and/or a positive real-time PCR result.

Results: Of the 75 participants, 64/75 (85.33%) were male, with a median age of 27 years, originating from sub-Saharan Africa. *Schistosoma* infection was detected in 12/75 (16%) individuals. A total of 3/75 (4%) had urogenital schistosomiasis: one diagnosed by both microscopy and real-time PCR, one by microscopy alone, and one by real-time PCR alone. A total of 10/75 (13.33%) cases of intestinal schistosomiasis were diagnosed; the positive results are detailed in Table 1. For the detection of *Schistosoma* spp. a sensitivity of 55.56%, specificity of 98.48%, positive predictive value of 83.33% and negative predictive value of 94.29%, with a Kappa index of 0.63 were obtained. In the detection of *S. mansoni*, real-time PCR showed 100% concordance with microscopy results. In the case of *S. intercalatum/guineensis*, the concordance was 98.67% (74/75), with one case detected only by real-time PCR.

Table 1. Results of diagnostic tests for intestinal schistosomiasis.

Conclusions

A prevalence of schistosomiasis of 16% was obtained in the cohort studied, with the intestinal form being more prevalent. With only 3/75 positive urine samples, the performance of PCR for *S. haematobium* was not assessed. In stool samples, real-time PCR showed low sensitivity and concordance for the detection of *Schistosoma* spp. However, it proved to be a very useful tool for the specific identification of *S. mansoni* and *S. intercalatum/guineensis*.

Fig. 1

Table 1. Results of diagnostic tests for intestinal schistosomiasis.

	Microscopy			Real-time PCR			
ID	*S. mansoni*	*S. intercalatum/ guineensis*	Final Result	*Schistosoma* Spp.	*S. mansoni*	*S. intercalatum /guineensis*	Final Result
13	Negative	Negative	Negative	Positive	Negative	Positive	Positive
46	Positive	Negative	Positive	Positive	Positive	Negative	Positive
55	Positive	Negative	Positive	Positive	Positive	Negative	Positive
57	Negative	Positive	Positive	Positive	Negative	Positive	Positive
58	Negative	Positive	Positive	Positive	Negative	Positive	Positive
61	Positive	Negative	Positive	Negative	Positive	Negative	Positive
62	Negative	Positive	Positive	Negative	Negative	Positive	Positive
68	Positive	Negative	Positive	Positive	Positive	Negative	Positive
69	Negative	Positive	Positive	Negative	Negative	Positive	Positive
75	Negative	Positive	Positive	Negative	Negative	Positive	Positive
N positive	4	5	9	6	4	6	10
			Mean Ct	27.87	19.15	21.30	

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Sensitive and specific diagnosis of *Schistosoma mansoni* and *S. haematobium* from field-collected urine SAMPLES from Tanzania, Africa

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Background Schistosomiasis is a bloodborne, and waterborne parasitic disease caused by the human *Schistosoma* species, namely *Schistosoma mansoni* and *S. haematobium*. The parasite requires an intermediate snail host, where they grow and develop, along with a human host (definitive). Schistosoma egg detection in feces (*S. mansoni)* and urine (*S. haematobium*) are the WHO-recommended confirmatory diagnostic tests.

Methods The goal of our research was to determine the efficacy of detecting single or dual Schistosome species from filtered human urine samples collected in Tanzania by amplifying species-specific cell-free repeat DNA fragments via polymerase chain reaction (PCR) and gel electrophoresis. In total, 104 filtered human urine samples were evaluated and collected from individuals residing in the village of Kayenze, Tanzania. All samples were detected with 100% accuracy and no cross-amplification was present.

Results For a single infection of *S. mansoni*, 22 (21%) of the samples were

positive, while 15 (14%) of the samples were negative via PCR. Moreover, for a single infection of *S. haematobium*, 7 (7%) of the samples were positive, while 15 (14%) of the samples were negative. Dual infections were found in a higher percentage, with 60 (58%) of the samples being positive.

Conclusions Thus, we have justified that PCR is more sensitive and specific by amplifying species-specific cell-free repeat DNA fragments from the same urine sample than WHO-recommended methods of processing stool and urine. To evaluate the success of control programs, to conduct surveillance, and to determine the prevalence of dual schistosome infection for moderate and low infection areas, a more sensitive, specific, quick, and cost-effective test is needed.

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A case report of hepatosplenic schistosomiasis with consequent portal hypertension leading to transjugular intrahepatic portosystemic shunt implantation

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Hepatosplenic schistosomiasis (HSS) is a severe, chronic manifestation of *Schistosoma mansoni* infection, marked by periportal fibrosis and portal hypertension. Although primarily affecting individuals in endemic regions, HSS increasingly presents in non-endemic countries due to global migration. Effective management often requires specialized interventions, and recent shortages of praziquantel - the sole effective oral therapy – present a growing threat to patient care.

We describe of a 28-year-old male migrant from Liberia presenting in Germany with progressive weakness, pancytopenia, and massive splenomegaly. Diagnostic evaluation revealed periportal fibrosis, portal hypertension, and chronic hepatitis B. *Schistosoma mansoni* infection was confirmed by serology and PCR. The patient was treated with praziquantel and a nonselective beta-blocker. Severe portal hypertension necessitated transjugular intrahepatic portosystemic shunt (TIPS) implantation, which was complicated by shunt occlusion requiring recanalization. Significant clinical improvement followed.

This case underscores the necessity of considering schistosomiasis as a cause of portal hypertension in patients from endemic areas, even in non-endemic settings. Multidisciplinary management and access to both diagnostic and therapeutic resources are critical. The ongoing praziquantel shortage represents a major barrier to evidence-based care, with potentially life-threatening implications for both acute and chronic cases.

Ensuring uninterrupted access to praziquantel and advanced hepatological interventions is essential to optimize outcomes for patients with HSS worldwide. Immediate policy action is needed to address drug shortages and ensure equitable care for all affected individuals.

P 439

Updating standardized WHO assessment of schistosomiasis-related pathology with focused point-of-care ultrasonography

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Ultrasonography is used as a safe, fast, non-invasive, and relatively inexpensive technique for assessing chronic schistosomiasis-related pathology in clinical and field settings. A first standardized ultrasound protocol had been established by experts at a WHO-chaired meeting in Cairo, Egypt, in 1990. A reviewed protocol was later published in 2000. Scientific studies using the WHO-protocols showed that further amendments are necessary, and that sonomorphologic abnormalities due to Asian schistosomiasis (*Schistosoma japonicum* and *S. mekongi*) had not been addressed before.

A WHO-chaired expert group now reviewed the existing literature and established a standardized ultrasound protocol focusing on relevant and reproducible ultrasound findings caused by all *Schistosoma* species pathogenic to humans. A special focus on Asian schistosomiasis pathology summarizes the key elements of active and post-infectious lesions due to *S. japonicum*, such as liver lesions and danger signs, predicting severe outcome of the disease.

We present the "Basel protocol", supported by the latest research data, and discuss the rationale behind important protocol updates.

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Evolution of periportal fibrosis due to schistosomiasis after praziquantel treatment in a cohort of adult patients in an endemic area – Preliminary results of a prospective study in Madagascar

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Question: Praziquantel(PZQ), schistosomiasis' treatment of choice, has demonstrated variable effectiveness in resolving periportal fibrosis(PPF) due to *Schistosoma mansoni* or *japonicum*, with better outcomes in less advanced forms and in young subjects. This study aims to assess the response to PZQ treatment in adult patients(PTs) with PPF in Haute Matsiatra, Madagascar.

Methods: We analysed the ultrasound(US) morbidity pattern among adults in the region from July 2022 to April 2024, adopting this Image Pattern(IP) classification: no fibrosis(A); borderline/incipient PPF(B); moderate PPF(C, peripheral echogenic "pipe stems"; D, central portal wall thickening); and severe PPF(E, central portal wall thickening with echogenic "patches"; F, fibrosis from the portal hilum to the Glisson capsule; Dc, combined D and C; Ec, combined E and C). We contacted PTs with borderline, moderate or severe PPF for reassessment with US, blood tests and Point of Care-CCA(POC-CAA) every six months for a minimum of two follow ups. PTs with Bleeding risk(BR) according to the *Schistosoma mansoni* score(SMS, which combines IP and portal vein dilatation adjusted for height), were offered gastroscopy. Screening for chronic viral infections and schistosomiasis, using POC-CCA, were performed for all PTs. PZQ 40 mg/kg was administered as a single dose for one to three days according to PPF severity.

Results: We identified 52 PTs: 10 with borderline, 22 with moderate, and 20 with severe PPF. Of these, one died(IP D with cirrhosis) and one moved to another region. Follow up visits started in July 2025 and are ongoing.Up to now 15 PTs(10 female, 5 male) were re-evaluated: 4 IP B, 1 IP C, 4 IP Dc, 1 with IP E and 5 with IP F; median age was 36 years(range 21-52). The time from baseline was 14 months for 8, 28 for 4, 30 for 1 and 32 for 2 PTs. The US of IP B PTs showed no fibrosis in two cases, IP B in one case, and one progression to IP C. The PT with IP C progressed to IP Dc. One Dc PT showed complete regression and 3 Dc PTs progressed to Ec or E. IP E and F PTs"US pattern remained stable; three had ascites, one had portal thrombosis since baseline, and two were in therapy with propranolol. The POC-CCA of all PTs was negative.**Conclusion:** Of the 15 patients, only 3 showed regression, with two of them being borderline at baseline, indicating a poor effectiveness of PZQ on PPF. Data from the entire cohort and subsequent follow-ups will contribute to optimise the clinical management of PPF.

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The utility of two different elastography devices and conventional ultrasound in detecting hepatic fibrosis among patients presenting with Schistosoma mansoni related hepatosplenic disease at the endoscopy unit, of Nansio district hospital, Ukerewe district, north-western Tanzania

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Background: Schistosoma mansoni hepatosplenic morbidities are detected using B-mode ultrasound. Elastography systems have emerged as a quantitative diagnostic system for liver diseases, mainly liver fibrosis. However, the role of these systems in detecting periportal fibrosis (PPF) related to S. mansoni infection is unknown. We assessed the utility of the Echosense FibroScan® and Mindray Hepatus 6® in detecting PPF in patients presenting with S. mansoni hepatosplenic disease.

Methods: In hospital study was conducted at Nansio district hospital. Demographic and clinical history were obtained and the B-mode ultrasound was used to examine hepatosplenic morbidities. Liver fibrosis was examined using the Echosens FibroScan® and Mindray Hepatus 6® systems. Parasitological techniques were used to examine S. mansoni infection in urine and stool samples. Blood samples were tested for HIV serostatus and hepatitis B and C infections.

Results: A total of 225 patients were involved. Blood vomiting and melena were reported by 70.3% and 65.8% of the patients. On physical examination, 80%, 23% and 77% had abdominal distension, splenomegaly and others. Ascites and collateral veins were detected in 30.2% and 91.6%. Prevalence of S. mansoni infection based on KK-technique and POC-CCA were 5.8% and 29.9%. The prevalence of HCV, HIV and HBV were 0.5%, 3.6% and 9.5%. Using B-mode ultrasound, 36.7% and 39% of the patients had moderate and severely enlarged spleen. Overall, 3.9% and 96.1% had moderate and severe enlarged left liver lobe. The prevalence of PPF based on Echosens FibroScan®, Mindray Hepatus 6® and B-mode ultrasound were 17%, 22.5% and 89.8%. Using ultrasound as a gold standard in measuring PPF, the sensitivity and specificity of Echosens FibroScan®

at a cut off value of eight (8) were 88% and 24%. The sensitivity of Echosens FibroScan® decreased with an increase in cutoff value (≥9) while specificity improved with an increase in cutoff values (≥9). At a cutoff point of eight (8), the Mindray Hepatus 6® achieved sensitivity and specificity of 82% and 16%, with sensitivity decreasing while specificity increased with increase in cutoff values (≥9). On Kappa statistics, poor agreement between the elastography system and B-mode ultrasound was noted.

Conclusion: Elastography system achieved high sensitivity but poor specificity in detecting PPF. The level of agreements between elastography system with ultrasound in detecting PPF was very poor.

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Community stakeholders' perspectives on the involvement of traditional healers to enhance adult community members participation in mass drug administration against intestinal schistosomiasis and health seeking behaviours in endemic foci of north-western Tanzania

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Background: The Lake Victoria areas in North-Western Tanzania is endemic for S. mansoni parasite and its control activities solely focus on school aged children through mass drug administration (MDA) using praziquantel drug. The current on-going control project includes adults in community-based MDA campaigns using trained community drug distributors (CDD). To achieve high coverage, different community stakeholders including traditional healers need to be involved in the micro-planning process. Here, we explored community members perspectives on the involvement of traditional healers in MDA.

Methods: A descriptive qualitative study was conducted on Ukerewe island and Ilemela districts. Focus group discussion (FGD) and in-depth interviews (IDI) were conducted to explore perspectives, lived experience and the involvement of traditional healers' t in MDA activities. Participants included traditional healers (IDI=16) and community members (IDI=16), as well as FGD (n=9) with CDD and mixed FGD (n=9) with community members.

Results: The findings indicate that community members utilizes both traditional and modern medicine for treatment of schistosomiasis related morbidities. Community members supported the involvement of traditional healers in MDAs and agreed that the approach will improve MDA uptake. Community members regarded traditional healers as key figures in referring patients, and in mobilizing and sensitizing community members in MDA participation. However, most informants expressed their concerns on traditional healer's lack of professionalism and formal education, emphasizing the need to train them before involving them in MDA activities. Participants recommended that involvement of traditional healers should be limited to community mobilization and sensitization and not involved in diagnosis and treatment of intestinal schistosomiasis morbidities. On the other hand, traditional healers accepted their involvement in public health campaigns and expressed their readiness to contribute to MDA activities through raising awareness and referring patients with chronic morbidities to hospitals.

Conclusion: Given the observation that community members use traditional healers' services for treatment of intestinal schistosomiasis hepatosplenic morbidities, integrating them into MDA activities through targeted training can improve uptake and coverage of MDA.

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Optimizing social mobilization and sensitization strategies for paediatric schistosomiasis treatment uptake in Uganda – Insights from implementation research

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Expanding schistosomiasis control to preschool-aged children is critical for reducing transmission and mitigating life morbidity. The introduction of pediatric arPraziquantel (arPZQ) presents both opportunities and challenges necessitating tailored social mobilization and sensitization strategies to ensure community acceptance and treatment uptake, grounded in informed decision making. Following a holistic implementation science approach, we conducted formative research to understand barriers, facilitators, and community needs to arPZQ adoption in Hoima and Bugiri districts of Uganda, before study roll-out.

Using a qualitative approach—including in-depth interviews and focus group discussions with national and subnational health officials, village health teams, caregivers, and community leaders—we identified key facts influencing treatment uptake. Our findings indicate that while prior exposure to praziquantel may support arPZQ acceptance, opposition persists due to local understandings, including beliefs that schistosomiasis is caused by witchcraft, as well as concerns about medication side effects.

Resource constraints—such as limited funding for community outreach and insufficient training for village health teams—can lead to fragmented messaging and missed opportunities for strategic community engagement, ultimately weakening social mobilization efforts. To enhance community engagement, the study underscores the need for localized health messaging, continuous education efforts, and engaging trusted community figures to enhance understanding and confidence in the health intervention.

The insights from the study informed the development of targeted health messaging and sensitization materials, designed to address specific community concerns and promote trust in the intervention. Narrative persuasion and framing theory suggest that storytelling and culturally embedded communication strategies can improve parental receptivity. The next phase of the study will accompany the pilot distribution to assess the effectiveness of these strategies in real-time, refining approaches based on observed challenges and community feedback. The insights gained will inform the development of more effective social mobilisation and sensitisation strategies, ultimately contributing to reducing the burden of schistosomiasis in vulnerable populations.

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Health impact of mass drug administration for schistosomiasis in preschool- and school-aged children in Uganda – A modelling study

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Question: Preschool-aged children (PSAC), a highly at-risk age group for schistosomiasis (SCH)[1], have not yet been targeted in routine SCH control programs in Uganda, due to the lack of a suitable pediatric praziquantel formulation. Arpraziquantel (arPZQ) is a new child-friendly formulation and efforts are underway for widespread availability and use, including the ADOPT program[2] in Uganda. This modelling study aims to estimate the health impact of treating PSAC aged 2-5 years through mass drug administration (MDA) for SCH in addition to school-aged children (SAC).

Methods: We extend the SchiSTOP model[3] to incorporate MDA with arPZQ for PSAC and to estimate morbidity outcomes. SchiSTOP is a hybrid modelling framework for SCH transmission between humans and snails, combining an agent-based model and a deterministic compartment model. We compare the impact of annual MDA for both PSAC and SAC to annual MDA for SAC alone, assuming 75% coverage as per WHO treatment guidelines[4] over 10 years. Additionally, we simulate alternative coverage scenarios, including constant coverage (both lower and higher than reported) and coverage that increases over time. We also simulate the impact of MDA interruptions during this timeframe.

To evaluate the health impact of MDA, we estimate reductions in overall worm burden (worm-years), prevalence of heavy intensity infections, and disability-adjusted life years (DALYs). Finally, we perform multiway and probabilistic sensitivity analyses to examine the robustness of the health impact estimates.

Results: Our results suggest benefits of expanding MDA campaigns from SAC to include PSAC. However, high coverage among PSAC is necessary to observe a significant health impact with respect to the base case, while moderate coverage yielding only limited additional benefits. Importantly, the effectiveness of expanded MDA is influenced by the infection dynamics within the adult population, which serves as a reservoir for reinfection.

Conclusions: This study supports the policy change of expanded population coverage for MDA for SCH control in Uganda and globally, in line with the WHO guideline on control and elimination of human SCH. Besides PSAC, coverage of adults is crucial to reduce SCH burden.

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2 Pediatric Praziquantel Consortium, "ADOPT program."

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Knowledge of schistosomiasis among the caregivers of young children in the Boeny and Matsiatra Ambony region, Madagascar – A cross-sectional study

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Question: Human schistosomiasis is a neglected tropical disease affecting 220 million people, including 50 million preschool-aged children (PSAC). It impacts early childhood development, causing cognitive impairment, stunted growth, and impaired immune response. Praziquantel (PZQ) is the only recommended treatment, but its current formulation is unsuitable for PSAC due to taste and size issues. A new paediatric formulation offers smaller, more palatable tablets, facilitating Mass Drug Administrations (MDAs) targeting PSAC. Madagascar has a high schistosomiasis burden, with local prevalence rates over 60%, and PZQ is distributed for school-aged children (5 to 15 years), excluding PSAC. Knowledge about schistosomiasis and PZQ-MDA for PSAC is often limited. This study aims to assess knowledge of schistosomiasis and PZQ treatment among caregivers of PSAC in two regions of Madagascar.

Method: Data was collected through a cross-sectional survey of adult caregivers in Boeny and Fianarantsoa, Madagascar. R statistical software was used to calculate a knowledge score derived from six topics: drug effectiveness, disease transmissibility, its pathway, paediatric infection, asymptomatic infection and the possibility of re-infection. Results were normalized to a score ranging from 0-100, with 0 being the lowest and 100 the highest. Descriptive statistics and measures of central tendency were used to display the results.

Results: Overall, 6154 caregivers were surveyed, with 991 from Fianarantsoa and 5163 from Boeny. Place of survey was in 94.6% a healthcare setting such as at a primary healthcare center or a routine vaccination of the child. Knowledge scores ranged from 1.3 to 100 points, with a median of 67 (IQR 33.9). The most common misconception about schistosomiasis was the transmission via drinking water (53.1%). Around 22% of caregivers stated that after PZQ treatment reinfection was impossible and 55.4% thought that PZQ had no side effects.

Outlook: This study showed that knowledge of schistosomiasis and paediatric treatment varies among populations. Addressing misconceptions and providing accurate information are crucial for the sustainable implementation of PZQ-MDA for PSAC in Madagascar, aiding the goal of eliminating schistosomiasis as a public health problem *by* 2030.

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Healthcare-seeking behaviour for schistosomiasis treatment among preschool-aged children in Uganda's lakeside communities

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Schistosomiasis is a major public health concern in Uganda, with a 36.1% prevalence among preschool-aged children, exceeding the national average of 25.6% (Exum et al., 2019). To inform the pilot introduction of a child-friendly formulation for schistosomiasis treatment —arpraziquantel — to children aged 2 to 5 years, we explored parental healthcare-seeking behaviours for preschool-aged children (PSAC) likely to be affected by the disease in lakeside communities.

This cross-sectional qualitative study was conducted in 2022 in Hoima (Lake Albert) and Bugiri (Lake Victoria) districts, including 65 interviews and ten focus group discussions with parents/guardians of PSAC, Village Health Teams (VHTs), health professionals, community leaders, and district officials, alongside direct observations. Thematic analysis was guided by a healthcare access framework examining the availability, accessibility, affordability, adequacy, and acceptability of the medication.

The study found that parents seek medical treatment for their children from multiple sources, including VHTs, public and private health facilities, herbalists, traditional healers and churches, often consulting different providers based on availability, cost or success. Mothers are typically the primary decision-makers including financial responsibility, while fathers are often absent. VHTs were also found to play a role in guiding health decisions. For schistosomiasis treatment, mass drug administration (MDA) programs offer convenient access, but outside of MDAs, treatment is limited by medication unavailability, distance to hospitals, and transport challenges. Parents value government-provided free medication for school-based MDAs but also had reservations, including challenges based on perceiving information prior to MDAs as insufficient and reports of some children experiencing side effects (e.g. abdominal pain, diarrhoea).

Mothers, as primary decision-makers, bear the cost of child healthcare, including for schistosomiasis, but face limited access to praziquantel outside MDAs, with acute cases requiring costly hospital referrals. Families rely on MDA as the only free, accessible preventive measure. Improving school-based MDAs is crucial to enhance communication with parents prior to MDAs, preventing tensions that could also affect MDAs for PSAC. The global impact of the newly developed arpraziquantel depends on local availability, affordability, healthcare provider awareness and parental acceptance.

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Effect of behavioral interventions on schistosomiasis-related knowledge, attitudes, and practices of school children in Pemba, Tanzania – Results of a 3-year study

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Background: Schistosomiasis is a parasitic disease that mostly affects school-age children in sub-Saharan Africa. Preventive chemotherapy is the mainstay of control. Other interventions, including behavior change communication (BCC), are recommended to reduce transmission and ultimately achieve elimination. We determined the effect of BCC interventions on schistosomiasis-related knowledge, attitudes, and practices (KAP) among children who were exposed to different frequencies and durations within the 3-year SchistoBreak project in Pemba, Tanzania.

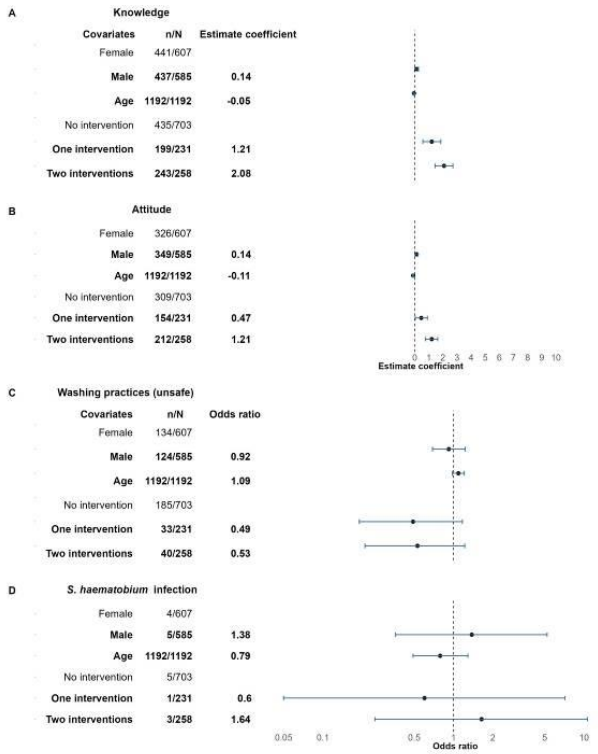
Methods: Annual surveys were carried out from 2020 to 2024 in 18 primary schools. Schistosomiasis-related KAP was assessed in randomly selected children attending grades 3-5. BCC interventions were implemented for one period (4 schools), two periods with no gap (3 schools), two periods with a 1-year gap (1 school), or never (10 schools). Linear and logistic mixed-models with random effect were applied to assess associations between BCC exposure categories as predictors and knowledge or attitude scores, or unsafe washing practices as the outcome variable in 2024.

Results: A total of 4196 children participated in the surveys. Knowledge and attitude improved with continuous or repeated exposure to BCC interventions. In 2024, the knowledge scores were significantly higher in children who received BCC intervention once (estimated coefficient (β): 1.2, 95% confidence interval (CI): 0.6-1.9) or twice (β: 2.1, 95% CI: 1.4-2.7), as compared to children who never received BCC interventions. Children who were exposed to BCC interventions twice (β: 1.2, 95% CI: 0.8-1.6) had significantly higher attitude scores in 2024. Washing practices improved regardless of whether or not children were exposed to BCC. The washing platforms installed in intervention areas were known by up to half of the children exposed to BCC interventions, but their use was considerably lower, varying between 7.5% and 43.1%.

Conclusions: Improved KAP is important to support schistosomiasis elimination through behavior change. For a lasting effect on KAP, repeated BCC interventions are

required, coupled with access to improved water infrastructure.

Fig. 1



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Knowledge gaps in community health workers' understanding of schistosomiasis transmission – Implications for schistosomiasis control in Côte d'Ivoire, Kenya, and Uganda

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Schistosomiasis is a neglected tropical disease that presents a major global health challenge, affecting over 250 million people, including children both younger and older than five years, particularly in Sub-Saharan Africa. Community health workers (CHWs) are vital in disseminating health information about schistosomiasis transmission, prevention and management. Yet, CHWs face challenges that impact their ability to provide effective health information to the communities they serve. This study explores CHWs' understanding of schistosomiasis transmission and the factors influencing their understanding.

As part of a larger formative study within the ADOPT project, which aims to identify the most suitable communication channels and distribution platforms to distribute arpraziquantel —a new paediatric treatment for preschool-aged children with schistosomiasis – this research used focus group discussions and in-depth interviews with CHWs in Côte d'Ivoire, Kenya, and Uganda. The study was conducted between December 2021 and June 2022.

Findings indicated that CHWs had various interpretations of how schistosomiasis is transmitted beyond the standard biomedical explanation. They often misapplied their knowledge of other diseases to schistosomiasis. Factors that contributed to this misapplication were the presence of multiple diseases with characteristics similar to schistosomiasis, CHWs' engagement in dealing with those diseases, the nature of fragmented health intervention programmes, and inconsistent training. As a result, the misapplication of health information could lead to undesired health-related behaviours among community members, affecting schistosomiasis prevention efforts.

Addressing the gaps in CHWs' understanding of schistosomiasis transmission requires training tailored to meet the specific contextual and practical needs of CHWs, focusing on the unique transmission dynamics of schistosomiasis. It is important to highlight how the transmission method of schistosomiasis shares similarities with other (waterborne) diseases while emphasising its distinct characteristics that require targeted understanding. This approach calls for stronger collaboration between disease-specific intervention programmes.

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Resistance Evaluation and Surveillance Initiative for Schistosomiasis Treatment (RESIST)

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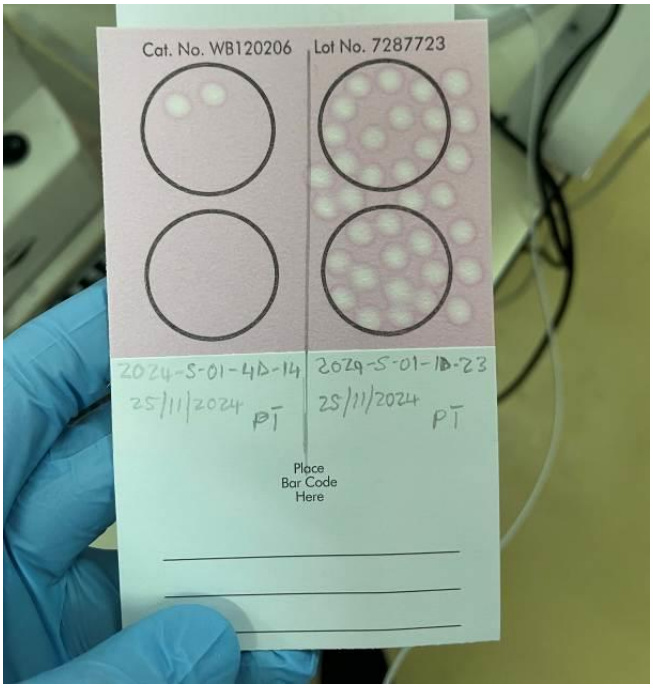
Zanzibar has an impressive track record implementing mass drug administration (MDA) with praziquantel (PZQ) against *Schistosoma haematobium* infections since the 1980s, achieving elimination of schistosomiasis as a public health problem in most areas. However, hotspots with high prevalence of infection (5-10%) remain. The RESIST project is set in Pemba (Zanzibar, Tanzania), where we hypothesise that MDA-driven selection of drug-resistant parasite strains may be contributing to persistent transmission in hotspots. The recent discovery of the molecular basis of PZQ action means that for the first time we are able to screen natural *Schistosoma* populations for genetic signatures that may point to reduced PZQ efficacy, or even resistance. The RESIST project combines parasitological surveillance, genomic analyses of the *S. haematobium* populations, and mathematical modelling to deliver new insights into how MDA has shaped the epidemiology and genetic diversity of *S. haematobium* in Pemba, as well as PZQ efficacy. In 2024–2025, quintuple urine filtration over five days was performed before and after MDA among >1000 children from two hotspot schools, and single pre-treatment urine filtrations were performed in an additional 15 non-hotspot schools (~800 children per school). In the hotspot schools, infection prevalences based on quintuple filtration were twice as high compared to prevalence based on the first sample only, with a peak infection prevalence of 35% over five days in one of

the schools. Eggs from positive urine samples were hatched and individual miracidia (N = 7,253 pre-treatment, N = 354 post-treatment) were isolated and stored on FTA cards for whole genome sequencing (WGS). WGS will also be performed on miracidia collected from non-hotspot schools (2025) and on archived samples from the same schools collected in 2012 and 2017. Data on genetic variability and correlation with egg reduction rates will be used to inform recently developed mathematical models for transmission and evolution of drug resistance in schistosomiasis. These models will in turn be used to predict the long-term impact of MDA programmes on infection levels, genetic diversity and PZQ efficacy, how to best monitor for drug efficacy, and how to best mitigate drug resistance if it occurs. Concluding, the RESIST project is laying the foundations for population-based research into drug resistance in *Schistosoma* species and will have important implications for novel drugs in the pipeline.

Fig. 1



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Efficacy of Praziquantel for treating *S. haematobium* infections in Zanzibar, a setting exposed to mass drug administration for more than 20 years – Early results of the RESIST project

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Background: On the Zanzibar islands, Tanzania, mass drug administration (MDA) with praziquantel against *Schistosoma haematobium* infections is implemented regularly since the early 2000s. Elimination of schistosomiasis as a public health problem has been achieved in most areas and interruption of transmission is the anticipated goal. However, hotspots with high prevalence of infection remain. The RESIST project implemented in Pemba Island investigates whether any MDA-driven selection of praziquantel resistance is occurring and contributes to persistent transmission in hotspots.

Methods: In the initial phase of the RESIST project, from October 2024 to March 2025, the efficacy of praziquantel treatment was assessed in two hotspot schools. In each school, a cross-sectional survey was conducted in the week before and two weeks after school-based MDA. In each survey, up to five urine samples per participant were collected and examined with urine filtration microscopy. For MDA, children were treated with praziquantel (40 mg/kg, single oral dose) and received a cup of porridge in the morning, before treatment activities started.

Results: The *S. haematobium* prevalence in the two schools was 6% (40/654) and 21% (149/703), respectively, before MDA, when the first urine sample per participant was examined. The pre-MDA prevalence increased to 14% (102/750) and 37% (280/749), respectively, when up to five samples per participant were collected and examined. Two weeks post-MDA, the prevalence was 1% (3/299) and 6% (35/637), respectively, based on single sample examination, and 1% (4/492) and 9% (64/697), based on quintuple urine examination. Among children that were egg-positive before treatment and took praziquantel during the MDA, the praziquantel cure rate ranged from 78-96%, depending on school and sampling approach.

Conclusion: Regardless of the long-term application of praziquantel in Zanzibar, our preliminary results revealed cure rates of praziquantel that are similar to those reported from other studies. Egg reduction rates will be determined once survey data are cleaned completely. Whether the *S. haematobium* miracidia isolated from egg-positive individuals show genetic markers of praziquantel resistance will be assessed in the future molecular work of the RESIST project.

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Prediction of the emergence of drug resistance in *Schistosoma haematobium* on Pemba Island, Zanzibar

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Mass drug administration (MDA) of praziquantel (PZQ) has been the backbone of schistosomiasis control for many decades. The widespread use of PZQ, and the absence of alternative treatment for schistosomiasis, have raised concerns about potential development of resistance to this drug. There is a growing understanding of the biological mechanisms that could lead to PZQ resistance in schistosomes [1]. However, it is currently unclear how potential emergence of drug-resistant *Schistosoma* strains in settings with ongoing MDA would affect transmission and parasite population dynamics, and what the implications for schistosomiasis control would be. To address these matters, we present the first-ever individual-based model for predicting infection trends, parasite genetics, and PZQ efficacy in *Schistosoma.* The model simulates the spread of monogenic PZQ resistance in a *Schistosoma* population, capturing essential elements of the parasite"s biology and transmission: a PZQ-insensitive juvenile worm stage, monogamous adult worms, human host age patterns in (re-)infection, and population dynamics of the intermediate snail host. Transmission is regulated through acquired immunity in humans and limiting mechanisms at the snail level. The model has been calibrated to reproduce historical and prospectively collected data from Pemba Island (Zanzibar, Tanzania) on: 1) *Schistosoma haematobium* infection epidemiology, 2) frequencies of genetic drug resistance markers in miracidia isolates, and 3) PZQ efficacy. Using the calibrated model, we show that drug resistance emerges more slowly in *S.*

haematobium than previously predicted for soil-transmitted helminths in a similar modelling study [3], and that this speed is dependent on the type and degree of transmission-regulating mechanisms. If preschool-aged children would be included in future MDA rounds, the spread of PZQ-resistant schistosomes would accelerate considerably. These findings stress that continuation and potential scale-up of MDA on Pemba needs to be accompanied by implementation of pharmacovigilance surveys to monitor the threat of PZQ resistance.

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Evaluating the diagnostic performance of UCP-LF CAA for the detection of female genital schistosomiasis in comparison to colposcopy-based visual diagnosis – A cross-sectional study from rural Madagascar

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Female genital schistosomiasis (FGS) is a condition resulting from a chronic infection with *Schistosoma haematobium*, affecting 50 million women in low- and middle-income countries. The standard screening for FGS recommended by the World Health Organization is colposcopy, visually detecting its typical signs. The laboratory methods conventionally used to detect schistosome infections have the potential to detect FGS, but have not been validated yet. Using these methods in highly endemic countries, such as Madagascar, might be advantageous to overcome limitations of colposcopy. The objective of this study was to compare the diagnostic performance of colposcopy for FGS with the detection of the circulating anodic antigen (CAA), which is produced by the parasite and can be quantified using an immunochromatographic assay.

A cross-sectional study was conducted from March to August 2021 at three primary health care centres in the Boeny region of Madagascar. Background characteristics, colposcopic images and urine samples were collected from women aged 18-49 years. Urine samples were subjected to upconverting reporter particle, lateral flow (UCP-LF) CAA analysis in Antananarivo. Clinical diagnosis of FGS was based on an agreement of two gynecologists on FGS-specific lesions in the colposcopic images. The proportions of FGS-positive results for colposcopy and schistosome infection based on UCP-LF CAA were estimated. To evaluate the performance of UCP-LF CAA in comparison to the visual diagnosis of FGS, we computed measures of diagnostic agreement. Logistic regression will be used to calculate odds ratios (OR) with 95% confidence intervals for the association of visual FGS diagnosis with the antigenic diagnosis of the parasite by UCP-LF CAA.

From a convenience sample of 500 women, UCP-LF CAA and colposcopy results were available for 413. From this, 17.4% (n = 72) were negative in both tests, 26.4% (n = 109) tested positive with UCP-LF CAA, 20.1% (n = 83) were visually diagnosed with FGS and 36.1% (n = 149) were positive in both tests.

Preliminary results show a high prevalence of schistosome infection, which is in alignment with previous assessments of FGS in the area. This represents an ideal setting to further assess the diagnostic performance of antigen detection methods and thus opens perspectives for the improvement of FGS diagnosis in highly endemic contexts, such as Madagascar.

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Diagnosing FGS with colposcopy imaging – The challenge of an objective diagnosis

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Background: Diagnosing Female Genital Schistosomiasis, a chronic manifestation of *Schistosoma haematobium* infection, remains challenging due to the lack of direct laboratory methods and the subjective nature of the WHO-recommended colposcopic assessment. Expert visual interpretation demands extensive time and human resources. This study evaluated the operational burden of clinical FGS diagnosis at primary healthcare centres (PHCCs) in rural Madagascar.

Methods: In a cross-sectional study at three PHCCs with schistosomiasis prevalence >60%, women aged 18 to 49 were recruited during the FIRM-UP campaign. Trained midwives performed colposcopies and captured cervical images for FGS assessment. Two expert gynaecologists independently reviewed these images, with discrepancies resolved through moderated consensus rounds in a second step. We measured diagnostic performance between the experts and quantified the time and personnel required.

Results: A total of 521 cervical images were analysed. Overall, FGS-positive diagnosis varied between 78.7% and 40.1% (κ = 0.20). Findings on specific FGS signs further underscored variability: rubbery papules were observed in 9.4% vs. 4.1% of cases (κ = 0.49), homogenous yellow sandy patches in 51.8% vs. 24.6% (κ = 0.27), abnormal blood vessels in 10.4% vs. 5.3% (κ = 0.47), and grainy sandy patches in 72.6% vs. 20.4% (κ = 0.07). Notably, 217 images out of the 521—lacking initial agreement—required three moderated consensus rounds, guided by a dedicated moderator, which took a total of 6 hours and 30 minutes. At the end, 26 images reached no consensus and were excluded.

Conclusion: Our study shows the challenge to reach an objective consensus for the diagnosis of FGS. If for screening purposes, the visual investigation seems to present several advantages, diagnosis is hampered by subjectivity and demands an intensive employment of time, human resources, and infrastructure. Diseases like FGS, based on subjective assessments, face significant hurdles—especially in clinical trials where comparing endpoints and outcomes becomes complicated. Standardized protocols, targeted training, and AI-assisted analysis could be essential to improve diagnostic accuracy and efficiency in these settings.

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Diagnostic accuracy and interrater reliability of colposcopy for female genital schistosomiasis implemented at primary level of care

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Background: Diagnosing neglected tropical diseases (NTDs) remains challenging due to inadequate tools, leading to misdiagnoses, especially in resource-limited settings. The WHO"s NTD Roadmap 2030 calls for cost-effective, field-deployable diagnostics. Female genital schistosomiasis (FGS), caused by *Schistosoma haematobium*, leads to chronic lesions and gynecological symptoms like pelvic pain, discharge, and infertility. The WHO-recommended diagnosis via colposcopy requires expertise and infrastructure, limiting its use. This study assesses the diagnostic accuracy of FGS detection by trained midwives at primary healthcare centers (PHCCs) compared to expert gynecologists.

Methods: A cross-sectional study was conducted in three PHCCs in the Boeny Region, in Northwestern Madagascar, where FGS prevalence exceeds 60%. Women aged 18-49 were recruited through the FIRM-UP campaign follow-up. Seven trained midwives performed colposcopies, capturing cervical images for FGS assessment. Two gynecologists independently evaluated captured images, resolving discrepancies through moderated consensus round. Statistical analyses determined diagnostic accuracy, sensitivity, specificity, positive predictive value (PPV), negative predictive value (NPV), and interrater reliability using Cohen"s kappa.

Results: A total of 495 participants with valid images were included. Mean age was 27 years, with 67.3% reporting at least one FGS symptom. Image quality varied, with 57.0% classified as lower quality.

Midwives achieved 75.0% accuracy (95% CI: 70.9-78.7), with high sensitivity (96.4%, 95% CI: 93.7-98.0) but low specificity (28.7%, 95% CI: 21.8-36.5). PPV and NPV were 74.4% (95% CI: 70.0-78.4) and 78.9% (95% CI: 65.8-88.2). Interrater agreement was fair (κ = 0.30, 95% CI: 0.22-0.39). PHCC location and screening experience significantly influenced diagnostic performance.

Conclusion: Diagnostic accuracy varied based on image quality, screening routine, PHCC location, and midwives" experience. Midwives showed high sensitivity but low specificity, indicating a tendency to over-diagnose. Standardized protocols, targeted training, and integrated screening approaches are crucial to improving FGS detection.

While AI-assisted diagnostics remain premature, future AI tools or real-time expert consultation could enhance accuracy, reduce disease burden, and promote equitable healthcare access.

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Prevalence of placental schistosomiasis and associations with adverse birth outcomes among pregnant women in Agogo, Ghana – Schisto-SGA/Agogo-2000

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Background: Schistosomiasis during pregnancy is associated with increased risk of adverse birth outcomes (ABO) such as low birth weight (LBW) or small for gestational age (SGA) [1]. Possible underlying pathophysiological mechanisms include placental inflammation, which can be induced by placental schistosomiasis (PS) [2]. Reliable data on the prevalence of PS and its association with ABO are sparse. One study from 1972 showed a prevalence of 20% based on a tissue maceration technique [3], which was confirmed in a newer study using polymerase chain reaction [4].

Methods: The design of the initial project was a cross-sectional study carried out between 2000 and 2001 in Agogo (Ghana) with the purpose to analyze associations of maternal malaria with ABO. Detailed data on the cohort (n=839) and

residual samples (extracted DNA from peripheral maternal and placental blood) are still available. Samples are tested for the presence of schistosomiasis using a PCR protocol targeting *Dra1.* Prevalence of maternal and placental schistosomiasis will be assessed and its impact on prematurity, SGA and LBW calculated using multivariate analysis. Ethical approval for the original study and for the current retrospective analysis were obtained from the Kwame Nkrumah University in Kumasi (Ghana).

Results: Preliminary data will be presented at the conference.

Discussion: Assessing the prevalence of PS in endemic regions is a challenge and epidemiological data remain scarce. Meanwhile, maternal schistosomiasis poses a threat to maternal and newborn health. Better understanding of the relationship between maternal schistosomiasis and ABO would underline the importance of the urgently needed treatment of schistosomiasis in pregnant women and young women of reproductive age and provide further rationale for treatment recommendations.

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Multi-country assessment of the prevalence of female genital schistosomiasis (MAP-FGS) – The example of implementation challenges of complex health interventions in Madagascar

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Female genital schistosomiasis (FGS) is a gynaecological condition caused by a chronic infection with *Schistosoma haematobium* (Sh), affecting approximately 56 million women and girls across sub-Saharan Africa (SSA). In endemic areas, mass drug administrations (MDA) with praziquantel (PZQ) are applied to control schistosomiasis. While PZQ eliminates adult worms, its effect on the resolution of FGS remains unclear. Furthermore, MDA primarily target school-aged children, leaving the long-term impact on adolescent girls and adult women poorly understood. Thus, the main aim of this study (MAP-FGS) was to assess the burden of FGS in women and girls between 10 and 60 years in SSA through a multi-country approach.

In Madagascar, a cross-sectional investigation is conducted in two regions with different Sh transmission settings: high prevalence (>50%) in Boeny, and low prevalence (0-10%) in Diana. A total of 1200 women (18-60) and 276 girls (10-17) is recruited to reflect exposure before and after the rollout of national MDA programmes. Diagnosis of FGS or probable FGS cases is confirmed through the presence of parasitic eggs in addition to colposcopy in women, or based on clinical symptoms in girls, respectively.

Between April and May 2025, participants in the region of Boeny were recruited from 15 fokontany, surrounding the three study sites at primary healthcare centres (CSB). Overall, we visited 1693 households. From those, 701 women and 151 girls took up the proposed service and visited the CSB. Despite the high participation rate, the main challenge was reaching and recruiting participants far from the CSB. Furthermore, procurement and logistics of study materials proved difficult in these settings. In addition, permanent electricity supply was not always provided, posing a significant challenge when performing colposcopy and microscopy, as well as maintaining appropriate storage conditions for samples. Working hours have also been adjusted to accommodate the participant"s time, as most work in rice fields during the day.

Despite significant challenges encountered during the implementation of MAP-FGS in Madagascar, over half of the targeted participant number has been successfully recruited so far. By documenting the burden and characteristics of FGS in this context, this study will ultimately inform national and regional schistosomiasis control strategies including women and girls who are not reached by school-based MDA programmes.

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Evaluation of the implementation of health services at primary level of care for female genital schistosomiasis in Madagascar

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Background: Female genital schistosomiasis (FGS) is a chronic condition caused by prolonged infection with *Schistosoma haematobium*. In resource-limited settings, FGS diagnosis is challenging because it relies on colposcopy-based examinations, which are often unavailable in primary health care centres (PHCC) due to specialized training and technology requirements. Colposcopy can also be used to screen other gynecological conditions, as cervical cancer. For the first time in the Boeny Region of Madagascar, the FIRM-UP project is offering yearly a colposcopy-based screening service to 500 reproductive-age women in three PHCCs. Our

study is evaluating the service"s outreach capacity, continuity, acceptability and sustainability.

Methods: A mixed-methods approach is used. Quantitative data are collected in 2025 using a structured questionnaire administered at the end of the colposcopy examination, and responses are recorded via an electronic case report form (eCRF) on RedCap. All women attending their third or fourth follow-up visits are included in the analysis. Additionally, qualitative data have been gathered through focus group discussions (FGDs) and in-depth interviews (IDIs) with both users and providers. Three FGDs and six IDIs were conducted with women, and one FGD and two IDIs were held with midwives, focusing on their perceptions and experiences of colposcopy examination.

Preliminary Results: Among the 327 women aged between 19 and 55 years old enrolled to date, 77.7% attended three visits and 19.9% attended four. The farthest municipality reached is 10 km from a PHCC, with 5.20% of women traveling that distance, mostly by foot. Urban areas have been reached more effectively than rural regions. Some women dropped out due to relocation (4.4%), death (1.0%), refusal to participate (4.2%) or current pregnancy (1.8%). Overall, 84.4% expressed satisfaction with the service, and 46.0% attended primarily to better understand their health, though 15.9% noted that the examination disrupted their daily activities.

Conclusion: Preliminary findings indicate a high retention rate and overall satisfaction with this newly introduced service, driven by participants" strong interest in monitoring personal health. The final results will offer critical insights to support communication strategies and guide potential expansion of integrated services in Madagascar and similar settings, aligning with evolving community needs.

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Female Genital Schistosomiasis – A comparative study between Zanzibar and Madagascar shedding light on onset and progression determinants

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Female genital schistosomiasis (FGS) is a chronic condition caused by the inflammatory response to *S. haematobium* eggs in the female genital tract. Between 40 and 56 million women are estimated to be affected by FGS worldwide. FGS presents with cervical and vaginal mucosal lesions causing pain, abnormal bleeding, and is associated with infertility, ectopic pregnancy, miscarriage, and an increased risk of HIV transmission. The wide range of FGS clinical presentations poses serious challenges for diagnosis, especially in low- and middle-income countries. Regular Mass Drug Administration (MDA) of praziquantel is reducing the prevalence of schistosomiasis and, as a consequence, is expected to significantly reduce the prevalence of FGS.

FESZAM aims to compare the FGS situation in Madagascar (Boeny region where > 50% prevalence of urogenital schistosomiasis is presently reported) and Zanzibar, where the schistosomiasis situation was similar to that of Madagascar in the 1990s but where a multi-year MDA intervention resulted in a drop of schistosomiasis prevalence from >70% to < 5%. The study will compare colposcopic results of more than 500 women attending Maternal and Child Health clinics in the two countries.

The main objective of FESZAM is to assess the impact of MDA on FGS and to identify factors influencing the onset and the progression of FGS. Further, the study aims to map FGS distribution patterns of the remaining cases of FGS in Pemba (for example, FGS being present in women who were out of school age when MDAs were organized in schools or who systematically refused treatment).

The study expects that the results will have a global impact, pushing more endemic countries to engage in preventive chemotherapy activities rather than trying to diagnose and cure FGS once the lesion is developed, and a local impact, providing indications to the Ministry of Health of Zanzibar on which age groups are more at risk of developing FGS and therefore allowing for targeted screening.

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Impact of chemical snail control on intermediate host snail populations for urogenital schistosomiasis elimination in Pemba, Tanzania – Findings of a 3-year intervention study

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The World Health Organization (WHO) has the goal to eliminate schistosomiasis as a public health problem globally by 2030 and to interrupt transmission in selected areas. Chemical snail control is one important measure to reduce transmission and achieve local elimination. We aimed to assess the impact of several rounds of chemical snail control on the presence and number of the *Schistosoma haematobium* intermediate snail host (*Bulinus* spp.) in water bodies (WBs) on Pemba Island, Tanzania, a setting targeted for elimination of urogenital schistosomiasis.

During the three annual intervention periods of the SchistoBreak study implemented in the north of Pemba from 2020 to 2024, malacological surveys were conducted up to four times per period in WBs of hotspot implementation units (IUs). Present freshwater snail species, vegetation, and WB characteristics were recorded. If *Bulinus* was found, the snails were inspected for S. haematobium infection and snail control with niclosamide was conducted.

Across the three intervention periods, a total of 112 WBs were identified in 8 hotspots IUs. The spatial distribution of WBs with *Bulinus* per IU was heterogeneous, ranging from 0.0% (0/15) of WBs infested in one IU in 2022 to 80.0% (8/10) of WBs infested in one IU in 2021. *Bulinus* presence was significantly associated with lower pH values in WBs (odds ratio: 0.2, 95% confidence interval: 0.1-0.4). A total of 0.2% (6/2360) of collected *Bulinus* were shedding *S. haematobium* cerariae. Following snail control, the number of *Bulinus* decreased or remained absent in 56.7% (38/67) of visits at WBs when compared to the previous visit in 2021, 54.9% (28/51) in 2022, and 33.3% (32/96) in 2023. In a total of 43.1% (22/55) of initially infested WBs, no *Bulinus* were found in the survey round conducted a few weeks after the first application of niclosamide. However, 25.4% (14/55) of WBs showed a pattern of recurring *Bulinus* presence.

The distribution of WBs containing *Bulinus* was very heterogeneous. The percentage of *Bulinus* with patent *S. haematobium* infection in our study area was extremely low. Repeated niclosamide application reduced the number of *Bulinus* in WBs, but snails often recurred after one or multiple treatments. While chemical molluscicide can reduce snail numbers, to fully break the *S. haematobium* transmission cycle, the timely diagnosis and treatment of infected humans, access to clean water, sanitation, and health education remain of prime importance.

Fig. 1

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Seasonal and spatial dynamics of freshwater snail populations and schistosomiasis transmission in Mizan Aman, Ethiopia

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Understanding the dynamics of freshwater snail populations and their role in schistosomiasis transmission is critical for optimizing control strategies in endemic regions. Schistosomiasis, caused by parasitic flatworms of the genus Schistosoma, remains a major public health burden in tropical and subtropical regions. The parasites undergo part of their life cycle within freshwater snails, releasing infectious cercariae into the water, which can penetrate human skin and lead to infection.

This study investigates the seasonal and spatial variations in snail abundance and infection patterns in Mizan Aman, Southwest Ethiopia, to inform targeted interventions. Data were collected from 20 freshwater sites across three distinct seasons: one dry and two wet seasons. Key environmental parameters, including temperature, pH, and salinity, were analyzed to understand their influence on snail populations and infection rates.

A total of 1,616 snails, predominantly Biomphalaria pfeifferi and Biomphalaria sudanica, were collected and examined. Significant seasonal fluctuations were observed, with snail abundance peaking during the dry season, likely due to stable habitat conditions, such as reduced water turbulence and steady water levels. Environmental factors influencing snail populations varied between seasons; for instance, salinity was a significant determinant of snail abundance during the dry season, while in the wet seasons, other factors such as total dissolved solids (TDS) and conductivity played a more prominent role.

In addition to snail population size, snails" infection rate was examined by cercaria shedding assays. In some collection sites like Agu, high infection rates were consistently recorded across all seasons. Interestingly, In Agu, an elevated infectivity rate in snails was observed during the wet season. suggesting a seasonal impact on cercarial shedding. Ongoing analyses aim to integrate these ecological observations with epidemiological data to explore correlations between seasonal variations and human schistosomiasis cases. This study underscores the need for seasonally adaptive and site-specific control strategies for effective schistosomiasis management and transmission prevention.

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How to control schistosomiasis outbreaks – A mathematical modelling study

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Background: Schistosomiasis is a waterborne parasitic disease transmitted through freshwater snails, affecting millions of people in tropical and subtropical regions. While generally endemic, outbreaks can occur due to imported cases and changes in snail habitats caused by climate change or human activities like dam construction and irrigation. However, most modelling studies focus on endemic settings, and outbreak control remains largely unexplored. Importantly, the predicted impact of outbreaks and their control may be sensitive to assumptions on key regulating mechanisms for maintaining endemic equilibrium, yet these remain debated. For instance, density-dependent parasite fecundity and acquired immunity have been incorporated in models but lack conclusive evidence.

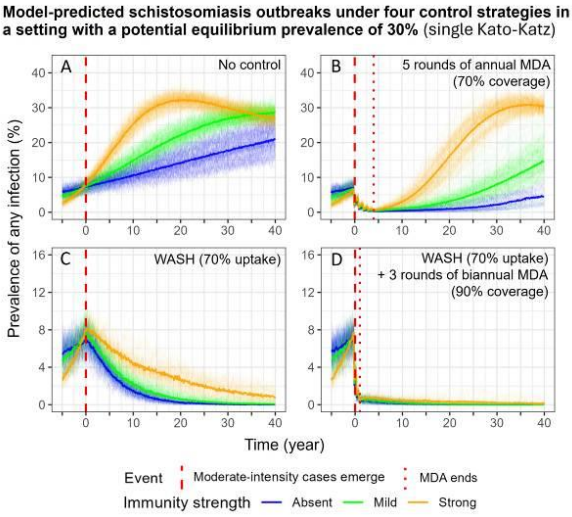
Method: We investigated the outbreak dynamics of *Schistosoma mansoni* under different assumptions on regulating mechanisms, and evaluated the impact of outbreak control strategies. We used the SchiSTOP model (Malizia *et al*., 2024), a hybrid framework integrating an individual-based model for human infections and a compartmental model for snail dynamics. We simulated outbreak scenarios in a naïve but susceptible population, triggered by imported cases. We tested common control strategies, including mass drug administration (MDA) and water, sanitation, and hygiene (WASH) interventions, implemented shortly after the first detectable moderate-intensity infections emerge.

Results and interpretation: Preliminary results indicate that community-wide MDA with high coverage for some years can rapidly suppress outbreaks but fails to eradicate the disease (Panel B). Especially when assuming strong aquired immunity as a reglating mechanism, stopping MDA leads to a rapid increase in prevalence. WASH can effectively slow down outbreaks (Panel C), but elimination will take several decades. A combined strategy of WASH together with 3 rounds of high-coverage MDA is required to control and eventually eliminate outbreaks (Panel D). Our findings highlight the need for

integrated strategies beyond standalone MDA for timely and sustainable control of local schistosomiasis outbreaks.

Reference: Malizia V, de Vlas SJ, Roes KCB & Giardina F (2024). Revisiting the impact of *Schistosoma mansoni* regulating mechanisms on transmission dynamics using SchiSTOP, a novel modelling framework. *PLOS Negl Trop Dis*, 18, e0012464.

Fig. 1



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Implementation of mass drug administration for lymphatic filariasis – The progress and the effectiveness and financial savings of integrating into an existing polio campaign

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Background: In 2019, Madagascar lost 360 lives to Neglected Tropical Diseases (NTD), which accounted for 0.2% of all deaths (164,161) in the country. This paper presents (a) the progress made towards achieving the 2023 Lymphatic Filariasis (LF) Mass Drug Administration (MDA) campaign goals; (b) the estimated financial savings resulting from integrating LF MDA into Polio immunization campaigns; and (c) the best practices, challenges, and recommendations.

Methods: In 2023, a total of 21,336,057 people in 83 districts were affected by LF and required Preventive Chemotherapy (PC). This report gives an overview of the LF MDA campaigns conducted by the national Neglected Tropical Diseases Control Programme (NTDCP) in those 83 districts. The LF MDA campaigns had three phases. In the first phase, 24 districts received triple therapy of Ivermectin, Diethylcarbamazine, and Albendazole (IDA), while the remaining 59 districts continued to receive dual therapy of Diethylcarbamazine and Albendazole (DA) as before. The first phase (15 districts) was not integrated, while the second phase (61 districts) was conducted simultaneously with the Polio Supplementary Immunization Activities (SIA) fourth round. The third phase (7 districts) was combined with Periodic Intensification of Routine Immunization (PIRI) and vitamin A supplementation. PC coverage was calculated by dividing the number of people treated by the total population targeted in the MDA campaign and multiplying by 100. The financial savings were calculated as the difference between the potential expense without integration and the actual expense with integration.

Results: In Phases 2 and 3, the campaign was able to cover 99.97% of the targeted 12,208 villages, which means that only three villages remained untreated. In contrast, Phase 1 covered all the targeted 2,847 village, attaining 100% geographic coverage. The 68 districts (Phase 2 and 3) that implemented an integrated approach attained an average therapeutic coverage of 76.6% (STDEV=8.3) compared to 73.2% (STDEV=6.7) among the 15 districts (Phase 1) that conducted MDA for LF without integration (p=0.05). The integration of the LF MDA campaign into the Polio SIA and PIRI campaign resulted in an estimated financial saving of US$1,431,203.

Conclusion: This study has shown that incorporating LF MDA into polio immunization campaigns can lead to improved financial efficiency and effectiveness in meeting the objectives of LF programs.

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Slash and Clear, a community-based vector control method, experiences from onchocerciasis-endemic areas in South Sudan and Cameroon

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Objective: Despite decades of treatment with ivermectin, onchocerciasis persists in many endemic foci. A "Slash and Clear" (S&C) community-based vector control method was proposed as an additional strategy for onchocerciasis elimination. This method involves cutting down vegetation where blackflies breed to reduce their population. We evaluated S&C feasibility and impact in endemic areas with different ecological features.

Methods: After mapping breeding sites, S&C was implemented in three onchocerciasis-endemic areas in South Sudan (Maridi, Mundri West and Mvolo Counties) and in one area in Cameroon (Ntui health district). Intervention sites included the Maridi dam spillway (sole blackfly breeding site in central Maridi); River Naam in Mvolo; River Yei in Mundri West; and the River Sanaga in Ntui. Before and after S&C, blackfly monthly biting rates (MBR) were determined from the human landing catch data.

Results: It took only four volunteers and four working days to remove the vegetation at the Maridi dam with a >90% decrease in blackfly bites during the following month. The intervention was initiated in 2019 during a research project and later perpetuated annually by the community without external support. In contrast, in Mvolo and Mundri West, one round of S&C did not engender a significant decrease in MBR because of multiple breeding sites including on rocks and timing of the intervention. In Ntui, S&C decreased both MBR (27,900 to 13,608 bites/man) and Ov16 seroprevalence in 3-6-year-olds (10.0% to 4.5%).

Conclusions: S&C is an environmentally friendly effective method to decrease blackfly biting rates and onchocerciasis transmission. Its effect depends on the ecological situation (more difficult in large rivers and where breeding is on rocks),

the timing of the intervention and may need to be repeated several times each year to obtain a significant impact.

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Harmonizing Loiasis classification – Integrating expert insights and AI analysis for enhanced disease management

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Loiasis is a highly neglected tropical disease caused by the parasitic nematode *Loa loa*. The current classification of loiasis, encompassing clinical, epidemiological, and diagnostic categories, lacks standardization, which impedes effective disease management and research.

This project aims to establish a harmonized classification system for loiasis by integrating expert-defined categories based on comprehensive scientific data. Infectious disease specialists will delineate the classification criteria, encompassing various stages of infection, symptomatology, and diagnostic aspects. These expert-defined classifications will then be compared to those generated by an artificial intelligence (AI) system, which will analyze large datasets to propose its own categorization. The comparison between human expert and AI-generated classifications will highlight discrepancies and potential areas for refinement, ensuring a robust and accurate classification system.

Ultimately, this project seeks to improve the consistency and accuracy of loiasis classification, facilitating better diagnosis, treatment, and public health interventions, and advancing research efforts aimed at controlling and eliminating *Loa loa*.

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Analysis of the economic burden of loiasis in rural areas of Gabon

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Background: Loiasis is a vector-borne filarial infection endemic to parts of sub-Saharan Africa. Historically, the disease has been regarded as having minimal clinical significance; however, emerging evidence has begun to challenge this perception. Loiasis disproportionally affects the economically disadvantaged communities residing in rural forested regions. To better understand the economic burden of loiasis, we conducted a comprehensive cost-of-illness study in an endemic region of Gabon, with the aim of quantifying the financial costs incurred by individuals infected with the disease.

Methods: We implemented a cross-sectional survey in 2023 in rural Gabon. Study participants took part in diagnostic testing for loiasis and were interviewed based on a standardized questionnaire covering medical and non-medical costs. Participants reporting eye worm migration or harboring loiasis microfilariae were defined as loiasis positive. Based on an analysis of direct and indirect cost factors, various cost estimates were derived by creating a synthetic control group by means of entropy-balancing and then applying generalized linear models (GLM) for the study region.

Findings: Between 19 April and 11 July 2023, 1,269 participants aged 18 to 65 in 38 villages were screened. 595 (47 %) out of all 1,269 participants had loiasis. We show that the average annual costs directly attributable to loiasis amount to 39.05 USD per individual per year. Average cost estimates are primarily driven by indirect costs and direct non-medical costs. We further show that in the rarer case that loiasis results in symptoms leading to healthcare seeking, treatment costs from the patient"s perspective can be very high and amount to an average of 29.35 USD per treatment [Median = 20.07 USD] or about 43 percent of the monthly average income in the region.

Interpretation: Contrary to its previously perceived benign nature, loiasis is now recognized as a condition that can significantly impair the quality of life of affected individuals. Our findings suggest that it is in particular associated with sizeable direct non-medical and indirect costs in economically disadvantaged communities. Notably, patients with symptoms leading to healthcare seeking can incur treatment costs that are often catastrophic, underscoring the need for a reevaluation of loiasis as a significant public health concern.

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Decentralizing Nodulectomy for Podoconiosis to the primary health care – Improving access and outcomes in southern Ethiopia

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Introduction and objectives: Podoconiosis, a debilitating condition caused by prolonged exposure to irritant soil, leads to lymphedema and the formation of painful, disfiguring nodules. In Ethiopia, where podoconiosis is endemic, a significant gap in treatment access exists, particularly in rural regions. The decentralization of nodulectomy (surgical removal of the nodules) to primary healthcare facilities aims to improve service delivery and patient outcomes. This report explores the progress of the decentralization of nodulectomy for podoconiosis patients in Southern Ethiopia, highlighting the implementation, challenges, and lessons learned.

Material and methods : The project was launched in January 2024 with theoretical and practical training sessions for healthcare workers in the Gamo Zone of Southern Ethiopia. A total of 12 mid-level healthcare workers from three health centers participated in the training. The trained healthcare workers performed nodulectomies on 50 podoconiosis patients, guided by expert mentors. Data on patient demographics, treatment outcomes, and the challenges faced were collected and analyzed.

Results: A total of 50 patients, with a median age of 45 years, underwent nodulectomy procedures at two health centers. The majority of patients were men (55.6%) with a median duration of lymphedema of 11 years. The average healing time for the wound was 21 days. The primary concerns for patients before surgery included difficulty walking (72.2%) and social stigma (63.9%). Post-procedure, patients experienced improved mobility and a significant reduction in stigma, with many able to wear shoes and return to work. However, challenges such as a lack of surgical supplies and the financial

burden on patients, particularly for travel and footwear, were identified.

Conclusion: The decentralization of nodulectomy for podoconiosis in primary healthcare facilities has proven successful in improving access to care and enhancing patient outcomes in Southern Ethiopia. However, continued efforts are needed to address logistical challenges, including the availability of surgical supplies and financial support for patients. The collaboration between local health authorities, universities, and NGOs was crucial to the success of the program. Recommendations include increasing funding, reducing travel costs for patients, and raising awareness to further reduce the stigma associated with podoconiosis.

Fig. 1

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Strongyloidiasis in travellers and migrants – Importance of screening populations at risk

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Background: *Strongyloides stercoralis* is an intestinal nematode, which is widespread in tropical and subtropical regions and often causes chronic infections in humans through autoinfection. The clinical picture varies from asymptomatic to life-threatening hyperinfection syndrome. There is concern that the prevalence of *S. stercoralis* in Europe is increasing due to importation by travellers and migrants.

Methods: Retrospective chart review study of patients evaluated at the Institute of International Health in Berlin. Cases were identified based on either a positive *Strongyloides* ELISA IgG result (i.e., probable cases) or the detection of *Strongyloides* larvae in stool using direct smear examination, the Baermann technique or Sodium Acetate-Acetic Acid-Formalin (i.e., confirmed cases).

Results: From 2018 to 2023, 162 *S. stercoralis* cases were identified. 98.8% of individuals resided in Europe. 48.8% were classified as migrants (half of whom were refugees) and 48.2% as non-migrants. History of recent travel was present in 66.7% of patients. Most common reason for travel was tourism (48.2%), followed by visiting friends and relatives (25.0%). Compared to non-migrants, migrants were more likely to be male (44.9 vs. 73.4%), younger (31 vs. 18 years), to be exposed in Africa (33.3 vs. 44.3%) or the Eastern Mediterranean region (10.7 vs. 31.6%). Symptoms were less common in migrants (89.7 vs. 57%) and migrants were more frequently identified through screening (10.3 vs. 48.1%). Most common symptoms in both groups were gastrointestinal (81.5 vs. 64.4%). Eosinophilia was present in 27.6%, with no significant difference between non-migrants and migrants (21.3 vs. 31.6%), or between probable or confirmed infections. Stool microscopy tests were positive in 34.5% (49/142), more frequently in non-migrants (45.2% vs. 23.1%). Positive serology was present in 21.6% (8/37) of cases with a positive stool microscopy.

Conclusion: Nearly half of the cases in migrants were asymptomatic and detected through screening. Most patients had no eosinophilia, and the sensitivity of serology was very low in cases with positive stool microscopy. These findings highlight the need for targeted screening strategies in at-risk populations. Both direct parasitological tests and *Strongyloides* serology should be combined, regardless of eosinophilia status. Due to the diagnostic limitations, therapy should be considered in case of clinical suspicion even if the test results are negative.

Fig. 1

Table

Characteristics of patients with *Strongyloides* infection evaluated at the IIH in Berlin

	Total	Migrant	Non-migrant
	(n=162)	(n=79)⁺	(n=78)⁺
Sex **			
Female	67 (41.4%)	21 (26.6%)	43 (55.1%)
Male	95 (58.6%)	58 (73.4%)	35 (44.9%)
Age in years, median (IQR, range) **	29 (18-44, 6-86)	18 (16-40, 6-79)	31 (24-43, 17-80)
Region of exposure **	(n = 156)	(n = 79)	(n = 75)
Africa	61 (37.7%)	35 (44.3%)	25 (33.3%)
Eastern Mediterranean	33 (21.2%)	25 (31.6%)	8 (10.7%)
Southeast Asia	26 (16.7%)	9 (11.4%)	17 (22.7%)
Americas	19 (12.2%)	4 (5.1%)	14 (18.7%)
Western Pacific	9 (5.8%)	3 (3.8%)	6 (8.0%)
Europe	8 (5.1%)	3 (3.8%)	5 (6.7%)
History of underlying immunosuppression			
HIV	7 (4.3%)	2 (2.5%)	5 (6.4%)
HTLV-1	1 (0.6%)	1 (1.3%)	-
History of alcohol use disorder	1 (0.6%)	1 (1.3%)	-
Reason for testing **			
Screening	46 (28.4%)	38 (48.1%)	8 (10.3%)
Clinical suspicion	116 (71.6%)	41 (51.9%)	70 (89.7%)
Symptoms at presentation¥**	119 (73.5%)	45 (57%)	70 (89.7%)
Gastrointestinal symptoms	88 (73.9%)	29 (64.4%)	57 (81.5%)
Respiratory	25 (21%)	9 (20.0%)	16 (22.9%)
Skin	36 (30.3%)	14 (31.1%)	21 (30.0%)
Other *	72 (60.5%)	34 (75.6%)	37 (52.9%)
Laboratory studies			
Eosinophilia (≥ 0.5 /nL)	43/156 (27.6%)	24/76 (31.6%)	16/75 (21.3%)
Hypereosinophilia (≥ 1.5 /nL)	9/156 (5.8%)	5 (6.6%)	3 (4%)
Positive stool microscopy	49/142 (34.5%)	15 (23.1%)	33 (45.2%)
Positive serology*§	121/150 (80.7)	67 (88.2%)	50 (71.4%)

Notes
Data as n (column %), unless otherwise specified
⁺ Migration status was unknown for 5 patients.
Differences in values between migrants and non-migrants were determined using a Chi-square test for categorical variables or a Mann-Whitney U test for medians:
* *p < 0.05*
** *p < 0.001*
§ Strongyloides IgG EIA-5812, DRG Instruments GmbH, Marburg, Germany
Abbreviations: IIH, Institute of International Health; IQR, interquartile range; HIV, human immunodeficiency virus; HTLV-1, Human T-cell lymphotropic virus type 1; IgG, immunoglobulin G

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Evaluating fly matrices and pooling strategies for (q)PCR-based screening of helminth egg carriage in house flies

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Background: The role of house flies in transmitting helminth eggs remains inconclusive due to methodological variations across studies. While microscopy has been the standard detection method, (q)PCR-based assays offer greater sensitivity and specificity, making them invaluable for field testing. However, the impact of fly matrix and pool size on diagnostic performance has not been evaluated. This study aimed to (1) assess the performance of conventional PCR and real-time PCR (qPCR) assays to detect helminth eggs in different fly matrices and across various pool sizes and (2) compare egg burdens on the exoskeleton and in the gut of house flies exposed to faeces containing helminth eggs.

Methods: The sensitivity of conventional PCR and qPCR assays was evaluated for detecting five *Taenia saginata* and five *Ascaris suum* eggs in different fly matrices (intact gut, filtered gut, and exoskeleton wash) and across various fly pool sizes (0, 1, 10, 20, and 40). Additionally, house flies (*Musca domestica* L.) were exposed to faeces spiked with 5,000 *T. saginata* eggs/g and 10,000 *A. suum* eggs/g. After three hours, eggs were recovered from the flies' exoskeletons and guts, then microscopically quantified.

Results: Both conventional PCR and qPCR failed to consistently detect *T. saginata* and *A. suum* eggs in intact gut samples, with sensitivity decreasing as pool size increased. In contrast, both conventional PCR and qPCR exhibited 100% sensitivity for *T. saginata* egg detection in filtered gut and exoskeleton wash samples across all pool sizes. For *A. suum*, qPCR demonstrated 100% sensitivity in all pool sizes of filtered gut and exoskeleton wash samples, outperforming conventional PCR (60% sensitivity for a single gut filtrate and 80% sensitivity for a pool of 20 exoskeleton washes). Following experimental exposure, significantly more eggs were recovered from the guts (222 eggs) compared to the exoskeletons (5 eggs) of 48 house flies.

Conclusions: Given the greater egg burden in the gut and the high sensitivity of qPCR in cleaner sample matrices (filtered gut and exoskeleton wash), pooling gut filtrates may provide a promising approach for field screening of helminth egg transmission by house flies. However, potential egg loss during filtration should be carefully assessed and minimized.

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One health surveillance of taeniasis and cysticercosis in the Bolivian chaco – A pilot study

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Question: Taeniasis and cysticercosis constitute a relevant public health concern in low-middle-income-countries (LMICs). However, surveillance and control programs are scant in many LMICs. We conducted a cross-sectional study in a selected rural area of the Bolivian Chaco, Cordillera Province, Santa Cruz Department, to investigate the presence of active transmission of *Taenia solium*.

Materials and methods: The study was conducted between October-November 2024 and involved five rural communities. It included a human population aged ≥ 5 years, to which a questionnaire was administered and a stool sample collected for microscopic examination, and a population of property pigs, which were inspected for the presence of sublingual lesions compatible with porcine cysticercosis.

Results: Six-hundred-thirty-five human subjects were enrolled in the study. Demographics and characteristics regarding the presence of risk factors in the enrolled population are represented in Table 1. A stool sample was collected and analyzed from 476 subjects. The prevalence of human taeniasis was 0.4% (95% CI: 0.05–1.5), with a per-community range of 0–1%. Prevalence of porcine cysticercosis was assessed in 167 pigs (27.5% males), with an observed prevalence of 1.8% (95% CI 0.4-5.2; per-community prevalence 0-4.4%) (Figure 1).

Discussion: The study results support the hypothesis that active transmission of taeniasis is present in some rural communities of the Bolivian Chaco, with a human taeniasis prevalence in line with previous studies conducted in other areas of the Plurinational State of Bolivia. Prevalence of porcine cysticercosis was lower than most data obtained in other areas of Latin America where risk factors are present, but prevalences obtained with this technique are highly variable, probably due to the high operator-dependence of this technique. Despite prevalence results not reaching the WHO thresholds indicated for the implementation of surveillance and control interventions in the whole study area, focal interventions might be warranted in the two communities where cases of both taeniasis and porcine cysticercosis were present. Moreover, surveillance should be extended to wider areas of the Plurinational State of Bolivia where risk factors for the active transmission of the parasite are present. Both surveillance and control programs should rely on a One-Health approach to provide accurate epidemiological data and most effectively reduce transmission of *T. solium*.

Fig. 1

Table 1. Main characteristics of the enrolled population divided by single villages.

	Ivamirapinta (tot 125)	Ipatimiri (tot 182)	Palmarito (tot 126)	Pampayuro (tot 65)	Kapirenda (tot 137)	Total (635)	p-value
Females (n, %)	80 (64.0)	110 (60.4)	88 (69.8)	38 (58.5)	96 (70.1)	412 (64.9)	0.217
Median age (IQR)	32 (17-56)	35 (15-57)	32 (17-45)	20 (12-36)	18 (11-45)	30 (14-50)	<0.005
Instruction level (n,%)							0.134
None	9 (7.2)	13 (7.1)	9 (7.1)	4 (6.2)	8 (5.8)	43 (6.8)	
Primary	51 (40.8)	74 (40.7)	48 (38.1)	36 (55.4)	65 (47.5)	274 (43.2)	
First-grade secondary school	24 (19.2)	55 (30.2)	36 (28.6)	16 (24.6)	36 (26.3)	167 (26.3)	
Second-grade secondary school	36 (28.8)	31 (17.0)	26 (20.6)	8 (12.3)	26 (19.0)	127 (20.0)	
Professional	3 (2.4)	3 (1.7)	6 (4.8)	0	1 (0.7)	13 (2.1)	
University	2 (1.6)	6 (3.3)	1 (0.8)	1 (1.5)	1 (0.7)	11 (1.7)	
Disease knowledge	60 (48.0)	76 (41.8)	47 (37.3)	13 (20.0)	55 (40.2)	251 (39.5)	0.005
Transmission knowledge	100 (80.0)	141 (77.5)	86 (68.3)	36 (55.4)	76 (55.5)	439 (69.1)	<0.005
Visualization of worm elements in the stool	20 (16.0)	25 (13.7)	19 (15.1)	12 (18.5)	30 (21.9)	106 (16.7)	0.375
History of epilepsy	4 (3.2)	0	1 (0.8)	0	4 (2.9)	9 (1.4)	0.062
Epilepsy reported in family members	15 (12.4)	13 (7.1)	8 (6.4)	4 (6.2)	5 (3.7)	45 (7.1)	0.103
Sanitary services in the household							<0.005
None	22 (17.6)	24 (13.2)	27 (21.4)	21 (32.3)	69 (50.4)	163 (25.7)	
Latrine	88 (70.4)	150 (82.4)	90 (71.4)	35 (53.9)	64 (46.7)	427 (67.2)	
WC	15 (12.0)	8 (4.4)	9 (7.1)	9 (13.9)	4 (2.9)	45 (7.1)	
Open field defecation							<0.005
Never	22 (17.6)	39 (21.4)	29 (23.0)	8 (12.3)	14 (10.2)	112 (17.6)	
Rarely	58 (46.4)	79 (43.3)	62 (49.2)	32 (49.2)	65 (47.5)	296 (46.6)	
Often	25 (20.0)	37 (20.3)	11 (8.7)	11 (16.9)	12 (8.8)	96 (15.1)	
Always	20 (16.0)	27 (14.8)	24 (19.1)	14 (21.5)	46 (33.6)	131 (20.6)	
Raw/undercoocked pork meat consumption							0.005
Never	55 (44.0)	125 (68.7)	69 (54.8)	32 (49.2)	74 (54.0)	355 (55.9)	
Sometimes	56 (44.8)	47 (25.8)	44 (34.9)	28 (43.1)	48 (35.0)	223 (35.1)	
Often	14 (11.2)	10 (5.5)	13 (10.3)	5 (7.7)	15 (11.0)	57 (9.0)	
Handwashing							0.027
Never	0	1 (0.6)	2 (1.6)	2 (3.1)	6 (4.4)	11 (1.7)	
Sometimes	4 (3.2)	19 (10.4)	7 (5.6)	5 (7.7)	11 (8.0)	46 (7.2)	
Often	7 (5.6)	12 (6.6)	16 (12.7)	4 (6.2)	8 (5.8)	47 (7.4)	
Always	114 (91.2)	150 (82.4)	101 (80.2)	54 (83.1)	112 (81.8)	531 (83.6)	
Pigs ownership	64 (51.2)	68 (37.4)	62 (49.2)	13 (20.0)	29 (21.2)	236 (37.2)	<0.005

Fig. 2

Table 2. Prevalence of human taeniasis (A) and porcine cysticercosis (B) in the study area, divided by single communities.

A.

	Palmarito	Ivamirapinta	Ipatimiri	Kapirenda	Pampayuro	**Total**
Enrolled subjects	n=102	n=97	n=122	n=104	n=51	**n=476**
Prevalence (95% C.I.)	0	1 (0.03-5.6)	0.8 (0.02-4.5)	0	0	**0.4 (0.05-1.5)**

B.

	Palmarito	**Ivamirapinta**	**Ipatimiri**	**Pampayuro**	**Total**
No. of inspected pigs	n=32	n=46	n=56	n=33	**n=167**
Prevalence (95% C.I.)	0	4.4 (0.5-14.8)	1.8 (0.04-9.6)	0	**1.8 (0.4-5.2)**

P 476

Exploring the presence and transmission cycle of *Paragonimus* spp. in invertebrate vectors and paragonimiasis in presumed pulmonary tuberculosis patients in Lambaréné, Gabon

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Background: Paragonimiasis is rarely reported from Gabon (last confirmed case 1993). Data on transmission and species diversity is limited (Rabone 2021). Diagnosis relies on sputum and stool microscopy, as well-validated serological assays and reference genomes are unavailable. Misdiagnosis as pulmonary tuberculosis (PTB) is well-documented (Sharma 2005).

We aimed to assess direct (egg detection) and indirect (serology) evidence of *Paragonimus* spp. in presumed PTB cases in Gabon and investigate invertebrate vectors for infective stages.

Methods: Patients: Between 9/2024 and 2/2025, consenting hospitalized patients with presumed PTB underwent stool and sputum testing. Serum was examined by specifically developed recombinant ELISAs for antibodies against Myo-1, MDP, CE3 and egg antigens (Rosa 2020, Curtis 2020, Lee 2007, Pathong 2018) with *P. westermani*-infected and uninfected sera as reference standard. A questionnaire assessed dietary habits.

Crabs: a convenience sample of crabs sold for consumption in central Gabon were examined for metacercariae using a pulp sedimentation technique (Sachs 1991). Species were identified by ITS-2 sequencing.

Results: In the cohort (n=103, 43% male, median age 44 years), 46% reported crab consumption (15% >1×/month; >10% unsafe preparations, e.g., dried/raw). ELISA validation (reference sera) revealed high accuracy for Myo-1 and egg antigen while CE3 lacked specificity. No cross-reactivity was observed with filariasis, malaria and schistosomiasis. No direct (eggs) or serological evidence of paragonimiasis was identified in participants (Figure 1).

All crabs (n=35, *Sudanonautes africanus* and *S. aubryi*) from Ngounié Province harboured encysted and excysted metacercariae (Figure 2) morphologically consistent with *P. uterobilateralis* (Voelker 1976). ITS-2 sequence matched 100% with *P. uterobilateralis* (Cameroon, GeneBank OM397549).

Discussion: In our cohort, eating behaviors posing a risk for paragonimiasis were common, but no human cases were detected. Spatially expanded recruitment is needed.

Metacercariae will be used to generate a reference genome (whole genome sequencing), enabling development of diagnostic PCRs and advancing phylogenetic understanding. The African snail host remains unidentified.

Conclusion: We provide evidence of an intact transmission cycle of *P. uterobilateralis* in Gabon but found no human cases. Our serological assays will improve diagnostics and support larger-scale epidemiological studies.

Fig. 1

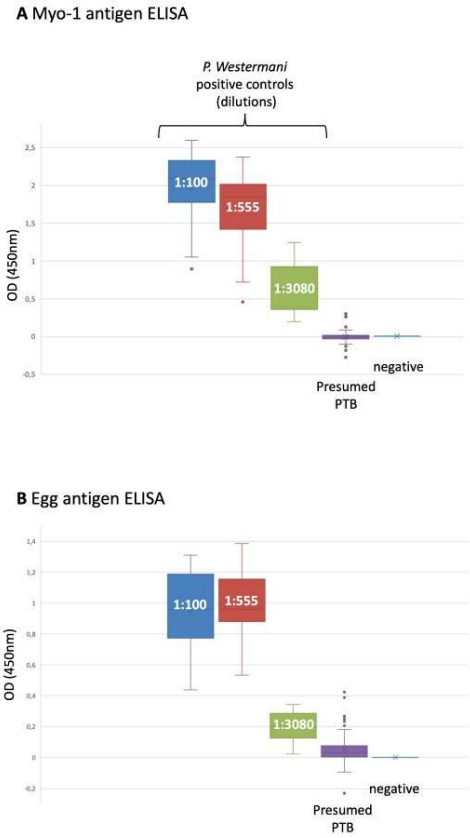
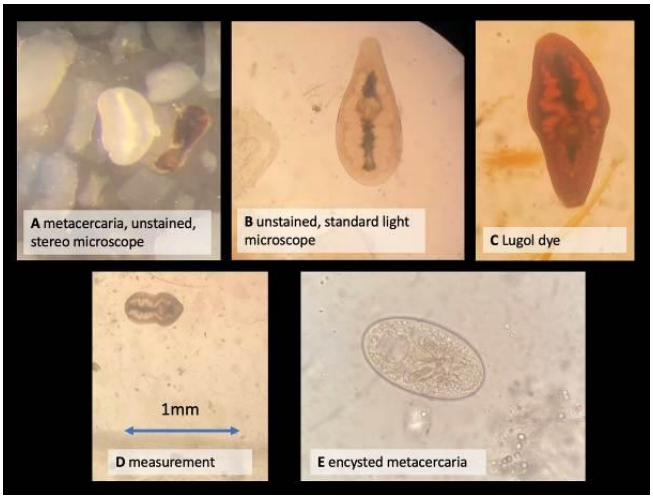


Fig. 2



P 477

Prevalence of intestinal parasitic infections in adult cancer patients at oncology ward in a tertiary care hospital in southwest Ethiopia

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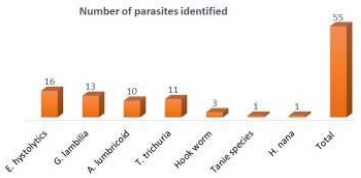
Background: Cancer patients are immunosuppressed, and are therefore at increased risk for intestinal parasitic infections. In Ethiopia, cancer patients are not routinely screened for intestinal parasites, which can lead to complications if infections are not diagnosed and treated early. This study aims to assess the prevalence and identify the causative agents of intestinal parasitic infections in cancer patients at oncology ward in a tertiary care hospital in Ethiopia.

Methods: A prospective study was carried out on confirmed cancer patients visiting the oncology ward for chemotherapy at Jimma University Medical Center, Ethiopia. Stool samples were collected from 167 cancer patients at baseline (t0, before chemotherapy) and from 73 patients after three cycle of chemotherapy (t1). A total of 240 stool samples were analyzed using direct wet mount microscopy. Additionally, Kato-Katz smear microscopy was performed on 141 stool samples for the detection of helminths.

Results: Overall, 22.9% (55/240) of stool samples tested positive for at least one intestinal parasite. The prevalence of intestinal parasitic infections was 19.2% (32/167) at baseline (t0) and increased to 21.9% (16/73) after three cycle of chemotherapy (t1) by wet mount microscopy. The infection rates for protozoa and helminths were 12.1% (29/240) and 10.8% (26/240), respectively. The most common intestinal parasites were *Entamoeba histolytica* (6.7%, 16/240) and *Giardia lamblia* (5.4%, 13/167). Five species of helminths were identified, with *Trichuris trichiura* being the most prevalent (4.9%, 11/240), followed by *Ascaris lumbricoides* (4.2%, 10/240). Additional helminths identified were hookworms (n=3), Taenia species (n=1), *Hymenolepis nana* (n=1), and two cases of co-infections. Moreover, Kato-Katz smears identified 5 cases that were missed by wet mount microscopy.

Conclusions: This study revealed the importance of routine laboratory screening for intestinal parasites in cancer patients before and during chemotherapy. Early detection and appropriate treatment are essential to reduce the risk of complications associated with intestinal parasitic infections in cancer patients.



P 478

Lower rainfall, higher temperature range, decreased surface vegetation, and higher humidity may increase the likelihood of cutaneous leishmaniasis incidence in northern Syria

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Question: Leishmaniasis is a Neglected Tropical Disease of global epidemiological importance caused by Leishmania parasites. Leishmaniasis is associated with high morbidity and

impacts on quality of life, as it results in large open wounds during infection, which are associated with severe social stigmatization. In northern Syria, cutaneous leishmaniasis (CL) is endemic and its incidence exhibits significant geographic and temporal variation.

Methods: This study examines historical associations between CL due to Leishmania tropica and Leishmania major and environmental variables including rainfall, temperature, humidity, and vegetation cover in 63 subdistricts in 21 districts in the Al-Hasakeh, Aleppo, Raqqa, Deir-ez-Zor, and Idlib Governorates of northern Syria. Specifically, this study employs a time-lag generalized linear model to examine the relationship between the environmental variables and CL incidence. Weekly CL cases and total consultations from December 28, 2014 to April 27, 2024 were collected at the community level from the Early Warning, Alert and Response Network. Environmental variables were extracted using Google Earth Engine.

Results: Weekly case counts varied from zero cases per week in many subdistricts to 2185 cases per week in the Ras Al Ain subdistrict in the 45th week of 2021. Seasonal trends were particularly apparent in Deir-ez-Zor governorate, where cases peaked in January every year between 2018 and 2022. This study found significant intra-governate and intra-district variability in weekly case counts. Generalized additive models found strong relationships between surface vegetation, rainfall, humidity, and temperature and CL incidence.

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Nationwide cross-sectional survey of Leishmania donovani in Nepal – A multidisciplinary approaches

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Introduction/background: Visceral leishmaniasis has been targeted for elimination as a public health problem in Nepal by 2030. Recently, increasing number of cases and their geographical expansion have been observed in new areas including hills and mountains; a threat to the ongoing elimination program in the country. Methodology Nationwide epidemiological, serological and entomological survey was conducted from March 2021 to November 2022 in 62 villages of 21 endemic doubtful districts. House-to-house survey was conducted to collect the socio-demographic information and data on past and current Kala-azar cases and their travel history. Venous blood samples were collected from all consenting individuals aged >2 years and tested with direct agglutination test (DAT), and titer of >1:1600 was taken as marker of Leishmania donovani infection. L. donovani species-specific PCR was performed on the DAT positive samples for parasite confirmation. We also captured sand flies using CDC light traps followed by mouth aspirators in selected six to eight human, mixed dwellings and cattle sheds for two consecutive nights in all 62 survey villages. The collected sand flies were morphologically and molecularly identified at species level. Results House-to-house survey was conducted in 1323 households from all 62 villages. The survey documented 64 past VL cases retrospectively and four new cases; 75.0% (51/68 were without travel history. Most of these cases (n = 57; 83.8%) reported within three years prior to survey. Overall, 3.9% (67/1738) of participants tested positive for L. donovani on DAT test and confirmed using SSU-rDNA. The sero-prevalence of L. donovani infection was significantly higher in men and pediatric age group. Phlebotomus argentipes; established vector for kala-azar found in all districts except mountainous districts. High variation of sand fly species distribution was observed in the surveyed districts; high abundance of P. argentipes in lowland and low abundance in hilly regions. Conclusion The epidemiological, serological and entomological evidence suggest the local transmission of L. donovani in endemic doubtful districts for kala-azar; indicates for the revision of the current endemicity status of Nepal. The presence of other sand fly species beyond the established vectors underscores the urgent need for extensive vector surveillance.

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Relatedness of *L. donovani* parasites causing CL in western Nepal in 2023-2024 with previously documented CL and VL cases in the Indian sub-continent – Can CL provoke a resurgence of kala-azar?

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Background: The ongoing kala-azar (visceral leishmaniasis; VL) elimination program in Nepal is based on the assumption of anthroponotic transmission of the protozoan parasite *Leishmania donovani*. A shift in foci of reported VL cases to hilly regions in western Nepal and the recent emergence of cutaneous leishmaniasis (CL) in patients from similar areas present new challenges to VL elimination. Furthermore, *L donovani* was recently identified in lesions of CL cases in Nepal. The question of whether CL-causing *L. donovani* can also contribute to VL is crucial to understand if the success of the VL elimination initiative in the Indian subcontinent is to be sustained, although evidence on sub-species level genomic differences between CL and VL causing *L. donovani* is currently lacking. This study aims to provide a genomic comparison of *L. donovani* parasites currently causing CL in Nepal with previously described *L. donovani* sequences from CL and VL patients in the region.

Methods: A case series study was carried out in sentinel dermatological sites in western Nepal. Skin punch biopsies were collected from 45 patients with clinically suspected CL lesions. Molecular tests based on the internal transcribed spacer 1 of the ribosomal RNA gene array (rDNA-ITS1) were used to detect and characterize the *Leishmania* parasites, with Sanger sequencing. Dendrograms were constructed and sequences from our study were compared (based on pairwise similarity) with over 500 available GenBank sequences of the *L. donovani* species complex.

Results: *Leishmania* parasites were detected in 26 CL patients, and all were identified as *L. donovani.* Importantly, the rDNA-ITS1sequences analysed in this study were identical, and shared with those previously documented from both cutaneous and visceral disease-causing parasites in Nepal, India (Himachal Pradesh) and Bhutan (Fig 1 and 2). Additionally, our analysis describes CL- and VL- causing *L. donovani* parasites with an rDNA-ITS1 sequence which is different from the previously reported VL-causing "core" sequences from the Indian sub-continent (Fig 1).

Conclusions: Our study suggests that CL and VL in Nepal are caused by similar if not identical *L. donovani* parasite strains, though additional sequencing is required to corroborate this finding and examine other non-sequenced genomic loci. If confirmed, cutaneous lesions could act as a

kala-azar parasite reservoir, which would have important implications for the kala-azar elimination program.

Fig. 1

Fig. 1 rDNA-ITS1 based dendrogram from CL samples analyzed in this study, compared to previously documented sequences of the Indian subcontinent. The dendrogram was constructed by producing a guide tree file with the ClustalW algorithm (http://www.clustal.org/) and loading that as a user tree file in MEGA 7 (https://www.megasoftware.net/). The tree was rerouted in MEGA 7 for visualization purposes only. The dendrogram is based upon resemblance of the sequences by pairwise comparison. No global alignment was constructed, and no evolutionary model was implied. Hence, the branch order does not reflect evolutionary history. Each taxon is identified using the WHO strain identification system, followed by the GenBank accession number if available. In case sequences were not retrieved from GenBank, the source of the sequence information is mentioned on the right of the figure. CL and VL samples are labelled with different symbols and colours, as shown in the top left. For samples from Nepal, the district where the patient was presumably infected is shown at the end of the taxon identification. Indications on the right of the tree depict the country of origin of the sequenced parasites. Two sequences are representative for respectively 12 and 191 strains, as indicated in brackets. In the hybrid strain LdHPCL66, 2 different rDNA-ITS1 variants were identified, shown with an asterisk following the taxon identification.

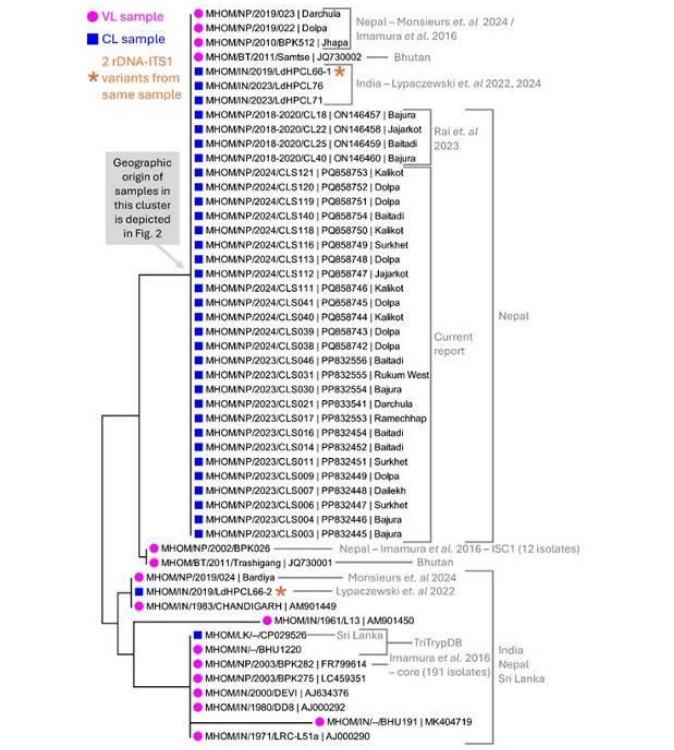
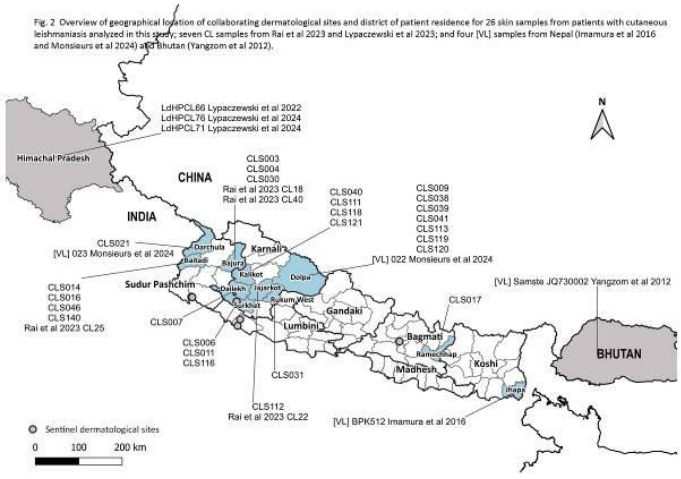


Fig. 2



P 482

Failure of thermotherapy in cutaneous leishmaniasis caused by *Leishmania tropica* in Pakistan

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Introduction: Cutaneous leishmaniasis (CL) is a neglected infectious skin disease caused by *Leishmania* parasites. In Pakistan CL is highly endemic, with an estimated yearly incidence of 50-100,000 cases, and with *Leishmania tropica* being the predominant species. The standard treatment with meglumine antimoniate (MA) involves frequent painful, potentially toxic injections for long duration, and is hardly available. There are no evidence-based safer and shorter treatment options for *L. tropica*. Topical thermotherapy is an easy and cheap option, but lacks robust evidence for efficacy against *L. tropica*. We assessed the effectiveness and tolerability of thermotherapy in *L. tropica* within a larger clinical trial evaluating new treatment options.

Methods: Participants with confirmed CL were enrolled in a multicenter randomized clinical trial conducted in Quetta, Pakistan. Thermotherapy was administered with a single session of radiofrequency-generated heat (ThermoMed™) applied to the lesion with an applicator gauge with two electrodes, in combination with a local lidocaine injection. . An interim futility analysis was conducted during the clinical trial to evaluate the effectiveness of thermotherapy compared to the standard of care with eight intralesional MA injections (Glucantime®).Treatment failure was defined as no or incomplete re-epithelialization and flattening of the lesion, or relapse at day 120

Results: A total of 408 CL study participants were enrolled, with a slight male predominance (56.4%). The median age was 22 years (IQR: 17–28). Most participants had 1 lesion, with a median size of 20 mm (IQR: 12–25) and a duration of 3 months (IQR: 2–4). Thermotherapy resulted in a failure rate of 68.8% (46/67) (per-protocol) and 73.8% (59/80) (intention-to-treat). The odds of failure were 4.2 times higher than MA injections (OR: 4.21, 95% CI: 2.25–7.89, p < 0.0001). Forest plot analysis showed a statistically significant inferiority of thermotherapy compared to the standard of care. Of the 80 participants who received thermotherapy, 72.5% (58/80) reported treatment-emergent adverse events, including second-degree burns (37.5%), first-degree burns (6.3%), itch (55.0%), and pain (5.0%).Itch was not seen in the standard of care group. All adverse events were mild to moderate, resolved with wound care. Pain is preventable by sufficient lidocaine during the application

Conclusion: While thermotherapy offers many advantages, these are largely overshadowed by its high failure rate compared to eight sessions of intralesional MA. These findings highlight the futility of thermotherapy as a treatment for CL caused *L. tropica*, leading to its discontinuation from this treatment arm in the randomized control trial.

P 484

Clinical and demographic risk factors associated with mortality in visceral leishmaniasis in Brazil – A

nationwide analysis of treatment outcomes and patient characteristics, 2007-2023

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Background: Visceral leishmaniasis (VL) remains a major public health concern in Brazil. Despite being a notifiable disease, comprehensive epidemiological analyses on patient characteristics and mortality risk factors are limited.

Methods: Data on VL in Brazil are reported through the Notifiable Diseases Information System (Sistema de Informação de Agravos de Notificação - SINAN), a database made publicly available by the Brazilian Ministry of Health in an anonymized format. This analysis focuses on the mortality of confirmed VL cases reported to SINAN from 2007 to 2023. To assess mortality risk, we used mixed-effects logistic regression models, incorporating the federative unit as a random intercept.

Results: During the study, 43,334 new VL cases with known treatment status were reported in Brazil, with an 8.6% mortality rate (3,724 deaths), including 17.9% (668) among children <5 yrs. Compared to children aged 5–15 yrs, mortality odds were higher in infants (adjusted odds ratio [AOR]: 5.27, 95% confidence interval [CI]: 4.22–6.60), children 1–5 yrs (AOR: 1.83, 95% CI: 1.49–2.26), adults 15–50 yrs (AOR: 5.02, 95% CI: 4.14–6.09), and highest in those ≥50 yrs (AOR: 13.75, 95% CI: 11.31–16.70). The presence of oedema (AOR: 2.74, 95% CI: 2.56–2.94), jaundice (AOR: 2.18, 95% CI: 2.03–2.35), bleeding (AOR: 3.65, 95% CI: 3.37–3.96), respiratory symptoms (AOR: 1.31, 95% CI: 1.22–1.40), and bacterial co-infections (AOR: 2.26, 95% CI: 2.10–2.43) were also associated with increased mortality. Higher odds of death were observed among individuals classified as "black" (AOR: 1.21, 95% CI: 1.05–1.40), "indigenous" (AOR: 1.57, 95% CI 1.13–2.20), males (AOR: 1.17, 95% CI: 1.09–1.26), and HIV-positive patients (AOR: 2.24, 95% CI: 2.04–2.46).

Conclusion: These findings underscore the urgent need for targeted interventions, particularly for vulnerable groups such as young children, older adults, HIV-positive patients, black and indigenous populations, and those with severe symptoms. As treatment regimens are prescribed based on disease severity (e.g., liposomal amphotericin B for children <1 yr, ≥50 yrs, HIV co-infection, and severe cases), they were not considered in the model.

Keywords: Visceral Leishmaniasis, Epidemiology, Mortality, Brazil.

P 485

Knowledge and identification of cases of noma, a Neglected Tropical Disease (NTD), among health professionals in Latin America – a cross-sectional survey

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Question: Noma (cancrum oris) is a rapidly progressing, disfiguring disease mainly affecting impoverished communities with limited access to healthcare, nutrition, and sanitation. While largely eliminated in high-income countries, noma persists in sub-Saharan Africa and may be underdiagnosed in Latin America. This study investigated the level of knowledge and identification of noma among healthcare professionals in Peru, Bolivia, Brazil, Colombia, and Mexico.

Methods: A cross-sectional survey was conducted using an online structured questionnaire in Spanish and Portuguese. The questionnaire collected demographic information and assessed participants" knowledge of noma"s clinical presentation, disease progression, risk factors, aetiology, transmission, treatment, and prevention. It also explored case identification and perceived barriers to diagnosis and management. A total of 174 healthcare professionals from five countries participated.

Results: Preliminary findings show that only 13.8% of respondents demonstrated adequate knowledge of noma. While 30% had heard of the disease, the mean knowledge score was just 2.1 out of 9 (23%) (Table 1). Few could correctly identify stages, rapid progression, or its high mortality. Over half did not know the cause; 16% incorrectly believed noma is contagious, and 47% answered "Don"t know" (Table 2). Knowledge varied significantly by country, with Bolivia scoring highest, but showed no significant differences by profession, experience, or workplace. Nine respondents reported suspected noma cases, mainly in Peru, suggesting possible recent cases despite underreporting. Cases varied in age, severity, and time of occurrence. Reported barriers to diagnosis and treatment included limited awareness, misdiagnosis, lack of training, and cultural factors such as reliance on traditional remedies or beliefs in witchcraft.

Conclusions: These preliminary results provide the first region-specific insight into noma awareness among health professionals in Latin America and reveal major gaps in knowledge and training. Integrating noma into medical and dental curricula and continuing education is essential to improve early detection, treatment, and reporting of this neglected but preventable disease.

Table Legends:

Table 1: Characteristics of health providers participating in the study (N=174).

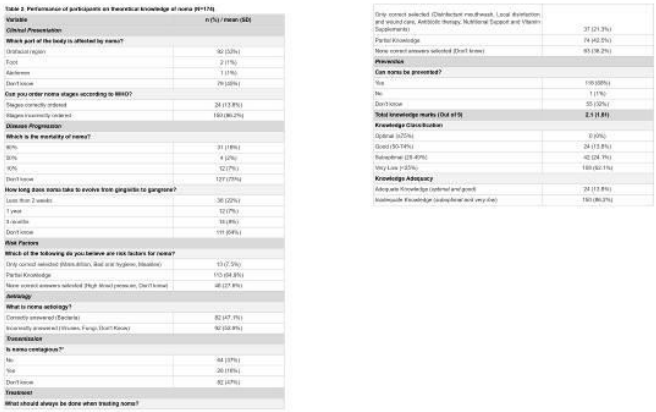
Table 2: Performance of participants on theoretical knowledge of noma (N=174).

Fig. 1

Table 1. Characteristics of health providers participating in the study (N=174).

Variable	n (%)
Gender	
Female	94 (54%)
Male	80 (46%)
Age	
<=25	2 (1.1%)
26-35	52 (30%)
36-45	54 (31%)
46-60	49 (28%)
60+	17 (9.8%)
Country of residence	
Peru	92 (53%)
Bolivia	33 (19%)
Brazil	28 (16%)
Colombia	15 (8.6%)
Mexico	6 (3.4%)
Professional Group	
Medical Doctors and Specialists	84 (48%)
Community and Public Health Staff*	17 (9.8%)
Nursing Staff	9 (5.2%)
Oral Health Professionals	6 (3.4%)
Others	58 (33%)
Years of experience	
Less than 5 years	39 (22%)
5 to 10 years	35 (20%)
More than 10 years	100 (58%)
Workplace	
Public Hospital	62 (36%)
Private Clinic	32 (18%)
Primary Health Center	21 (12%)
Research Institute	18 (10%)
Government Health Entity	4 (2.3%)
Other	37 (21%)
Academic Healthcare Center	
Yes	84 (48%)
No	90 (52%)
Have you heard about noma before?	(N=174)
Yes	53 (30%)
No	121 (70%)

Fig. 2



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Dietary patterns, nutritional biomarkers, and inflammation in Buruli ulcer patients in Ghana

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Background: Buruli ulcer (BU) is a neglected tropical disease (NTD) of the skin caused by Mycobacterium ulcerans. In 2023, BU was reported to affect 1952 people in endemic parts of Africa and Australia. In this study, we have determined the dietary status of BU patients compared to endemic-matched controls. In serum, we further determined the concentration of nutrition and inflammation biomarkers.

Methods: Two cohorts of BU patients were recruited from the Ashanti and Central regions of Ghana. In the first cohort, food consumption patterns, dietary diversity, nutrient intake and nutrient adequacy for 40 BU patients and 40 controls were determined. In the second cohort concentration of nutrition (zinc, vitamin C) and inflammation biomarkers (CRP, IL-1β, IFN-γ, TNF-α, IL-6) was measured using the ELISA, cytometric bead array, colorimetric assays in 80 BU patients and 80 controls at baseline.

Results: About 31% of the BU patients and 22% of the controls had stunted growth. The daily meals of over 95% of the participants comprise more than 64% of total energy intake from carbohydrate. Many participants (49%) had inadequate protein intake. Micronutrient intake was also often inadequate, especially for selenium, vitamin B12 and zinc which were significantly higher in the controls compared to BU patients as well as insufficiency (greater percentage below estimated average requirement) for selenium and vitamin B12. In serum, we first confirmed that there was no evidence of systemic inflammation (CRP

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Microbial community dynamics associated with healing and infection in Buruli ulcer disease

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Background: Buruli ulcer (BU) is a neglected tropical disease caused by *Mycobacterium ulcerans* infection that damages the skin and subcutaneous tissue. The disease is most prevalent in rural West and Central Africa and some part of Australia. The introduction of antimicrobial therapy with rifampicin and streptomycin or clarithromycin with complementary wound care or surgery has shown to be somewhat effective. This notwithstanding, treatment failures, various types of secondary lesions and repeat recurrences after apparent cure have been reported, suggesting the need for customized clinical management or other chemotherapy options. While microorganisms, such as pathogenic bacteria, are implicated in wound healing, our knowledge of the microbial composition and its effect on clinical outcomes in BU is limited.

Method: To investigate the role of the microbiota in Buruli ulcer disease presentation, its effect on healing outcomes, and possible causes of other unknown ulcers, we conducted a cross-sectional study using wound swabs from a cohort of

75 Buruli ulcer patients. Patients were grouped into fast and slow healers based on their time to complete healing, adjusting for the lesion size before treatment. Patient characteristics and data from shotgun metagenomic sequencing were analyzed in association with clinical outcomes.

Results: Analysis of sequencing data revealed polymicrobial communities of bacteria, fungi, protists, and viruses in wound swabs. We also observed a negative correlation between microbial richness and abundance as measured by the Shannon index to delayed healing time (Spearman correlation test, R2 = 0.07, p-value = 0.036). Multi-drug resistance Pseudomonas aeruginosa was differentially abundant in slow-healing wounds in comparison to fast healers. We also observe high abundance of fungi particularly, *Candida albicans* in Buruli ulcer lesions.

Conclusion: The complex microbial community in BU lesions, particularly involving bacteria-fungi interactions, may be relevant to clinical outcomes and requires further investigation as a possible treatment target to improve wound healing.

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Polymicrobial infections in Buruli Ulcer Wounds – Preliminary insights into the Co-occurrence of *Escherichia coli*, *Klebsiella* spp., and *Pseudomonas* spp. in Ghana

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Methods: The study involved collecting a total of 133 wound samples from patients diagnosed with Buruli ulcer lesions. To identify the presence of Gram-negative bacteria and assess their antimicrobial susceptibility, the Biomerieux® Vitek-2 Compact system was employed for the analysis.

Results: The examination revealed that Gram-negative bacteria represented a significant fraction of the total isolates from the samples. The key Gram-negative pathogens identified included P*seudomonas aeruginosa*, which accounted for 8.84% of the isolates, followed by *Klebsiella pneumoniae* spp *pneumoniae* at 6.12%, and *Escherichia coli* at 2.04%. These findings highlight the predominant role of these bacteria in the context of Buruli ulcer wounds.

Discussion: The identification of *Pseudomonas aeruginosa, Klebsiella pneumoniae,* and *Escherichia coli* in Buruli ulcer wound samples underscores the vulnerability of damaged skin to bacterial colonization. The study revealed concerning resistance patterns among these Gram-negative pathogens, underscoring the urgent necessity for further research to explore these resistance mechanisms in depth. Additionally, the presence of extended-spectrum beta-lactamase (ESBL)-producing bacteria raises significant concerns regarding the potential for horizontal gene transfer, which may exacerbate antimicrobial resistance and complicate treatment strategies for secondary infections linked to Buruli ulcer.

An interesting observation was made concerning bacterial counts over time; a general decline was noted in bacterial loads with ongoing treatment. However, there was a surprising spike in Gram-negative bacterial counts between Week 8 and Week 24, which coincided with a lapse in participant visits. This anomaly highlights the critical need for continuous monitoring to better understand bacterial dynamics and ensure timely interventions.

Conclusion: This preliminary data reveals a significant presence of *Pseudomonas* spp, *Klebsiella* spp, and *Escherichia* spp in patients suffering from Buruli ulcer, alongside alarming resistance patterns. The findings emphasize the urgent demand for a thorough exploration of the resistance mechanisms employed by these pathogens. It is essential to incorporate effective management strategies for secondary bacterial infections into Buruli ulcer treatment protocols, aiming to enhance patient outcomes and optimize therapeutic approaches moving forward.

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Improved protocols for isolation of *Mycobacterium ulcerans* from clinical samples

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Background: The isolation and culture of Mycobacterium ulcerans (Mu) as a primary diagnostic modality for Buruli ulcer (BU) disease are limiting due to their low sensitivity and slow-growing nature. *M. ulcerans* cultures can also be overgrown with other bacteria and fungi. Culture, however, remains an important tool for the study of persisting viable *M. ulcerans*, drug susceptibility tests, and other molecular assays to improve management of the disease. The challenge of contamination with other fast-growing bacteria necessitates decontamination of clinical samples prior to culturing, but current methods may be too harsh, resulting in low yields of *M. ulcerans*. We aimed to evaluate a Tika-Kic decontamination process for *M. ulcerans* that uses supplements to stimulate *M. ulcerans* growth to improve recovery.

Methods: Swab and Fine Needle Aspirate (FNA) samples were collected from 21 individuals with confirmed BU at baseline (week 0) and weeks 2 and 4 after initiating antibiotic treatment. Samples were decontaminated with Tika-Kic decontamination medium and the modified Petroff (NaOH) methods then inoculated each into Mycobacterium Growth Indicator Tube (MGIT) or Löwenstein Jensen (LJ) medium. Time to growth detection and confirmation by qPCR as well as the proportion of positive cultures for all three methods and the proportion of positive cultures for all three time points were documented. Common contaminating bacteria were also isolated and identified.

Results: The proportion of *M. ulcerans* positive cultures obtained was higher for Tika-MGIT samples [14/43 (32%)] compared to Petroff-MGIT samples [10/43 (23%)] and Petroff-LJ samples [8/43 (19%)]. Baseline samples had a higher isolate proportion [17 (53%)] compared to samples collected after treatment initiation [9 (28%) for week 2 and 6 (19%) for week 4]. Contaminating bacteria isolated include *Burkholderia cepacia, Pseudomonas aeruginosa, Pasteurella*

pneumotropica, Proteus mirabilis, Morganella morganii, *Staphylococcus aureus* and *Enterococcus*.

Conclusion: Our study shows an advantage for culturing *Mycobacterium ulcerans* from clinical samples using the Tika-Kic decontamination and growth medium. Further research is needed to refine sample processing to improve *M. ulcerans* recovery

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Bacterial clearance in Buruli ulcer lesions from patients in the BLMS4BU study

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Treating Buruli ulcer (BU) requires 8 weeks of daily rifampicin and clarithromycin (RC8) alongside wound care. The BLMs4BU clinical trial (*NCT05169554;* https://blms4bu.org/) is investigating a 4-week treatment regimen combining amoxicillin/clavulanate, rifampicin and clarithromycin (RCA4). This approach is based on the hypothesis that the addition of amoxicillin/clavulanate could enhance bactericidal activity, potentially leading to a reduction in the median healing time for BU lesions.

The aim of this study was to assess the rate of bacterial clearance in BU lesions from patients participating in the BLMs4BU study.

Fine-needle aspirates and swab samples were taken from participant"s lesions at the time of diagnosis and during follow-up visits until week 14 at the Pobè treatment center in Benin (December 2021-September 2024). Five samples were taken at each visit: three were used for *Mycobacterium ulcerans* viability assessment (combined 16S rRNA RT/IS*2404* qPCR assay), and two for *M. ulcerans* DNA detection by IS*2404* qPCR.

Up to September 2024, 44 participants were included in the study (lesion Categories I-III), 48% of them under the investigational treatment RCA4. All patients had a positive IS*2404* PCR result. At any visit 16S rRNA was detected in lesions of 72.73% (16/22) Category III patients, 68.75% (11/16) Category II patients and 33.33% (2/6) Category I patients. Time to healing was inversely associated with 16S rRNA detection in lesions at any visit (healing before or at week 14: 45.00% (9/20) 16S rRNA positive; healing after week 14: 90.91% (20/22) 16S rRNA positive; p-value=0.0022). The bacterial load was variable along the follow-up period, suggesting that the sampling method and the heterogeneous distribution of bacteria in the lesions could play a critical role in the detection of *M. ulcerans* DNA or 16S rRNA. However, a decreasing trend on the bacterial load was observed in all lesions, especially in Category II lesions. For larger unhealed lesions, a higher follow-up period may be needed to entirely capture bacterial clearance dynamics.

In summary, *M. ulcerans* clearance was observed in both treatments arms, with no viable bacteria (undetectable 16S rRNA) after day 28 in most of participant"s lesions.

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Shortening Buruli ulcer treatment in western Africa – An update on the BLMs4BU trial

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The WHO Road Map for NTDs has prioritized shortening treatment duration and improving adherence for Buruli ulcer (BU). The WHO recommended antibiotic therapy for BU includes rifampicin (R) plus clarithromycin (C) for 8 weeks (RC8). Preclinical studies have demonstrated that combining amoxicillin/clavulanate (A) with RC shows high *in vitro* efficacy against *Mycobacterium ulcerans*. Amoxicillin/clavulanate is widely available, with a good safety profile, low toxicity and suitable for oral and paediatric use.

The BLMs4BU trial includes randomized, open-label, non-inferiority, multicenter Phase II (NCT05169554) and Phase III (PACTR202209521256638) studies. The aim is to evaluate the non-inferiority of a 4-week regimen of A combined with RC (RCA4) versus standard WHO recommended treatment (RC8) in achieving cure rates at month 12 post-treatment initiation. Patients are actively and passively recruited and included based on clinical diagnosis (Very Likely or Likely WHO BU score), IS*2404* qPCR confirmed, stratified according to BU lesion category, and followed up for 12 months with standardized management.An external technical expert panel assess the need for major excision surgery at week 14 after treatment initiation. Primary efficacy outcome is the proportion of patients with complete healing of lesions without recurrence and without major surgical excision within 12 months of initiating treatment.

As of January 2025, the Phase II trial conducted in Benin has enrolled 123 participants. Female-male distribution is balanced, about 50% of the participants are ≤ 15 years old and more cases have a Very Likely clinical score. More than 90% of participants have a single lesion, and this is primarily in the lower limbs. Category III lesions are more prevalent (44%). Treatment allocation is balanced between the two arms. Ninety participants have completed the 12-month follow-up.

To date, none of them required major excision surgery. Only mild and transient adverse events or secondary effects have been registered, with no serious adverse events related to the study medication. With more than 70% of the target recruited (80% power requirement), RCA4 shows safety. Non-inferiority assessment of efficacy will be conducted on study completion. The Phase III trial is currently ongoing and has recruited 62 participants in Togo and Côte d"Ivoire.

In summary, our data suggest this shorter, all-oral, broadly suitable treatment, could establish a new paradigm in BU.

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Evaluating the Buruli ulcer experience in Côte d'Ivoire and Benin – An inclusive approach

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Buruli ulcer (BU) is a neglected tropical disease (NTD) potentially resulting in permanent disability, with profound psychosocial and socio-economic consequences. Efforts to understand and improve the experience of patients with BU require comprehensive approaches. The BLMs4BU clinical trial (https://blms4bu.org/) aims to shorten treatment duration from 8 weeks to 4 weeks and contribute to alleviate the disease burden. As part of the trial, we are evaluating patient"s quality of life, along with individual and structural factors influencing treatment adherence and access to healthcare services in Côte d'Ivoire and Benin. This also includes engaging key stakeholders, such as patients' companions, community leaders, traditional medicine practitioners and healthcare workers from endemic areas.

Information will be gathered from patient"s dossiers, official census and interviews to patients and stakeholders, using standardized questionnaires to collect quantitative and qualitative data on: (i) health status and quality of life of patients; (ii) patients' perceptions and beliefs about medicines, as well as other interventions for BU (wound care, physiotherapy, surgery, etc.); and (iii) knowledge, attitudes and practices about BU and barriers to access health care.

After completing training, piloting and validation, the study is now recruiting participants, with interviews being conducted at various time points, from recruitment to discharge, using purposive sampling until saturation is achieved. A greater understanding of the patient's experience will be obtained, allowing the barriers that hinder adherence to treatment and access to health services to be addressed. This will support the development of an implementation strategy for the new treatment evaluated in the BLMs4BU project, as well as other interventions for BU. In doing so, it will contribute to the achieving the objectives outlined in the WHO in its Road Map for NTDs, 2021-2030, by addressing key factors that impact disease management and control.

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Determinants of health and prevention of neglected tropical diseases – Multidisciplinary research for the prevention and management of Buruli Ulcer in southern Benin

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Question: Health determinants extend beyond biomedical factors, encompassing socio-economic, behavioral, cultural, and environmental conditions. Integrating these into medical research and health policies is challenging, especially for tropical diseases. Although the incidence of Buruli ulcer caused by *Mycobacterium ulcerans* has declined in Benin, significant geographic variations remain. Direct contact with stagnant water is the main risk factor, but why some individuals become infected while others do not is unclear. Preventive measures are insufficient due to a limited understanding of disease transmission patterns. Effective prevention requires a comprehensive approach that includes better knowledge of human behaviors. This study aims to investigate factors influencing the variation in Buruli ulcer incidence in the endemic departments of Southern Benin to improve preventive measures.

Methods: A multidisciplinary approach combining microbiology, epidemiology, geographic mapping, and social sciences with mixed-methods design was applied. Quantitative methods (spatial mapping and epidemiological surveys) comprised a case-control study of 150 patients and 300 matched controls to identify relationships between socio-environmental and medical factors. Qualitative methods (interviews and field observations) helped gain deeper insights into underlying processes and identify potential unexamined determinants.

Results: Over 67% of *Mycobacterium ulcerans* contamination occurs in lowland areas, with invertebrates (orthopterans, hymenopterans, mollusks, arachnids) being the most affected. High-risk sites include Gnizounmè (Lalo) and So-Ava (Atlantique). Frequent contact with natural water sources, especially in flooded lowlands, is the main risk factor. Using unprotected water sources increases risk, while clean water access and disease awareness are protective. Seasonal water fluctuations correlate with higher incidence, while permanent water points are linked to fewer cases. Collaborating with traditional healers supports early detection and targeted interventions.

Conclusion: This study helped develop a primary prevention model tailored to endemic areas, which could support further research on Buruli ulcer and other neglected tropical diseases. Findings highlight the need for an integrated approach within the *One Health* framework, aligning with WHO priorities to improve patient care and enhance disease prevention in at-risk populations.

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Treatment and prophylaxis research on leprosy in Africa – A systematic review

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Leprosy is a neglected tropical disease caused by Mycobacterium leprae. It is still endemic in over 120 countries worldwide, leaving a considerable number of individuals with permanent physical limitations, such as loss of limbs and social stigma. Despite being known for such a long time, systematic clinical research efforts in this field are limited and seemingly focus on populations outside the African continent. At the same time, African countries are among the five with the highest number of leprosy cases in the world.The aim of this systematic review was to systematically evaluate the role of the African patient population in clinical drug and vaccine trials in the field of leprosy. A systematic review was performed by searching in several databases and registers, such as the Clinical Trial section in the Cochrane Library, WHO International Clinical Trials Registry Platform, PubMed and the Infolep database with guidance of the PRISMA flowchart. Out of these trials, the trial characteristics were identified. After that, a risk of bias assessment for the randomised trials and for the non-randomised studies of interventions developed by Cochrane was carried out to assess the quality of included trials.

A systematic database search revealed that leprosy is not a priority for clinical research in Africa. Despite the absence of additional restrictions on the literature search, only 20 of the 197 publications identified at the initial stage could be identified as relevant. Of the 20 publications identified, 11 were related to treatment, 5 to vaccines, 3 to treatment reactions and 1 to prophylaxis trials. Furthermore, 14 trials were randomised, 16 controlled and 6 trials were blinded. Additionally, 5 trials were conducted between 1980 and 1989, and the most frequently used medicinal product was dapsone, which was used in 10 out of the 20 trials.

The risk of bias assessment for randomised trials was overall completed with 33 assessments for every primary outcome in the 13 publications, 21 were rated as having a high risk of bias. The assessment for non-randomised trials for interventions in 7 publications concluded mostly in moderate risk of bias with 7 assessments in total.
The systematic review illustrates the limited research conducted in recent years on the African patient population in the context of clinical research efforts in the field of leprosy.Future research should aim at more inclusive strategies for the development of effective countermeasures against leprosy.

Fig. 1

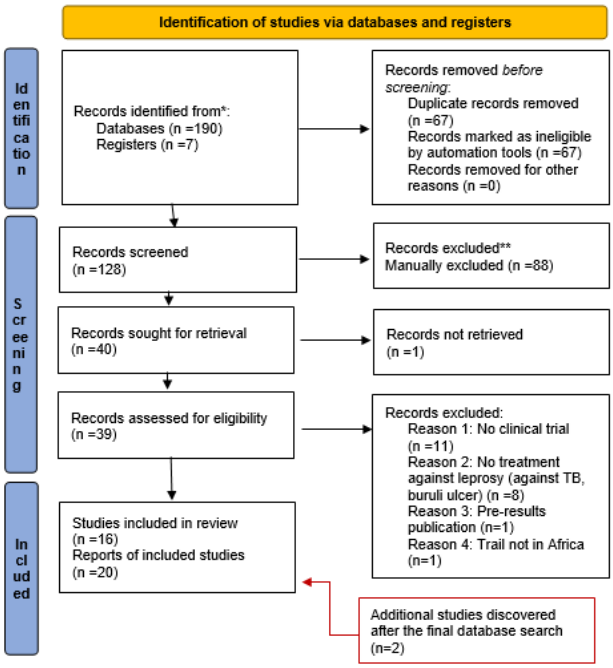

Fig. 2

Table 2: All trial characteristics

No.	Authors	Title	Year of publication	Period of study conduct	Type of Trial (T/V/P/TR)	Randomization y/n/*	Controlled y/n/*	Blinded y/n/*	Recruiting countries
1	H. W. Wheate[13]	Preliminary report on sulphetrone therapy in lepromatous children.	1951	1949	T	*	*	n	Uganda
2	G. Currie[14]	A clinical trial of sulfonthomidine ('Tanasil' Roche) in lepromatous leprosy	1966	*	T	*	y	*	Malawi
3	J. A. Kinnear Brown, M. M. Stone, I. Sutherland, S.J. Stanley	B.C.G. vaccination of children against leprosy: first results of a trial in Uganda[15]	1966	1952-1959	V	y	y	*	Uganda
		B.C.G. vaccination of children against leprosy in Uganda: results at end of second follow-up[16]	1968	1964- 1966	V	y	y	*	Uganda
		BCG vaccination of children against leprosy in Uganda: final results[17]	1981	1970-1975	V	y	y	*	Uganda
4	Y. Otoyula, C. I. Rwoma, M. J. Churn[18]	Four years' experience with dapsone as prophylaxis against leprosy	1971	1963	P	n	y	*	Kenya (Buyala, Samia)
5	R. Rohde[19]	Report of combined therapy in leprosy with rifampicin and isoprodian conducted at the Bisidimo-center, Ethiopia	1975	*	T	*	y	*	Ethiopia
6	S. R. Pattyn, M. T. Rollier, R. Rollier,	A Controlled Clinical Trial of Continuous and Intermittent	1975	1972-1974	T	y	y	y	Casablanca, Marokko
	E. J. Saerens, P. Docke[20]	Rifampicin Therapy During an Initial Three Months Period in Lepromatous leprosy: Final Analysis							
7	J. Manungo and J.E.P. Thomas[21]	A comparison of the incidence of type 2 reactions in lepromatous leprosy with two regimens of treatment	1982	1978-1981	TR	n	y	y	Zimbabwe
8	J. Warndorff, J. BOURLAND, S. R. Pattyn[22]	Follow-up on short-course 2 months' rifampicin treatment of paucibacillary leprosy	1982	*	T	y	y	y	Burundi, Ethiopia
9	THELEP Clinical Trials Subcommittee[23]	Response to Treatment by Multidrug Regimens in the THELEP Controlled Clinical Drug Trials	1983	*	T	y	y	n	Mali, India
10	F. A. J. M. Pieters, F. Woestenk, and J. Zurdema[24]	A field trial among leprosy patients in Nigeria with depot injections of Dapsone and Monoacetyldapsone	1988	1986	T	n	y	y	Nigeria
11	P.A.Otsyula, M.Obura, C.Okoido, P.Okuku, S.Makokha and J.Nyaswa[25]	Multidrug therapy for treatment of paucibacillary leprosy in western Kenya-preliminary communications	1990	*	T	y	y	*	Kenya
12	S. R. Pattyn, J. A. Hussey, G. Baguillon, M. Maiga & P. Jannet[26]	Evaluation of five treatment regimens, using either Dapsone monotherapy or several doses of Rifampicin in the treatment of paucibacillary leprosy	1990	1983-1986	T	y	*	*	Mali
13	S.R. Pattyn, G. Groenen, L.I. Arnsens, L. Ruykens, L. B. Mpuh[27]	A controlled therapeutic trial in paucibacillary leprosy comparing a single dose of rifampicin with a single dose	1991	1983-1985	T	y	y	*	Democratic Republic of Kongo (DRC)
		of rifampicin followed by one year of daily dapsone. The Collaborative Study Group for the Treatment of Leprosy in Zaire							
14	Jorg M. Pönnighaus and Gail Boerrigter[28]	Are 1B doses of WHO/MDT sufficient for multibacillary leprosy: results of a trial in Malawi	1995	1987	T	y	y	*	Malawi
15	Prof Paul E M Fine, Karonga Prevention Trial Group	Randomised controlled trial of single BCG, repeated BCG, or combined BCG and killed Mycobacterium leprae vaccine for prevention of leprosy and tuberculosis in Malawi. Karonga Prevention Trial Group[29]	1996	1986- 1989	V	y	y	y	Malawi
		BCG re-vaccination in Malawi: 30-year follow-up of a large, randomised, double-blind, placebo-controlled trial[30]	2021	1986-1989	V	y	y	y	Malawi
16	Saba M. Lambert, Shimelis D. Nigusse, Dagafa T. Alembo, Stephen L. Walker, Peter G. Nicholls	Comparison of Efficacy and Safety of Ciclosporin to Prednisolone in the Treatment of Erythema Nodosum Leprosum: Two Randomised, Double Blind, Controlled Pilot Studies in Ethiopia[31]	2016	2011-2012	TR	y	y	y	Ethiopia
		A Randomized Controlled Double Blind Trial of Ciclosporin versus	2016	*	TR	y	y	y	Ethiopia
		Prednisolone in the Management of Leprosy Patients with New Type 1 Reaction, in Ethiopia[32]							

*no information, BCG: Bacillus Calmette-Guérin

P 497

Community-based integrated skin screening events for leprosy prevention in Ethiopia, Tanzania and Mozambique – Preliminary results from an acceptability survey

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Introduction: PEP4LEP & PEP4LEP 2.0 to interrupt *Mycobacterium leprae* transmission by screening individuals at risk for leprosy and administering chemoprophylaxis in Ethiopia, Tanzania, and Mozambique. In these projects, community skin screening events ("skin camps") invited the 20 households closest to leprosy index patients for integrated skin screening, examining for both skin-neglected tropical diseases (NTDs) and common skin conditions. Skin medication and referrals were offered if needed. Eligible contacts received single-dose rifampicin post-exposure prophylaxis (SDR-PEP) for leprosy prevention. A study objective was to assess the acceptability.

Methods: As part of the acceptability study, a satisfaction survey using Kobo Collect was conducted in nine skin camps (three per country) among participants aged >18 years. Interviews were also conducted to gather qualitative insights, thematic analysis is currently ongoing.

Results: A total of 368 participants were surveyed (Ethiopia 131, Mozambique 127, Tanzania 110), of which 97% recommends the skin camp and 96% said they would return if re-invited. If the events focused solely on leprosy, 85% would still attend, though willingness varied by country (Ethiopia 97%, Mozambique 85%, Tanzania 70%). The availability of SDR-PEP influenced participation, with 77% still attending without it, also with country variations. Free skin medication was a motivator, with 84% willing to attend without it, though interest was notably lower in Tanzania (61%). Overall, 55% of participants rated waiting times as 'good' (Ethiopia 61%, Mozambique 78%, Tanzania 21%). Waiting times were rated 'okay' by 37% in Ethiopia, 18% in Mozambique, and 78% in Tanzania, while 1-4% across all countries rated them as 'bad'.

Conclusion: Participants answers reflected satisfaction with the intervention. Country-specific differences highlight the need for certain tailored approaches. Disease integration and free medication, including SDR-PEP, were motivators. These findings underscore the importance of adapting health interventions to local contexts to enhance participation and leprosy control efforts. More results are expected.

PEP4LEP is part of the EDCTP2 programme supported by the European Union. It also received funding from the Leprosy Research Initiative (LRI). PEP4LEP 2.0 is supported by the Global Health EDCTP3 Joint Undertaking and its members. The funders had no role in study design, data collection/analysis or publishing.

P 498

Skin NTDs and common skin conditions seen in the PEP4LEP & PEP4LEP 2.0 projects in Ethiopia, Mozambique and Tanzania – Preliminary results

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Introduction: The PEP4LEP & PEP4LEP 2.0 projects are implementation trials in Ethiopia, Mozambique and Tanzania to identify the most effective and feasible method for screening people at risk of developing leprosy and administering single-dose rifampicin (SDR) as post-exposure prophylaxis (PEP) to interrupt the transmission of *Mycobacterium leprae*.

Methods: The trials employ a two-arm, cluster-randomized design comparing a community-based screening intervention ("skin camp") with a health centre-based screening intervention. In the skin camp intervention, approximately 100 contacts per leprosy patient are screened and provided with SDR-PEP, if eligible. In the health centre-based intervention, household contacts are invited for screening and SDR-PEP administration. Both approaches incorporate an integrated skin disease screening strategy, which aligns with the World Health Organization"s approach to control skin NTDs. Data is

collected on paper and later entered into the electronic database REDCap.

Results: To date, 22,137 contacts have been screened and recorded in REDCap, with 20,727 participating in the skin camp intervention and 1,410 in the health centre intervention. Among screened individuals, 10,306 (46.6%) were diagnosed with skin diseases, with 10,131 in the skin camps and 175 in the health centre-based approach. A total of 314 new leprosy cases were detected, with 263 cases identified in the skin camps and 51 in the health centres. Over 60 different skin conditions were diagnosed. Besides leprosy, other skin NTDs seen included scabies, onchocerciasis, podoconiosis, deep fungal infections, lymphatic filariasis, and schistosomiasis. Other common skin conditions detected were, amongst others: superficial fungal infections, eczema, urticaria, pityriasis versicolor and impetigo. Of all screened contacts, 19,974 (90.2%) were eligible for leprosy chemoprophylaxis.

Conclusion: The integrated screening strategy proved effective in detecting both leprosy and other skin-related NTDs, supporting a broader public health impact in especially the community skin camps. More results are expected, including on cost-effectiveness, as the study is still ongoing.

PEP4LEP is part of the EDCTP2 programme supported by the European Union. It also received funding from the Leprosy Research Initiative (LRI). PEP4LEP 2.0 is supported by the Global Health EDCTP3 Joint Undertaking and its members. The funders had no role in study design, data collection/analysis or publishing.

P 499

Quality of life among adults with scabies – A community-based cross-sectional study in north-western Ethiopia

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Introduction: Scabies undermines quality of life through its highly disturbing disease symptoms, by distorting self-perception, and secondary to social stigma. Knowledge of its effect on quality of life in general and on specific aspects of day-to-day life is key to addressing the health needs of individual patients and to evaluating gains from community-based disease control interventions.

Objectives: To measure the effect of scabies on the quality of life of people with the infestation.

Methods: A community-based cross-sectional study was conducted in a scabies outbreak-affected district in north-western Ethiopia. The study involved 381 households and 86 adults with scabies. We used the ten-item Cardiff Dermatology Life Quality Index (DLQI) tool to collect data. Cronbach"s alpha value was used to determine the internal consistency of the Amharic version of the scale. Overall and Dermatology Life Quality (DLQ) domain specific mean scores were calculated. The association between sociodemographic characteristics and scabies-related life quality impairment was tested using Kruskal-Wallis test.

Results: Scabies moderately affected the quality of life of adults with scabies. The overall mean DLQI (mDLQI) score was 9.2 (SD = 7.6). "Symptoms and feelings" and "daily activity" DLQ domains had the highest mDLQI scores (3.5, SD = 1.9 and 2.2, SD = 2.5, respectively). "Leisure activities" was the least affected domain 0.8 (SD = 1.1). In terms of severity, scabies had moderate or severe effect on DLQ of 54.7% of the participants and extremely severe effect was reported among 27% of the participants. However, no association was observed
between sociodemographic characteristics and quality of life impairment.

Conclusion: Quality of life was moderately impaired among people affected by scabies. Refocusing attention on management of disease symptoms, using standard scabies treatment, and providing psychosocial support to improve self-perception of people affected with scabies may help reduce quality of life impairment.

Fig. 1

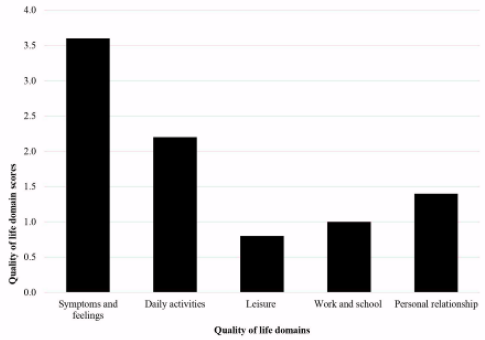
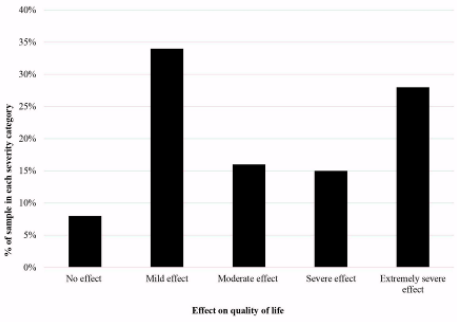


Fig. 2



P 500

Scabies in the Amhara region of northern Ethiopia – A cross-sectional study of prevalence, determinants, clinical presentation, and community knowledge

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Introduction: The World Health Organization aims to prevent, eliminate, or control Neglected Tropical Diseases (NTDs), including scabies, by 2030. However, limited epidemiological data presented a challenge to control efforts, especially in high burden countries. There was a major scabies outbreak in northern Ethiopia starting in 2015 and prevalence has since increased across much of the country. This study aimed to

measure scabies prevalence and presentation, identify its predictors, and assess community perception of, and knowledge about, the infestation.

Methods: This population-based cross-sectional study was conducted in Ayu Guagusa district, Amhara region, northern Ethiopia. 1437 people who were members of 381 randomly selected households participated in the study. Five trained mid-level health workers diagnosed scabies cases clinically. Participants were asked about their socioeconomic characteristics, knowledge and attitudes about scabies, and health seeking behaviours. Multi-level logistic regression models were fitted to adjust for individual and household-level confounding variables, and identify predictors of scabies infestation.

Results: Scabies prevalence was 13.4% (95% CI 11.8 - 15.5). Households of more than five people (adjusted Odds Ratio (aOR)=3.5, 95% CI 1.2 - 10.2) were associated with increased odds of developing scabies, however, females had lower odds (aOR=0.5 95% CI 0.3 - 0.8). Scabietic lesions most frequently involved the trunk (62.0%), and vesicles were the commonest types of lesions (67.7%). Two-thirds of adult study participants had heard about scabies and most obtained scabies related information from informal sources. Only 32% of cases sought care for scabies from any source.

Conclusions: Scabies prevalence was high, signifying the need for community-based control interventions. Host density and sex were important predictors of scabies. Despite the favourable attitude toward the effectiveness of scabies treatment, health care seeking was low.

Fig. 1

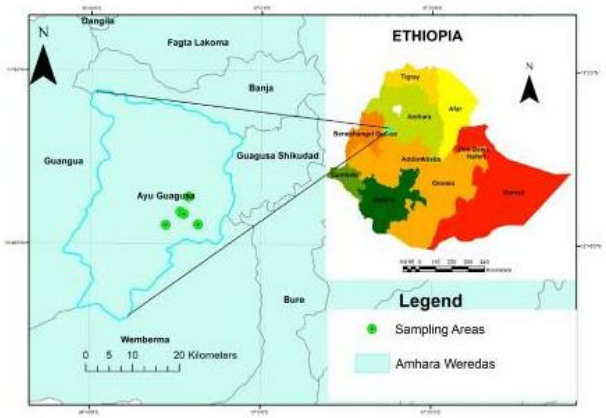

Fig. 2

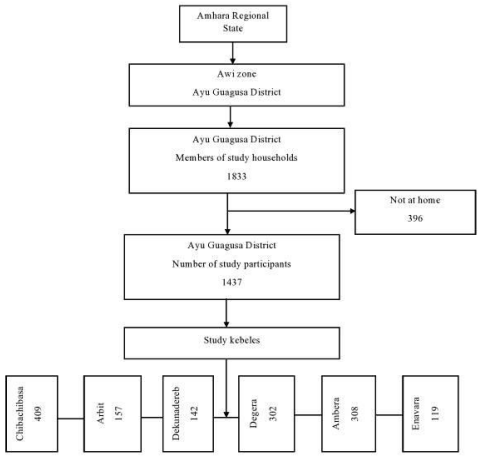

Figure S2. Study diagram, number of participants, and place of residence (*kebeles*)

P 501

No secondary impact of ivermectin mass drug administration for onchocerciasis elimination on the prevalence of scabies in northwestern Ethiopia

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Background: Mass drug administration (MDA) is among the five major strategies that are currently in use to con- trol, eliminate or eradicate Neglected Tropical Diseases (NTDs). Optimising MDA to control multiple NTDs max- imises impact. The objective of this study is to estimate the secondary impact of ivermectin MDA for onchocer- ciasis on the prevalence of scabies.

Methods: This quasi-experimental study was conducted in Ayu Guagusa district, northwestern Ethiopia. Scabies prevalence was estimated in surveys before the MDA, at 6 and 12 months afterwards. The sample size was 1437 people from a panel of 381 randomly selected study households. Multistage sampling was employed in randomly selecting six kebeles (the lowest administrative unit) with respective gotes (small villages) and households. All members of the selected households were invited to participate in the study and participants who were available in all three surveys formed a cohort.

Results: Scabies prevalence was similar prior to the MDA (13.4%, 95% CI 11.7 to 15.2%) and 6 months after (11.7%, 95% CI 10.1 to 13.2%) but was substantially greater at 12 months (22.1%, 95% CI 20.1 to 24.1%). The 6-month incidence and disappearance rates were 10.8% (95% CI 8.8 to 13.2%) and 82.6% (95% CI 75.0 to 88.6%), respectively.

Conclusions: Ivermectin MDA for onchocerciasis was not observed to have a secondary impact on the prevalence of scabies over the follow-up period of 12 months.

Fig. 1

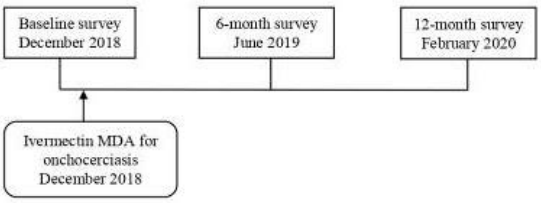

Figure 1. Scabies survey rounds and ivermectin MDA for onchocerciasis.

Fig. 2

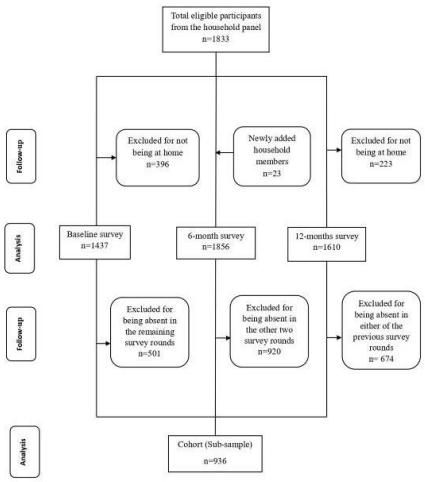

Figure 2. Flow diagram for participants of the three surveys and cohort sub-sample.

P 502

An inhibition-ELISA test for the serodiagnosis of *Trypanosoma brucei gambiense* using recombinant antigens

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Introduction: The World Health Organization (WHO) has outlined the diagnostic needs for new tests for Human African trypanosomiasis caused by *Trypanosoma brucei gambiense* (gHAT) to achieve its interruption of transmission by 2030. Inhibition ELISAs (iELISAs) are highly specific, high throughput, simple-format tests that could play a crucial role in large-scale surveillance in post-elimination settings. A prototype of this test has demonstrated a promising diagnostic performance, but concerns were raised regarding its stability. Additionally, significant efforts have been made in the development of recombinant antigens to avoid working with highly infective *T. b. gambiense* clones and the use of laboratory animals. The aim of this project was to develop a highly specific gHAT iELISA based on recombinant antigens (r-iELISA), comparing it to the gold standard in gHAT serological diagnosis, immune trypanolysis (TL), and to its predecessor, an iELISA based on native antigens (n-iELISA).

Materials and methods: The recombinant antigens rLiTat 1.3 and rLiTat 1.5, expressed in insect cells (*Trichoplusia ni* and *Spodoptera frugiperda*), were provided by Coris BioConcept (Gembloux, Belgium). The monoclonal antibodies 7B1D7 and 1A11G10, along with the rest of the reagents used to optimize the test, were provided by Advanced Practical Diagnostics (apDia, Turnhout, Belgium). The final protocol was based on that described by Geerts et al. (2021). A small proof-of-principle study was conducted using samples from 66 gHAT cases and 65 endemic controls to determine the preliminary sensitivity and specificity of the r-iELISA, comparing it to TL and n-iELISA. The stability of the test was calculated as the intraplate and the interplate coefficient of variation (%CV).

Results and discussion: The estimated sensitivity and specificity of r-iELISA were 98.4% and 98.5%, respectively, whereas the sensitivity and specificity of n-iELISA were 96.8% and 98.5%. The agreement of r-iELISA with TL is 100%. Both the intra and interplate variation throughout 4 weeks, using over 120 repetitions of the negative control, were below 10%. Although the results are encouraging, further testing is ongoing to better evaluate the diagnostic potential of r-iELISA, as well as its long-term stability at 4°C and higher temperatures, as well as its feasibility on samples other than plasma (*i.e.,* dried blood spots).

P 503

Genetically engineered Trypanosomes as a safe and ethical alternative for native antigen production in gambiense HAT diagnostics

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Every year, millions of people are screened for gambiense Human African trypanosomiasis (gHAT) to identify the last remaining patients as the disease approaches elimination. This public health effort relies heavily on antibody tests requiring high sensitivity for screening and exceptional specificity in reference assays. Current serodiagnostic tests depend entirely on whole-cell preparations or purified native antigens from *Trypanosoma brucei (T.b.) gambiense*. The virulence and inability of these strains to grow in vitro necessitate large-scale animal cultivation, resulting in significant biosafety risks and dependence on thousands of rodents annually.

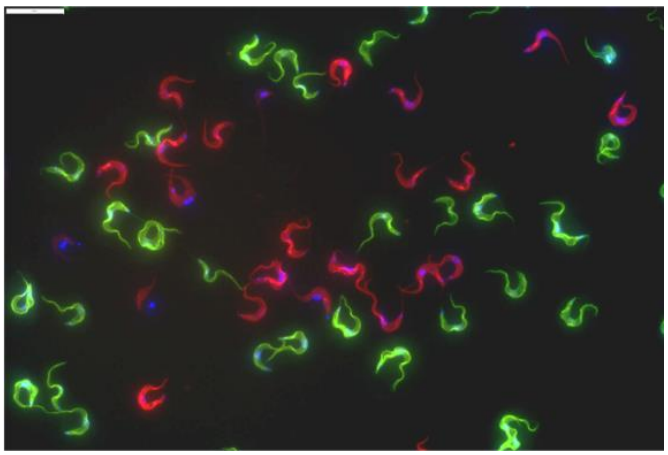
To overcome these issues, we genetically engineered *Trypanosoma brucei (T.b.) brucei* strains expressing *T. b. gambiense* variant surface glycoproteins (VSG) LiTat 1.3 and LiTat 1.5 in locked expression sites. Fluorescence markers were integrated into recombinant *T. b. brucei* strains to develop a fluorescent immune trypanolysis (FIT) assay. Unlike conventional TL assays requiring manual microscopic counting, FIT enables multiplexed, real-time kinetic visualization of parasite lysis, improving assay throughput and accuracy. FIT results demonstrated perfect concordance with traditional TL.

For ELISA diagnostics, recombinant antigens were purified from in vitro-cultured parasites using Concanavalin A (ConA) chromatography, replicating native antigen preparation methods. Indirect and inhibition ELISA evaluations confirmed recombinant antigens performed equivalently to native antigens.

Efforts to optimize large-scale in vitro culture methods, include the use of roller-bottle systems achieving densities of 5 x 10^6 parasites/ml, producing recombinant VSG antigens at ~0.2 mg/L. This scalability enables broader applications, potentially yielding enough material for integration into rapid diagnostic tests. Recombinant *T. b. brucei* thus offer a safe, ethical, and effective alternative for native antigens for gHAT diagnostics, addressing critical biosafety and ethical challenges.

Figure 1**.** Fluorescently labeled *T.b. brucei* expressing *T. b. gambiense* VSGs LiTat 1.3 (green) and LiTat 1.5 (red) on their surface coat. Nuclear and kinetoplast DNA are stained with DAPI (blue). This multiplexed labeling approach allows clear differentiation of antigenic variants in FIT.

Fig. 1



P 504
YouTube videoclips on diagnosis of human African trypanosomiasis

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Background: As the prevalence of Human African Trypanosomiasis (HAT) or sleeping sickness declines, experience in its diagnosis is progressively lost. Experienced laboratory technicians retire, are affected elsewhere or replaced by new staff. Furthermore, cases become rare and maintaining the diagnostic experience is a challenge. In particular passive case detection will be key to post-elimination surveillance. Laboratory staff of peripheral health care facilities in HAT endemic areas or historic foci should therefore be maximally supported to maintain their skills to diagnose remaining or reemerging HAT cases. The large coverage of internet networks, even in remote rural areas, can be exploited to make test procedures available in the format of videoclips.

Methods: Videoclips showing the main procedures for HAT screening and diagnosis were recorded and released on YouTube.

Results: So far, 3 videoclips have been posted on YouTube in French. Two clips deal with serological screening either with the CATT agglutination test (https://www.youtube.com/watch?v=dN56HA6oH2I) or with the HAT Sero *K*-SeT rapid diagnostic test (https://www.youtube.com/watch?v=tsSsDiY39RQ). A third video explains how to collect blood for remote testing in immunological and molecular reference laboratory tests, using the "kit for blood collection, KPS" (https://www.youtube.com/watch?v=jJHgs1I8Kn8).

Conclusions: A videoclip on parasitological confirmation using the mini Anion Exchange Centrifugation Technique (mAECT) is in preparation, as well as anglophone versions of all available clips. These videoclips can be used by staff in both HAT endemic and non-endemic areas, who are confronted with potential HAT cases that should be diagnosed.

Acknowledgements

We thank the staff of HGR Tandala, the PNLTHA-RD Congo, IRD, ITM and INRB that contributed to the videoclips. The activities received financial support from the EU under Horizon Europe GH-EDCTP3, Project "*Stop Transmission of gambiense Human African Trypanosomiasis*" (STROGHAT) and were carried out in the context of the HAT WHO Collaborating Centres: IRD (FR-137), ITM (BEL-34), and INRB (COD-1).

P 505
Stop transmission of gambiense human African trypanosomiasis in an endemic focus in the Democratic Republic of Congo – Study implementation results at month 7

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Background: Gambiense human African trypanosomiasis (gHAT) cases reached historic lows, with WHO aiming for interruption of transmission by 2030 (1). The Stop Transmission of gHAT (STROGHAT) study assesses effectiveness, feasibility and safety of a new elimination strategy based on treating gHAT seropositive subjects with acoziborole.

Methods: STROGHAT is a one-arm epidemiological study, with a nested phase IIIb, one-arm, open label, non-randomized, multicentre clinical trial, implemented in Equateur province, Democratic Republic of Congo. Screening is performed by mobile teams using Card agglutination test for trypanosomiasis/*T.b.gambiense* and health structures using rapid diagnostic tests (HAT Sero K-Set). Parasitologically confirmed cases received standard of care. Parasitologically negative, seropositive subjects are treated with acoziborole. Post-hoc immunological and molecular tests are performed for all seropositive subjects for follow-up needs assessment and prevalence estimate. Elimination will be assessed by a survey in study year 4.

Results: From March to October 2024, 159,415 persons were screened: 155,595 through active screening (AS) and 3,820 by passive screening (PS). Males represented 54.40% of AS and 44.95% of PS populations. The mean age was 25.8 years in AS (Median 22 years, IQR 12-37 years) and 33.3 years in PS (Median: 32 years, IQR 20-45 years). Mobile teams reached 97.6% of planned villages, screening 94.9% of their populations. Among those screened, 471 tested positive (0.30%), 0.20% (312 subjects) in AS and 4.16% (159 subjects) in PS. 46 were included in the clinical trial. 4 gHAT cases were identified: 1 through AS and 3 by PS (1 by parasitology, 1 by post-hoc tests and 2 by both of them), giving a prevalence of 2.5 per 100,000. The positive predictive values of screening tests were 0.32% (AS) and 1.89% (PS).

Conclusions: The study achieved high screening coverage and community participation, supporting the feasibility of this approach to reach interruption of transmission. Low positivity rate and predictive values reflect the very low gHAT prevalence in the region.

1. WHO. Ending the neglect to attain the sustainable development goals. A road map for neglected tropical diseases 2021–2030. Geneva: WHO; 2020.

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Formative research on Chagas disease – A deeper understanding of a silent and silenced disease

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Background: Chagas disease (CD) is a neglected tropical disease that affects over 6 million people worldwide, and each year an estimated 15,000 babies are born with congenital CD.[1] The CUIDA Chagas project aims to eliminate congenital CD transmission by enhancing diagnosis, treatment, and comprehensive care in Bolivia, Brazil, Colombia, and Paraguay.

Objective: To conduct a situational analysis of each of the territories included in the CUIDA Chagas implementation research to better understand the local context considering physical, socioeconomic and cultural environments, as well as health systems, stakeholders and institutional culture.

Methods: The research combined quantitative and qualitative approaches, and included desk research, open-ended semi-structured interviews and focus group discussions (FGD). The desk research consisted of collecting and reviewing national and local level secondary data, focusing on demographic and socio-economic data, health systems, and existing CD data, policies and programs. Through interviews and FGDs primary data on CD was collected, focusing on knowledge, diagnosis and care, positive and negative attitudes, and personal/family experiences related to the disease.

Results: Systemic factors within primary healthcare, including low coverage, high staff turnover, and geographical challenges are key impediments to accessing effective care. Trust in healthcare professionals is low, leading to abandonment of treatment and follow-up care. The absence of support networks or community engagement around CD, coupled with minimal social mobilization and a lack of political awareness on the inadequacies of public health services, contribute to a lack of agency and increased vulnerability among women affected by CD.

Conclusion: There are significant barriers and challenges faced by women affected by CD, particularly related to access to diagnosis, treatment and integrated care. Findings call for targeted interventions that address socioeconomic disparities, particularly in municipalities with high poverty levels and limited infrastructure. In addition, they emphasize the need for comprehensive, community-centered approaches that not only address healthcare infrastructure but also prioritize comprehensive support systems that address the social, psychological, and professional barriers faced by women affected by CD, promoting greater societal inclusion.

[1] https://www.paho.org/fr/node/70266

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Trypanosoma cruzi genotypes detected in chronic infected people – Association with geographic origin and clinical manifestations of Chagas disease

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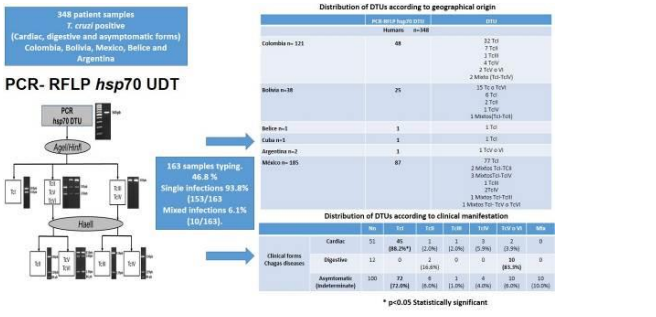
Trypanosoma cruzi is the causative agent of Chagas disease (CD), a neglected tropical disease, and one of the most important parasitic diseases worldwide. *T. cruzi* is currently subdivided into six DTUs (discrete typing units) named TcI-TcVI and Tcbat, and although no clear association has been found between parasite genetics and different clinical outcomes of the disease or different transmission cycles, genetic characterization of *T. cruzi* strains remains crucial for integrated epidemiological studies. The PCR-RFLP *hsp*70 DTUs were used for the detection of *T. cruzi* lineages in 348 samples of Chronic Chagas diseases (cardiac, digestive and indeterminate or asymptomatic form) collected from Bolivia, Argentina, Belize, Colombia and Mexico. The DTUs were associated with the geographical origin and clinical manifestations of Chagas Diseases. Of the 348 positive for *T. cruzi* analysed samples, 163 (46.8%) were successfully typing using the PCR-RFLP *hsp*70 DTU. We detected the presence of all DTUs directly in clinical samples. Single infections (i.e. presence of only one DTU in the sample) were detected in 93.8% of the samples (153/163), while mixed infections were 6.1% (10/163). We corroborate the geographic distribution of the DTUs. The geographical distribution of the major *T. cruzi* lineages found corresponds to that reported in the different countries studied. When we evaluated the association of DTUs with clinical manifestations of CD, the probability of finding TcI in subjects with chronic Chagas cardiomyopathy was higher than other DTUs, with high statistical significance (Fisher p= 0.048). Moreover, the probability of finding TcV or TcVI in patients those who have developed the digestive form of CD was higher than other DTUs, with high statistical significance (Fisher p< 0.001). In asymptomatic people all DTUs were detected while TcI appeared more frequently in these cases, but without statically significance (Fisher p=0.85). The obtained results contribute to the study compilations of geographic distribution of the prevalent DTUs in humans in endemics areas. In this context, understanding the genetics of *T. cruzi* and clinical implications will provide new knowledge that may contribute to additional strategies in the diagnosis and clinical outcome follow-up of patients with Chagas disease.

Fig. 1



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Example of the diagnostic landscape for Chagas disease in Brazil, Bolivia, Colombia and Paraguay – The CUIDA Chagas experience on equitable market access

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Background: Chagas disease (CD) is a major public health problem worldwide. The CUIDA Chagas project aims to contribute to the elimination of congenital transmission increasing and intensifying access to diagnosis, treatment and comprehensive care, through innovative and sustainable approaches in Bolivia, Brazil, Colombia and Paraguay. One of the objectives of this study is to forecast the need for different diagnostic tests (rapid, serological, molecular and parasitological) and a variety of use scenarios, as part of the efforts to support market shaping and supply chain interventions to ensure equitable access to innovative products, which is key to an informed engagement with test manufacturers.

Question: How to forecast and demonstrate a more precise need for key priority CD diagnostics?

Methods: Based on a Total Addressable Market approach, a market sizing model was developed to forecast the volume of CD diagnostic tests required to reach target population groups in the 4 countries over a period of 7 years for two scenarios of use. The "Current Scenario" (CS) reflects the present CD testing context and trends, and the "Improved Scenario" (IS) represents a situation in which clinical evidence supports the adoption of innovative diagnostics and there were strategies to increase access for a larger population. The diagnostic algorithms consider a three tests approach, based on the national guidelines and literature review, and then validated by country experts through workshops to address national specificities.

Results: The forecasted volume of tests required to screen and diagnose the target populations across the four countries for the CS and IS stands, respectively, at approximately 7.6 million (M) and 19.2 M in 2024; and is expected to grow to 15.3 M and 51.1 M by 2030. While serological tests accounts for 70% of the total volume in the CS, RDTs account for 60% in the IS. The expected adoption of molecular tests results from zero tests in the CS to 178,000 for the IS.

Conclusion: Despite important gaps in epidemiological data, it is possible to present to procurers of CD diagnostics and CD test manufacturers and developers the potential need of the innovative diagnostics. Insights and data displayed can be useful for evaluating an investment potential, the viability and scalability of specific products. It allows discussions on mechanisms to improve affordability, considering both Latin American countries and high-income "non-endemic" countries.

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Towards equitable access to diagnostics and treatment for Chagas disease in Brazil, Bolivia, Colombia, and Paraguay

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Background: Chagas disease (CD) is a neglected tropical disease (NTD) that affects over 6 million people worldwide, yet less than 10% have been diagnosed, and fewer than 1% have received etiological treatment, partially due to significant access barriers. The CUIDA Chagas project aims to contribute to the elimination of congenital CD transmission by enhancing diagnosis, treatment, and comprehensive care in Bolivia, Brazil, Colombia, and Paraguay. In addition to access to market activities, the project includes three research protocols: implementation research, validation of a diagnostic algorithm that uses rapid diagnostic tests, one clinical trial as well as a strong community engagement component.

Objective: To identify key barriers to equitable access to CD diagnostics and treatment in four CUIDA Chagas countries, and describe efforts to address them.

Methods: First, the project devised advocacy actions and market research to develop an equitable access strategy, focusing on access dimensions: availability (forecasting and supply), affordability and adoption of diagnostic tests (serological, rapid and molecular) and treatments. Second, different interviews and engagement with key stakeholders were performed to identify the barriers as well as addressing some of them whenever possible.

Results: Key barriers were identified, as follows: (a) Budget limitations restricting screening and diagnostics expansion; (b) Lack of epidemiological data due to poorly maintained information systems; (c) Inefficient procurement mechanisms, leading to price variations for diagnostic tests; (d) Suboptimal storage and distribution, requiring faster deliveries at higher costs; (e) Market monopolies, leading to higher prices.

To address these challenges, a market-sizing tool was developed to estimate the potential implementation of screening policies, fostering interest and competitiveness among producers. Additionally, in order to ensure sustained BZN supply, efforts to ensure the involvement of a second supplier were undertaken in collaboration with the Brazilian Ministry of Health and options to expand the supply to the regional level were explored.

Conclusion*:* Improved integration between epidemiological surveillance and supply logistics is crucial to overcome access barriers. The strategies implemented in the four CUIDA Chagas countries offer a framework for broader regional solutions.

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Hepatitis E Virus in animal reservoirs and its impact on chronic liver disease in Vietnam

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Background: Hepatitis E virus (HEV), a zoonotic and foodborne pathogen, poses significant public health risks, particularly in regions with high rates of chronic liver diseases such as hepatitis B virus (HBV) infection. In Vietnam, domestic pigs and farmed wild boars serve as major HEV reservoirs, but the role of HEV in exacerbating chronic liver diseases remains unclear. This study investigates the prevalence, genotypic distribution, and potential zoonotic transmission of HEV in pigs and wild boars, as well as the seroprevalence and clinical impact in HBV-infected individuals and patients with hepatitis of unknown etiology (HUE).

Methods: HEV RNA was detected and sequenced from rectal swabs, faecal samples, and liver tissues of 427 domestic pigs and 101 wild boars in central and southern Vietnam. Serological tests for anti-HEV IgG/IgM and HEV RNA positivity were performed on blood samples from 587 HBV-infected individuals and 158 HUE patients.

Results: HEV RNA was detected in 7% (29/427) of domestic pig samples and 25% (25/101) of wild boar samples, with subgenotype 3a predominating. Serological analysis revealed a 26% anti-HEV IgG seroprevalence in HBV-infected individuals and 36% in HUE patients, with significantly higher rates in those with liver cirrhosis and hepatocellular carcinoma. No HEV RNA was detected in serum samples, although anti-HEV IgM was detected in one patient.

Conclusion: HEV is prevalent in both animal and human populations in Vietnam, with domestic and wild pigs acting as potential zoonotic reservoirs. The high HEV seroprevalence in HBV-infected and HUE patients suggests a possible role in liver disease progression, warranting further investigation into HEV transmission dynamics and its clinical impact.

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Long-term persistence and boostability of immune responses following different rabies pre-exposure prophylaxis priming schedules of a PCEC rabies vaccine

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Background: Rabies is a vaccine preventable lethal viral disease that is usually transmitted through the bite of an infected animal**.** Rabies remains a significant public health issue, particularly in regions where the disease is endemic, necessitating effective and lasting vaccination strategies.

Objective: This study aims to evaluate the long-term persistence of rabies virus-neutralizing antibody (RVNA) responses in subjects following different rabies pre-exposure prophylaxis (PrEP) primary schedules and the antibody responses to a booster dose using the purified chick embryo cell rabies vaccine (PCEC-RV).

Methods: Adults who completed the parent study (NCT01662440; safety and immunogenicity of different primary PrEP regimens with PCEC and Japanese encephalitis [JE] vaccine) and received full rabies PrEP regimens (Rabies+JE-Accelerated, Rabies+JE-Conventional, and Rabies-Conventional) were enrolled in this phase III, open-label extension study (NCT02545517). Immunogenicity was assessed by rabies virus neutralizing antibody (RVNA) concentrations, and levels ≥0.5 international units (IU)/mL were considered adequate for protection. Participants with RVNA concentrations <0.5 IU/mL were eligible to receive a PCEC-RV booster.

Results: After 10 years, the probability of detecting adequate RVNA concentrations was 57.8% for the Rabies + JE-Accelerated group, 60.2% for the Rabies + JE-conventional, and 62.0% for the Rabies-Conventional group.

Conclusion: Approximately 69% of study participants received no PCEC-RV rabies vaccine booster (68.6%) during the 10-year follow-up period. The study demonstrated a strong immunogenic response to a PCEC rabies vaccine booster dose, irrespective of the primary regimen received. Furthermore, the response was independent of the time elapsed since the last primary vaccine dose administration.

This clinical trial was funded by GlaxoSmithKline Biologicals SA. Abstract submitted by Bavarian Nordic on behalf of the co-authors.

Keywords: rabies, pre-exposure prophylaxis, PCEC rabies vaccine, immune persistence, booster response, vaccination schedules.

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Factors associated with post-exposure prophylaxis for human rabies prevention and epidemiological of animal bite cases in Mozambique, 2017-2021 – Need to strengthen One Health collaboration and coordination

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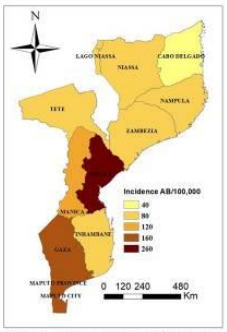
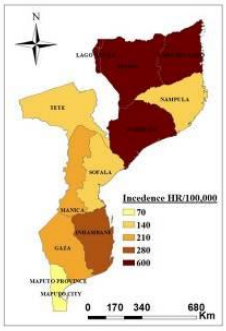
Despite growing awareness of dog-mediated rabies, in recent years there has been an increase in the occurrence of animal bites in Mozambique and, on the other hand, availability and access to post exposure prophylaxis is uneven. This study was carried out to evaluate epidemiology of animal bites and the factors associated with non- post-exposure prophylaxis in humans. A cross-sectional study with a quantitative approach was carried out between 2017-2021. Secondary data from the rabies surveillance system were used. Descriptive statistics and multivariate logistic regression were calculated, considering a P<0.05. During the study period, an average of 87.9 cases of animal bites were recorded per 100,000 inhabitants (95%CI: 86.8-89.0), with a stationary trend, Maputo City 263(95%CI: 253.8-272.8), Sofala 222 (95%CI: 216.3-228.3), Gaza 154 (95%CI: 147.8-160.7) had an incidence above the national average. Among the cases investigated with criteria, 50.0% (1874/3746) did not receive post-exposure prophylaxis, with a downward trend. People bitten in Zambézia (ORa=176.5; 95%CI:24.1-1290.4; P<0.001); Niassa (ORa=17.2; 95%CI:11.5-25.6; P<0.001); Cabo Delgado (ORa=13.8; 95%CI: 8.1-23.6; P<0.001), Inhambane (ORa=7.2; 95%CI:3.5-14.3; P<0.001) were more likely not to take post-exposure prophylaxis than people bitten in Maputo Province. Living in a rural area increased the chance of not taking post-exposure prophylaxis 70% more than living in an urban area (ORa=1.7; 95%CI:1.4-2.1; P<0.001). an average of 187 cases of human rabies were recorded per 100,000 people bitten (95%CI: 134.9-240.6) with a downward trend. A person bitten in Niassa (ORa=12.1; 95%CI:5.8-25.0; P<0.001), or Cabo Delgado (ORa=9.5; 95%CI:4.0-22.6; P<0.001), or Zambézia (ORa=5.3; 95%CI: 2.6-10.8; P<0.001) or Inhambane (ORa=3.7; 95%CI:1.5-8.8; P=0.004) were more likely to return rabies than the person bitten in Maputo Province. There has been a decrease in non-human post-exposure prophylaxis and a decrease in rabies cases, however, there is heterogeneous access to rabies vaccine in Mozambique and rabies remains a serious public health problem. Living in the provinces of Niassa, Cabo Delgado, Zambézia, Inhambane and in rural areas decreases the chance of taking post-exposure prophylaxis in humans. It increases the risk of developing rabies after an animal bite. It is recommended to improve the logistics of rabies vaccine distribution, prioritizing the areas with the highest incidence.

Fig. 1



Incidence of animal bites by province, Mozambique, 2017-2021



Incidence of human rabies by province, Mozambique, 2017-2021

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Evaluation of environmental and entomological determinants of urban transmission of chikungunya virus in Mozambique 2020-2021

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Arbovirus infections in Africa are a multivariable complex problem influenced by different factors. Chikungunya virus is one of the most important in the world. This vector-borne disease is transmitted to humans mainly by Aedes aegypti and Aedes albopictus. The global distribution is shown to have increased at an alarming rate of expansion to new areas and Aedes aegypti is breeding outdoors, including dirty water and sewage, in what may be a new adaptive strategy for this vector, which is traditionally considered to have adapted to the domestic environment and breed mainly in indoor water storage containers. The study aimed to evaluate of Environmental and entomological determinants of urban transmission of arboviruses in the city of Quelimane. A quantitative cross-sectional study was carried out between November 2020 and December 2021 in houses of patients suspected of arboviruses houses and two neighboring houses. Mosquitoes was collected by aspirator; potential breeding sites were inspected and samples were collected from the immature stage obtained from these breeding sites. descriptive statistics and entomological index were calculated. 296 households were visited, of which 99 were arboviral suspects (cases) and 197 (controls) in 18 neighborhoods, 5% (16/296) of those households were positive to Aedes aegypti immature stage. 93 of 99 suspected were tested to Chikungunya and the positivity rate was 38.7% (C: 95%: 26.1–47.2) in first visit and 20% (IC 95%: 2.5 – 55.6) after 60 days. A total of 5,165 adult mosquitoes were captured, of which 2,887 were males. Culex sp. was the most captured species with 95.4% (4928/5165) specimens, Aedes sp represented about 4.2% (217/5165) specimens. About 10.3% (11/106) of the oviposition traps were positive. A total of 2,160 artificial containers were inspected and 1%(22/2160) were positive with Aedes sp. Regarding the WASH, about 60% (178/296) of households do not have piped water and 98% store water for daily use. In the rainy season, 52% (154/296) of the houses have puddles; 33% (99/296) do not drain rainwater into drainage ditches. Medium containers, with little water depth, with the presence of organic matter and shown to be the most sought after by the Aedes for reproduction and Tires were created with the highest productivity of immature Ae. Aegypti. Water and sanitation hygiene conditions are important for the Chikungunya outbreak and no significant differences exist between cases and controls conditions.

Fig. 1

Infestation rates of immature Aedes spp by neighborhoods	Number of House Inspected	Positive House	House Index %	Number of containers	Number Positive Container	Contanair Index %	Breteau Index %
Micajune	3	1	33	51	2	4	67
Manhaua	3	0	0	29	0	0	0
Janeiro	42	7	17	331	7	2	17
Torrone Novo	17	1	6	112	1	1	6
17 de Setembro	9	0	0	66	0	0	0
Coalane II	57	1	2	422	1	0.2	2
3 de Fevereiro	6	0	0	41	0	0	0
Coalane II	15	1	7	123	1	1	7
Acordos de Lusaka	39	0	0	309	0	0	0
Cololo	24	2	8	161	3	2	13
25 de Setembro	6	1	17	40	1	3	17
10 de Maio	6	1	17	48	5	10	83
Sangariveira	21	1	5	140	1	1	5
Kansa	3	0	0	27	0	0	0
Santagua	6	0	0	61	0	0	0
Sampene	30	0	0	198	0	0	0
Murropue	9	0	0	31	0	0	0
TOTAL	296	16		2190	22		

Fig. 2

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Burden of disease for NTDs in Germany

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Introduction: The WHO defines 21 Neglected Tropical Diseases (NTDs) which often cause chronic impairments and primarily affect tropical and subtropical regions. Globalisation, migration and climate are contributing to increasing reports worldwide, yet no standardised surveillance system exists. This study aims to quantify incidence trends of reported cases of NTDs in Germany to assess their epidemiological significance and public health implications.

Methods: Data were primarily collected from the Federal Health Reporting System (GBE-Bund) which provides nationwide diagnoses based on ICD-10 codes. Case numbers of hospitalised patients, sex distribution, number of deaths and average length of hospital stay (LOS) for each NTD were extracted for the period 2012-23. To verify completeness and accuracy, data were cross-checked with laboratory records and official reporting statistics.

Results: The most commonly reported NTD cases were scabies (median 5693 cases/year, IQR: 2477, 7245), echinococcosis (median 496 cases/year, IQR: 443, 551),

dengue and chikungunya (median 229 cases/year, IQR: 159, 266), soil-transmitted helminths (median 114 cases/year, IQR: 85, 176) and leishmaniasis (median 69 cases/year, IQR: 55, 106). Highest numbers of deaths were found in patients with scabies (median 5 cases/year, IQR: 4, 7), echinococcosis (median 4 cases/year, IQR: 2, 5), rabies (median 3 cases/year, IQR: 2, 5) and snakebites (median 2 cases/year, IQR: 2, 4). Further analyses on sex differences in NTD cases, mortality trends, temporal case trends and LOS are ongoing and will be presented in detail at the conference.

Discussion: We found high numbers of cases for diseases known to be endemic in Germany, such as scabies and echinococcosis, while imported diseases (e.g. dengue and leishmaniasis) were also frequently reported. Ongoing analyses will further explore potential differences in reported NTD cases, particularly in relation to changes in their legal reporting obligations under the IfSG (Infection Protection Act). Notably, reporting biases may lead to over- or underreporting due to unspecific ICD codes, e.g., Buruli ulcer coded as A31.1=Cutaneous mycobacterial infection.

Conclusion: This is the first study to provide an overview of the burden of NTDs in Germany while highlighting challenges in diagnosing and reporting. Strengthening preventative measures and increasing awareness within the medical community are essential to reduce the future burden of NTDs.

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Spatio-temporal machine-learning models integrating epidemiological, geospatial, and meteorological covariates to forecast preventive chemoprophylactic neglected tropical diseases in West Africa

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Question: Can spatio-temporal machine-learning models that fuse epidemiological surveillance, Earth-observation geospatial layers and high-resolution meteorological data accurately forecast district-level risk of preventive-chemoprophylactic neglected tropical diseases (PC-NTDs)—lymphatic filariasis, onchocerciasis, schistosomiasis, trachoma and soil-transmitted helminths—across West Africa far enough in advance to optimise mass-drug-administration (MDA) timing and targeting?

Methods: We compiled weekly case counts (2010-2024) from national NTD programmes in 163 districts spanning Benin, Guinea, Nigeria and Sierra Leone and linked them—at a 5 × 5 km grid—to 54 covariates: satellite-derived rainfall, temperature, soil moisture, NDVI, land-use; population density; night-time lights; water-access and sanitation scores. After lag-selection with cross-correlation analysis, we trained an ensemble of gradient-boosted trees, random-forest quantile regressors and long-short-term-memory networks within a spatially blocked, forward-chaining cross-validation framework. Spatial autocorrelation was captured through a graph convolution layer, and model interpretability assessed with SHAP values. Performance was benchmarked against an autoregressive integrated moving-average (ARIMA) model. Scenario analysis estimated cases averted and cost savings from model-guided, versus blanket, MDA.

Results: The ensemble predicted 12-week-ahead incidence with a mean absolute error of 0.83 cases/10 000 (RMSE = 1.21) and AUROC = 0.92—outperforming ARIMA by 37 % ($p < 0.001$). Forecast maps correctly identified 87 % of observed outbreak districts and flagged 29 emergent hotspots two to three months before surveillance alerts. Rainfall anomaly (lag = 6 weeks), NDVI (lag = 8 weeks) and night-time lights (contemporaneous) were the strongest predictors. Simulation showed that risk-stratified MDA guided by the model could avert 18 % (95 % CI: 14-22 %) additional cases annually while reducing drug procurement costs by US $3.2 million.

Conclusion: Integrating multi-domain covariates within spatio-temporal machine-learning frameworks delivers accurate, actionable forecasts of PC-NTD risk in West Africa. The approach enables earlier, more efficient chemoprophylaxis, accelerates progress toward elimination targets and is readily adaptable to other climate-sensitive diseases and regions.

Fig. 1

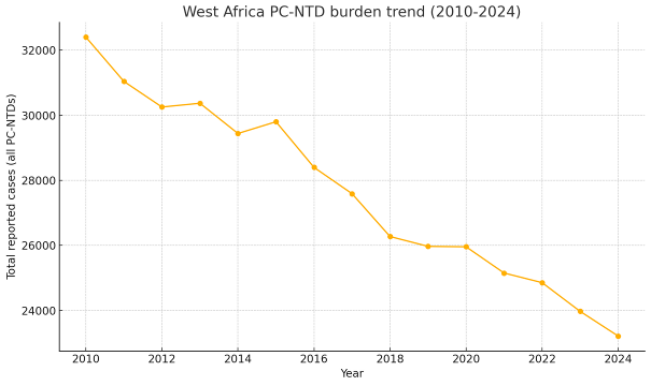

Fig. 2

PC-NTDs Regional Burden Summary

	Disease	Total cases 2010-24	Share of total (%)
1	Lymphatic filariasis	103300	24.9
2	Onchocerciasis	72000	17.4
3	Schistosomiasis	126000	30.4
4	Soil-transmitted helminths	93300	22.5
5	Trachoma	20100	4.8

P 518

Community engagement for clinical decision support algorithms in primary health care – Insights from Morogoro, Tanzania

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Question: Effective community engagement is critical for the success of health research projects, particularly those aimed at improving service delivery. This study outlines community engagement activities conducted as part of a project (called

DYNAMIC) implementing clinical decision support algorithms (CDSA) to manage sick children in primary healthcare facilities in Morogoro, Tanzania. The activity aimed to build community trust, facilitate participant enrollment, and ensure the uptake of research findings.

Methods: Between May and October 2021, 85 community engagement meetings were conducted across Ifakara Town Council, Ulanga District, and Mlimba District, involving 658 participants, including ward and village leaders. The process included identifying local leaders, securing district-level approvals, planning meeting schedules, and conducting discussions at village and ward levels. Materials such as flyers, posters, consent forms, and COVID-19 precautions were provided, and communication was conducted in the local language (Swahili).

Results: Key themes from participant feedback included concerns about the benefits and risks of the CDSA. Beyond these discussions, participants proposed ways to strengthen healthcare delivery. They recommended that the research team conduct regular health education on antibiotic resistance, rational medicine use, and treatment adherence, integrating these into village meetings for accessibility. They emphasized gender-sensitive approaches, suggesting women-only education sessions. Additionally, participants raised concerns about pharmacy regulation, advocating for stronger oversight to prevent counterfeit or inappropriate medication sales and proposing collaboration between the research team and local authorities.

Conclusion: This study highlights the vital role of community engagement in fostering trust and improving research implementation in low-resource settings. More importantly, it highlights specific community-driven recommendations that could enhance the sustainability and impact of the intervention. By addressing knowledge gaps through health education, incorporating gender-sensitive approaches, and advocating for better pharmacy education and regulation, research projects can further align with community needs and contribute to more effective health system strengthening.

P 520

Mosquito diversity and host-deeding patterns across different land uses in Vietnam – Implications for vector control strategies

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Background: Vietnams tropical climate provides a conducive environment for mosquito proliferation, contributing to the burden of mosquito-borne diseases. Understanding mosquito species diversity and their host-feeding patterns is critical for designing effective vector control measures. This study examines mosquito diversity and host-feeding patterns to guide targeted vector control strategies.

Methods: Mosquitoes were collected between 2022 and 2023 across three distinct land use categories (urban, rural, and forest) in four geographical regions: North, South, Central Coast, and Central Highlands. Sampling was conducted using BG-Pro traps at multiple sites within each category to ensure representative coverage. Morphological identification was performed to classify mosquito species, and diversity indices were calculated for each land use type. Blood meal analysis was conducted using DNA barcoding, targeting the *cytochrome b* gene and the *16S rRNA* gene to determine host species. The effects of land use on mosquito diversity and feeding patterns were statistically assessed.

Results: A total of 18,091 mosquito specimens were analyzed over the two-year study, representing 47 species across 12 genera. The most abundant species was *Culex tritaeniorhynchus* (10,025 specimens, 55%), followed by *Culex quinquefasciatus* (1,770 specimens, 10%) and *Armigeres subalbatus* (757 specimens, 4%). Ten species were detected across all land use types, and seven were present in all four regions. A total of 349 blood-fed specimens (belonging to 13 species and 3 undifferentiated taxa) were identified. Of these, successful host identification was achieved for 267 specimens (77%), revealing 18 mammalian and 4 avian host species. The predominant blood meal sources included chicken (45% of identified hosts), humans (28%), and dogs (12%). Mixed-blood meals were detected, suggesting potential bridge vector roles in pathogen transmission. While mosquito community composition varied significantly by land use, no statistically significant effect was observed on host-feeding patterns.

Conclusion: The observed variations in mosquito diversity by land use underscore the need for tailored vector control strategies. The detection of mixed-blood meals suggests that some species may act as bridge vectors, facilitating zoonotic pathogen transmission. These findings can support evidence-based vector management programs to mitigate the risk of vector borne diseases.

P 521

Enhanced diagnosis and antibiotic Ssewardship in CNS infections – Comparative efficacy of FAME and 16S ONT sequencing in northern Vietnam

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Background: Timely and accurate pathogen identification is critical for guiding appropriate antibiotic therapy in patients with Central nervous system (CNS) infections, especially in resource-limited settings where delayed diagnosis often leads to poor patient outcomes. This study evaluated the diagnostic efficacy of advanced molecular techniques, including the BioFire® FilmArray® Meningitis/Encephalitis Panel (FAME) and 16S ONT sequencing, compared to conventional diagnostics for CNS infections. The goal was to improve diagnostic accuracy, reduce time to appropriate treatment, and enhance antimicrobial stewardship.

Methods: We retrospectively analyzed CSF samples from 330 patients with suspected CNS infections across four hospitals in Vietnam. Pathogen identification was conducted using FAME, 16S ONT sequencing, and conventional diagnostics (CSF culture and PCR). The impact of these diagnostic methods on empirical antibiotic therapy and clinical outcomes was assessed through chart reviews and outcome

analysis, using the Glasgow Outcome Scale to classify patient outcomes.

Results: Pathogens were identified in 24% (80/330) of patients, with FAME and conventional methods detecting 64 pathogens in total. The agreement between FAME and conventional diagnostics was 87%. 16S ONT sequencing identified pathogens in 9% (28/329) of cases, including 17 pathogens not detected by CSF culture, such as *Streptococcus suis* and *Acinetobacter baumannii*. Inappropriate empirical antibiotic therapy was administered to 61% of patients with 16S ONT-positive results. Mortality was 10%, with fungal meningitis and dual infections associated with the highest rates. Multivariate analysis identified community-onset infection (OR=0.2; 95% CI 0.1 - 0.8; p=0.03) as a protective factor, while a longer duration of illness before admission (≥ 5 days) (OR=5.1; 95% CI 1.6 - 20.0; p=0.01) and altered mental status on admission (OR=7.4; 95% CI 2.0 - 33.2; p=0.004) were significant predictors for unfavorable outcomes. Furthermore, timely administration of appropriate empirical therapy was significantly associated with a reduced risk of mortality (OR = 0.1; 95% CI: 0.0–0.6; p = 0.029).

Conclusion: The study highlights the importance of expanding molecular diagnostic panels in selected patients to improve antimicrobial stewardship, optimize clinical management, and reduce mortality in resource-limited settings.

P 522

Contested quantification for planetary health – A sociotechnical analysis of Bangladesh's water salinity monitoring infrastructure

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In climate change and planetary health, the datafication of natural processes and their effects on human health is gaining importance, not least due to data's role in international funding mechanisms. In Bangladesh, water salinity has become the focus of much research and could emerge as an asset to access climate funding. Taking Bangladesh's water salinity monitoring infrastructure as a case study, this paper problematizes the "neutrality" of water salinity data. Adopting the methodological approach of an "infrastructural inversion", we foreground the relational nature of data production. The study draws on ethnographic fieldwork in Bangladesh along the data production chain. We highlight how the involvement of a large variety of actors gave rise to vastly different data infrastructures and explicate the influence of actors' "problematization". We further illustrate the importance of pre-existing materiality for the implementation of data collection systems on the ground and their power to influence whose reality is represented and whose is left out. Discussing these findings in the context of the international development sector reveals the complex interplay between the dual function of data as a mediator of knowledge and proof of legitimacy. Attention is paid to the tendencies of perpetuating patterns of exclusion and inclusion through data in a setting of project-based funding. We thereby provide global health researchers, policy makers and development practitioners with a detailed case study whilst stimulating reflection on the hegemony of datafication.

P 523

New motorbikes in Malawi – What about the motorcyclists head protection?

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Background: Only in the last years motorbikes where allowed into Malawi by a larger scale. This is an additional task for all our emergency services. Already before this introduction of a potential new group of ICU-patients our traumatic-brain-injury victims represented 29 of 351 (8%) of our critical care patients in 2017. Nothing is known about the type of head protection motorcyclists wear and which injuries we therefore have to expect to a larger degree.

Objectives: To forecast new challenges for our emergency services through the type of existing or lacking head protection of our new Malawian motorcyclists.

Methods: In September and October 2024 we conducted a prospective, observational study of 788 motorbikes and their drivers to identify preventable injuries especially to the head. Data were gained during free-flowing traffic in a real life situation in a large Central African city (Blantyre).

Results: 788 motorbikes with 1471 drivers and co-drivers were scrutinzed. Motorbikes accounted for 21.4% all vehicles. The helmets of 868 motorbikers on 465 motorbikes were controlled. We found 175 drivers (21.2%) wearing a helmet (3 were construction helmets, two integral helmets). 12 co-drivers wore a helmet (1.4%). Only 6 female drivers were dentified and none of them (0%) wore a helmet. 121 co-drivers were female (31.4%) and 2 of them wore a helmet (1.6%). Only 6 of 264 male co-drivers wore a helmet (22.7%). No child under 5 on a motorbike wore a helmet (0%) and only 2 motorbikes were found where 2 people wore a helmet 0.4%). Only 3.4% of all helmets were worn by women. 17 of our motorbikes had a needed but unused helmet dangling from the handlebar (3.7%). No motorbike with 3,4 or 5 five users had helmets for all of them. From 208 helmet wearing motorbike users 196 had either no helmet shields (visors) or did not use them (94.2%). Only 10 used it correctly (4.8%) and 2 had motorbike-glasses (0.96%). The chin-strap was adjusted correctly in 34 of 112 cases (30.4%), were a helmet was worn and were the chin-strap could be seen. Smartphones could be seen jammed deliberately in the helmet for phoning purposes. Age, type and quality of the helmets could not be assessed.

Conclusion: Heads of most motorbike users were not protected adequately. Helmet use in co-pilots was much lower than in pilots. Helmets were often not used correctly and women and children were grossly underprotected.

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Women and their importance for road traffic accident prevention in Malawi

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Question: Road traffic accidents (RTAs) are an underadressed challenge in Africa. The role of women is

hardly known. To improve emergency care in Malawi (9th highest RTA fatality rate worldwide) we need to find ways for prevention through gender sensitive real life information. Our objective is to investigate possibilities of reducing the work load for emergency services through a focus on female road-traffic education.

Methods: April/May ´24 we conducted a prospective, observational study of 2786 cars, motorbikes, minibusses and many other vehicles in Blantyre (Malawi) to identify preventable traffic injuries for women.

Results: Motorbikes and Bicycles: On 1012 consecutively investigated motorbikes 1 woman was the driver. All others (99.9%) were passengers. None (0 %) wore a helmet. (male drivers 36.7%). None had any type of adequate protective body clothing or gloves or security boots (0%). On 180 normal and 112 people-transporting bicycles we saw not a single female driver. All woman were passengers. No woman was sitting in a "sidewise" position (common in Africa) on the bike. No woman (0%) wore any kind of protective clothing. Bicycle-taxis: From further 182 people on bycicle-taxis no woman was the taxi-driver and no woman (40) wore a helmet (0%).

Cars: Women were seen in 35.7% as drivers (300 cars). They only drove private cars (100%).

Minibusses were never driven by women (500 busses). Woman were sitting only as passengers in overfilled minibusses – and children on their lap (not counted as passengers) making the overfilling and the dangers of an accident even worse. No female conductor was seen. At the minibus stations no female support personal e.g. porters was seen. The situation at the loading stations are very busy, tense and sometimes quite aggressive – they are absolutely male dominated.

Other vehicles: 500 investigated other vehicles did not show a female driver (0%). Small and big lorries, busses, trikes, ambulances, fire-engines or pick-ups belonging to state companies were driven only by men. Nevertheless women were seen like men standing unsecured on lorries and pick-ups.

Conclusion: Even when standards on African roads are low – standards for women are worse. Cheap helmets need to be made available as the most important measure. The transport situation on open lorries and overfilled minibusses needs to be adressed politically in a gender sensitive way. Education on gloves, boots, protectors has to follow.

P 526

Comparative study on the mental health status of older Japanese migrants and local Thai older people living in Chiang Mai, Thailand

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In recent years, international retirement migration has increased, with retirees relocating to developing countries to seek a lower cost of living and maintain their quality of life in retirement. Thailand, particularly Chiang Mai, has become a favored destination for older Japanese migrants due to its milder climate and lower population density compared to Bangkok. While many older Japanese migrants initially move to Thailand for cultural experiences and leisure, prolonged stays often present physical and mental health challenges. During the COVID-19 pandemic, strict lockdowns restricted travel to Japan, further exacerbating health concerns among retirees.

This study examines the mental health status of older Japanese migrants in Thailand compared to local Thai older adults, particularly after the acute phase of the COVID-19 pandemic. A questionnaire survey was conducted between March and September 2024, collecting demographic data, including gender, age, height, weight, marital status, and family composition. Mental health status was assessed using the 28-item General Health Questionnaire (GHQ-28). A total of 109 participants were included, comprising 49 older Japanese migrants and 60 local Thai older adults. The mean age was significantly higher for Japanese participants (75.0 years) compared to their Thai counterparts (68.9 years). The total GHQ-28 score was also significantly higher among Japanese respondents than among Thai respondents (3.89 vs 1.36, $p<0.05$), indicating poorer mental health. Additionally, all GHQ-28 subscale scores were significantly higher in Japanese respondents, with anxiety and insomnia being particularly prevalent.

These findings suggest that older Japanese migrants in Thailand experience poorer mental health than local Thai older adults. The significantly higher levels of anxiety and insomnia among older Japanese migrants highlight the need for targeted interventions to support their psychological well-being. Future research should investigate sociocultural and healthcare factors contributing to these disparities and develop culturally tailored mental health interventions to enhance the well-being of older Japanese migrants in Thailand.

P 528

A probable case of Dhat syndrome tells us why we should all be keener on anthropology

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We report the case of an Indian 24-year-old man, who accessed the public outpatient clinic for migrants and sexually transmitted infections (STIs) centre in Brescia, Italy. The patient complained about loss of semen after urination or defecation, and premature ejaculation associated with urethral discomfort. He reported that the symptoms were usually accompanied by erection, following thoughts related to sex, and expressed concern over this experience. He was at first referred to a urologist who, after a normal physical examination, prescribed an abdomen ultrasound and urinary analyses, all of which turned out to be normal. One year later, the patient returned to our attention complaining about the persistence of the symptoms. A second urological visit and a STIs screening were carried out twice without any pathological finding. The hypothesis of Dhat syndrome was then put in place.

The last version of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) dropped the term "culture-bound syndrome" in favour of "cultural concept of distress"[1]. Dhat syndrome is a cultural concept of distress defined as "a folk diagnosis for severe anxiety and hypochondriacal concerns associated with the discharge of semen, whitish discoloration of the urine, weakness, and exhaustion"[2].

Our case highlights that an anthropological mindset should be applied any time a patient with a different cultural background meets a healthcare professional, to help understand the patient's needs and expectations. Medical doctors and, generally, healthcare workers should bear in mind that the codes through which they interpret clinical signs and symptoms may prove inadequate in addressing certain health matters, especially confronting people from a different culture.

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P 530

Association between tolerance as a coping mechanism and perceived stress among filipino people living with HIV – A cross-sectional study in a community treatment hub in metro Manila, Philippines

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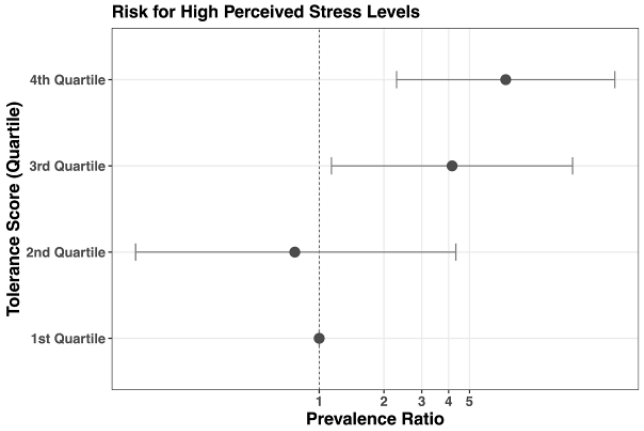
Question: How is tolerance as a coping mechanism associated with perceived stress among Filipino people living with HIV?

Methods: Individuals living with HIV who began treatment at a community treatment hub in Metro Manila in 2019 were identified through their participant records. These identified participants received an email invitation to complete an online self-administered questionnaire that gathered sociodemographic and clinical variables for the study. In addition, the online survey also included two validated instruments: the Perceived Stress Scale and the Filipino Coping Strategies Scale, which were administered to assess the perceived stress levels and coping strategies of Filipino people living with HIV. The associations between each ascertained covariate and the risk of high perceived stress levels were estimated using bivariable and multivariable generalized linear models with a Poisson distribution, log link function, and robust variance, a standard approach for common outcomes. Moreover, the adjusted model was controlled *a priori* for potential confounding factors. Effect size estimates were reported as crude prevalence ratios and adjusted prevalence ratios (aPR) with 95% confidence intervals (95% CI) to assess the association between tolerance and the risk of high perceived stress levels.

Results: Of the eligible participants, 220 males responded to the online survey. The study population had a mean age of 29.2 years (± 5.4 standard deviation), with 76.8% belonging to the > 24 age bracket, 44.1% being smokers and/or vapers, and 13.6% having high perceived stress levels. A higher tolerance score is associated with a significant risk of high perceived stress levels [3rd quartile (aPR: 4.15, 95% CI: 1.14 to 15.08, p-value = 0.030); 4th quartile (aPR: 7.37, 95% CI: 2.29 to 23.71, p-value = 0.001) than the lowest 1st quartile tolerance score (Fig. 1).

Conclusions: In Filipino culture, tolerance, known as "Pagtitiis," is often viewed as a form of resilience. However, our research suggests that tolerance can function as a harmful coping mechanism for Filipino PLHIVs; it may increase their vulnerability to heightened perceived stress. Furthermore, there is an urgent need for culturally responsive interventions that promote healthier and more adaptive coping strategies among Filipino PLHIVs.

Fig. 1



P 532

Bridging the Mental Health Gap Capacity building for healthcare providers – An inclusive, tailored, and sustainable co-construction process

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Background: Mental health disorders are a public health problem. In addition to the difficulty of accessing treatment, mental health disorders are a source of stigmatization, violation of rights, marginalization and isolation with negative social, economic and health impacts. In Burundi, the baseline survey of the program for the integration of mental health into PHC conducted by MoH showed that: 42.7% of people say they have already had a health problem related to "nerves"; 64.5% of the population shows psychological discomfort highlighting the importance of mental health issues Method Louvain Cooperation, in consortium with Enabel, MEMISA and MSV, has implemented an intervention to integrate mental health into PHC, in line with the WHO Framework for Action, in 4 provinces in Burundi. The current presentation focuses on the "Capacity Building of Mental Health Care Providers at the First Level of the Health System, Including Community Capacity" component to address mental health human resource gaps. It describes i) the process of implementation of the tailored WHO Mental Health GAP protocol through an inclusive co-construction of a training model adapted to the context for optimal appropriation and sustainability and ii) the monitoring and evaluation of this implementation through pre and post training tests, post-training supervision, Evaluation of the impact of training on the

management of mental health disorders (DHIS2) and on the resilience of the health and community system. Results 11 adapted modules were developed and a training session for 25 trainers was organised. The cascade training has trained a total of 1559 providers: 840 Community Health Workers, 69 Health Promotion Technicians, 509 HC Nurses, 38 DH Nurses, 44 Hospital General Practitioners, 24 BDS/BPS Supervisors, 31 CDFC and 4 PNILMCNT officers. Monitoring and evaluation showed a significant improvement in providers' knowledge after the training and following the post-training supervisions. DHIS2 showed that before training, only epilepsy was reported against several other mental disorders after training. The health and community system resilience assessment are underway. Conclusion The collaboration with the ministry of health, the establishment of the Mental Health thematic group and the mapping of actors have led to better ownership by all, a synergy of actions and the strengthening of the MoH" leadership.

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Making universal health coverage a reality – Are our health systems truly addressing the burden of mental disorders?

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Background: Mental illnesses impose a significant global burden. In Burundi, individuals with mental health conditions encounter substantial barriers to accessing care, with financial constraints constituting a primary obstacle. Understanding the economic cost of mental illness is crucial for developing informed healthcare policies and resource allocation strategies. This study aimed to quantify the financial burden experienced by patients with mental illnesses in Burundi while seeking treatment.

Method: A cost analysis of mental health care was carried out in Burundi from the patient's perspective, with a time horizon of two years, 2021 and 2022. The data used for this study were extracted from the "OpenClinic GA", software used for managing electronic medical records and billing in healthcare facilities in Burundi. Direct and indirect costs were computed based on the cost data for 6,143 patients, involving 24,321 outpatient visits and 2,967 inpatient admissions.

Results: Results showed that annual average direct cost of mental illness per patient was 355.8 USD [352.6 USD; 359 USD], annual average indirect cost was 28.8 USD [25.6 USD; 32 USD], and the annual average economic cost was 385.2 USD [374.7 USD; 395.7 USD]. Sensitivity analysis showed that a 20% reduction in the number of contacts and in the cost of medications resulted in a respective reduction of 42% and 28.6% in the economic cost.

Conclusion: Results highlight the substantial financial burden of mental illness for patients in Burundi and showed that the best strategies to reduce it are improving care management and reducing the cost of medications. This burden underscores the urgent need for policy interventions, including expanding access to affordable medications, improving care management strategies, and increasing government funding for mental health services.

Keywords: Costs, economic burden, mental illness, patient

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Integrating mental health care into primary health care in Burundi – Strategies and implementation

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Context: Mental health is a major issue in Burundi. Mental disorders are under-diagnosed and under-treated due to limited access to care, lack of qualified professionals and stigma. Integrating mental health care into primary health care is a sustainable way to improve access and patient care

Objective: To describe the strategies for integrating mental health care into primary care, the measures adopted, challenges and prospects

Methods: The intervention is based on task shifting to non-specialists (GPs and nurses) to manage mental disorders in district hospitals (DHs) and health centres (HCs), with a structured referral system between the different levels of the health pyramid. Key actions include: (1) developing national guidelines for the integration of mental health care; (2) strengthening coordination among stakeholders; (3) training health care providers in the recognition and management of mental disorders; (4) combating stigma (5) establishing a formative supervision system (6) improving the availability of medicines (7) recruiting mental health nurses in DHs

Results: The adoption of the strategic document has made it possible to harmonise interventions and improve the involvement of partners. Mental health is now part of the health care package offered in CDS and HD. National training has been provided for GPs and nurses. he number of consultations for mental disorders has increased, especially in HCS.. The updating of the national list of essential medicines has improved the availability of psychotropic drugs. The inclusion of mental health indicators in the NHIS has improved patient monitoring. However, challenges remain: lack of qualified staff, failure to recruit mental health nurses, insufficient funding and high turnover of trained staff. Integration is still a work in progress and requires further support.

Conclusion: Integration is progressing in Burundi, with promising results, particularly in terms of training and patient follow-up. Further efforts are needed to ensure sustainability, particularly through increased funding and recruitment of specialist staff. Partner involvement is crucial

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Integrating mental health into primary healthcare services – Application of mhGAP tool to community-based interventions in Niger

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Background: Niger started the integration of mental health into primary healthcare since 2019 with the support of the Belgian Development Agency (Enabel) in three districts:

Diounidou, Gothèye and Gaya. Their approach combines a clinical component (capacity building for healthcare workers) and a community one as recommended by the WHO mental health Gap Action Program (mhGAP). The districts followed the mhGAP guide, which structures the integration process in 3 key phases: assessment and planning, preparation and implementation of services. This last phase includes training, supervision, organization of the referral and counter-referral, medication, provision of pharmacological and psychosocial interventions, management of information and awareness-raising actions to boost demand. Nevertheless, many barriers still stand in the way of optimal integration in countries adopting this approach. These include insufficient community awareness of mental health issues, persistent high levels of stigma, and a lack of information on the availability of services. These obstacles underline the need to establish a strong community link to promote access to, and acceptability of, mental health care.

Methods: Teams in the three districts have set up action research to test different community interventions, in addition to supporting health facilities in line with mhGAP. Qualitative interviews with the main stakeholders aimed to describe the system implemented and analyze the success factors and difficulties encountered. The approach adopted is iterative, enabling interventions to be adapted.

Results: The three districts conduct awareness caravans. In addition, Gaya and Gothèye have chosen to involve teachers (60 in each district) in raising awareness about epilepsy among students and referring observed cases in schools to the health centers. Gaya also relies on community health workers (25 trained) to identify cases and refer them to a health center, to organize home visits or awareness sessions. Gothèye has opted to engage traditional healers (28) and customary chiefs (28). Initial results in terms of service use are promising: 2096 patients were treated in health centers (2021-2203). The main pathologies were epilepsy (32%), schizophrenia (21%) and psychotic-disorders (10%).

Conclusion: The adaptation of mhGAP allowed treatment of a substantial number of people suffering from mental health issues. However, due to stigma, the involvement of the community remains crucial.

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Burnout among healthcare workers in Kinshasa (Democratic Republic of Congo) – Working conditions to be considered by occupational medicine to maintain a functional healthcare system

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Introduction: Work-related stress and burnout are not spared in resource-limited countries, even if they are still poorly documented, primarily due to HCWs' limited ability to identify these issues. Due to a lack of awareness, they may not recognize that their stressful work environments can contribute to burnout within their profession. This study sought to assess the working conditions of HCWs in Kinshasa, the prevalence of burnout, and the risk factors associated with it.

Methods: A cross-sectional study was conducted via multistage stratified random sampling in Kinshasa's hospitals from December 2023 to January 2024. Data were collected through a structured questionnaire based on the Maslach Burnout Inventory for Medical Personnel, as well as sociodemographic, occupational, and lifestyle information. All variables associated with burnout at the 0.20 significance level in bivariate analyses were included in multivariable logistic regression analysis.

Results: The study included 566 participants, of whom 55.0% were women and the HCWs large majority were physicians (46.5) and nurses (47.5), with a mean age of 39.0±10.4 years. Over 60% of HCWs performed at least one night shift per month, with some working up to 12-night shifts per month. Additionally, 38.2% engaged in dual practice, combining work in a public hospital with at least one private facility, with some practicing in up to six hospitals at the same time. The prevalence of burnout was 27.9%. In multivariate analysis, the identified risk factors for burnout were females (aOR=1.95, 95% CI: 1.22-3.11), alcohol consumption (aOR=2.59, 95% CI: 1.04-2.41), perform ≥ 4 nights shift work per month (aOR=1.92, 95% CI: 1.18-3.12), dual practice (aOR=1.76, 95% CI: 1.13-2.76), and high workload (aOR=2.82, 95% CI: 1.83-4.34).

Conclusion: Our findings reveal a significant proportion of HCWs affected by burnout without being aware of it, which is closely linked to their working conditions. Strengthening regulations in this area and prioritizing the promotion of occupational health for HCWs are essential steps, as they form a cornerstone of the healthcare system. Burnout among HCWs not only endangers their well-being but also increases the risk of medical errors, potentially compromising patient care quality.

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Gendered differences in digitizing community health services and implication for Community Health Workers (CHWs) mental wellbeing within rural and informal settings in Kenya

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The WHO *Global Strategy on Digital Health 2020- 2025* promotes deploying digital solutions to strengthen health systems. Consequently, Kenya made history by integrating 100,000 CHWs into the formal health system, transition them from volunteers to performance based compensated roles and digitizing them. However, within a health workforce where CHW roles are reportedly highly gendered and dominated by female CHWs who are embedded in historical patterns of marginalization, digital solutions must not exacerbate the digital divide and amplify existing disparities. Nevertheless, intersectional identities relating to digital health uptake and implications on mental wellbeing remains largely unexamined.

Key Informants interviews were conducted among National and Sub national Community Health and Mental System Strengthening - policy actors and CHWs supervisors (n=15). Digitization uptake motivations, barriers and implications on CHWs" mental wellbeing were assessed within feminist intersectionality framework. Data was digitally recorded, transcribed verbatim, and analyzed using thematic framework.

Majority viewed technology uptake motivations as (i) intrinsic due to recognition, dignity and confidence from real-time supervision and; (ii) extrinsic based on enhanced household data collection and reduced workload. Perceived personal stressors arose from gender norms which (i) exacerbated digital illiteracy causing anxiety amongst some female CHWs, and (ii) changing work responsibilities heightened insecurities amongst aged female CHWs, often worried of phone theft.

Majority felt distraught due to job related stressors of (i) weak internet connectivity and costly data syncing needs; (ii) inadequate trainings and (iii) mistrust from community members regarding enrolment.

Ongoing research is critical in exploring digitization implications for workloads, experience and mental wellbeing amongst CHWs and deliberate uptake strategies to be undertaken that encourage gender equity.

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Examining the burden of burnout among nurses and midwives and health system appropriateness in response to burnout during the COVID-19 pandemic in Kenya – A nationwide study

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The COVID-19 pandemic placed unprecedented stress on healthcare systems worldwide, with frontline healthcare workers (HCWs), particularly nurses and midwives, being disproportionately affected. In Kenya, systemic challenges heightened their vulnerabilities, resulting in significant burnout risk. This study investigates burnout prevalence, determinants, and impacts among nurses and midwives in Kenya during the COVID-19 pandemic and evaluates the health system"s response. We used data from the Kenya Frontline HCWs Resilience study, conducted from January 2021 to June 2022 across all 47 counties of Kenya. Data collection instruments included the Oldenburg Burnout Inventory and the Utrecht Work Engagement Scale. The study sample comprised 1,907 participants in the quantitative survey and 24 in qualitative interviews. Descriptive statistics reported prevalence, while regression analysis identified determinants and outcomes of burnout. Thematic content analysis was used for qualitative data. Most survey participants were female (59.9%), diploma holders (72.4%), Protestant Christians (52.5%), and married (56.7%). The mean age was 34.2 years. Burnout prevalence was high at 79.4% (95% CI[77.5% - 81.2%]). Factors exacerbating burnout included delayed salary payment, lack of managerial support, unmanageable workload, insufficient resources, and lack of psychological care. More years of experience were protective against burnout. Professional development opportunities, recognition, and economic security reduced burnout risk. Burnout negatively affected HCWs, institutions, and patients. Each unit increase in burnout OLBI score decreased work engagement UWES-9 score by 0.65 units (coefficient = -0.65; 95% CI [-0.74, -0.56], p < 0.001). Health system measures were inadequate, showing significant gaps. In conclusion, high prevalence of burnout among nurses and midwives in Kenya highlights a significant concern for the health system. Job stressors in unsupportive environments exacerbated the burden. This underscores the need for strategic changes and targeted interventions to promote the wellbeing of nurses and midwives, contributing to a robust health workforce capable of better coping with future public health emergencies.

Fig. 1

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Marked prevalence of depressive symptoms and unhealthy dietary intakes among Ugandan university students – an observational study

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Background: University students in low- and middle-income countries (LMICs) suffer from academic stress, financial difficulties and they often consume an unhealthy diet. Despite increased focus on mental health, this topic is under-researched in LMICs like Uganda. We therefore examined the prevalence of depressive symptoms (a proxy for depression) and dietary intake among students at Makerere University (the largest public university in the country) in the capital Kampala.

Methods: A cross-sectional study was carried out among first- and second-year students recruited randomly from the Colleges of Health Sciences, Agricultural and Environmental Sciences, Engineering, and Humanities and Social Sciences. They completed the WHO-recommended Centre for Epidemiological Studies – Depression (CES-D) questionnaire with a range score 0-60, where scores >16 indicate depression. Dietary intake was assessed using the Health Diet Score (HDS) questionnaire with a score range 0-14, where scores < 9 indicate consumption of an unhealthy diet.

Results: Among 273 participants, there was a very high prevalence of depressive symptoms and unhealthy eating (62.6% and 90.8%), respectively. Notably, no association between the level of depressive symptoms and HDS dietary score was observed ($r = 0.061$, $p = 0.312$). Moreover, we found no associations between level of depressive symptoms and residence ($p = 0.488$), or sex ($p = 0.722$), or age group ($p = 0.870$). A significant association was observed between having close ties to family (i.e. feeling safe, supported, and understood by the people you call family) and depressive symptoms ($p = 0.006$), implying that students who reported not being close to their families were more likely to be categorized as depressed. These findings suggest that while most demographic variables were not linked to levels of depressive symptoms, perceived family support may play a meaningful role in the students' mental health.

Conclusion: These new findings indicate that the level of depression and unhealthy eating among Ugandan university students are alarmingly high. This points to a public health crisis that may negatively impact students" academic achievements and general wellbeing if not addressed properly. It therefore calls for an integration of culturally sensitive mental health- and nutritional interventions embedded into university programs to help in the management and prevention of depression and to promote healthy eating among the students.

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Spotlight on burnout among workers in Kinshasa, Democratic Republic of Congo – A qualitative study

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Introduction: Burnout is a work-related phenomenon resulting from chronic exposure to occupational stress. While it has been extensively documented in high-income countries, its prevalence is rising in low- and middle-income countries, where employees are increasingly subjected to high levels of stress due to performance demands despite limited resources. Given that neuropsychiatrists play a key role in diagnosing burnout, this study aimed to explore their clinical experience regarding burnout among employees in Kinshasa, Democratic Republic of Congo.

Methods: A qualitative study was conducted from January to May 2024 among neuropsychiatrists selected through homogeneous purposive sampling in hospitals in Kinshasa. Their experiences with burnout in medical practice were explored through semi-structured interviews. All interviews were recorded and transcribed. Data were analyzed using NVivo 14 software through thematic analysis, categorizing verbatim into predefined themes and subthemes.

Results: Thirteen neuropsychiatrists participated in the interviews, including five women and eight men. The most frequently diagnosed professional categories with burnout were healthcare workers, bank employees, and teachers. Most affected employees worked in the private sector, where they were required to meet daily targets, often disregarding existing labor laws. Symptoms aligned with the three classical dimensions of burnout: emotional exhaustion, depersonalization, and reduced personal accomplishment. In some cases, elevated blood pressure was the sole clinical sign. Barriers to early burnout identification included the absence of occupational physicians and psychologists in organizations, along with the limited awareness about burnout in Congolese workplaces. Additionally, neuropsychiatrists reported diagnostic challenges due to symptom similarities between burnout and depression.

Conclusion : A holistic approach should include interventions promoting employees' occupational health and well-being and preventing burnout. This requires the active involvement of all relevant stakeholders within organizations to identify and reduce occupational stressors when elimination is not feasible. Such efforts would not only support employee development and job satisfaction but also contribute to overall organizational performance.

Keywords: Occupational health, Burnout, Occupational stress, qualitative study, Kinshasa, Democratic Republic of Congo

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Silent strain in Healthcare Heroes – A cross-sectional study investigating hypertension among healthcare workers in Kinshasa, Democratic Republic of Congo

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Introduction: Hypertension is a major cardiovascular risk factor affecting over one billion people globally. Occupational factors can negatively impact cardiovascular health, increasing the risk of hypertension. Healthcare workers, despite their role in patient care, are not spared. Studies examining these occupational factors are scarce in the Democratic Republic of Congo. This study aimed to determine hypertension prevalence and associated risk factors among healthcare workers in Kinshasa.

Methods: A cross-sectional study was conducted from December 2023 to January 2024 among physicians and nurses selected from selected hospitals in Kinshasa. Data was collected using a questionnaire based on a modified WHO STEPwise approach and the Karasek model. Anthropometric parameters, blood pressure, and fasting blood glucose levels were measured. The prevalence of hypertension was determined. All variables associated with hypertension were included in a multivariate logistic regression analysis, with a significance threshold of 5%. Hypertension prevalence was determined, and all associated with hypertension were included in a multivariate logistic regression analysis, with a significance threshold of 5%.

Results: A total of 575 participants were included in the study, of whom 52.2% were women and 47.8% were men, with a mean age of 38.2±9.8 years. The prevalence of hypertension was 21.4%, and more than half of the participants (56.1%) were unaware of their hypertensive status. In multivariate analysis, the identified risk factors for hypertension were age ≥40 years (aOR=2.99, 95% CI: 1.74-5.16), seniority ≥10 years (aOR=2.77, 95% CI: 1.58-4.84), dual practice (aOR=3.06, 95% CI: 1.84-5.09), job stress (aOR=2.05, 95% CI: 1.27-3.29), overweight (aOR=1.94, 95% CI: 1.14-3.29), and obesity (aOR=3.62, 95% CI: 1.96-6.72).

Conclusion: Beyond traditional risk factors, occupational factors are associated with hypertension. Implementing occupational health promotion strategies through improved regulation of medical practice and encouraging healthier lifestyles among healthcare workers is crucial.

Keywords: Hypertension, Healthcare workers, Occupational health, Cross-sectional study, Kinshasa, Democratic Republic of Congo

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Facilitators and barriers of implementing a sustainable international pediatric oncology program in west Kenya

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Background: Childhood cancer highlights a global health inequity; survival outcomes are primarily determined by a child's place of birth. The majority of children with cancer (~80%) live in low- and middle-income countries and have low chances of survival (<20%). The Prinses Máxima Center (Netherlands) collaborates with Moi Teaching & Referral Hospital (Kenya) to reduce this inequity. Three project phases are distinguished in the current 5 year program (2021-2026): pre-hospital (awareness & early diagnosis), in-hospital (clinical & supportive care and data registry) and post-hospital (follow up & survivorship). Research projects are conducted in

twin-construction by Dutch & Kenyan PhDs. This study aims to: 1) analyse barriers and facilitators of the implementation of this program and 2) develop recommendations to overcome identified barriers and evaluate the impact of facilitators on treatment outcomes.

Methods: This study adopts the Consolidated Framework for Implementation Research (CFIR). This includes a mixed-methods approach combining qualitative data from stakeholder interviews, focus group discussions, and quantitative data on predetermined variables that assess project outcomes.

Lessons learned from practice: Based on current practice the following variables should be further analysed as facilitating factors: a long standing collaboration, motivated local Pediatric oncologist (strong leadership) and team, shared language, sufficient available resources, existing infrastructure for project implementation (AMPATH), limited bureaucracy, memorandum of understanding, clear needs definitions, availability of: health insurance system, cancer support charity, treatment guidelines, national cancer institute and national cancer strategy.

Observed barriers include: lack of paediatric cancer registries, underdeveloped healthcare system, cultural barriers, inadequate supply of pharmaceuticals, limited local resources, competing healthcare needs, inadequate coverage of health insurance, disparities in educational levels affecting equitable collaboration in twinning PhD projects, abandonment of therapy, high workload among healthcare staff in Kenya, external funding dependency.

Moving forward: Next steps will involve the systematic evaluation of facilitators & barriers to inform practical strategies for sustainability, and the development of adaptable frameworks for the implementation of similar global health initiatives.

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HLA-DRB1 gene polymorphisms in women with cervical cytological abnormalities in Burkina Faso, West Africa

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Introduction: Human papillomavirus (HPV) infection is implicated in cases of cervical cancer but remains insufficient for its development. This suggests the involvement of other risk factors such as host-related factors and genetic factors. Human leukocyte antigens (HLA) are encoded by closely linked genetic loci and play an important role in cervical carcinogenesis. The objective of this study was to determine the rs9272143 polymorphisms of the HLA-DRB1 gene in women with precancerous cervical lesions and their implications in the development of cervical cancer in Burkina Faso.

Methods: This is a case-control study on 59 women with cytological abnormalities of the cervix, including 24 HPV-positive women and 35 HPV-negative women, from April to June 2024 (CERS Ethics Agreement 2023-07-182). Genotyping of rs9272143 polymorphisms of the HLA-DRB1 gene was performed by the amplification-refractory mutation system (ARMS-PCR) method at the Laboratory of Molecular Biology and Genetics (LABIOGENE).

Results: The results of the study showed that 67.79% of the participants were aged 50 to 65. The frequency of TT, TC and CC genotypes of the rs9272143 polymorphism of the HLA-DRB1 gene were 87.7%, 12.3% and 0.0% respectively in the study population with a mutation rate of 12.3%. However, the frequencies of TT, TC and CC genotypes were 91.18%, 8.82% and 0.0% in HPV-negative women and 82.6%, 19.4% and 0.0% in HPV-infected women, respectively. No statistically significant implication was found between rs9272143 polymorphisms and the development of precancerous lesions.

Conclusion: The absence of the CC genotype in this population of women with cytological abnormalities requires special attention. A large-scale study is needed to determine the role of HLA-DRB1 in the development of cervical cancer.

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Experience in using ready-to-use screening kits to facilitate cervical cancer screening in Benin

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Introduction: Cervical cancer in Benin accounts for 15.9% of female cancers screened between 2014 and 2020. Access to screening remains a challenge to be addressed, so that cases can be detected early to limit the very high morbidity and mortality associated with the disease. The aim of this study was to measure the acceptability, perceived effectiveness and practicality of a ready-to-use kit (Antoukit®) for performing the VIA/VIL test, compared to the standard device.

Method: This was a comparative study between the ready-to-use screening kit (Antoukit®) and the standard test (bulk inputs). A sample of 75 maternity care providers trained and equipped to carry out screening using the VIA/VIL technique on 100 women, 50 tested with the ready-to-use kit (Antoukit®) and the remaining 50 with the standard test. A semi-structured questionnaire was administered to the providers to gather their opinions on a number of criteria including ease of use, risk of error, risk of product loss and risk of adverse effects (burns). The data collected were cleaned and analyzed using SPSS 26 software.

Results: Compared with the standard test, the antoukit® proved superior (statistically significant difference) for the various criteria analyzed. Thus 76% vs. 16% for the standard test found it very easy to use; 74.8% vs. 20.0% for the standard test perceived it as having no risk of dilution error; 87% vs. 35% for the standard test perceived it as having no risk of burns; and 74.8% vs. 14.4% found it more economical, with less risk of product loss.

Conclusion: The results clearly demonstrate the advantages of the ready-to-use test (Antoukit®) over the standard test. The Antoukit® is easier to use, safer for patients and more economical. This kit could be recommended for routine cervical cancer screening.

Key words: cervical cancer, ready-to-use screening kit, screening, Benin

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Addressing the rising prevalence of cervical cancer in the eastern Democratic Republic of Congo – A call to action for improved screening and prevention strategies

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Cervical and breast cancer are major contributors to cancer-related deaths among women in the Democratic Republic of Congo (DRC), where inadequate data collection tools hinder understanding of cancer morbidity and mortality rates and prevention efforts. This project aims to raise awareness, screening, and management of precancerous lesions, particularly in North Kivu.

A cross-sectional study conducted at the Centre Hospitalier in Butembo between May 2023 and April 2024 screened 1,068 women for cervical cancer using visual inspection methods with acetic acid and lugol. Treatment involved a thermocoagulator for lesions under 75%, while those over 75% were advised for hysterectomy if maternity was completed. Biopsies were taken from women with suspicious lesions.

Results indicated a substantial prevalence of precancerous lesions, with 86 women testing positive for abnormalities; 78 received thermo-coagulation treatment, demonstrating manageable conditions. Additionally, 18 women required further biopsy investigation due to suspected cancer.

The findings highlight the urgent need for effective cervical cancer prevention and management in low-resource settings like the DRC. Previous studies (Mvila et al. 2020; Nkamba et al. 2019) emphasize the barriers that women encounter regarding timely access to screening and treatment, stressing the importance of a sustainable healthcare infrastructure. Collaboration with international organizations, including the WHO and various NGOs, is essential to develop effective screening and vaccination initiatives to mitigate the cervical cancer burden.

In conclusion, this study reinforces the necessity of addressing cervical cancer prevention and treatment deficiencies in the DRC, specifically in underrepresented areas like North Kivu. By adopting evidence-based methods, enhancing healthcare systems, and forging partnerships with global health organizations, the DRC can improve its capacity to fight cervical cancer, thereby enhancing women's health outcomes.

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Self-Efficacy, economic stress, and religiosity – Determinants of health-related quality of life in sickle cell disease

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Sickle cell disease (SCD) affects individuals across economically varied settings, where financial and psychosocial factors complicate disease management. Understanding how self-efficacy, economic stress, and religiosity influence health-related quality of life (HRQoL) is critical for developing effective interventions. This study explored these relationships in the context of the ongoing cost-of-living crisis, using data from 443 participants from 19 countries. Self-efficacy positively predicted HRQoL, emphasising the importance of empowering individuals with SCD to manage their condition. The individual impact of the cost-of-living crisis was negatively associated with HRQoL, highlighting the need for economic support measures. Religiosity showed a negative association with HRQoL, challenging assumptions about its protective role in chronic disease management. These findings point to a need for interventions that enhance self-efficacy, address financial stressors, and consider the diverse psychosocial needs of SCD populations. This study contributes to the growing call for culturally sensitive, targeted approaches to improve HRQoL across economically diverse contexts.

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Detecting undiagnosed hypertension using repeated blood pressure measurements: A cross-sectional study in rural Sidama Region, Ethiopia

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Background: Hypertension (HTN) is a major public health concern and a leading risk factor for cardiovascular diseases worldwide. In Ethiopia, a significant number of peoples with HTN remain undiagnosed due to limited healthcare access and low awareness levels. This study aimed to determine the prevalence of undiagnosed HTN and its associated factors among adults in the rural districts of Sidama Region, Ethiopia.

Methods: A community-based cross-sectional study was conducted in Shebedino District, Sidama Region, Ethiopia, from March to April 2024. A total of 2,875 adults aged 45 years and above were screened using standardized blood pressure measurements taken three times per participant. Hypertension was defined as an average systolic blood pressure (SBP) ≥140 mmHg and/or diastolic blood pressure (DBP) ≥90 mmHg. Data were collected using structured interviews and anthropometric assessments. Logistic regression model was used to identify factors associated with undiagnosed HTN.

Results: The overall prevalence of HTN was 21.74% (625/2,875), of which 84.64% (529/625) were newly diagnosed cases **(Figure 1).** Factors significantly associated with undiagnosed HTN included female gender (AOR = 1.89, 95% CI: 1.52–2.36), older age (AOR = 1.91, 95% CI: 1.43–2.53), alcohol consumption (AOR = 1.41, 95% CI: 1.07–1.87), chat chewing (AOR = 2.17, 95% CI: 1.52–3.10), frequent salt use (AOR = 4.07, 95% CI: 2.53–31.37), overweight status (AOR = 2.05, 95% CI: 1.19–3.54), lack of prior blood pressure measurement (AOR = 2.48, 95% CI: 1.14–5.40), and distance from healthcare facilities (AOR = 1.49, 95% CI: 1.15–1.94).

Conclusion: A high burden of undiagnosed HTN was observed in rural Sidama, emphasizing the need for improved community-based screening programs and increased awareness. Strategies to reduce modifiable risk factors such as unhealthy dietary habits, alcohol use, and physical inactivity should be prioritized. Strengthening primary

healthcare services and expanding HTN screening efforts are crucial for early detection and management.

Keywords: Hypertension, Undiagnosed, Prevalence, Rural Ethiopia, Risk Factors, Blood Pressure Screening

Fig. 1

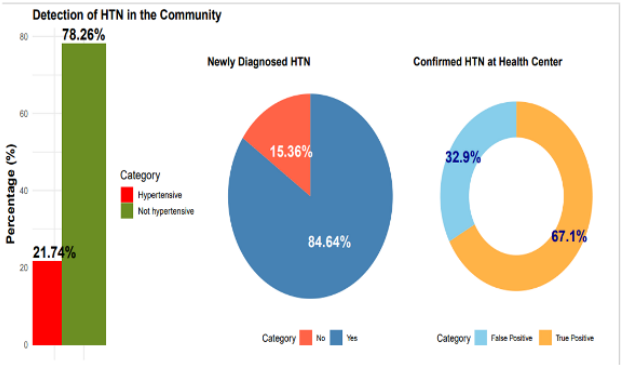

Figure 1: Burden of Hypertension Detection in the Community

P 550

A history of multiple tropical diseases increases risk of hypertension – A cross-sectional study from Buea

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Introduction: Studies have linked infectious diseases to cardiovascular conditions, however, little is known about tropical disease burden and hypertension.

Hypothesis: We hypothesized that a history of multiple tropical infections was associated with greater risk of hypertension.

Methods: We examined participants from outpatient clinics in Buea, who underwent a detailed questionnaire on prior infections with tropical diseases, including dengue, malaria hospitalization and leishmaniasis. Participants were categorized with hypertension if they had a prior diagnosis of hypertension, were treated with anti-hypertensive medication or had systolic/diastolic blood pressure ≥140/≥80mmHg.

Results: A total of 700 participants (mean age 41 ± 15 years, 61% women) were enrolled, of which 42% (n=214) had hypertension and 370 (n=64%) had a history of tropical infectious disease. The distribution of tropical diseases was the following: Dengue 76% (n=270), malaria hospitalization 49% (n=104) and leishmaniasis 14% (n=48). In logistic regression models, each increase in prior tropical infections was significantly associated with hypertension (OR 1.50 [95%CI 1.15 to 1.96], P=0.003). The association remained significant after adjusting for age, sex, body mass index, education, income, work status, living area (urban/rural), smoking status, vegetable intake and plasma creatinine (Figure A). Persons with a history of ≥2 tropical infections (n=64) had the greatest risk of hypertension (OR 2.04 [95%CI 1.15 to 3.63], P=0.015) (Figure B). In adjusted models, prior infection with dengue was associated with higher risk of hypertension (P<0.05), but no associations were found for malaria hospitalization or leishmaniasis (P>0.05).
Conclusions: A history of multiple tropical infections was associated with hypertension. This finding supports the idea that infectious diseases may be related to cardiovascular conditions

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P 551

Better management of NCDs – Strategies to enhance medication adherence in hypertensive patients

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Hypertension is a major global health concern, with poor medication adherence contributing to severe complications. The World Health Organization (WHO) framework categorizes adherence barriers into health system, socio-economic, therapy-related, condition-related, and patient-related factors. While medication adherence is a challenge worldwide, unique contextual barriers exist in different regions. This study explored these determinants and proposes behavioural and implementation strategies to enhance adherence.

A qualitative study was conducted using in-depth interviews with hypertensive patients in Ghana to explore the determinants, analysed thematically and mapped onto the WHO adherence model. Findings revealed that key barriers included financial constraints, poor patient-provider communication, high pill burden, medication side effects, and reliance on alternative medicine. Additionally, spiritual beliefs and misconceptions about hypertension as a temporary illness contributed to non-adherence.

Although similar challenges exist globally, contextual differences shape adherence behaviours. For example, Europe benefits from stronger health financing systems and digital adherence interventions, whereas Ghanaian patients often face medication stock shortages and high out-of-pocket costs. Additionally, while negative medication beliefs are present in both regions, Ghanaian patients are more likely to prioritize spiritual healing and alternative medicine over prescribed treatments.

To improve adherence, patient-centred behavioural interventions are essential. Strengthening health financing, integrating culturally sensitive patient education, leveraging digital tools, and improving provider-patient engagement can significantly enhance adherence. Addressing these barriers through behavioural and implementation research will contribute to better health outcomes and sustainable hypertension management in a changing world.

Keywords: Medication Adherence, WHO Framework, Hypertension, Behavioural Research, Ghana, Implementation Science

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P 552

Health system barriers and facilitators to support integrated NCD/MHPSS care in North and South Kivu provinces, Democratic Republic of the Congo – A rapid appraisal study

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Background: The Democratic Republic of Congo (DRC) is committed to fostering more integrated health care, including

for non-communicable diseases (NCD) and mental health psychosocial support (MHPSS), yet its implementation remains unclear. We examined health system barriers and facilitators to support more integrated NCD/MHPSS care in DRC, focusing on conflict-affected areas of North and South Kivu.

Methods: We conducted a desk-based search for gray and published academic literature from January 2012 to March 2023. Informal discussions were held with local experts to check key findings. The analysis was guided by an adapted conceptual framework.

Results: National NCDs-related burden is increasing in DRC, yet there is a lack of data for North and South Kivu and with crisis-affected populations specifically. MHPSS needs are high among conflict-affected populations due to ongoing violence, forced displacement and high levels of poverty. For health system inputs, workforce and financing are insufficient to address NCD and MHPSS needs. There also appears to be regular shortages of essential drugs, particularly in primary care services. Care delivery and resources are also not evenly distributed. Policies on for integrated NCDS/MHPSS services are limited, as well as commitment to implementing integration. For intermediate goals, service coverage and access are low. Patients also experience high out-of-pocket expenditure with quality of care being often poor. Overall, data is lacking on the quality, safety, responsiveness, and continuity of care. Although promotion services are available at community level, their coverage and effectiveness are unclear. There is also very limited data on the community-level influences on NCD/MHPSS. Evidence on how services are improving health and protection outcomes is extremely limited.

Conclusion: There appears insufficient focus on NCD/MHPSS barriers and facilitators in South and North Kivu. Further investment and research are needed to strengthen services in conflict-affected areas and to support integration for a more comprehensive and effective health system response.

P 555

Needs of patients and nurses for prevention and management of stroke in community – 4th public health region

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Question: What are stakeholders' care needs in the community-based stroke care system?

Methods: The study utilized a purposive sampling and recruited 35 nurses and 134 stroke patients" including the family caregivers of the stroke patients. Data collected by in-depth interviews about the needs of nurses included information on emergency care skills, management or organization specialists, medical equipment or medical support, and the care system's efficiency. Likewise, the information for the needs of stroke patients or caregivers included information on treatment and warning signs, social support and social networks, health care in an emergency, efficient service and positive communication, and personal and location.

Results: Of 35 nurses, all were females with a mean age of 43.06 years, with nursing work experience at an average of 21.31 years, and professional nurses with an average of 8.31 years of work experience at primary care units. Similarly, of 134 patients and relatives of stroke patients, most of the patients and relatives had educational attainment at elementary education (75.4%), followed by secondary education (12.7%). Likewise, 126 patients were using services for chronic illnesses (94%). Patients and relatives had structural needs in the area of personnel and facilities. They demanded more nurses and wider facilities with sufficient seats for using services. Most of the patients were at risk for stroke and were diagnosed with hypertension (89.6%) and only 14 stroke patients were in the recovery stage and the end stage with a median primary care unit service time of 5 years. In addition, the patients had needs in the area of recommendations on practices and warning signs of stroke such as dietary practices, exercise, quitting smoking, and observation of abnormal symptoms. Furthermore, patients and relatives had emergency care needs, which was consistent with the needs of nurses. Lastly, patients and their relatives needed effective service and positive communication for long-term care.

Conclusions: The study recommends developing guidelines for the management of stroke care and prevention by increasing emergency care skills among nurses working at primary care units, enhancing the efficiency of management systems, care networks, social support, and primary care unit instruments to meet the needs of patients and relatives to lead to positive outcomes.

Keywords: Stroke patients, Patients" needs, Nurses" needs and skills

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P 556

Strengthening the management of non-communicable diseases (hypertension and diabetes) in Tchaourou in the Borgou department, Benin – Between community strategies and institutional actions

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Introduction: Hypertension and diabetes are major health challenges. In Tchaourou, a health district in Benin"s Borgou region, the latest official statistics (2015 STEPS survey) report prevalence rates of 34.4% and 24.8%, respectively. Numerous grassroots initiatives have emerged to support the prevention and management of these diseases within communities. However, little is known about these initiatives. This study explores the role of communities in managing hypertension and diabetes in Tchaourou.

Methodology: This study draws on the qualitative component of mixed-methods research. Data were collected through semi-structured interviews with 10 healthcare professionals, 9 patients and 22 community members. Thematic content analysis was conducted to identify the roles of communities in disease management, their successes, and their challenges.

Results: Communities in Tchaourou recognized the burden of hypertension and diabetes and actively engaged in addressing them. Local associations, including savings groups and women"s cooperatives, conducted awareness campaigns on risk factors and prevention. Experience-sharing initiatives were spontaneously established, connecting experienced patients with newly diagnosed individuals. Patients organized themselves into an association

and successfully negotiated the monthly visit of a diabetologist. Some groups promoted balanced diets through culinary demonstrations and coordinated weekly sports activities. Religious leaders played a supportive role, particularly in encouraging women"s participation, while certain initiatives received technical assistance from an international NGO.

Despite these efforts, challenges persisted. Some disseminated health information was inaccurate (e.g., promoting salt elimination rather than reduction). Charlatans exploited community engagement by offering unproven herbal remedies. Furthermore, while healthcare providers implemented the WHO Package of Essential Non-Communicable Disease Interventions (WHO PEN), community-led initiatives remained poorly integrated, resulting in misalignment and weak coordination.

Conclusion: This study highlights promising community-led initiatives for addressing hypertension and diabetes in Tchaourou. However, these efforts need reinforcement. Greater integration between community initiatives and healthcare providers' interventions could improve coherence and maximize impact.

P 557

Sleep quality and quality of life in adults with type 2 diabetes in Bangladesh

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Context: In Bangladesh, the prevalence of non-communicable diseases (NCDs) has increased sharply in recent years while type 2 diabetes one of the alarming public health concerns among urban dwellers.

Rationale: Despite great developments in diagnostic and treatment methods, the disease, DM and its complications still bring important consequences for the lives of the patients, compromising in many ways their wellbeing and quality of life. Therefore, we aimed to assess the sleep quality and quality of life (QoL) in adults with type 2 diabetes in Bangladesh.

Description: We conducted a cross sectional study among 180 adult type-2 diabetic patients in primary diabetic health care centres in the megacity Dhaka, Bangladesh. Patients aged ≥25 years and diagnosed as diabetic for at least 1 year, were enrolled.We used the Pittsburgh Sleep Quality Index (PSQI) to assess the sleep quality and SF- 36 v2TM for the quality of life. Each dimension in SF-36 was scored on a 0 to 100 scale, with higher scores indicating better functioning. Each component in PSQI was scored from 0 to 3, yielding a global PSQI score ranging from 0 to 21, with higher scores indicating worse sleep quality.

Achievements: The mean (SD) PSQI global score was 7.28 (3.06). Score of overall quality of life ranged from 914-2910 with mean (SD) score 2044.80 (512.75). 117 participants (65%) were poor sleepers (global PSQI >5) who had significantly poor functioning on all domains of the SF-36 (all $p<0.001$). Overall sleep quality and quality of life had significant relationship with age ($p<0.001$), occupation ($p<0.05$), duration of diabetes ($p<0.001$), BMI ($p<0.05$), diabetes complications ($p<0.001$), hypertension ($p<0.05$), coronary heart disease ($p<0.001$) and insulin use ($p<0.05$).

Conclusions: Our study, first ever among diabetic adults in urban population of Bangladesh, suggests that Diabetes has a significant impact on an individual"s QoL and sleep quality. Therefore, a comprehensive nationwide study and screening of new patients for sleep problems need to be evaluated.

P 559

Difficulties related to the management of Chronic Kidney Disease (CKD) at the National Center for the Prevention and Treatment of Kidney Failure (CNPTIR) in Bouaké (Côte d'Ivoire)

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Background: This study, focusing on the difficulties of managing chronic kidney failure at the CNPTIR in Bouaké. The question that motivated this research is: How do the specific difficulties encountered at the CNPTIR in Bouaké affect the effectiveness and quality of patient care? This study aims to understand the impact of the difficulties encountered at the CNPTIR in Bouaké on the effectiveness and quality of care for patients suffering from chronic kidney failure.

Methods: The study took place at the National Center for the Prevention and Treatment of Renal Failure (CNPTIR) in Bouaké, from December 2022 to April 2024. It is part of a mixed approach (quantitative and qualitative). The reading grid, the interview guide and the questionnaire were used to collect field data from the 91 patients, including 57 men and 34 women. These data were analyzed using the theory of methodological individualism (R. Boudon, 1964, p. 342).

Results: 9.98% of patients have a high level of knowledge about chronic kidney failure; 14.29% have a fair level, and 30.77% have an average level. However, 30.77% of respondents have a poor level and 14.29% have no knowledge of this disease. These results are due to the fact that patients at the Bouaké CNPTIR do not receive sufficient education on the subject to enable them to acquire a higher level of knowledge. 97% of patients reported experiencing various difficulties in their care: economic, social, family, and material. 51.60% of patients at this center admitted to experiencing economic and material problems.Administrative staff, healthcare providers, and technicians also mentioned difficulties related to material, economic, and social support. Emphasis was placed on the insufficient supply of medical equipment such as dialysis machines, medications, and supplies.

The lack of material resources, the insufficient number of dialysis machines, the untimely breakdowns of generators and other associated equipment, and the delay in the delivery of supplies are negatively impacting the chronic kidney failure treatment process at the CNPTIR in Bouaké. The number of dialysis sessions has been reduced to two, or even one, instead of three per week.

Conclusion: This study identified the main challenges faced by the CNPTIR in managing chronic kidney disease (CKD) in Bouaké. These challenges are numerous and occur at various levels. They negatively impact CKD care in Bouaké.

P 560

Operational research – Implementation of integrated disease screening for long COVID sequaele and undiagnosed non-communicable diseases using point of care ultrasonography

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Background: Since late 2019, over six million people worldwide have tested positive for SARS-CoV-2, with 10–30% experiencing long-term complications. However, data from sub-Saharan Africa remain scarce, and diagnostic tools for long COVID are limited. This study assessed the use of point-of-care ultrasound (POCUS) in resource-limited settings to characterize post-COVID sequelae in Zambia and explore strategies for equitable healthcare delivery.

Methods: A cross-sectional case-control study was conducted in 15 districts across Zambia from December 14–30, 2024. Adults with a documented COVID-19 history (January 2023–December 2024) were identified from facility records, recalled for interviews, and screened for persistent symptoms. Clinicians performed physical exams, while trained radiographers conducted POCUS scans using Butterfly Ultrasound to detect post-COVID respiratory sequelae.

Findings: Among 225 COVID-19-positive individuals, 47 (20.5%) reported persistent symptoms, with 17% (8) experiencing significant functional impairment, including breathlessness and heart failure. In comparison, 43 (10%) of 408 controls also reported symptoms. The most common issues were uncontrolled hypertension, headaches, and insomnia. Routine screening revealed a high prevalence of undiagnosed non-communicable diseases (NCDs), highlighting the need for integrated NCD screening. POCUS proved feasible in rural and urban settings, offering superior imaging to X-rays and an alternative to CT scans where unavailable. However, power outages delayed diagnostics in some areas.

Conclusion: POCUS enhances diagnostic capacity, particularly in rural areas with limited specialist services. Its digital capabilities enable teleconsultations, improving diagnostic accuracy. Integrating POCUS into routine care could strengthen pandemic preparedness and health system resilience in resource-limited settings.

P 562

Gaps in treatment of epileptic seizures in a Zambian rural area

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Introduction: Epilepsy is a multifactorial neurological disorder, including parasitic infections of the brain such as neurocysticercosis (NCC). People with epileptic seizures (PWES) in low and middle-income countries often do not receive appropriate treatment, which besides epileptic seizures, may also lead to reduced quality of life and possibly death. The objective of this study was to describe gaps in treatment of epileptic seizures in a Zambian rural area.

Methods: A cross-sectional study was conducted in Sinda district of Zambia between August and October 2018. PWES identified from clinic records and with the help of community healthcare workers were recruited. Two questionnaires, one to PWES and the other to local healthcare workers, were administered to describe the treatment gap.

Results: A total of 146 PWES and 43 healthcare workers were interviewed. Of the146 PWES, 131 had taken anti-seizure medication (ASM) at some point since their seizure onset, of which 49.6% were on current treatment. Only 18.3% were on continuous ASM, an overall treatment gap of 83.6%. Over 55% of healthcare workers did not know the relationship between epilepsy and NCC. The risk factors associated with lack of appropriate treatment were stock-outs of ASMs, lack of diagnostic equipment, poor patient follow up, and PWES opting for traditional medicine.

Conclusion: The treatment gap is substantial in Sinda district. The causes are multifactorial, involving shortcomings at the level of healthcare facilities, communities, and individuals. Directed training of healthcare workers and significant improvements in the supply and dispensing of ASMs will be key in substantially reducing the gap.

Keywords: Epileptic seizures; treatment gap; neurocysticercosis; epilepsy; anti-seizure medications; adherence

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P 564

Genomic characterization of extended-spectrum beta-lactamase-producing *Escherichia coli* in children and livestock in Ghana

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Escherichia coli (E. coli) are known to express extended-spectrum β-lactamase (ESBL) enzymes at high rates in Ghana. However, little is known about interactions at a one-health level facilitating the transmission and spread of those resistant isolates. To shed light on such interactions, confirmed ESBL-positive *E. coli* isolates previously collected from stool samples of Ghanaian children with and without diarhoea as well as from livestock, including poultry and goats, were subjected to next-generation sequencing (NGS)-based assessment of phylogeny, resistance genes, and mobile genetic elements. Of the 117 assessed ESBL-positive *E. coli* isolates, 44 were from children without diarhoea, 30 were from children with diarhoea, 35 were from poultry, and eight were from goats.

Phylogenetic analyses by core-genome multilocus sequence typing (cgMLST) suggested infrequent co-colonization of children and livestock with identical clones. Applying traditional MLST, the sequences ST-617, ST-38, ST-10, and ST-167 were repeatedly observed in declining order of frequency within the study population. The most common ESBL-type resistance was based on *bla*CTX-M-15 genes, observed next to multiple resistance genes affecting different antibiotic classes. Various mobile genetic elements were recorded, and incompatibility types repeatedly reported from Ghana, like *IncFIA, IncFIB, IncFII, IncHI,* and *IncQ1,* were observed and shared between isolates colonizing human individuals and poultry.

Our study identified a high prevalence of antimicrobial resistance (AMR) genes, with significant distribution observed in isolates from both children and animals.

In summary, the work indicated likely transmission of ESBL-positive *E. coli* and mobile genetic elements of *E. coli* between human individuals and livestock, particularly poultry. The results confirm a need to include livestock in molecular surveillance approaches that target both the individual genetic bases for resistance and the bacterial strains that harbor and exchange them to obtain a comprehensive epidemiological overview of resistance spreading.

OS 001

Bridging the mental health knowledge gap using telemedicine and clinical decision support tools in rural Mali

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Introduction: Mental health has long been neglected within healthcare systems. However, this is slowly changing globally, including in Mali. With only one psychiatry department located in a referral hospital, the number of mental health professionals remains critically low for the Malian population.

Aim: To bridge the gap in human resources for mental health care.

Methods: As part of the CLEFS project in Mali, a mental health component was developed to train first line healthcare workers in detecting mental disorders within the community. A diagnostic support tool was created and integrated into OpenClinic GA, the Health Information System (HIS) used in primary healthcare facilities. Screening forms were incorporated to assess mental health conditions in adults, children, adolescents, and women during the perinatal period. These forms enable healthcare workers to identify mental health disorders based on general and specific symptoms. The tool then suggests potential diagnoses based on symptom selection. Additionally, smart glasses are used as a teleconsultation and tele-expertise solution to connect rural health workers with specialists in Bamako for remote support.

Results: These digital tools enhance the ability of rural healthcare workers to screen for mental health disorders and improve their training in mental health management. As a result, they feel more confident in their roles, and patient satisfaction has increased. The study covers more than 30 mental health teleconsultations that have been conducted using smart glasses in Mali.

Conclusion: Telemedicine and clinical decision support tools can play a crucial role in addressing the shortage of mental health professionals and strengthening the capacity of rural healthcare workers in managing mental health disorders and other conditions. However, additional training and motivation will be necessary to ensure the effective and sustained use of these tools.

Keywords. Telehealth, smart glasses, mental health, Mali

OS 002

Technological and organizational challenges and solutions for implementing teleconsultation and tele-ultrasound applications in the Fatick region in Senegal

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Introduction: Senegal, like many other African countries is facing a shortness of specialized health care staff outside urban areas. To cope with this challenge, the Ministry of Health of Senegal, technically assisted by the Belgian Development Cooperation, has initiated a teleconsultation and tele-ultrasound project integrating with the electronic medical record (EMR) for gynecology-obstetrics and neonatology services in the Fatick region of Senegal. Two technical components have been deployed by the project on different levels of the health system: (i) a smart glasses based telecommunication solution and (ii) a regional PACS server for storage and exchange of ultrasound images.

Aim: The aim of the project was to bring medical specialized expertise from reference health facilities to first level remote health posts without physically moving caregivers and/or patients. A primary objective was the rationalization of referrals of (supposedly) obstetrical emergencies. In this study we analyzed the technical and organizational challenges this project has faced.

Methods: A first mission was organized measuring technical parameters such as connectivity bandwidth, image quality, smart-glasses autonomy and integration with the EMR. A second mission focused on socio-cultural, organizational and financial aspects of implementing the telemedicine solution.

Results: the study showed that standard 4G+ internet connections provide adequate bandwidth for fluent teleconsultations with good image quality between rural health posts and referral hospitals in Senegal. The DICOM formatted ultrasound images could successfully be integrated into the local EMR and real time expert assistance was remotely provided by gynecologists to midwives in rural maternities. The telemedicine solution was positively evaluated by end users as well as patients from a clinical, financial and efficiency-of-care perspective. However, important organizational challenges remain regarding teleconsultation appointment scheduling, payments for virtual care services and availability of expert health staff.

Conclusion: the implementation of telemedicine solutions for gynecology-obstetrics care in rural Senegal is feasible from a

technical perspective. Organizational improvements, such as the implementation of a call center, fixing a tariff for virtual care services and creating a sufficiently large pool of expert care providers will be necessary for making telemedicine solutions sustainable.

OS 003

Social, cultural and psychological determinants for successful implementation of telemedicine projects in West-Africa

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Introduction: Several teleconsultation solutions for obstetrics, gynecology, neonatology, and mental health have been proposed for implementation in Senegal and Mali. These solutions utilize smart glasses to bring clinical expertise to health centers and posts, aiming to improve healthcare quality and accessibility while reducing unnecessary referrals. Field experience and literature confirm that the success of such telemedicine solutions depends largely on their integration into the local socio-cultural environment.

Aim: To understand the local context and document key socio-cultural risk factors as well as the elements that facilitate the adoption and use of telemedicine applications.

Methods: Qualitative data was collected through eight focus groups and five in-depth interviews in Mali and Senegal. The interview guide was developed based on previous studies on telemedicine implementation and usage. Key topics included: (1) main advantages, (2) expected challenges, (3) decision-making authority, (4) cost of triangular consultations, (5) medical decision responsibility, and (6) additional smart glasses applications.

Results: The main advantages identified were on-site care access, reducing costly transportation, improved patient care quality, and the added value of smart glasses in emergencies. Expected challenges fell into eight categories: financial, infrastructural, organizational, technological, cultural, individual, regulatory, and healthcare-related. Key concerns included shared responsibility between on-site and remote clinicians for medical decisions and fair compensation for doctors, requiring legal frameworks. Additionally, participants highlighted opportunities for remote training and supervision using smart glasses.

Conclusion: There is strong enthusiasm among both healthcare workers and patients for smart glasses-based teleconsultation. The tool is expected to significantly improve healthcare quality. Moreover, the focus groups provided valuable insights into the local context while fostering engagement, ensuring that future users feel involved and heard.

OS 004

Telemedecine for surgical training – Feasibility, acceptability, and cost-benefit of using smart glasses in Burundi

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Introduction: Access to healthcare is essential for universal health coverage but remains a challenge due to geographic, economic, and social disparities, especially in rural areas. Low- and middle-income countries face a critical shortage of healthcare professionals, exacerbated by their migration to developed nations. In Burundi, shortage of surgeons led the Ministry of Health to implement a district surgery training program for general practitioners, with support of Enabel. To address limited surgeon availability and high training costs, smart glasses were used to enable remote coaching of surgical teams. This study aimed to evaluate this innovative telemedicine approach in Burundi.

Method: Between July and October 2023, a mixed-methods cross-sectional study assessed the acceptability, feasibility and cost-benefit of using smart glasses for surgical training in Burundi"s Muramvya District Hospital. Quantitative data were collected using follow-up sheets, while qualitative data on acceptability and feasibility were gathered through interviews. Feasibility was evaluated using five criteria related to video and sound quality, connection stability, and synchronization, while costs and benefits were projected over a five-year period from a project funder's perspective.

Results: A total of 24 surgical procedures were remotely coached using smart glasses, with a feasibility score averaging 4.3 out of 5 despite initial challenges with slow internet connections which later improved by switching from smartphones to high-end 4G+ routers. Cost analysis over five years demonstrated that the smart glasses approach is more efficient than face-to-face coaching. Results showed that implementation of this new approach generates a net benefit of €134,165 for a single site over a period of 5 years, or €26,833 annually. Sensitivity analysis highlighted the approach"s cost-benefit dimension, revealing that trainer fees and the number of patients play a crucial role in determining net benefits.

Conclusion: Results showed that smart glasses are an acceptable, feasible, and cost-effective tool for district surgical training in Burundi. As district surgery training remains dependent on external funding in Burundi, the use of smart glasses is an interesting alternative to reduce the cost. Expanding their use to fields like mental health, maternal and child health and biomedical maintenance could address other critical needs and enhance quality care for underserved populations.

OS 005

TrypElim: A Digital Tool for Strengthening Data-Driven Decision-Making in Human African Trypanosomiasis Elimination

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Introduction: Sleeping sickness, or human African trypanosomiasis (HAT), has been selected by WHO as one of the neglected tropical diseases (NTDs) to be eliminated by 2030. Efficient and high-quality data collection, data-driven decision-making and quality assurance of recorded cases are key features in an elimination perspective.

Aim: Develop and implement a digital tool adapted to HAT elimination requirements.

M**ethods**: TrypElim is a digital tool designed to capture geo-referenced data, integrated into a decision support system. It facilitates and optimises the planning and execution of HAT control interventions. A key feature is the quality control of diagnostic procedures. The tool was developed by Bluesquare as an Android-based application with a server-side dashboard, integrating data from the main HAT control interventions. The implementation of TrypElim was piloted in the Democratic Republic of Congo (DRC), in the provinces of Kwilu, Kwango, and Mai-Ndombe, by the Institute of Tropical Medicine (ITM) and the National sleeping sickness control program, PNLTHA. The tool was assessed for usability, data completeness and quality. Field teams and program managers provided feedback on acceptability. Once validated, the tool was scaled-up nationwide. In 2023 the system was migrated to IASO, an open-source, configurable platform with enhanced performance, interoperability, and shared features with other programs.

Results: Early implementation faced challenges: poor internet connectivity hindering data synchronization, and lack of digital literacy affecting data quality and interpretation. TrypElim is currently deployed in all endemic provinces of DRC. Since 2019, around 2 million screening results are recorded annually, and videos and pictures of almost all confirmed cases are available for diagnostic quality assurance. The tool is routinely used by the PNLTHA for planning of screening activities and for monitoring of vector control interventions. TrypElim improved data completeness and reporting timeliness. By improving data quality and validation, real-time mapping, and targeted screening and supervision, the tool strengthened case detection and resource allocation. Users reported improved decision-making.

Conclusion: TrypElim has strengthened data-driven decision-making in HAT elimination, streamlining surveillance and intervention planning. The IASO migration improves sustainability and scalability to other HAT endemic countries, accelerating HAT elimination and serving as a model for other NTD programs.

OS 006
Introduction to the epidemiology of loiasis in endemic regions
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As introductory presentation, a brief overview of the current understanding of the epidemiology in endemic regions is provided highlighting the importance of loiasis in endemic regions. A breif overview of the current treatment and control efforts in endemic regions is provided.

OS 007
Clinical presentation and long-term complications of loiasis in endemic regions
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Based on large-scale population-based cohort studies in highly endemic regions of Central Africa, recent advances in our understanding of clinical presentation and complications of loiasis are presented. Pathophysiological concepts leading to morbidity and excess mortality are discussed.

OS 008
Loiasis in the returning traveller
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Returning travellers are a special patient population with distinct parasitological and clinical features. Based on one of the largest cohort of patients, the peculiarities of the diagnosis and management of loiasis in returning travellers is discussed.

OS 009
Challenges and recent advances in the treatment of loiasis
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The treatment of loiasis is complex and may be associated with life-threatening complications. There is a need for clear guidance of clinical management by evidence based treatment recommendations for patients in endemic regions and returning travellers. Recent advances in anti-filarial drug development will be discussed.

OS 010
Outlook of management and control of loiasis
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Based on the current understanding of the epidemiology and clinical presentation of loiasis, important barriers to effective diagnosis, management, and control of loiasis are presented. This will provide a clear guidance for the priorities for research, training, and the public health response of this ignored tropical disease.

OS 011
Loiasis from a perspective of the Expanded Special Project for Elimination of Neglected Tropical Diseases (ESPEN) at WHO
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Loiasis is not part of WHO"s official list of neglected tropical diseases. At the same time loiasis constitutes an important barrier for the control of NTDs. Based on our current understanding of the disease, loiasis' role as disease on its own and in the context of the complex interplay with other infectious diseases will be discussed.

OS 012
Differences between males and females in infectious diseases notifications

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There are differences between males and females for most diseases both for exposure and course of illness, including outcome. These differences can be related to biological sex or gender i.e. socio-cultural factors that may impact exposure and healthcare access.

We aimed to quantify differences between males and females in infectious disease notifications in Europe.

We observed important differences in male proportion across infectious disease notifications in EU/EEA countries. For some diseases with high male proportions in all countries, such as HIV and hepatitis B, behaviours play a role in disease transmission. Screening offered to specific populations may explain differences across countries for example for *C. trachomatis*infections.

OS 013
Sex differences in influenza vaccine immunity

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Sex differences in the humoral immune responses to the seasonal quadrivalent influenza vaccine (QIV) in young adults (YA; 18-49yo) or high dose QIV in old adults (OA; 75+yo) were analyzed to evaluate how age-related changes in steroids impact sex differences in B cell responses. Prior to vaccination, CD19+ B cells from OAs, regardless of sex, showed greater enrichment of hallmark pathways associated with inflammatory responses than YAs. Among YAs, females had greater H3N2, but not H1N1, neutralizing antibody titers and greater proportions of hemagglutinin (HA)+CD19+ B cells and HA+ memory B cells than males through 28 days post-vaccination (DPV), which was not observed among OAs. CD19+ B cells from YA females had greater transcriptional activity at 7 DPV than YA males, with upregulation of estrogen-responsive genes and NF-kB-mediated inflammatory pathways in B cell subsets. HA stimulation and treatment of antibody secreting cells (ASCs) from YAs and OAs with estradiol increased the number and size of HA+IgG+ ASCs from YA females and to a lesser extent OA females, but not males, which was inhibited by estrogen receptor antagonism. Machine learning algorithms illustrated that baseline (0 DPV) steroids, including 17-hydroxyprogesterone, estrogens, and testosterone, as well as HA+CD19+ B cells and HA+ ASCs were major predictors of subsequent seroconversion at 28 DPV, particularly in YA. This study provides mechanistic insights into steroid mediation of greater influenza vaccine-induced immunity among reproductive-aged females as compared with age-matched males and explains how sex differences in vaccine-induced immunity are reduced with old age.

OS 014
Sex differences in *Mycobacterium tuberculosis* infection

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Tuberculosis (TB) remains the most prevalent bacterial infectious disease and the leading cause of death from a single pathogen worldwide. Epidemiological data consistently show a higher incidence and mortality in males compared to females, with a male-to-female ratio of approximately 2:1. Both sociocultural (gender) and biological (sex) factors are believed to contribute to this disparity. To specifically investigate the role of biological sex, we utilize murine models, which eliminate many of the confounding variables that complicate human studies. Our research demonstrates that male mice—reflecting the human situation—exhibit greater susceptibility to TB, as evidenced by impaired long-term bacterial control and premature death. We observed notable differences in the organization of pulmonary TB lesions, especially within the B cell compartment, and identified B cell-derived IL-10 as a sex-specific immune regulator. Building on these findings, we further explored whether sex-based immune differences extend to vaccine responses. Indeed, we found marked disparities in adaptive immune responses to TB vaccines; importantly, the classical BCG vaccine showed no efficacy in male C57BL/6 mice while providing significant protection to females. Together, our findings highlight how adaptive immunity differentially influences TB disease progression and vaccine responses in a sex-specific manner.

OS 015
Sex differences in parasitic diseases

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Many parasitic diseases exhibit sex differences in their prevalence and severity, which persist even when accounting for varying exposure as the result of different gendered behavior. Both sex chromosomal complement and sex hormones are known to contribute to these observed differences. Two examples of male-biased parasitic infections, whose outcome is critically shaped by sex hormones, are hepatic amebiasis caused by *Entamoeba histolytica* and leishmaniasis caused by *Leishmania spp*. Amebic liver abscesses occur predominantly in adult men despite similar infection rates between the sexes and incidence of these abscesses correlates positively with serum testosterone levels. Studies in a mouse model for this disease have shown that testosterone dampens, and estradiol enhances, the NKT cell-mediated immune response necessary for parasite clearance in the liver. In addition, testosterone promotes the infiltration of neutrophils and pro-inflammatory monocytes to the site of infection and enhances the monocyte-mediated immunopathology leading to larger abscesses in males. Similarly, animal models for cutaneous and visceral leishmaniasis have indicated testosterone to be a driver of increased parasite burden and disease severity. *In vitro* studies on macrophages, the main host cell type infected by *Leishmania*, also showed higher parasite uptake by male-derived cells compared with cells from females. This is likely due to a more efficient inflammatory, anti-parasitic immune response of female-derived macrophages. Both these examples show that studying the role of sex hormones in immunomodulation of parasitic infections is important to better

understand the differences observed in disease manifestation between the sexes.

OS 016

Preparing maternal care for crisis – lessons learned from a case study of Palestinian maternal and newborn care during war

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Question: The recent war in Gaza, investigated as a plausible Genocide by UN, is causing severe long- and short-term impact on maternal and newborn health. In the short-term pregnant women are unable to access hospitals as all hospitals has been damaged and moving around is dangerous. In the long term the impact of starvation and heavy metals from explosives are causing epigenetic threats to the coming generation. What can we learn from the ongoing crisis and midwives in Gaza to be prepared for potential emergencies?

Method: A case study will present a review of recent literature on the current situation and experiences from maternal and newborn health in Gaza, together with preliminary results from a qualitative study describing midwives experiences of providing intrapartum care in shelters during the recent war in Gaza

Results: Un reports that 70% of the war casualties in Gaza are women and children, several studies reported on epigenetically consequences for newborn children from previous and the current war in Gaza. Interviews of midwives who assisted women in shelters under the current war has been preliminary thematically analyzed and described with the overarching theme: *Torn between fear, abandonment, pride and compassion.*

Conclusion: In recent wars, like the genocidal war in Gaza, civilians are not protected by international humanitarian law. Hospitals and healthcare providers have been targeted to a large scale, leaving pregnant women and children at great risk. The role of midwives has become especially vital in such crisis situations. International humanitarian law needs globally recognition to ensure pregnant women and newborns in humanitarian emergencies

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OS 017

Cyclone Freddy and its impact on maternal health service utilisation – Cross-sectional analysis of data from a national maternal surveillance platform in Malawi

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Background: Climate change poses a significant threat to women"s health in sub-Saharan Africa, yet the impact of climate change on maternal health is rarely reported in the region. Using an existing Maternal Surveillance Platform (MATSurvey), we estimated the immediate impact of Cyclone Freddy on maternal health care service indicators in Malawi.

Methods: We analysed facilitylevel data for pregnant women up to 42 weeks post-partum using the national MATSurvey database. We compared incidences of service utilisation before (1 January to 19 February 2023) and after (20 February to 30 March 2023) the cyclone using a negative binomial regression approach. Differnce in difference analyses were used to compare trends in service utilisation between the year of the cyclone (2023) and the sam eperiod in the preceding year (2022).

Results: Between 1 January and 30 March 2023, a total of 37,445 live births, 50,048 antenatal clinic attendances, 23,250 postnatal clinic attendances, 84 maternal deaths, and 1,166 neonatal deaths were recorded by 33 facilities in the MatSurvey database. There was an immediate reduction in service utilisation in the post-cyclone period, including the postnatal attendance per week (pre-cyclone median: 355.0 [IQR 279.0552.0], post-cyclone median: 261.0 [IQR 154.3–305.5], RR 0.56 [95% CI 0.44–0.71, p <0.001]) and the antenatal attendance per week (pre-cyclone median: 860.0 [IQR 756.51060.0], post-cyclone median: 656.5 [IQR 486.5–803.3], RR 0.66 [95% CI 0.55–0.78, p <0.001]). Stratified analyses by geographical zones revealed a stronger reduction in postnatal clinic attendance in the Southwest (RR 0.50 [95% CI 0.29–0.85, p = 0.010]) and the North (RR 0.29 [95% CI 0.15–0.56, p <0.001]).

Conclusions: Cyclone Freddy resulted in an immediate decline in utilisation of maternal health services in cyclone-affected regions in Malawi. We observe evidence of catastrophic climate events impacting on the healthcare of women and their babies. Policymakers, researchers, and health systems need to ensure that essential women"s health services are maintained during these events and improve measures to support service resilience in the face of climate change.

Fig. 1

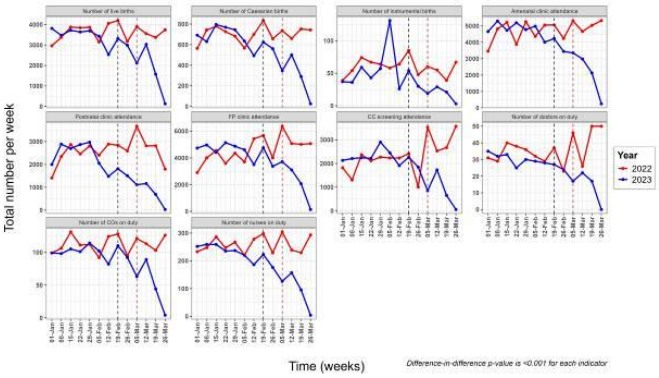
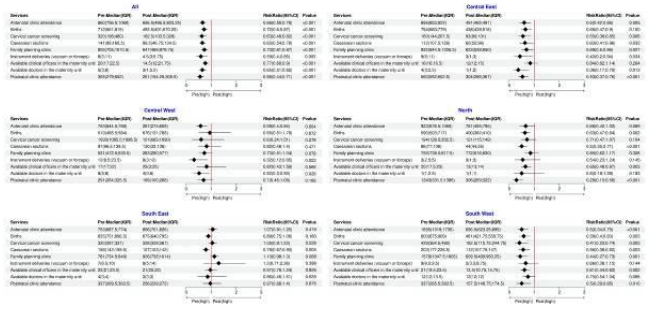


Fig. 2



OS 018

Immigrant women's experiences and perceived needs for postpartum care following severe pregnancy complications in Norway: A scoping review

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Background: Previous studies have reported that immigrant women are disproportionately affected by severe pregnancy complications such as postpartum hemorrhage (PPH), preeclampsia, eclampsia, extreme prematurity, gestational diabetes, and perinatal loss. While these events require adequate follow-up, existing literature highlights that immigrant women often experience fragmented, inadequate, or culturally insensitive services during the postpartum period. The experiences and expressed needs of immigrant women who had severe pregnancy complications remain underexplored.

Objective: To outline what is known about the experiences and perceived postpartum care needs of immigrant women following severe pregnancy complications.

Methods: We conducted a scoping review using the Arksey and O'Malley framework and followed the PRISMA-ScR checklist to synthesize the existing literature. Using the Arksey and O'Malley framework and reported in line with the PRISMA-ScR checklist, a scoping review was conducted to synthesize the existing literature. We designed and executed the search strategy with the assistance of a research librarian. We searched pubmed and scopus databases for relevant literature. Studies were included if they focused on immigrant or refugee women in high-income countries, addressed postpartum experiences following severe pregnancy complications, and used a qualitative or a mixed-methods design. The search yielded 80 original articles after removing duplicates, and we selected 30 for full-text review. Fifteen articles were removed and a total of 15 studies from five countries were included.

Findings: Based on 15 original articles, four major themes were identified: (1) difficulties navigating health systems and not knowing where to turn for help; (2) communication and language barriers; (3) discrimination and cultural insensitivity; and (4) grief, trauma, emotional and psychological distress with inadequate follow-up.

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OS 019

Changes in cesarean section rates after introduction of a punitive financial policy in Georgia – A population-based registry study 2017–2019

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Question: There is little research on how financial incentives and penalties impact national cesarean section rates. In January 2018, Georgia introduced a national cesarean section reduction policy, which imposes a financial penalty on hospitals that do not meet their reduction targets. The aim of this study was to assess the impact of this policy on cesarean section rates, subgroups of women, and selected perinatal outcomes.

Methods: We included women who gave birth from 2017 to 2019 registered in the Georgian Birth Registry (n = 150 534, nearly 100% of all births in the country during this time). We then divided the time period into pre-policy (January 1, 2017, to December 31, 2017) and post-policy (January 1, 2018, to December 31, 2019). An interrupted time series analysis was used to compare the cesarean section rates (both overall and stratified by parity), neonatal intensive care unit transfer rates, and perinatal mortality rates in the two time periods. Descriptive statistics were used to assess differences in maternal socio-demographic characteristics.

Results: The mean cesarean section rate in Georgia decreased from 44.7% in the pre-policy period to 40.8% in the post-policy period, mainly among primiparous women. The largest decrease in cesarean section births was found among women

Conclusion: The cesarean section rate in Georgia decreased during the 2-year post-policy period. The reduction mainly took place among primiparous women. The policy had no impact on the neonatal intensive care unit transfer rate or the perinatal mortality rate. The impact of the national cesarean section reduction policy on other outcomes is not known.

OS 020

Unmet need or epidemic of Caesarean deliveries in the changing surgical landscape in Sierra Leone?

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Question: What is the impact of the surgical task-sharing program on access and quality of Caesarean Deliveries in Sierra Leone?

Methods: A surgical task-sharing program was initiated by the Sierra Leonean Ministry of Health in 2011 to enhance public surgical capacity. Evaluation of this program was done through nationwide surgical activity assessments and a prospective study with a 5-year follow-up of caesarean deliveries performed by medical doctors and associate clinicians.

Results: Since the start of the program, 109 associate clinicians and non-specialist medical doctors completed the 2-year training course [1]. Caesarean section rates increased from 1.4% in 2012 to 5.3% in 2023. Caesarean deliveries were in 2023 mostly performed in public facilities (81.3%) by

associate clinicians (57.6%) [2]. In total 1274 women were enrolled in a prospective study comparing medical doctors and associate clinicians identifying that Caesarean deliveries performed by associate clinicians were not inferior to those undertaken by doctors [3]. Within 5 years after Caesarean delivery, one in four women became pregnant again and more than half had a vaginal delivery. Significant differences in place and mode of birth between wealth quintiles illustrate inequities [4].

Discussion and conclusion: The introduction of a nationwide surgical task-sharing initiative to strengthen the surgical workforce at district governmental hospitals in 2011 has emerged as a contributor to the change in surgical activity and output observed in Sierra Leone over the last decade. More research is needed to safeguard the quality of obstetric care with a focus on quality decision making for a Caesarean delivery. Teamwork dynamics training and skilled health care workforce availability seem to be of great importance in preliminary qualitative data findings.

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OS 021

Mortality reduction from post-partum haemorrhage and eclampsia in Niger from 2015 to 2025

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Introduction: Maternal mortality due to post-partum haemorrhage and eclampsia remain high in many low-income countries. We present recent Niger Ministry of Health health-systems changes integrating eclampsia mortality reduction into their impactful PPH-mortality reduction strategy, and impact on maternal mortality 2015-2025.

Methods: Niger's nationwide PPH prevention and treatment strategy combines prevention using misoprostol, or oxytocin if available, semi-quantitative blood-loss measurement, and a 3-Step Treatment protocol when manifest PPH occurs, with 11 tools from disease eradication programmes, including prospectively tracking of outcomes, a low-cost supervision system et.al. Effectiveness having been documented, MOH-Niger is now adding magnesium sulphate and an eclampsia treatment protocol into this system in the most populous four of its eight regions, covering 17 million people and 1 million annual births.

Results: Niger's PPH-strategy reduced overall maternal mortality in close to 1.4 million health facility births over 72 months by 34.5% and the proportion of maternal deaths due to PPH by 70% through 2020, by well over 50% within a year or two. Data through 2024 indicate PPH achievements are being sustained. Early results concerning eclampsia through June 2025 are expected to be available by ECTMIH.

Conclusion: The results of Niger"s systems-strengthening are far better than expected. How can the global public health community best collaborate to test Niger's systems-strengthening strategy in other low-resource settings?

Reference: Lancet Global Health 2023 Feb;11(2):e287-e295)

OS 022

Social logic and community dynamics of NCD management in West Africa

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In a West African context marked by weak health systems, structural poverty and pressing security emergencies, non-communicable diseases (NCDs) such as hypertension, diabetes and associated mental disorders have become major public health challenges over the past two decades. Once perceived as "diseases of the rich," they now disproportionately affect the poorest due to a combination of sociocultural, behavioural, socioeconomic, environmental and health system factors. Social representations play a fundamental role here, particularly those surrounding the causes of these diseases, which are often attributed to spiritual forces or witchcraft, and are accompanied by limited knowledge of NCDs. This often delays seeking care and adopting recommended behavioural changes. In addition, faced with financial and geographical barriers and in a climate of mistrust towards biomedicine, many patients turn to traditional or neo-traditional therapies, driven by rumours but also by the hope of a cure.

People with these chronic diseases have often reported that their emotional and social well-being is neglected in the formal health system, as care models have traditionally prioritised physical health. The convergence of physical, emotional and social vulnerabilities within this population highlights the need for more holistic approaches to the management of these chronic diseases.

This presentation, based on a qualitative study conducted in Burkina Faso, Ghana and Niger, highlights not only the many challenges identified, but also the commitment of community actors at the individual and collective levels. At the individual level, there are often invisible but essential care dynamics. These dynamics refer to all the social, cultural and relational factors that accompany patients throughout their journey, such as support from loved ones, initiatives by health workers in constrained contexts, or the combined use of different forms of treatment depending on available resources and perceptions of the disease. At the collective level, community actors collaborate with primary health care providers to develop context-appropriate strategies that improve the delivery and use of NCD-related services, particularly for vulnerable groups.

The study concludes that improving NCD care requires stronger partnerships between government and communities and leveraging existing networks that prioritise the needs of marginalised populations.

OS 023

Institutional and systemic drivers of access to non-communicable disease care at primary healthcare level in West Africa – A mixed method study

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Background: Non-communicable diseases (NCDs) are the leading cause of global mortality, with a growing burden in sub-Saharan Africa. However, evidence on the capacity of primary healthcare (PHC) systems to manage NCDs in West Africa remains limited. This study examines institutional and systemic factors influencing access to NCD care (hypertension, diabetes and mental illnesses) at the PHC level in Burkina Faso, Ghana, and Niger.

Methods: A sequential explanatory mixed-methods study was used. Quantitative data were collected using the World Health Organization"s Service Availability and Readiness Assessment tool between August 2023 and March 2024 across selected regions. Facilities were selected through purposive and random sampling. Service availability and readiness for NCD care were analyzed by country, facility type, managing authority and location using Stata 18.0. Qualitative data from interviews with policymakers, providers, and managers were thematically analyzed using NVivo 12.

Results: Among 512 facilities, Burkina Faso had the highest proportion of health centres (71.7%) and was predominantly rural (63.3%). Niger had the most referral-level (79.7%) and urban facilities (50.5%), while Ghana showed a balanced urban–rural distribution. Service availability varied: Burkina Faso reported high availability for diabetes (100%) and mental health (94.2%) but low for hypertension (37.2%). Ghana had higher availability for hypertension (78.5%) and diabetes (75.4%), with limited mental health services (35.4%). In Niger, availability was 81.3% for hypertension, 59.7% for diabetes, and 67.4% for mental health. Readiness scores were highest in Niger (55.3; 95% CI: 53.4–57.2), driven by strong basic amenities (71.4%; 95% CI: 69.6–73.3). Burkina Faso led in equipment and standard precautions (100%; 95% CI: 98.6–101.4). Ghana and Niger outperformed Burkina Faso in diagnostic capacity (wide 95% CI). Burkina Faso had the highest medication availability (26.1%; 95% CI: 25.3–26.9). Qualitative findings highlighted urban–rural disparities, infrastructure gaps, and drug shortages.

Conclusions: This study reveals disparities in NCD service availability and readiness across the three countries. It underscores the critical role of the public sector and the need for greater private sector engagement. Targeted interventions in infrastructure, workforce, and supply chains are essential to strengthen PHC systems and ensure equitable, integrated NCD care.

Fig. 1

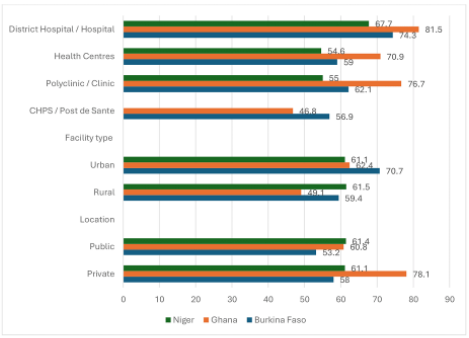

Figure 1 Median of service readiness by managing authority, location and facility types

OS 024

Monkeypox virus pathogenesis, immunology, and adaptation

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Monkeypox virus (MPXV) is a zoonotic poxvirus that has been endemic in West and Central Africa for a long time. MPXV pathogenesis involves viral entry through mucosal surfaces or skin breaches, followed by replication in local tissues and dissemination to lymphoid organs, resulting in a systemic infection characterized by fever, lymphadenopathy, and a characteristic rash. The immune response, comprising both innate and adaptive components, plays a crucial role in controlling infections and influencing disease severity. Outbreaks, first the global spread of clade II outside Africa in 2022, and since 2023 the accelerating spread of clade I in central Africa, point to MPXV adaptations that pose the risk of it becoming more transmissible in humans. Animal models that mimic the clinical disease outcomes in humans are essential for better understanding the pathogenesis, host tropism, and the contribution of genetic mutations. Using the CAST/EiJ mouse model, we demonstrate that MPXV infection via tail scarification is a suitable animal model for mimicking human mpox. In our study, the disease outcome is milder in clade IIb-infected mice than in clade IIa-infected mice, which is associated with enhanced immunogenicity early during infection. This suggests that clade IIb more efficiently activates host immune responses, highlighting how this animal model could facilitate studying new MPXV variants to help develop efficient antivirals and preventive measures.

OS 025

Mpox 2025 – Where do we stand on vaccines and antivirals

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This presentation provides an update on the current status of Mpox vaccines and therapeutic options. Two generations of smallpox vaccines, based on vaccinia virus, have shown cross-protection against MPXV. Among them, the third-generation Modified Vaccinia Ankara-Bavarian Nordic (MVA-BN, also known as Imvanex, Jynneos, or Imvamune) vaccine has been the most widely used during recent outbreaks. Data from observational studies and post-exposure prophylaxis suggest that MVA-BN is safe and provides protection, particularly after two doses. However, long-term immunity and efficacy in different populations remain under investigation.

Other Mpox vaccines including candidate vaccines based on mRNA technology are in clinical development and will be discussed.

On the therapeutic side, tecovirimat (ST-246), an antiviral targeting the viral VP37 protein, has shown promise in both animal models and has been used in compassionate-use settings in humans. It is currently authorized for use in some regions under emergency or expanded access protocols. However, recent randomized controlled trials have challenged its broad efficacy. The STOMP trial (Clade II) and the PALM007 trial (Clade I, DRC) both failed to demonstrate a significant benefit in reducing symptom duration or time to lesion resolution compared to placebo, although the drug was consistently well tolerated. Other antivirals such as brincidofovir and cidofovir have also been explored, although data on their effectiveness in treating Mpox in humans are limited. These findings highlight the urgent need for alternative therapeutic options, particularly for severe cases and vulnerable populations.

The talk will also discuss remaining challenges, including limited vaccine supply in endemic regions, the emergence of new epidemiological patterns, and the critical need for equitable access to both diagnostics and countermeasures. With Mpox continuing to evolve in clinical presentation and geographic spread, a sustained global response integrating surveillance, vaccination, and targeted research is essential.

OS 026

Clinical manifestations and epidemiology of Monkeypox Clade I in Africa

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Monkeypox virus (MPXV) Clade I is referred to as the Congo Basin Clade (Central Africa), and it remains a serious public health threat in West and Central Africa. This is due to its virulence and transmissibility compared to Clade II (West Africa). Most infections are zoonotic, acquired through direct contact with infected animals such as rodents and primates. However, human-to-human transmission has been documented recently. Clinically, the Clade I infections are characterized by severe virulence and case fatality rates up to 10%, while the Clade II results in milder disease and lower mortality, <1%.

Clinically, monkeypox presents with a prodrome of fever, headaches, and lymphadenopathy, followed by a centrifugal vesicular-pustular rash. Severe complications, including bronchopneumonia, encephalitis, corneal infections, and secondary bacterial infection, are more commonly reported in children and immunocompromised individuals.

Epidemiologically, Monkeypox Clade I is primarily associated with zoonotic transmission from wildlife reservoirs, notably rodents and primates, with limited human-to-human transmission occurring largely through direct contact with skin lesions, body fluids, or contaminated materials. Factors such as deforestation, population displacement, bushmeat consumption, and waning smallpox immunity have facilitated the persistence and spread of the virus in endemic regions. In addition, outbreaks misdiagnosed as other rash illnesses, such as varicella, the stigma and lack of laboratory confirmation, contribute to underestimating the disease burden. Therefore, strengthening regional surveillance, enhancing diagnostic capacity, increasing community awareness, and implementing targeted vaccination strategies remain critical for controlling Clade I Monkeypox and mitigating future outbreaks.

Understanding the clinical and epidemiological landscape of monkeypox in West and Central Africa is critical for informing prevention, outbreak response, and international preparedness efforts, especially given the recent global spread beyond endemic regions.

Key words: Monkeypox, Clade I, Epidemiology, Clinical, Africa, surveillance

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OS 027

Mpox clade Ib neutralisation

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Mpox, a zoonotic virus in the Orthopoxvirus genus, has been under scrutiny for the past 3 years as it threatens public health worldwide. On August 14, 2024, the WHO declared the mpox epidemic a public health emergency of international concern (PHEIC) for the second time in less than two years, and extended the vaccination campaigns initiated in 2022. Mpox is divided into two distinct clades: Clade I and Clade II. While the 2022 global outbreak was caused by a virus from a subclade of Clade II, the clade IIb, a new subclade of the virus emerged in DRC in September 2023: clade Ib. This virus rapidly spread and led to a resurgence of the Mpox epidemic in West & Central Africa. Little is known about mpox clade Ib, but it is associated with more severe disease than its clade IIb counterpart. Moreover, sexual contact transmission is no longer the main factor of mpox spread in the current outbreak, as more and more cases are linked to household and community transmission. As a results, increasing proportions of infected children under 15 years old are now registered in some central African countries. In this context, it is vital to investigate the sensitivity of this new clade Ib virus to existing vaccines and antiviral therapies. We compared *in vitro* the inhibition of viruses from the 2 clades by tecovirimat (TPOXX), an antiviral developed against smallpox. Although its efficacy was not proven in recent clinical trials, we showed that it efficiently inhibits all clades of mpox *in vitro*. We also tested the seroneutralisation of clade Ib virus by serum from vaccinated individuals and showed that IMVANEX vaccine induces neutralising antibodies able to inhibit mpox clade Ib infection.

OS 028

Impact of vaccination with third generation modified vaccinia Ankara and sexual behaviour on mpox incidence in men who have sex with men – Analysis among participants of the ANRS-174 DOXYVAC trial

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Background: Mpox was first reported in France on May 19 and third-generation live Modified Vaccinia Ankara (MVA-BN) vaccination of multiple-partner men who have sex with men (MSM) was recommended as of July 11, 2022. We assessed the impact of vaccination and of sexual behavior adopted during the epidemic period on mpox incidence in the ANRS-174-DOXYVAC trial enrolling MSM on HIV pre-exposure prophylaxis (PrEP) with history of sexually-transmitted infections (STI) in the previous year.

Methods: We compared pre-epidemic socio-behavioral characteristics and change in sexual behaviors after the onset of the epidemic of participants with mpox and mpox-free. Then we compared incidence rates of mpox per 1000 person-months (p-m) between May 9-July 10 (before vaccination of MSM, period-1) and July 11-September 20 2022 (after vaccination launch, period-2) and explored factors explaining the period effect using Poisson regression model.

Findings: 472 MSM had data before and after May 9, 2022. Twenty percent had received smallpox vaccine during childhood. Mpox occurred in 77/472 participants (incidence 49.3 per 1000 p-m (95%CI 38.9-61.6)). MVA-BN vaccination roll-out was rapid, with 86% (341/398) of eligible participants having received at least one dose by September 20, 2022. Sexual behavior significantly changed before and after May 9, with a decrease in the proportion of mpox-free participants with > 10 partners during last 3 months (45% vs 38%, p=0.0035). Mpox incidence was 67.4 per 1000 p-m (95%CI 51.6-86.6) in period-1, and 24.4 per 1000 p-m (95%CI 13.9-39.6) in period-2, with an incidence rate ratio of 0.36 (95%CI 0.21-0.63). In multivariable Poisson regression model, three factors were significantly associated with the risk of mpox: smallpox childhood vaccination with a 86.2% risk reduction (95%CI 56.2 – 95.7), MVA-BN vaccination in 2022 with a 85.5% risk reduction (95%CI 49.5-95.8), and having >10 partners in the last 3 months at the last available evaluation, with an incidence risk ratio of 2.2 (95%CI 1.4 – 3.4)..

Interpretation: In MSM on PrEP enrolled in the ANRS-174-DOXYVAC trial, rapid roll-out of MVA-BN vaccination was associated with a strong reduction in mpox incidence, while smallpox vaccination during childhood and change in sexual behavior contributed to the risk reduction during the first part of the epidemic.

OS 029
Introduction to the topic: Strategic approach of advocacy to influence global health policy and research priorities
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Over 1.7 billion people worldwide are affected by or at risk of Neglected Tropical Diseases (NTDs), a group of 21 conditions caused by various pathogens. These diseases often lead to chronic illness, disability, or death if untreated and remain underfunded and overlooked, as they primarily affect the poorest populations.

In countries like France, Germany, Italy, Switzerland, and the UK, national networks have been formed to advocate for the inclusion of NTD programs in broader global health, pandemic preparedness, and poverty reduction strategies. These networks unite experts from research, academia, industry, and civil society to influence government policies and investment decisions.

Session Objectives:

- Analyze how European NTD advocacy networks shape global health policy and research agendas
- Assess the impact of geopolitical and multiple crises on NTD funding and international cooperation
- Emphasize the importance of political lobbying in raising awareness and support for NTDs

The German Network against Neglected Tropical Diseases forms a national platform in Germany designed to heighten awareness of NTDs and raise the level of commitment in Germany to fighting them. The German network wishes to support the World Health Organization (WHO) in controlling, eliminating or even eradicating the 21 neglected tropical diseases.

OS 030
UK Coalition Against NTDs
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Established in 2011, the UK Coalition against Neglected Tropical Diseases (NTDs) is a national platform of UK-based NGOs, research institutions, and academic organisations working collaboratively to influence UK policy and investment in NTDs. The coalition was formed prior to the 2012 London Declaration on Neglected Tropical Diseases to build and strengthen political will and support the evidence base for investing in NTDs. The UK Coalition membership has grown in recent years to include observers, other entities, networks with a vested interest in working with national UK stakeholders to support and contribute to influencing activities of the coalition.

The Coalition"s strategic influencing work is developed and delivered by coalition members through the Influencing Working Group. Objectives and activities are focused on building political will through parliamentary engagement, advocating for policy reform, and sharing evidence to encourage investment in cross-sectoral approaches to support communities affected by NTDs. This also includes engaging with public parliamentary inquiries to influence policy and decision makers on the contributions of NTD investments to health systems strengthening and broader global health goals. Coalition members actively work with persons affected by NTDs, engaging them directly to share their perspectives with policy and decision makers through public events in the UK parliament.

Over the last 14 years the Coalition as evolved, to be increasingly flexible, agile and adaptive to a rapidly changing UK political landscape. While many NTD focused organisations are facing increasing challenges with financing, one area Coalition members recognise, is the opportunity for coordination and collaboration to ensure an enabling environment for UK policies and investments that can best serve marginalised and vulnerable communities affected by NTDs.

OS 031
Italian Network for Neglected Tropical Diseases
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The Italian network for Neglected Tropical Diseases (IN-NTD) was established in 2021, on the wake of the launch of the new WHO roadmap 2021-2030 aimed at reaching the last mile in the fight against NTDs.

The aim of the network is to facilitate both national and international collaboration among various institutions in Italy that deal with NTDs. The purpose of the network is to coordinate the efforts of a wide range of stakeholders - including scientific societies, foundations, hospitals, non-

governmental organizations, university departments and academic courses - to achieve the synergy and authority necessary to propose and organize effective interventions. These actions target NTDs still endemic in Italy (cystic echinococcosis, leishmaniases, for example), as well as those affecting tropical areas where NTDs are hyperendemic.

During the past four years, the network has organised or endorsed scientific meetings, webinars, publications, recommendations and surveys on particular topics related to NTDs.

OS 032
French network against neglected tropical diseases
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The French-speaking NTD network named « réseau francophone sur les MTN » (RFMTN : https://www.rfmtn.fr/) has the following objectives 1) Encourage interactions between French and Francophone institutions involved in the field of research and control against NTDs (scientific institutes and universities, NGOs, PPPs, pharmaceutical laboratories, societies, etc.), ensuring a better coordination of scientific information and communication on NTDs; 2) Develop collaborative programs in response to calls for proposals for interventional research, and establish partnerships with national control programs, particularly through the French speaking world and Europe; 3) Strengthen visibility and conduct effective advocacy with politicians and donors to obtain dedicated funds for the implementation of coordinated research and actions in the field of NTDs within the framework of the 2030 WHO roadmap on NTDs. To achieve these goals, high-level political support, engagement around this topic within the research community, and the provision of appropriate funding will be necessary in France, in the French speaking world, and with our European partners. There are "success stories" involving activities that are embedded in our French-speaking research community for the elimination of NTDs, e.g. the recent elimination of Human African Trypanosomiasis as a public health problem in Guinea, Chad and other countries, together with many eliminations of other NTDs in endemic countries. The RFMTN, together with all its members and partners from other NTD networks continues to drive international efforts to ensure that support for NTD elimination continues over time to reach the 2030 Sustainable Development Goals.

OS 033
Swiss Alliance Against Neglected Tropical Diseases (SANTD)
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The Swiss Alliance Against Neglected Tropical Diseases (SANTD) was established as a non-profit association in 2017 with a clear mission: to enhance Switzerland's response to the global challenge of neglected tropical diseases (NTDs). Through targeted advocacy and awareness-building, the SANTD aims to strengthen resources and collaboration to reduce the neglect of these diseases, improve the health and well-being of affected communities, and contribute significantly to global health priorities. The Swiss Alliance against Neglected Tropical Diseases (SANTD) brings together a broad range of diverse Swiss institutions including NGOs, educational and research institutes, pharmaceutical companies, R&D organizations, and individuals interested in global health. Together these institutions work towards a shared vision to elevate the profile and priority of NTDs in the global health discourse.

OS 034
Integrated molecular surveillance to enhance the control of tuberculosis in a low incidence setting
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Background: With an incidence of 5.2 per 100,000 Germany belongs to the group of low incidence countries asked for exemplary actions to address the challenge to achieve tuberculosis (tb) pre-elimination (<10 cases per million population) by 2035. Among other priority actions this requires the application and evaluation of new tools to enhance active case finding. The majority of tb cases is being identified by patients presenting themselves because of symptoms (=passive case finding; 73% in 2024). In our project we applied Integrated Molecular Surveillance (IMS), i. e. systematically linkage and joint analysis of whole genome sequencing (WGS) results together with epidemiological data of cases to support health authorities in their efforts to interrupt chains of tb transmission.

Methods: Isolates of notified tb cases were sent to the National Reference Center for Mycobacteria for whole genome sequencing and cluster analysis. Results were linked with epidemiological data and systematically assessed for public health relevance of molecular clusters identified.

Results: In 2024, WGS results were available for 58.9% (2005/3.406) of culture-confirmed TB cases notified in Germany. Of sequenced isolates 35,0 % (701/2.005) could be attributed to one of 367 molecular clusters. Of these 37,1% (136 clusters) involved two or more health authorities from different administrative districts. Only for 18% (126/701) of clustered cases an epidemiological linkage was reported prior to IMS analysis. Of cases belonging to clusters 110 cluster reports were sent to local health authorities in 2024 to support the contact investigation of clusters with potential public health relevance and for the identification and interruption of outbreaks .

Conclusions: IMS is an important tool in a low incidence country to enhance case finding by linking cases through the tb strains isolated and to identify vulnerable groups and settings with an elevated risk of transmission, including investigation of cross-border events. Additional benefits include information on Mycobacterium tuberculosis complex subtype (in Germany 2024 data were available for only 62,6%). Through the systematic analysis of drug-resistance associated mutations using WGS, IMS also offers the possibility of continuous resistance surveillance, which is an important monitoring tool, especially when introducing new drugs or treatment regimens.

OS 035

Integrated molecular surveillance for the fight against drug resistant tuberculosis in a high incidence setting

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Drug-resistant tuberculosis remains a major challenge in high-incidence settings, where limited resources and ongoing transmission hinder effective control. Traditional diagnostics are insufficient to detect resistance early and guide timely interventions. Integrated molecular surveillance, combining rapid molecular diagnostics, targeted next-generation sequencing (tNGS), and epidemiological data, offers a framework to improve detection, monitor transmission, and inform treatment.

Bedaquiline (BDQ) is now central to MDR/RR-TB treatment, with the WHO recommending regimens such as the 6-month BPaLM. However, rising BDQ resistance (BDQr) threatens treatment outcomes. In Mozambique, BDQr increased from 3% to 14% between 2016 and 2021. To investigate, tNGS (Deeplex®-Myc-TB) was applied to sputum samples submitted to the National Tuberculosis Reference Laboratory, Maputo, from January 2021 to April 2025. Samples resistant to isoniazid and/or rifampicin were included. Predictions were obtained for 288 samples, of which 246 (85.4%) were RR-TB. Among these, 51/246 (20.7%) were fluoroquinolone resistant, 29/246 (11.8%) had additional BDQr and were classified as XDR-TB, and overall 68/246 (27.6%) carried BDQr. Notably, 13/246 (5.3%) harbored the I491F rpoB mutation undetected by commercial assays, nine of which were BDQr.

These findings reveal alarming rates of BDQr in Mozambique, threatening rollout of BDQ-based regimens. Scaling up integrated molecular surveillance with tNGS is critical to guide individualized treatment, prevent transmission of highly resistant strains, and safeguard the effectiveness of new regimens in high-incidence settings.

OS 036

Target next generation sequencing for rapid TB drug resistance prediction – Chances and challenges

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Targeted Next-Generation Sequencing (tNGS) of *Mycobacterium tuberculosis* (MTB) is approved by the World Health Organization for direct drug-resistant tuberculosis (DR-TB) testing of respiratory specimens. Current assays have several limitations: targets are limited and do not align with current treatment guidelines for MDR cases, limit of detection is lower than WHO recommended diagnostics, and laboratory workflow is still mostly manual. In addition, turnaround time and cost remain to high. A new generation of assays is entering the market with the promise to at least increase the number of relevant targets and decrease the limit of detection. Data on comparison of performance between the current commercially available kits and the platforms with time to results will be presented.

The presentation will also discuss unpublished data on a comparative evaluation of the beta version of Deeplex Myc-TB XL assay (GenoScreen, FR) and the QIAseq xHYB MTB panel (Qiagen) enabling direct Whole Genome Sequencing through hybridization-based MTB genome capture. The comparison includes the detection limits (LOD) and performance for DR and genotyping predictions of the two assays on a panel of fully characterized clinical samples.

Pros and Cons in different routine epidemiological settings of the different platform will be discussed

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OS 037

Precision medicine for drug-resistant Tuberculosis – Leveraging pathogen sequencing for optimised treatment

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Background: Drug-resistant tuberculosis (DR-TB), particularly rifampicin or multidrug-resistant forms (RR/MDR-TB), threatens global elimination efforts owing to inadequate detection and bedaquiline resistance. In Eswatini, an MDR Mycobacterium tuberculosis strain with the rpoB I491F mutation, undetectable by GeneXpert MTB/RIF Ultra or line probe assays (LPA), increased from 30% to 58% between 2009-2018, with many strains carrying rv0678 mutations linked to bedaquiline resistance. As a response, Eswatini implemented targeted next-generation sequencing (tNGS) for surveillance in 2019 and transitioned to programmatic clinical use in 2022. This study describes a public health approach for tNGS introduction in Eswatini and its impact on patient care.

Methods: tNGS was performed on all samples where resistance to isoniazid or rifampicin was detected using Xpert Ultra, LPA, or phenotypic drug susceptibility testing (fig 1) during the study period from September 2021 to December 2022. Patient specimens were initially tested by Xpert Ultra, followed by LPA, liquid culture, and tNGS, specifically using the Deeplex Myc-TB assay, at the Eswatini National Tuberculosis Reference Laboratory. Clinical data were collected through programmatic structures, and sequencing results were reviewed by the Clinical Advisory Committee (CAC) for treatment decisions (fig 2).

Results: tNGS identified rpoB I491F mutations in 46% (17/37) of initial samples. tNGS improved rifampicin resistance detection by 73% (27/37) compared with conventional methods. Mutations in the rv0678 gene, linked to bedaquiline/clofazimine resistance, were found in 32% (12/37) of isolates and 65% (11/17) of strains with the I491F mutation. None of the strains with the rv0678 mutation showed fluoroquinolone resistance. tNGS results led to drug resistance reclassification, changing regimens for 73% (27/37) of patients and achieving 84% (31/37) treatment success.

Conclusion: tNGS improved the detection of drug resistance and optimised treatment for DR-TB in Eswatini, demonstrating its feasibility and value in programmatic settings. The high prevalence of bedaquiline resistance among rpoB I491F strains highlights a critical threat to current regimens, such as BPaLM/BPaL. These findings support the expansion of pre-

XDR TB definitions to include bedaquiline resistance, and underscore the need for broader tNGS access to guide individualised care and curb resistance to new TB medications.

Fig. 1

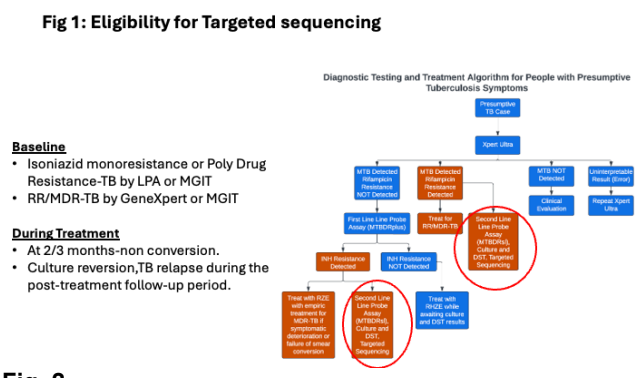
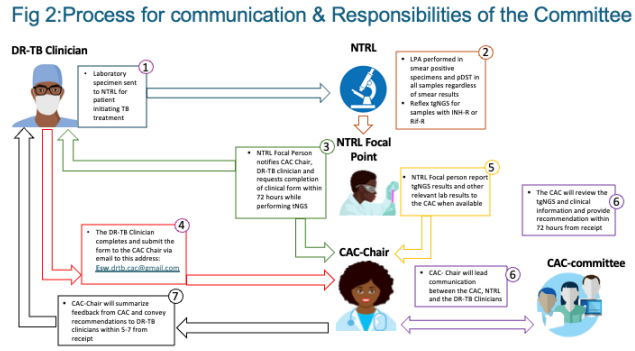


Fig. 2



OS 038

Building pediatric ultrasound capacity – Insights from the EKFS GTP International Paediatric Ultrasound Network (IPUN)

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In limited recource settings (LRS), where insufficient medical imaging services limit and delay diagnosis and treatment, ultrasography has relevant influence on patient management.1 Since March 2022, the Else Kröner-Fresenius-Foundation-funded project "IPUN" has been providing trainings in clinician-led point-of-care ultrasound (POCUS) to paediatricians, clinical officers, and family medicine specialists involved in direct care of children and adolescents at five partner hospitals in Nepal, Tanzania (2), and Malawi (2). Basic and advanced general ultrasound as well as echocardiography courses strengthen paediatric ultrasound capacity. Future local ultrasound tutors and mentors are identified throughout. Course content is developed and adapted to meet local diagnostic needs and emphazises hands-on training. The provision of ultrasound machines, including evaluation for suitability in the respective settings, enables continuous delivery of services. Cloud-based availability of all administrative and teaching content to all network members encourages flexible development of collaborations – especially South to South - between all partner sites. Up to June 2025, 382 clinicians have been trained in POCUS.

While strengthening research capacity at all partner sites the scientific activities within IPUN encompass a range of initiatives aimed at optimizing POCUS use in LRS. These include systematic reviews on ultrasound training methodologies and evaluation strategies, with a focus on LRS;2 observer-reported needs assessments; scientific evaluation of the curriculum development; investigations into paediatric POCUS applications; and the development of standardized frameworks for POCUS device selection in LRS. Additional efforts involve survey-based studies assessing post-training knowledge retention and skill application in routine care, and the integration of tailored training programs for local healthcare providers. Furthermore, pilot studies are underway to evaluate the added diagnostic value and safety of lung POCUS in neonatal care.

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2 Eppel, F., Hunstig, F., Bélard, S. et al. Concepts for point-of-care ultrasound training in low resource settings: a scoping review. Ultrasound J 17, 24 (2025). https://doi.org/10.1186/s13089-025-00427-3

OS 039

Strengthening pediatric emergency care in the Gambia – Scaling up the Emergency Triage Assessment and Treatment (ETAT) program

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The Gambia, a country of 2.42 million people, faces high under-5 mortality (56/1,000 live births; DHS 2020), limited government health expenditure (~1–1.4% of GDP), and widespread gaps in pediatric emergency care. To address this, the WHO Emergency Triage Assessment and Treatment (ETAT) program was implemented at Edward Francis Small Teaching Hospital (EFSTH), where over 100 healthcare workers were trained since 2024, and ETAT was embedded into routine care. From April to June 2025, 95 pediatric emergency referrals were triaged, 90% as urgent/emergency. Main diagnoses included pneumonia, meningitis, sepsis, and convulsions—conditions targeted by ETAT. Mortality within 24

hours was just 3.1%, demonstrating improved early management.

Beyond tertiary level an initial baseline assessments using the WHO HEAT tool (Oct 2024) at secondary-level hospitals revealed major deficits regarding pediatric emergency care: no structured triage, missing emergency drugs (e.g., glucose, diazepam), non-functional equipment (oxygen, suction), and significant knowledge gaps. Triage accuracy at Farafenni General Hospital (FGH) was 16%. Average time to treatment was 234 minutes; correct emergency care was provided in only 8% of cases

In early 2025, ETAT was implemented at FGH and Kanifing General Hospital (KGH) through three months. Implementation was mentored by national and international facilitators, with weekly sessions, bedside teaching, and structural improvements including set up of dedicated triage areas and ensured availability ofbasi, effective emergency drugs and materials. At FGH, MCQ scores rose from 10/20 to 17/20, with 76–81% accuracy in scenario-based skills. Staff confidence and skills—e.g., intraosseous access—increased notably. In one 14-day period, 499 children were triaged (35/day) at KGH, with 17% prioritized.

A Generic Instructor Course was held to ensure quality of trainers and improve teaching skills. Fifteen national instructors were certified.

The German Society for Tropical Paediatrics and International Child Health (GTP) has supported the ETAT implementation both financially and with technical assistance, including the deployment of international facilitators and the provision of the base for the development of national teaching materials.

The program is now expanding further, with full national rollout to all secondary health facilities planned by 2027. ETAT has been integrated into medical and pediatric nursing curricula to ensure sustainability. This presentation outlines the ETAT implementation model, early outcomes, and national scale-up strategy.

OS 040

Incidence of Late-Onset Sepsis among preterm infants at Muhimbili National Hospital, Dar es Salaam, Tanzania – Preliminary findings from a prospective observational study of the Academic Hospital Partnership Program

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Background: Hospital partnership programs by members of the German Society for Tropical Paediatrics and International Child Health (GTP) focus on important topics of Global Child Health. Late-onset sepsis (LOS), occurring ≥72 hours after birth, remains a major cause of morbidity and mortality among preterm neonates, particularly in low-resource settings. In Tanzania, limited data exist on the burden, clinical profile, and causative organisms of LOS in this vulnerable population.

Objective: To describe the incidence, clinical characteristics, microbial etiology and resistance profile of LOS among preterm infants born between 28+0 and <34 weeks of gestational age at Muhimbili National Hospital (MNH), Dar es Salaam, Tanzania.

Methods: We conducted a prospective descriptive study over 20 months at MNH"s neonatal unit. Preterm infants born at 28+0 to <34+0 weeks" gestation were enrolled within 7 days of life and followed for 28 days or until discharge/death. Maternal and neonatal demographics, LOS episodes (clinical or culture-proven), and microbiological profiles were recorded. LOS was defined as clinical signs of sepsis occurring ≥72 hours after birth.

Results: From October 2023 to May 2025 1,947 preterms were screened and 878 recruited into the study. Most enrolled infants were inborn (84.6%), weighed <1500g (64.7%) and male (51.1%). Among these participants 161 developed clinical LOS with an overall cumulative incidence of 18.3% and a total of 80 blood culture-positive cases. The most common isolated pathogens were Gram-negative enterobacterales (Klebsiella, E. coli), Pseudomonas and Burkholderia species with high rates of antimicrobial resistance (AMR), although Gram-positive organisms accounted for a relevant number of isolates.

A total of 72 preterm infants (8.2%) died during the follow-up period of 28 days with more than 80% (n=58 deaths) attributed to sepsis. Of these sepsis-related deaths most experienced a lethal LOS episode (n=43), and 26 of these were culture-proven cases.

Conclusion: LOS affects a substantial proportion of preterms admitted at MNH. This highlights the need for ongoing microbiological surveillance to guide empiric antibiotic use. These findings provide a crucial baseline for understanding the burden and microbiological profile of LOS in this high-risk population and emphasize the importance of routine sepsis monitoring and pathogen-specific infection control measures in neonatal units caring for preterm populations in similar settings.

OS 041

Impact of the hospital partnership program

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IMPACT OF HOSPITAL PARTNERSHIP PROJECT WITH DTC, GERMANY

The aim of the project was to train 12 rural surgeons in 6 rural hospitals in India, empowering them with capabilities of performing Minimally Invasive Surgeries to increase the surgical coverage of the target population by 1000 surgical procedures per year per 100000 population.

The project provided 10 Laptop Cystoscopes and 2 Gas Insufflation Less Laparoscopic Surgical Equipment (RAIS devices) and trained the local surgeons by the innovative Proctorship method where the faculty travelled to the rural and remote hospitals to train the rural surgeons.

The project was so popular that at the end of the project 51 doctors were trained in 17 rural hospitals and data from 5 control hospitals were analysed to see the impact of the project.

The total number of surgical procedures at these hospitals increased from 1844 to 6363 at these hospitals with an average of 374 per year from 109 per year.

The surgical coverage in the target population increased from 580 per 100000 population a year to 2147 per 100000 population a year.

The marginal increase in the control hospitals during this period were not significant.

The project is a sustainable one because the program is continuing even after the completion of the project period and even during the project period the number of participating hospitals increased, and they invested money in purchasing the necessary equipment.

The project also encouraged innovation, and the project team developed an innovative real – life looking Simulator for MIS training and followed it up with development of a training program.

In May this year the team conducted workshops in Malawi and trained 48 local surgeons using the Simulators and some of them who had not seen or performed these procedures on patients were able to start doing minor laparoscopic and endoscopic procedures immediately after the training program

In conclusion, the Hospital Partnerships program had great impact in training surgeons in rural areas not only in India but also in Africa.

Fig. 1

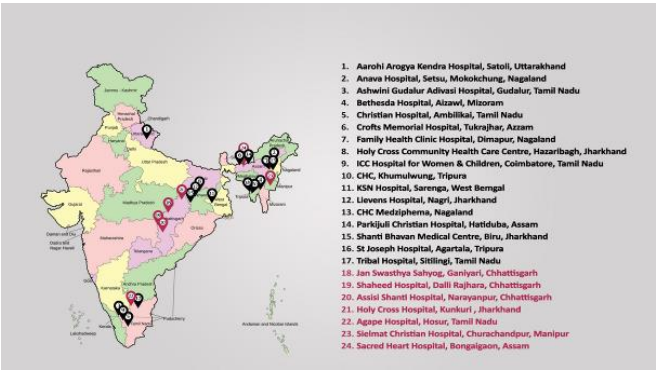

Fig. 2

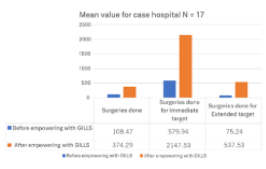

Figure 1: Mean value for case hospital before and after empowering with GILLS

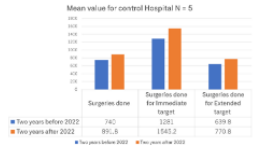

Figure 2: Mean value for control hospital two years before and after 2022

OS 042

Developing District Urology in Malawi

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One urologist in Malawi serves a population of 5 million people. All urologists are in central hospital in the big cities. This means the majority of urology patients in the district hospitals will receive at least their initial urology care by non-urologists. We present a model that is used to support district health care providers as they treat urology patients. The model involves virtual real time communication, support visits and special skill transfer workshops. We hope the model will improve the quality of urology care in at a district level.

Key words

Malawi, urologist, district hospital, urology care.

OS 043

Management of imported HCID cases in France and the role of COREB (Operational coordination for epidemic and biological risks)

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Introduction: Imported HCID event is a rare event but could present potential risk considering unfavorable clinical outcome and human-to-human transmission in the communities and caregivers. Clinical care needs high technical requirements that are demanding to set up and maintain with dedicated hospital rooms armed with all devices and furniture including intensive care items. These high-level isolation units allow favorable environment to provide high quality of care and adequate protection for health care workers. We review the French organization driven by the Centre de Crises Sanitaires (Health Emergency Unit) from the Ministry of health and the mission of a national coordination named –COREB.

Description: High Consequences Infectious Diseases could be schematized in two situations: an isolated imported case/patient or a local outbreak. The first situation would need rapid identification for isolation, care with appropriate PPE, the second situation would need rapid hospital and care adapted responses with a strong coordination. From two events, El Hajj pilgrims returns from Saudi Arabia at risk of MERS-Cov and the presence of CCHF in France, we describe the organization based on Reference hospitals (present in each district/region) and the role of preparedness: awareness and training.

Discussion: Reference hospitals geographical distribution in France including overseas territories (Antilles, Guyana, Indian Ocean) provide appropriate covering and proximity to ensure rapid response to hospitalized patients for care and microbiological diagnosis. The main drawback of this organization is the maintenance of high degree of expertise and the need for exercise and training on the regular basis, in the context of afflicted health system. There is also a need for identifying suspected cases as quick as possible to reduce the risk of health care contamination.

Conclusion: French origination to tackle HCID is demanding and should consider graduation responses according the identifying risk, from hemorrhagic fever virus to respiratory virus threats. Although the health system should be prepared and health care workers well trained; infection prevention control measures during routine care play a key role to limit the risk of spreading emergent pathogens agents.

OS 044

Preparedness for high consequence- and emerging infectious diseases in Germany – Experience of the German STAKOB network (*Permanent working group of competence and treatment centers for high consequence infectious diseases)*

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Intense travel activities and globalisation increase the risk of international spread of high consequnces infectious diseases

(HCID) like Lassa fever or Ebola Disease and introduction of emerging infectious diseases (EIDs) e.g. Mpox into Germany. Management of suspected and confirmed HCID cases must be well coordinated at national and European level to ensure the most effective medical care for the patient and to prevent secondary infections.

The German "*Permanent Working Group of Competence and Treatment Centers for High Consequence Infectious Diseases"*), known as STAKOB *("Ständiger Arbeitskreis der Kompetenz- und Behandlungszentren für Krankheiten durch hochpathogene Erreger"*), aims to assure adequate and coordinated clinical and public health response of HCID and EIDs in Germany. Coordinated by the Robert Koch Institute, STAKOB brings together eight German Public Health Authorities (competence centers) and seven High Level Isolation Units (HLIUs, treatment centers) in Germany. To ensure comprehensive care for suspected or confirmed HCID cases, STAKOB forms a strategically structured network, ensuring that patients from anywhere in Germany, can receive highly specialized care in HCID treatment centers within few hours. The expertise is complemented by institutions such as e.g. the Federal Institute for Vaccines and Biomedicines, the Federal Institute for Drugs and Medical Devices, the medical service of the Federal Foreign Office, and the medical service of the German Armed Forces - all working together to address HCID challenges. .

STAKOB enables the exchange of knowledge and experiences; joint development of guidelines on infection prevention and control measures, clinical management, and therapy; and support for the World Health Organization and other outbreak responses internationally.

The past years have shown how important the STAKOB network is for Germany—not only in providing critical care for HCID cases (Ebola, Lassa) but also increasing capacity to support public health and clinical management of EID cases (COVID-19, Mpox). However, maintaining several HLIUs in Germany requires a high commitment of financial, material, and human resources. Due to the rarity of substantiated HCID events, maintaining the appropriate level of preparedness and ensuring sufficient investments is an ongoing struggle. Nevertheless, it is essential to have a network ready to react in times of a changing biosecurity and infectious landscape.

OS 045

Necessities and perspectives of European collaboration in the management of HCID events

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Construction of the state of the art National High Level Isolation Unit (NHLIU) in Ireland is near completion. This National High Level Isolation Unit in Ireland will play a critical role in protecting the public from outbreaks of unexpected infectious disease threats. In the interim, there is a contingency arrangement between Ireland and Germany for the transfer of confirmed case of High Consequence Infectious Disease. The coordination is via the German High Level Isolation Unit Network (STAKOB). There is also a contingency arrangement between Ireland and RescEU-NOJAHIP group (based in Norway) for aeromedical transfers of patients with confirmed HCID from Ireland to Germany. This is via the EU Emergency Response Coordination Centre (ERCC). As part of the preparation phase for the new facility, a number of cross agency simulation exercises have taken place including National Ambulance Services, Irish Defence forces, HSE and Public Health. The aim of these simulations is to strengthen our national capacity, capability and preparedness for future health threats. Exercise Volare (April 2024) was a large cross country simulation exercise of a transfer of a HCID case to Germany, using RescEU NOJAHIP air capacity. This involved simulating HCID notification and response through the Emergency Response Coordination Centre (ERCC) of the EU Civil Protection Mechanism.

Ireland NHLIU is working closely with national authorities and transport agencies to ensure successful and sustainable preparedness and response strategies for future public health emergencies. The strategy for HCID preparedness includes HLIU capacity building with European centres in addition to training and simulation centre for emerging health threat and pandemic preparedness. The HLIU will be equipped for in-situ interprofessional team based simulation for regional centres and transport agencies.

OS 046

Marburg disease epidemic 2024 in Rwanda – Clinical and epidemiological management

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The 2024 Marburg Virus Disease (MVD) outbreak in Rwanda revealed critical vulnerabilities in clinical, epidemiological, and surveillance frameworks for managing highly lethal zoonotic pathogens. Analyzing data from 6,613-suspected cases—including 66 laboratory-confirmed infections and 15 fatalities—highlighted distinct transmission dynamics, primarily affecting healthcare workers in Kigali's districts of Gasabo, Kicukiro, and Nyarugenge. Although cases emerged in additional districts such as Gatsibo, Kamonyi, Nyagatare, and Rubavu, nosocomial transmission within Kigali underscores significant infection control challenges. Our findings demonstrate that early clinical indicators—such as fever, fatigue, headache, nausea, and joint pain—were more predictive of MVD than traditional hemorrhagic signs, which remained infrequent. Recognizing the zoonotic nature of MVD, sentinel bat screening was conducted across affected regions to evaluate reservoir presence and spillover risk. In terms of environmental decontamination, we deployed a UV-C light-emitting robot capable of disinfecting approximately 16 m² per minute. This innovative approach facilitates rapid and effective remediation of MARV-contaminated environments and supports the safe reuse of disinfected equipment. Strengthening healthcare worker training on infection prevention, expanding case investigation, and implementing robust contact tracing proved vital in curbing transmission. A comprehensive One Health approach integrating human, animal, and environmental surveillance was emphasized to enhance risk assessment and outbreak containment. Recommendations include updating case definitions to encompass constitutional and gastrointestinal symptoms, expanding bat reservoir screenings, and enhancing public health messaging to foster community engagement. This integrated strategy underscores the importance of preparedness and coordinated response mechanisms to manage future MVD outbreaks effectively in Rwanda and the broader region.

OS 047

On-site support by EFFO project during the Marburg fever outbreak in Rwanda – Infection prevention and control

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Introduction: On 27 September 2024, the Rwanda Ministry of Health (MoH) declared the countries" first Marburg Disease (MARD) outbreak. The outbreak response at national level was immediately implemented through a national command post with subdivision in pillars, one of them being Infection prevention and control (IPC).

The ongoing Efficiency by Edification – Center of Excellence project (EFFO) aims at strengthening the Rwandan health system with regards to HCID containment through (a) construction of a high-level isolation unit (HLIU) in Kigali, Rwanda as well as (b) conceptualization and realization of a training program for health care workers (HCW).

Methods: EFFO project coordination was involved in the IPC pillar activities, alongside with MoH, WHO and experts from international organizations such as Africa CDC.

Results: National guidelines and SOP"s on IPC of MARD as well as Ebola Disease (EBOD) were established. Validation was carried out during a workshop. An IPC training workshop for HCW acting as trainers (ToT) was realized.

Conclusion: EFFO contributes substantially to EBOD/MARD outbreak preparedness and response in Rwanda.

OS 048
On-site support by EFFO training during the Marburg fever outbreak in Rwanda – clinical management
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During the 2024 Marburg Virus Disease (MVD) outbreak in Rwanda, a multidisciplinary team from the Department of Infectious Diseases and Critical Care Medicine and the Institute of International Health at Charité – Universitätsmedizin Berlin supported local healthcare workers (HCWs) through targeted training sessions and lectures on the management of filovirus diseases (FVD).

The outbreak, first reported in September 2024, posed a serious challenge to Rwanda"s healthcare system. Thanks to a rapid and well-coordinated response by national health authorities, it was swiftly contained. Local HCWs successfully treated MVD patients at all levels of care. At the time, a long-standing collaboration on high consequence infectious diseases (HCID) between German and Rwandan public health institutions was already in place. Within this framework, the Robert Koch Institute coordinated the "Efficiency by Edification – Center of Excellence" (EFFO-COE) project, aiming to establish a high-level isolation unit (HLIU) in Kigali and train a specialised team. The Charité team led the training component, developing a curriculum and conducting both on-site training and webinars. Training activities began in March 2024, while the construction of the HLIU in Kigali was and still is in progress.

In response to a request from the Rwandan Ministry of Health, a Charité team traveled to Kigali to provide intensive, hands-on training. The team worked closely with the WHO case management pillar and Rwandan health authorities. Following a needs assessment, they delivered lectures, case discussions, and simulation exercises for HCWs deployed in or recently rotated out of the MVD treatment centre. The sessions focused on MVD clinical presentation, treatment strategies, and infection prevention and control (IPC). Training was performed on full-scale patient simulators and on separate mannequins for additional exercises in airway management and central line placement.

Feedback from discussions and short surveys indicated improved knowledge and greater confidence among HCWs in managing MVD cases.

This presentation highlights how international collaboration and intensive training supported local healthcare workers during Rwanda"s MVD outbreak.

OS 049
Integration of mental healthcare in Burundi – Progress and challenges in primary health services
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We use Valentijn et al.'s framework to analyse the integration of mental health care into primary services in Burundi. Mental disorders remain under-treated due to limited access, few professionals, and stigma. Integrating mental health into primary care enhances accessibility and holistic care.

Objective To outline strategies for integration, progress made, challenges, and prospects.

Methods & Measures: **Task shifting to non-specialists**: GPS, nurses and community health workers are trained to deliver basic mental health services, increasing accessibility and care scope. **Referral system**: Structured pathways ensure continuity of care between levels. **National guidelines and coordination**: Provide a framework for integration and policy alignment. **Training of providers**: GPs, nurses, and CHWs are trained to handle mental health needs, extending reach into communities. **Anti-stigma actions**: Reduce barriers to care access. **Supervision and drug availability**: Support quality and treatment continuity. **Recruitment of mental health nurses**: Planned for district hospitals to strengthen the referral system. **Organizational consortium**: Their coordination and "double anchoring" (central level, peripheral health facilities, and community) illustrate the importance of governance and inter-organizational collaboration for successful integration, a recurring theme in integrated care frameworks.

Results: Harmonized interventions and partnerships illustrate better coordination. Mental health services are now available in health centers and district hospitals. Nationwide training: Strengthens the capacity of primary care and the quality of care provided. Consultation numbers are rising, and psychotropic drug supply has improved. Mental health indicators are integrated into the national health information system.

Challenges: Lack of qualified personnel (specialized nurses not yet recruited): affecting care for complex cases. Funding remains low, impacting sustainability. High staff turnover undermines training and continuity.

Conclusion: Progress is evident, especially in training and system setup. More funding and personnel are needed to sustain gains. Partner engagement offers an opportunity to

reinforce integration of governance structures. In line with Valentijn et al., Burundi"s integration focuses on improving accessibility, completeness, coordination, and community orientation. Further investment is needed to reinforce these pillars

Fig. 1

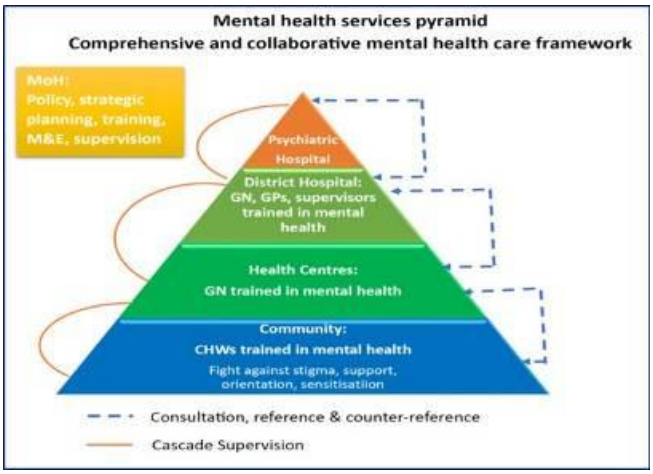

Fig. 2

Table : Reinforcing health personnel mental health care capacity in Burundi

Type of cadres	Numbers
National trainers	25
General practitioners at District hospital level	234
General practitioners et community hospital level	67
Nurses at district hospital level	379
Nurses at health centre level	1695
Community health workers	4469
Departmental and regional authorities, national supervisors	122
Health promotion technicians	262

OS 050

Challenges in coordinating the integration of mental health into primary care in urban Congo – a micro-level analysis

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In 2019, an initiative to integrate mental health (MH) into primary health care was implemented at the Tshamilemba Health Learning and Research Centre (CSART), in Lubumbashi (DRC), as part of a partnership between the Institute of Tropical Medicine in Antwerp and the School of Public Health of the University of Lubumbashi. The experiment took place in the context of insufficient provision of primary care, poor peer collaboration, and a largely supernatural perception of mental disorders.

The main objective was to promote equitable access to quality MH care, traditionally reserved for specialized structures. The response was based on the WHO MHGAP guidelines and followed the classic integration steps: planning, preparation and implementation. Emphasis was placed on building the capacity of a team of non-specialist providers (doctors, nurses, technical assistants), as well as promoting collaboration between them.

The CSART involved mental health specialists, families, community relays, traditional and spiritual healers, as well as the health zone's management team. However, coordination with traditional practitioners, who are beyond the authority of the formal health system, has been a major challenge. The lack of MH focal points within local and provincial health authority teams also hampered the process.

In the absence of other facilities offering MH care in the area, CSART has had to operate in relative isolation. Nevertheless, clinical integration has led to a better identification of patients' needs and an improvement in the quality of care in the centre. CSART's leadership has implemented a variety of strategies, including building a shared value system, reorganizing clinical services, and developing a framework to facilitate functional integration.

Applying the conceptual framework of Valentijn et al., this integration initiative has demonstrated that institutional integration is essential if we want to go beyond purely local success, but that integration into a weak health system is a major obstacle to achieving this. However, the integration of mental care into the general care package was feasible and added great added value for the well-being of the population and the centre.

OS 051

Primary health care and mental health practice in Guinea Conakry

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In 2000, a project supported by the European Union initiated a collaboration between FMG, an NGO with thorough experience in primary health care, and a specialized mental health centre, bringing together specialists in the field. The aim was to promote the integration of mental health into primary health care, offering it as a component of the general care package in community health centres.

A community approach actively involving families in identifying and motivating people with a MH problem, was initiated.

Joint consultations between mental health professionals and general practitioners promoted the transfer of skills and allowed for both medical and psychosocial care for people with mental disorders. The patients who benefited from these actions, as well as their families, organized themselves into an association to continue and strengthen efforts in this field.

A network of actors, including traditional healers, health centre caregivers, civil society organisations, as well as community members and patients themselves, were formed to bring mental health issues out of the shadow and address them collectively. Gradually, health district authorities got involved and skilled in supervision of these activities, while the central level set up a national mental health program. This program now has a strategic plan, the development of which is supported by FMG and some international NGO for the expansion of the experience on a larger scale.

Building on Pim Valentijn's conceptual framework of integrated care, this experiment highlights not only the potential of clinical integration of mental health in primary care, but also professional integration, involving a diverse network of actors committed to improving the management of mental disorders. The gradual involvement of state actors, both central and decentralized, will also make it possible to move forward at the institutional and political level to guarantee

more sustainability and the potential to achieve a national scale initiative for more impact.

OS 052
A national mental health strategy – the case of Rwanda
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Rwanda faces an exceptionally large burden of mental problems due to the consequences of the 1994 genocide. The national mental health survey (N=19110) showed a high prevalence rate of mental disorders with approximately 1 in 5 in the general population meeting criteria for one or multiple common mental disorders (Kayiteshonga et al, 2022).

In the aftermath of the genocide, Rwanda reviewed its health system and included mental health in the priorities of the national strategy for transformation. Thus, all new health policies from 1995 to the latest Health Sector Strategic Plan 2025-2029 paid specific attention to MH. These policies gave way to actions by both governmental and non-governmental agencies under the coordination of Ministry of Health showing the commitment of the national health authorities.

Over the last 3 decades, Rwanda has been able to integrate mental healthcare into primary healthcare services. Today all district hospitals in the country have a functional mental health unit; 82% of community health centres have designated mental health personnel (mental health nurse or clinical psychologist); all teaching hospitals have a mental health department staffed with a psychiatrist, psychologists, and mental health nurses. Training, mentorship and supervision of general practitioners at primary healthcare level contribute to increasing the access and quality of mental healthcare services. To guarantee access, mental health services are integrated in the package of services reimbursed by community-based health insurances. Mental health care is also provided in non-hospital settings such as schools and community forums by local associations and CHWs. Mental health professionals (psychiatrists, psychologists, mental health nurses, neurologists, social workers) are by now also trained locally as a key strategy for sustainable mental health services.

Mental health services in district-level hospitals and health centers reduced the pressure on 3 specialized mental health centers that received only between 15 and 20% of the total mental health consultation visits in Rwanda.

Looking at Valentijn et al.'s conceptual framework, the integration of mental health care in Rwanda tackled all aspects of integration. MH was introduced at all levels of care, including community care. The institutional and political reforms at all levels of the health pyramid created a robust care system supported by strong management and governance structures.

OS 053
Leishmaniasis in confict situations
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There is a strong association between incidence of leishmaniasis (cutaneous and visceral) and the occurrence of conflict and political terror. This association is mainly through a process of population displacement and health system deterioration. Population movement due to conflict is a main factor in increased transmission of leishmaniasis: non-immune people moving to endemic areas, or infected people from endemic areas moving to non-endemic areas where the sandfly vector is present, thus introducing the disease in new areas. Socio-economic factors such as poor housing and sanitation also play an important role. Public services such as waste collection are disrupted, and resulting open waste creates favourable conditions for sandfly vectors and animal reservoirs to thrive. Overcrowding in displaced camps may increase contact between vectors and humans..

Key to leishmaniasis disease control are provision of early diagnosis & treatment, and vector control. This requires functional health facilities with qualified staff, a stable supply of drugs, diagnostics and vector control materials, a surveillance system, and a technical support system. However, in armed conflict health infrastructures may be destroyed or damaged. Widespread fighting and insecurity will restrict access to the affected population as well as access from patients to healthcare facilities. Insecurity may result in a lack of medical expertise for implementation of diagnostic and treatment services. Lack of entomological knowledge makes it more difficult to decide what would be appropriate vector control strategies. The collapse of control interventions will create favourable conditions for sandfly vectors and for animal host reservoirs, resulting in increased disease transmission, especially in overcrowded situations of displacement and refugee camps. All these factors are contributing to high morbidity of leishmaniasis in conflict situations.

OS 054
Aetiology, diagnosis and treatment of noma – Latest news and lessons learned from MSF"s experience in Sokoto, Nigeria
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Noma (cancrum oris) is a rapidly progressing orofacial gangrene affecting malnourished children aged 2–5 years in settings marked by extreme poverty, poor hygiene, and limited access to healthcare. With an untreated mortality rate estimated at over 90%, noma remains one of the most neglected of neglected tropical diseases, with major gaps in research, surveillance, and policy response.

Since 2014, Médecins Sans Frontières (MSF), in partnership with the Nigerian Ministry of Health, has supported the Noma Children"s Hospital in Sokoto—providing acute medical care, rehabilitation, and community-based services for noma-affected children. This operational experience has generated key insights into the aetiology, clinical management, and broader public health challenges associated with the disease.

Noma"s aetiology remains poorly understood. It is increasingly recognised as a polymicrobial opportunistic infection linked to malnutrition, recent illness, lack of vaccination, poor oral hygiene, and low socioeconomic status. While previously identified organisms include *Fusobacterium necrophorum*, *Prevotella intermedia*, and *Treponema denticola*, recent pilot research by MSF and the University of Liverpool has identified a previously undescribed *Treponema* species consistently present in acute noma lesions, suggesting a potential role in disease pathogenesis.

Clinically, noma progresses through predictable stages: from gingivitis and necrotising gingivitis to oedema, gangrene, and severe facial destruction. Early recognition of reversible stages is critical for survival. Differential diagnoses include yaws, leprosy, oral cancers, and traumatic injuries, though the rapid tissue loss in noma remains distinctive.

MSF"s multidisciplinary management in Sokoto combines antibiotics, surgical debridement, nutritional rehabilitation, physiotherapy, psychosocial care, and reconstructive surgery where needed. Integration with malnutrition and vaccination programs has improved early detection and referral.

This presentation will outline clinical and programmatic lessons from MSF"s experience, emerging microbiological findings, and the operational challenges of delivering noma care in a fragile setting. It will also reflect on advocacy efforts—led by Nigeria and supported globally—that secured noma"s inclusion on the WHO list of neglected tropical diseases.

Noma remains both a clinical emergency and a marker of extreme inequity. Addressing it requires sustained investment in research, service delivery, and health equity for the most vulnerable children.

OS 055
Living with Noma in Sokoto, Nigeria
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Noma is a rapidly progressing and devastating orofacial gangrene. If untreated, it has an estimated mortality rate of up to 90%. The rare people surviving the acute phase of the disease are left with severe wounds, making it hard to eat, speak, see or breathe.

In December 2023, noma was officially recognised by WHO as the 21st Neglected Tropical Disease, increasing attention to better understand and treat the disease. Mrs Mulikat Okanlawon speaks in this session as someone who has experienced what many only study. She shares the inspiring and urging message that people with lived experience of noma and NTDs can contribute as equal stakeholders to advancing research, treatment and policy.

Mulikat survived noma as a child, and has dedicated her life to supporting other noma survivors, turning her experience into action. The initial infection destroyed the tissue on the left side of her face, affecting her mouth and her cheek up to her eye. As a teenager and young adult, she underwent several reconstructive surgeries and started to accept what happened to her. In parallel, she got her first job at the very hospital where she was treated and went back to school. In 2022, she co-founded *Elysium*, the first noma survivors" association, to amplify the voices of those who are too often forgotten or seen only as patients, subjects of studies or recipients of charity.

Today, Mrs Okanlawon shares her personal journey to challenge the global health community to address the underlying inequities causing preventable diseases like noma. Rather than providing answers, she is asking scientists, organisations and decision makers to reflect on their own role. She asks them: Are you truly listening to survivors? Are you including them meaningfully in our work? Are you committed to equity, not just in theory, but in practice? What are the concrete actions you are willing to take without further due?

This presentation offers a unique and necessary call to action focusing on the social aspects of tropical diseases, advocating for equitable approaches inspired by empathy, and celebrating the dignity and leadership of people with lived experience. From her work as a healthcare worker to her commitment as an advocate, Mrs Okanlawon emphasises the power of lived experience in shaping effective responses to NTDs while sharing a message of hope: There is ability in disability, and thanks to more awareness, noma can be eradicated.

OS 056
Access to diagnostics and drugs for the most neglected NTDs in fragile settings
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As people affected by Neglected Tropical Diseases (NTDs) typically belong to disadvantaged communities in low and middle-income countries, many NTD diagnostics and drugs are characterised by market failure. This has a dual negative impact: the tools that are on the market are prone to supply insecurity, with fluctuating availability and multiple quality issues, while innovations that would drastically improve diagnostic and treatment options are rare due to limited R&D funding for NTDs.

Shortages of tests and medicines for visceral leishmaniasis have been recurrent over the last decade. The situation is particularly acute in East Africa, where local conflicts, a lack of dedicated NTD funding, and importation constraints represent additional access barriers.

Access to antivenom is also very limited, particularly in sub-Saharan African countries with fragile health systems. Historically, poorly regulated African antivenom markets have been dominated by low-cost, low-quality products. As out-of-pocket expenses are the main source of antivenom financing, only a minority of snakebite victims can access effective treatment.

New product candidates in development for visceral leishmaniasis, snakebite and other NTDs should be made affordable for countries in need and incorporated into the list of essential products financed through universal health coverage programmes.

OS 057
Tackling visceral leishmaniasis in Sudan amidst on-going conflict?
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Sudan harbors the highest caseload of visceral leishmaniasis (VL) worldwide. With a national burden of 4,000-5,000 cases annually, the life-threatening parasitic disease remains a critical national public health challenge. Over 85% of cases are reported in Gedarif State eastern Sudan.

Sudan has been in conflict since 15th April 2023, and consequently there has been a marked lack of access to health care and frequent stock interruptions of essential medicines, including diagnostics and drugs for VL. This is extremely concerning, as left untreated VL has an average case fatality rate of 95%.

The control of VL in Sudan is run by the MoH neglected tropical disease (NTD) department, with additional support from Oriole Global Health, and funding from the End Fund. The MoH has rolled out various activities which are aimed to increase case finding and reduce mortality: training of health care staff; health promotion activities; active case finding;

interventions to improve reporting such as the introduction of DHIS2 line listing; mobile mentoring teams, coordination meetings and a hotline for clinical advice. Despite the successful implementation of these activities, there are indications that many VL patients do not have access to diagnosis and treatment, and consequently there is a concern of high mortality due to VL in communities.

In the absence of routine monitoring of VL, this presentation will report the results of a recent field investigation

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OS 058
Strengthening Early Warning of West Nile Virus in Italy Through a One Health Approach
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West Nile virus (WNV) is one of the most significant vector-borne zoonoses in Italy, where it has become endemic in the Po Valley and other regions. Italy has progressively developed a One Health integrated surveillance system that combines veterinary (animal and mosquitoes) and human surveillance. Climatic and environmental monitoring is also included as a complementary component of these activities. The surveillance strategy is based on intersectoral collaboration among local veterinary services, public health authorities, entomology centers, and regional institutions. Its primary objectives are the early detection of viral circulation in new areas and the timely activation of preventive measures based on risk communication, vectors and the Substances of Human Origin (SoHO) control. The integrated approach combines routine testing of mosquitoes, wild birds, and syndromic surveillance in humans and horses, supported by rapid communication and data sharing across sectors. In recent years, the system has been further enhanced through the integration of climatic and environmental Earth Observation (EO) data. Variables such as Land Surface Temperature (LST), the Normalized Difference Vegetation Index (NDVI), Soil Moisture (SSM), and rainfall have been incorporated into predictive models. The application of machine learning to surveillance and EO data has demonstrated strong predictive capacity, enabling the identification of areas suitable for WNV circulation up to two weeks in advance. This environmental dimension strengthens the overall framework, consolidating the surveillance system as a truly effective early warning tool.

OS 059
Global epidemiology and risk factors for stroke and the case example of Nepal
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Background: Stroke remains a leading global cause of death and disability, with an increasing burden in low- and middle-income countries (LMICs). Nepal exemplifies this trend, facing unique challenges in prevention, early detection, and management. This presentation explores global stroke epidemiology and risk factor patterns, with a focus on the Nepalese context.

Methods: A literature review was conducted using peer-reviewed sources (2019–2025) from PubMed, Embase, local databases, the Global Burden of Disease (GBD) study, national health surveys, and hospital-based data. The review analysis global and regional data on stroke incidence, mortality, and risk factors, with a detailed focus on Nepal.

Results: Stroke causes ~7 million deaths annually, with incidence rising 70% and mortality 43% since 1990—mostly in LMICs. By 2050, stroke deaths are projected to rise by 50%, with LMICs bearing over 75% of the burden. ICH accounts for nearly half of stroke-related DALYs, predominantly in Asia-Pacific regions.

In Nepal, community surveys report stroke prevalence (2,368–2,967/100,000) higher than GBD estimates. GBD data indicate an incidence of 84/100,000 and mortality of 55/100,000. Ischemic strokes account for 63% of hospital cases; mean age at onset is ~62 years. Hypertension is the most common risk factor (75–82%), followed by smoking, alcohol, diabetes, and severe urban air pollution. Most risk factors are modifiable.

Conclusion: The global rise in stroke burden is particularly pronounced in LMICs. Nepal illustrates this trend through high hemorrhagic stroke rates, a young average age at onset, and a risk profile dominated by modifiable factors. Effective strategies must prioritize hypertension control, environmental interventions, and strengthened acute and rehabilitative care.

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OS 060
Setting up a System of Care: A Bottom-Up Approach through Hospital Partnership
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Background: Stroke care in Nepal faces systemic challenges, including limited infrastructure, a lack of standardized protocols, and fragmented services. In response, the Nepal Stroke Association (NSA), in partnership with the Department of Neurology at University Hospital Heidelberg, launched the Nepal Stroke Project in 2021. Supported by the GIZ Hospital Partnerships program and funded by the Federal Ministry for Economic Cooperation and Development (BMZ) and the Else Kröner-Fresenius Foundation (EKFS), the project aims to build a sustainable and scalable stroke care system through hospital-level capacity building.

Methods and Implementation: The project follows a bottom-up approach, focusing on the development of 20 stroke-ready hospitals across Nepal. Key activities include site visits, clinical workshops, nurse training, and regional masterclasses. To support data-driven improvement, the standardized reporting platform Res-Q is being introduced across participating sites. Public and professional awareness campaigns further promote early recognition and timely response to stroke. A binational steering committee coordinates implementation, facilitates timeline adherence, and engages with healthcare leadership and policy stakeholders. The partnership also fosters ongoing research, professional exchange, and educational opportunities.

Conclusion: he Nepal Stroke Project illustrates how local engagement, structured capacity building, and international collaboration can drive systemic improvement in stroke care. Its integrated, participatory model offers a transferable framework for advancing care in other resource-limited settings.

OS 061
Clinical Experience in Setting Up Stroke Systems: Lessons from the Nepal Stroke Project
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Introduction: Stroke is a major cause of death and disability in low- and middle-income countries (LMICs), where health systems often lack the infrastructure, protocols, and trained personnel necessary for timely and effective care. In Nepal, challenges such as delayed symptom recognition, limited access to imaging, and logistical constraints hinder the implementation of evidence-based stroke treatment. In response, the Nepal Stroke Project was initiated to develop an integrated, context-adapted stroke system across selected hospitals and regions, with the goal of improving acute care and long-term outcomes.

Methods and Implementation: The project aimed to develop a scalable stroke care system through a combination of multidisciplinary training, infrastructure development, workflow optimization, and data monitoring. Capacity building involved targeted training of emergency physicians, nurses, radiologists, and hospital administrators. Stroke-ready hospitals were established, supported by standardized protocols for stroke alerts and thrombolysis. To streamline acute care, prehospital notification systems were introduced, alongside efforts to reduce door-to-imaging and door-to-needle times. Continuous data monitoring was implemented using local stroke registries and audit-feedback cycles. Additional efforts included the creation of referral pathways for mechanical thrombectomy in urban centers and the integration of post-stroke care components such as rehabilitation planning and caregiver education.

Conclusion: Despite systemic barriers—including workforce shortages, unreliable imaging access, and limited public awareness—the project demonstrates that stroke systems can be developed in resource-constrained settings through pragmatic adaptation of guidelines, strong local leadership, and stakeholder collaboration. Early indicators show improvements in thrombolysis rates, acute care timelines, and interdisciplinary coordination. The Nepal Stroke Project offers a replicable model for LMICs seeking to implement cost-effective, scalable stroke systems rooted in local ownership and sustainable practices.

OS 062
Challenges in Community Stroke Awareness in LMICs and the Role of Community Engagement
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Introduction: Stroke is a leading cause of death and disability worldwide, with a disproportionate burden in low- and middle-income countries (LMICs). Despite its preventability, public awareness of stroke symptoms, risk factors, and the urgency of treatment remains critically low in many LMIC settings. Contributing factors include limited health literacy, scarce resources, cultural misconceptions, and weak healthcare infrastructure. These challenges hinder early recognition and timely intervention, both of which are crucial for reducing stroke-related morbidity and mortality. Community engagement and digital strategies have emerged as promising approaches to address these barriers by delivering health information in accessible, culturally relevant, and scalable ways.

Methods and Implementation: Evidence is drawn from community-based hypertension and stroke awareness programs in India and Colombia, which employed community health workers (CHWs) using culturally tailored protocols and mobile health tools to improve outreach and risk factor management. In Nepal, the Nepal Stroke Project (NSP) has implemented a hybrid strategy since 2021, combining targeted digital campaigns with grassroots education. Over 3 million people were reached via social media using standardized messaging (e.g., BE-FAST), while in-person events educated hundreds of community members and healthcare providers. Building on this, the SPACE initiative (Stroke Prevention and Awareness through Community Engagement using e-Health) was launched to deliver video-based stroke education in Nepal and Brazil. The approach uses visual storytelling to address literacy barriers and engages communities through co-developed content and facilitated discussions.

Conclusion: Stroke awareness efforts in LMICs benefit from combining community-based engagement with innovative digital tools. The success of interventions like NSP and SPACE depends on contextual adaptation, sustainable integration with health systems, and avoidance of overburdening CHWs. Future strategies must align with national health policies to ensure equity, scalability, and long-term impact in stroke prevention.

OS 063
Sustainable Knowledge Transfer and Establishment of a Stroke Master Program
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Background: Stroke is a leading cause of morbidity and mortality worldwide, with low- and middle-income countries (LMICs) facing major challenges in accessing specialized care and training. Key barriers include gaps between knowledge and practice and the lack of structured, context-adapted education for healthcare professionals. The development of a Stroke Master Program aimed at providing advanced, sustainable training for healthcare professionals in stroke medicine, drawing on experiences from the Nepal Stroke Project might bridge these gaps and improve long-term outcomes. The program should equip clinicians with updated knowledge and practical skills to strengthen stroke care capacity in LMICs.

Methods: To design such a program, published evidence and qualitative interviews with healthcare providers involved in stroke care across Nepal, should be combined. These interviews highlighted the importance of repeated, modular training and a blended learning approach combining various educational methods, while the curriculum needs to target a broad range of healthcare professionals and cover essential aspects of stroke care. Effectiveness should be evaluated through participant feedback and assessments exploring changes in clinical practice.

Expected Outcomes: Evidence from Tanzania suggests that structured capacity-building initiatives supported by

international collaboration and standardized protocols can improve clinical practice and establish stroke units despite resource constraints (Matuja et al., 2025). In Nepal, a national stroke training initiative trained over 1,000 healthcare workers and formed stroke teams, but challenges such as staff turnover, limited awareness of time-sensitive interventions, and restricted access to advanced therapies remain (Tunkl et al., 2023). Interviews emphasized the need for repeated modular training and blended learning, with internships highly valued but limited by logistical and financial barriers.

Conclusion / Implications: The proposed Stroke Master Program should offer a scalable, adaptable model for sustainable knowledge transfer in stroke care. By integrating local expertise and flexible blended learning, it could address real-world barriers and knowledge gaps in LMICs. This approach may serve as a blueprint for capacity building in other specialties and resource-limited regions, advancing global efforts to reduce disparities in stroke outcomes through international collaboration and context-sensitive education.

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OS 064
Strengthening national Rapid Response Mobile Laboratory (RRML) capacity – A case study from Belgium

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The global public health landscape demands agile response mechanisms for infectious disease threats. This abstract showcases **B-LiFE (Biological Light Fieldable Laboratory for Emergencies)**, a WHO-classified **Type 2 Rapid Response Mobile Laboratory (RRML)** from Belgium. Established in 2009, B-LiFE embodies a comprehensive approach to bolstering national and international capabilities for biological threat detection, identification, and monitoring (DIM).

B-LiFE serves as a vital **operational platform**, providing critical support during public health emergencies. Its deployment in diverse crises, from Ebola to COVID-19, underscores its adaptability and crucial role in rapid response. Continuous integration of **cutting-edge technologies** ensures B-LiFE's ongoing relevance and efficacy.

Beyond operations, B-LiFE acts as a dynamic **technological incubator**, rigorously validating innovative tools for field use, including advanced biothreat detection and resilient communication systems. Furthermore, it plays a key role in **capacity building** through **just-in-time training (JiTT)**, equipping local staff with practical skills. Participation in international exercises and EU projects like eNOTICE-2 solidifies its commitment to global preparedness, emphasizing secure data management and robust telecommunication. B-LiFE exemplifies how national RRMLs significantly contribute to global health security.

OS 065
The role of RRML in the public health response to the health crisis – Example from the field with the international deployment in Mayotte, France

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On December 14, 2024, cyclone Chido severely affected Mayotte (France), destroying water supply systems and compromising sanitation facilities. This situation quickly raised concerns about the risk of epidemics, mainly waterborne diseases such as cholera and diarrheal diseases, as well as other infectious diseases, exacerbated by high temperatures, overflow and poor living conditions.

To address this situation, national and local health authorities contacted WHO on December 24, 2024, to formally request assistance from the Rapid Response Mobile Laboratories (RRML) network, and a multinational team was formed on December 31 under the umbrella of GOARN. This team was composed of members from various institutions, with WHO Europe acting as coordinator, the Institut Pasteur, Paris (France) as technical team leader, the Leipzig University (Germany), the Université Catholique de Louvain (Belgium) and the Ministry of Health of Israel.

Given the complex and evolving situation on site, the objectives of this deployment were exceptionally broad in the context of the RRML response. Two priority requests were raised: 1) environmental analysis of water quality, including chemical testing, and 2) surveillance of waterborne diseases through microbiological analysis of drinking water. In addition, two additional non-priority requests were also made, in case of difficulties encountered by local medical facilities, with 3) support for malaria and arbovirus surveillance and 4) support for clinical diagnosis, particularly for waterborne pathogens and arboviruses. A first team arrived on site on January 15, 2025, for a period of nearly 15 days, then was partially replaced during the first rotation for an additional 15 days, which allowed for adjustments of needs on site. The end of this mission, totaled 45 days, was carried out by the coordinator and the technical leader.

The implementation of this deployment, unique in its range of activities and international composition, provided an opportunity to assess the advantages and limitations of this new expanded diagnostic approach in the field, while ensuring the completion of the public health assistance missions requested.

This experience will also serve as a source of inspiration and reflection in the context of the current implementation of the GOARN Strategic Group for Diagnostic Surge Capacities (GOARN DiSC), which brings together RRML network activities and aligns them with One Health approach.

OS 066
Integrating RRMLs into national health system – Lessons learned from South Asia

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In the past hundred years more than 15 epidemics / pandemics at global, regional and country level occurred causing at least one million deaths and devastating impact on national, regional and global economy. The Covid-19 pandemic started in 2019 and as of 2025 caused 37 million deaths globally. Further ongoing epidemics by Tuberculosis, Malaria, HIV, Dengue, Hepatitis B, Hepatitis C and remerging

epidemics by Avian Influenza, Mpox, Cholera are threat for new pandemic due to climate change, urbanization, increased international travel and trade.

Bangladesh is the most densely populated country in South Asia. It is highly endemic for Dengue, Malaria, Visceral leishmaniasis and Diarrheal diseases. Since 2019 Bangladesh is having big outbreaks of Dengue with 300,000 cases annually and thousands of deaths. The serological test NS1Ag is only 80% sensitive for detection of primary Dengue and even less for diagnosis of secondary Dengue. Further, the disease now has spread all over the country. Therefore cost-effective, user-friendly and portable point-of-care / point-of-need molecular diagnostic(s) and their integration into the heath system is the first priority for containment of any outbreak like Dengue.

Rapid Response Mobile Laboratory in suitcase (RRMLs) paved the way to fill up this gap. It is portable, robust, air-tight, dust-tight, waterproof, independent of local facilities & external power supply. Its size and weight comply with the international air transport policies. RRMLs is validated as a highly sensitive and specific POC for detection of Dengue, Visceral leishmaniasis and Diarrheal diseases in Bangladesh. Lab officers and technicians from the health system of Bangladesh are trained as trainer of the trainee (ToT) in using RRMLs for diagnosis Dengue fever, Visceral leishmaniasis and Post-Kala-azar Dermal Leishmaniasis. Key institutions in Bangladesh, responsible for rapid response to eventual outbreak are also equipped with RRMLs. Hence, integration of RRMLs into the health system is feasible. The challenge is to sensitize the policymakers for sustainability of this achievement where international partnership is highly required.

OS 067
Effective RRML deployment strategies in resource-limited settings – Experiences from West Africa
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The recurring re-emergence of viral hemorrhagic fevers (VHF) make them a public health problem in Africa, but also a threat to Europe and developed countries regarding the increasing numbers of imported cases and the potential VHF agents for bioterrorism. Viral hemorrhagic

fever (VHF) diagnostics in Africa are difficult due to distances. Few specialized laboratories are available, and sent samples to these references labs is difficult. Thus, time to result can be very long which can impact the control measures implementations, as the huge outbreak of Ebola virus disease (EVD) in West Africa has shown. The challenge is to take the laboratory into the field for early detection and response in simple infrastructure settings independent of electricity supply and cool chain. Field deployment of classical methods such as virus isolation and serological assays is not required for diagnosis of acute disease. Therefore, portable, accurate, simple, and rapid tests are needed to detect the virus at the spot-of-infection. In this study, we set out to develop mobile molecular platforms for VHF diagnostics in outbreak situations in remote area by using Real time PCR and real-time recombinase polymerase amplification (RT-RPA). During the West Africa Ebola outbreak, field trail with PCR and RPA tests deployment were successful using dry stabilized reagents and solar power generators.

Indeed, Institut Pasteur de Dakar laboratory is a WHO-approved collaborating Centre and was the first deployed laboratory to Conakry after the declaration of the disease. The IPD laboratory played important roles in i) diagnostics in Guinea and tested 55% of all samples in the country, ii) better understanding of transmission chains in Conakry and the molecular evolution of the virus during the outbreak and iii) improvement of burial management and community engagement by developing a rapid test.

OS 068
Bridging policy and practice gaps in AMR surveillance across LMICs through real-time detection of substandard and falsified antimicrobials
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Antimicrobial resistance (AMR) is a critical global health threat, especially in low- and middle-income countries (LMICs), where it caused 1.27 million deaths and was associated with 4.95 million deaths in 2019 (Murray et al., 2022). A major driver is the prevalence of substandard and falsified (S/F) antimicrobials. According to WHO, 10% of medical products in LMICs are S/F, with antibiotics among the most affected (WHO, 2017).

National Medicines Regulatory Authorities (NMRAs) in many LMICs face regulatory challenges—limited funding, weak enforcement, insufficient lab infrastructure, and poorly controlled informal pharmaceutical markets. For example, in Nigeria, over 60% of medicines are sold in unregulated settings (EPN, 2023). Although over 90 countries have AMR action plans, fewer than 25% of LMICs include pharmaceutical quality surveillance (Tripartite AMR Country Self-Assessment Survey, 2023).

To address this, the Ecumenical Pharmaceutical Network (EPN), with Difaem, uses GPHF Minilabs to support decentralized drug quality monitoring and advocacy in 13 LMICs. These Minilabs conduct visual inspections, disintegration tests, and thin-layer chromatography (TLC) to assess antibiotics and essential medicines. Between 2019 and 2023, over 7,000 samples were collected from markets, pharmacies, and hospitals and, when failing screening, referred to the WHO-prequalified MEDS lab in Kenya for high-performance liquid chromatography (HPLC) testing. Findings were shared with NMRAs.

In 2023, of 1,347 samples tested, 46 (3.2%) failed screening. Most (81.6%) were antimicrobials: antibacterials (55.6%), antimalarials (20.4%), antimycotics (3.7%), and antihelmintics (1.9%). Substandard common antibiotics such as amoxicillin and ciprofloxacin were found in Uganda and Tanzania, prompting WHO Medical Product Alerts.

EPN"s Minilab approach demonstrates the value of real-time, decentralized surveillance in identifying S/F medicines and mitigating AMR. To scale impact, efforts must be integrated into national AMR strategies, supported by stronger lab infrastructure, expanded coverage in underserved areas, and enhanced regulatory coordination. Pharmaceutical quality monitoring is essential for combating AMR and restoring trust in LMIC health systems.

OS 069
Enhancing global health security in LMICs through clinical microbiology and innovative diagnostics to combat antimicrobial resistance
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Antimicrobial resistance (AMR) is a growing global health threat that severely undermines the efficacy of life-saving antimicrobials (AM) and jeopardizes modern medical care. Nowhere is this crisis more acute than in low- and middle-income countries (LMICs) where fragile health systems and limited diagnostic capacity hinder timely detection and management of resistant infections. Robust clinical microbiology and innovative diagnostic strategies are indispensable tools for combating AMR. In LMICs, however, systemic challenges—such as under-resourced laboratories, inadequate personnel training and inconsistent access to quality diagnostics—continue to limit effective surveillance and antimicrobial stewardship.

A comprehensive systematic review and meta-analysis of AMR in Rwanda across One Health domains—human, animal, and environmental—underscores the urgency of the problem. Among 29 eligible studies, multidrug-resistant (MDR) bacteria had a pooled prevalence of 46%, with rates as high as 51% in human isolates. Extended-spectrum beta-lactamase (ESBL) production reached 40%, and methicillin-resistant Staphylococcus aureus (MRSA) stood at 44%. Escherichia coli and Klebsiella pneumoniae, the most frequently isolated pathogens, exhibited alarming resistance to first-line treatments such as ceftriaxone, ampicillin, and co-amoxiclav. Resistance was higher in hospital-acquired infections than in community-acquired infections, highlighting the urgent need for stronger infection prevention and control measures. The findings also underscore the paucity of data on AMR in animal and environmental compartments, emphasizing the necessity of a One Health approach to integrated surveillance and policy action.

To close the gap, scalable, rapid, and affordable diagnostic tools tailored for resource-limited settings must be prioritized. Investments in laboratory infrastructure, workforce capacity, and digital data systems are essential to strengthen clinical microbiology and ensure early AMR detection. Aligning these efforts with national action plans and global frameworks can enable data-driven decisions, coordinated interventions, and equitable access to effective treatments.

Ultimately, addressing AMR in LMICs requires a multi-sectoral strategy that integrates innovation, health system strengthening and One Health principles. By empowering LMICs with the tools and systems they need, we can safeguard AM efficacy and enhance global health security for future generations.

OS 070
Veterinary perspectives on AMR – Integrating animal health and human health
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Background: The use of antimicrobial agents (AMA), considered as an essential component of veterinary practice, include treatments, prevention and growth promotions in farm animals. The emergence of antimicrobial resistance (AMR) threatens the effectiveness of current antibiotics. Moreover, AMR can spread from animal hosts to the environment and then to humans through horizontal gene transfer of Antimicrobial resistant genes (ARGs) and emergence of zoonotic strains of microorganisms. Furthermore, AMA can change the microbial community of body surfaces thus enabling resistant and virulent clones to flourish.

Current situation: Several evidences have emerged over the association between the use of AMA in animals or the occurrence of ARG in animal host isolates of bacteria to the emergence of AMR in humans who are closely associated with animals, but there are also reports of human to animal transmission of resistant organisms. Foodborne pathogens such as non-typhoidal Salmonella, *E. coli*, *Campylobacter jejuni*, *Listeria monocytogenes* are among the most frequent AMR organisms transmitted to humans from animals. On the other hand, methicillin resistant *Staphylococcus aureus* and *Clostridium difficile* may be transmitted from animals to humans and vice versa through the environment or direct contact.

Proposed solution: The transmission pathways for the exchange of AMR/ARGs are complex and only whole genome analysis of the organisms can clarify the sources and patterns of AMR spread within a given community. Surveillance of AMR in animals, environment and human populations are required to provide information that can be used in the control of the spread of AMR. In addition, emphasis on judicial and response stewardship of antibiotics in veterinary and medical practices combined with promotion of disease prevention strategies are the key to the control of AMR spread. Finally, there is need for more research on the use of probiotic organisms for management of common enteric infections in poultry, pig and calf management to reduce reliance on AMA.

Conclusion: There is need for a One Health approach by professionals in animal, human and agriculture and environmental Health to address the problem of AMR.

OS 071
NCD Public Health System Challenges in Crisis Settings
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Armed conflict and displacement exacerbated the burden of non-communicable diseases (NCDs) by disrupting already fragile health system in Ukraine. The war has significantly increased challenges in accessing prevention, diagnosis, and treatment for cardiovascular diseases, diabetes, cancer, chronic respiratory diseases, and mental health disorders. Vulnerable and hard-to-reach populations face the highest risks, contributing to premature mortality and undermining community resilience.

Continuity of NCD care is critical to reducing excess mortality during crises, as disruptions in treatment and follow-up can have severe consequences for patients with chronic conditions. Strengthening primary health care and supporting the resilience of the health workforce are essential for maintaining service delivery under pressure. Effective ways to reach the most vulnerable populations shall be identified to ensure that care is both equitable and responsive to community needs. Finally, integrating NCD prevention and management into broader health reforms is key to building sustainable systems that can withstand future shocks and extend beyond immediate crisis response.

This presentation will:

1. Highlight key NCD-related challenges in crisis-affected health systems based on Ukraine"s case.

2. Examine Ukraine"s experience in maintaining NCD services during war.

3. Address the intersection of NCDs and mental health in conflict settings.

4. Explore integration of NCD prevention and management into crisis preparedness and health system reforms.

5. Review service delivery challenges, workforce resilience, and opportunities for innovation amid the full-scale war in Ukraine.

Ukraine"s experience underscores the urgent need to embed NCD prevention and care into crisis response frameworks. Lessons learned can inform global strategies to strengthen health systems, promote equity, and protect populations from the dual burden of conflict and chronic disease.

OS 072
NCD Prevention and Management – Community-Based Programs during Post-War Recovery
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In post-war recovery settings, health systems are frequently overstretched, resources are scarce, and decision-making structures are fragile, leaving the prevention and management of non-communicable diseases (NCDs) particularly vulnerable to neglect. Nevertheless, NCDs represent a substantial and growing share of the disease burden, threatening both population health and the long-term stability of health services. During times of armed conflict or its aftermath, the situation for people with NCDs often deteriorates further: routine treatment and medication may be unavailable, access to health facilities is disrupted, and individuals are more likely to adopt risk-increasing behaviors such as smoking, poor diet, or physical inactivity. Mental health challenges - including stress, trauma, displacement, and loss of social networks - amplify these risks by driving unhealthy coping mechanisms and complicating the management of chronic conditions.

In this context, community-based programs offer an important opportunity to address NCD challenges in a cost-effective, culturally sensitive, and sustainable way. By focusing on preventive activities the interventions can reduce demand on already limited curative services and prevent complications from chronic illnesses. Community-driven approaches also ensure continuity of care for patients with chronic conditions, mobilize local resources, strengthen social support networks, and foster resilience in contexts where institutional capacity remains weak or fragmented.

Despite persistent barriers - including fragile policy frameworks, disrupted supply chains, workforce shortages, and limited funding - the growing body of evidence suggests that community-based NCD prevention and management can play a pivotal role in reducing long-term health burdens. When implemented effectively, these programs not only improve individual and population-level health outcomes but also contribute to the reconstruction of functional, resilient health systems capable of responding to both chronic and acute health needs in post-war settings.

OS 073
Strengthening Mental Health in Primary Care: The Growing Role of GPs After mhGAP Implementation in Ukraine
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The decision to implementatmhGap in primary health care in Ukraine in 2019 and supported by WHO was timely and strategic, because at that time Ukraine did not have its own program on mental health.

In 2022, russia's full-scale invasion in Ukraine began, following war since 2014 and Coronavirus pandemic. The impact on the mental health of Ukrainians has been catastrophic, and this applies not only to refugees, internally displaced persons, people who were in temporarily occupied territories, those who were subjected to torture, rape (including children)by russian troops, and had injuries related to hostilities, but also to every civilian who is in a relatively calm area, which nevertheless suffers daily attacks by drones, ballistics, and missiles. Not to mention military personnel and their families, that need special attention and support from now on.

So it is critically important for Ukraine to have the opportunity to receive high-quality modern evidence-based mental health care everywhere - from first-contact services to specialized psychiatric care facilities.

Results:

8,342 medical professionals completed offline training

More than 27 international and Ukrainian partner organizations joined the implementation thanks to a successful communication strategy, including WHO, World Bank, Medico del Mundo, International Medical Corps, Government of Switzerland and others.

An online course was created, which was completed by over 127 000 medical and other professionals, educators, psychologists

Drugs for mental disorders treatment were included in the «Dostupni liky»(Affordable Medicines) - program, which provides continuous access to medications free of charge or with small ouf-of-pocket payments based on an electronic prescription from a doctor.

A nationwide program "How are you?" was created with the support of the First Lady of Ukraine Olena Zelenska

Ukraine has taken a course to increase self-help, informal services in communities and mental health services at the primary level, while reducing the number of long-term care facilities and so-called residential institutions, as the emphasis is on reintegration of a person into the community as soon as possible.

OS 074
Building Resilience in Wartime: Lessons from Ukraines Primary Healthcare System
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Primary healthcare, according to the WHO Frameworks and recommendations, should be one of the most well-supported healthcare spheres in general. During war, primary healthcare shows that it can be one of the most efficient and well-used systems, also.

So what are the strongest parts of primary health care, which help during the russian war in Ukraine? One of the strongest parts is the horizontal connections. Primary health care physicians are used to connecting with each other in order to help their colleagues and patients. Another strong part is thinking about the needs of people, not their diagnoses or the needs of the system, and acting accordingly to them. One more strong thing is that PHC physicians are flexible, can easily learn new things, and use them. And finally, primary care physicians can do more than others, and they are trained to do it.

In this section, we are going to reflect on these and many other strong parts of PHC, which can help and are helping during war.

OS 075

Beyond *Strongyloides stercoralis* – Clinical presentations of anthroponotic and zoonotic strongyloidiasis in the UK Armed Forces

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Question: Military populations are at high risk of *Strongyloides* infection due to deployment to endemic regions and occupational exposure to contaminated soil. Infections, often asymptomatic for decades, have been documented post-deployment and have led to deaths amongst veterans. The UK Armed Forces recruits many personnel from *Strongyloides*-endemic countries and frequently deploys to endemic regions. This study investigates the prevalence of strongyloidiasis across four UK military sub-populations.

Methodology: Samples were collected from four groups:

1. Personnel who recently migrated from Nepal (N = 2,263).

2. Personnel who migrated from Fiji (N = 250).

3. Personnel who had recently completed jungle training in Brunei (N = 119), tested at 2 and 12 weeks post-return.

4. Personnel who had historically undertaken jungle training in Brunei (N = 68).

Participants provided a blood sample for *S. stercoralis* IgG ELISA and eosinophil count, and a stool sample for microscopy, charcoal culture, and qPCR.

Results: *Strongyloides* infection was identified in all study groups. Among Fijian migrants, 35.1% (87/248) were seropositive, and 9.5% had a positive faecal result. Dermatological symptoms were more common in those testing positive (OR 3.44). Among personnel recently returned from Brunei, 47.4% (55/116) tested positive. Serological testing showed low sensitivity (16%) at 12 weeks, and sequencing identified *Strongyloides fuelleborni*. Of those with historical Brunei exposure, 17.6% (11/68) had a positive result, with sequencing again confirming *S. fuelleborni*. *S. fuelleborni* infections had persisted for over five years in some individuals.

Conclusions: This study provides novel insights into Strongyloides infections in UK Armed Forces personnel. It is the first to assess prevalence among Nepalese and Fijian migrants and constitutes the largest global dataset on imported *S. fuelleborni* infections. It highlights the limitations of current serological diagnostics and demonstrates for the first time that *S. fuelleborni* can persist in humans for over five years. These findings reveal a burden of strongyloidiasis in the UK military, informing policy changes and increasing awareness of this neglected tropical disease.

OS 076

A point-of-care IgG4 test to assist in the *Strongyloides* control program

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A good diagnostic tool is required for the success of a *Strongyloides* control program, which is part of the WHO's soil-transmitted helminth control programs. Diagnosing the infection is challenging due to the lack of a gold-standard test and the low and intermittent presence of *Strongyloides* larvae in the stool. Serology is often used in diagnosis despite some limitations. A rapid, field-applicable serological test would be ideal for supporting the control program. The presentation will describe a prototype point-of-care lateral flow test that uses recombinant NIE antigen and specific IgG4 detection. The rapid test has been independently evaluated in several countries, including Southeast Asia (Malaysia, Thailand), South America (Brazil, Argentina), Italy, and Iran. It has also been applied to populations of people with cancer, diabetes, and chronic kidney disease. Overall, the rapid test demonstrates good diagnostic performance, with a sensitivity of 80-97% and a specificity of 90-100%, and is promising in addressing the need for a rapid test for *Strongyloides* infection.

OS 077

Molecular methods for clinical diagnosis and surveillance of Strongyloides infections

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Molecular methods for the diagnosis of Strongyloides stercoralis infections have been used in several countries reporting differences in performance depending on the reference technique used and the setting in which the study was conducted. Although in the first publication the overall sensitivity of the PCR was 61% it became apparent that this associated in baermann and copro culture discrepant samples. This was later confirmed in other settings for example in Mozambique in which the sensitivity of four different microscopy techniques was 69% as compared with PCR with a sensitivity of 92%. Real-time PCR has also proved to be a valuable tool in monitoring the effect treatment. Combined with other (helminth) targets in a multiplex PCR makes molecular diagnostics more and more feasible in a routine laboratory. Although other molecular methods such as LAMP, digital PCR and metagenomic Next Generation Sequencing applications are also finding their way as diagnostic tools they are not yet so much implemented in the

routine setting. In conclusion, Strongyloides stercoralis real-time PCR is an efficient tool for the diagnosis of strongyloidiasis and monitoring treatment efficacy.

OS 078

S. stercoralis and S. fuelleborni, a tale of two worms – Insights from a novel qPCR

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Question: Strongyloidiasis, primarily caused by *Strongyloides stercoralis* and occasionally by *S. fuelleborni*, is a neglected tropical disease affecting millions worldwide. Accurate diagnosis is essential for effective control and surveillance, yet current molecular assays often lack species specificity, making it difficult to distinguish between these two species. This limitation creates a blind-spot in epidemiological studies, particularly those focused on zoonotic transmission.

Method: To address this, we developed and validated a novel duplex real-time PCR (rtPCR) assay that uses species-specific TaqMan® probes targeting the cytochrome b gene to differentiate *S. stercoralis* from *S. fuelleborni*. These new primers and probes were optimised against well-characterised positive controls and later trialled on 98 clinical samples originating from 15 countries across covering three continents (S. America, Africa and S/S.E Asia).

Results: Our assay demonstrated high specificity with no cross-reactivity and a DNA detection limit of 1 pg/µL. Further the clinical validation using 98 samples confirmed 54 positive cases, comprising 36 *S. stercoralis*, 16 *S. fuelleborni*, and two mixed infections. Significantly, *S. fuelleborni* was detected in samples from Brunei, Malawi, and Italy, suggesting a broader geographical distribution than previously recognised and highlighting the need for targeted epidemiological interventions. Our novel duplex assay was less sensitive than the existing genus-specific assay, showing an average Ct difference of +3.7 cycles, which may explain the 44/98 clinical samples that failed to produce a positive result. Despite this limitation our assay fills a critical gap in diagnostics and to balance sensitivity with specificity, we propose a two-step diagnostic protocol: initial screening with the genus-specific assay, followed by species-level confirmation using the duplex assay.

Conclusion: This approach provides a clearer understanding of species distribution and zoonotic potential, thereby informing more effective control strategies. Continued efforts to improve assay sensitivity and broaden surveillance are warranted to support the WHO"s 2030 goals for neglected tropical diseases and to better understand the epidemiology and transmission dynamics of both *S. stercoralis* and *S. fuelleborni*.

OS 079

Strongyloidiasis in UK and in Malawi – Developing a One Health appraisal

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In this presentation, I highlight ongoing work on the molecular epidemiology of the parasitic nematode *Strongyloides fuelleborni* where our attention upon this threadworm was first sparked in 2021 by its unexpected detection within a semi-captive troop of baboons managed at Knowsley Safari, UK. To the best of our knowledge, our report is the most northerly maintained population of *S. fuelleborni* which raises several important questions about its short- and long-term environmental transmission dynamics. Upon a recent genomic analysis with NGS methods, putative molecular adaptations were identified inclusive of peculiar genetic polymorphisms such as several expanded intragenic regions of its mitochondrial genome; further phylogenetic analysis with 18S rDNA regions helped to reveal a deep evolutionary split between African and Asian worm populations. As part of my PhD studies, I will present recent surveys at Knowsley Safari and in Malawi, the latter incriminates vervet monkeys as local hosts which perhaps enable sporadic infections in children. Looking ahead, I hope to better reveal this threadworm"s zoonotic potential(s) and actual spillover(s) from non-human primates, to improve our epidemiological perspectives.

OS 080

Analysis of the availability of eleven tracer medicines in the public health districts in Mauritania, in the context of the implementation of the National health insurance scheme

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Background: Access to quality medicines is a major public health challenge in sub-Saharan Africa. In response, Mauritania has taken a step forward by launching the National Health Insurance Fund for the Informal Sector (CNASS) in 2023. This innovative and voluntary scheme is designed to improve health coverage for workers in this sector. The effectiveness of this initiative hinges on ensuring uninterrupted access to essential quality medicines, particularly to tracer medicines (TM). Thus, we conducted a study to assess the availability of eleven key TM in the public health facilities participating in the CNASS program in Mauritania.

Methods: A standardised medicines availability survey developed by the WHO and the HAI was adapted and used for data collection at aiming to assess the availability of eleven TM in 33 health facilities across five health districts, in March 2022 and October 2024. The institutional support for the health sector support program in Mauritania supports these health facilities.

Results: The overall mean availability of the 11 TM in Mauritania across the 33 health facilities surveyed was 60%, with the highest availability in Boghe (74%) and the lowest in Dar Naim (45%). Mean availability for TM was significantly higher in 2024 than that of 2022 (77% vs 47% respectively, p=0.0179) Fig 2. Out of the 11 studied TM, three had the highest availability, namely amoxicillin 500 mg tablets (94%), paracetamol 500 mg tablets (94%) and Ringer lactate 500 ml 10% (83%). Salbutamol aerosol 100 µg/dose and vitamin K 5 IU showed the lowest availability (under 15%) Fig 1.

Conclusion: Our results showed that the availability of TM is low and varies by region and over time. Given that the CNASS initiative is essential for promoting health equity, a longitudinal study is needed to examine the implementation of the CNASS and its impact on the availability of TM.

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Fig. 1

Figure 1 : Availability of Mauritania's 11 TM in the public sector.

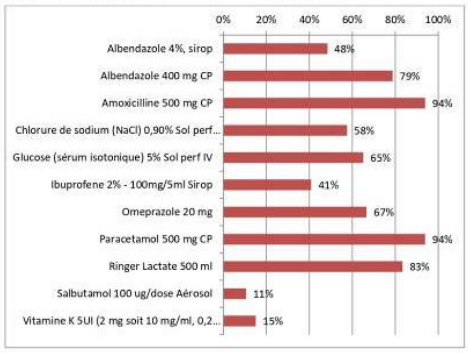
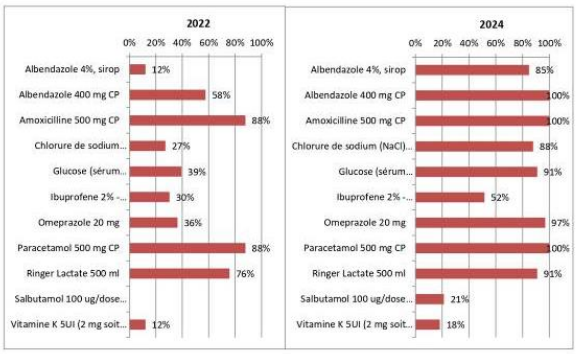


Fig. 2

Figure 2 : Availability of each TM in 2022 and in 2024



OS 081

Dispensing of medicines for asthma and chronic obstructive pulmonary disease through the government health insurance in Syria

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Background: Asthma and chronic obstructive pulmonary disease (COPD) are common noncommunicable diseases, exacerbated in conflict settings by the heightened environmental exposure to triggers, weakened health systems, and poor access to medicines and healthcare. However, accurate data on medicines dispensing in this context are generally scarce.

Objective: We examined the patterns and rates medicines dispensing for asthma and COPD among the beneficiaries of the Syrian governmental health insurance scheme between June 2018 and March 2021.

Methods: We retrospectively analyzed the outpatient dispensing records for 125,371 adults. Medicines for asthma and COPD were identified using the Anatomical Therapeutic Chemical (ATC) classification system. Dispensing rates were calculated as the number of packages per 1,000 beneficiaries per month, stratified by age, sex, and route of administration.

Results: Out of our sample, 15.02% received at least one package of a medicine for asthma or COPD. Oral formulations were the most frequently dispensed (92.67% of patients), particularly oral salbutamol and xanthines. Inhaled medicines, including inhaled corticosteroids (ICS) and ICS long-acting β2-agonists (ICS–LABA) combinations, were markedly under-dispensed (17.08% of patients). Dispensing rates were higher in females and older adults. Seasonal variation showed peaks in autumn and winter, with a notable decline in April 2020, coinciding with the early COVID-19 period.

Conclusions: The study highlights substantial gaps in dispensing of medicines for asthma and COPD, with particularly low rates for inhalers, likely reflecting barriers driven by the conflict, economic instability, and sanctions. Robust coordinated action is needed to improve their availability in Syria.

OS 082

Alignment of National Essential Medicines list with procurement practices and other relevant pharmaceutical processes in South Africa

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Question: The effectiveness of a health system in providing access to medicines is in part determined by the alignment of several core pharmaceutical processes with their National Essential Medicines List. Empirical evidence suggests that, although a National Essential Medicines List may exist, listed medicines are not always registered in the country, or procured. This case study assessed the alignment of the National Essential Medicines List with registration, procurement and reimbursement processes for essential pediatric oncology medicines in South Africa [1].

Methods: A selection of priority chemotherapeutics, anti-emetics and analgesics in the treatment of five prevalent childhood cancers in South Africa was compared to those listed in 1) the World Health Organization Essential Medicines

List for Children (WHO EMLc) 2021, 2) the registered health products database of South Africa, 3) the relevant South African National Essential Medicines Lists (NEML), 4) bid packs and awarded tenders for oncology medicines for 2020 and 2022, and 5) oncology formularies from the leading Independent Clinical Oncology Network (ICON) and two private sector medical aid schemes. Consistency between these sources was assessed descriptively.

Results: There was full alignment for 25 priority chemotherapeutics for children between the NEML, the products registered in South Africa and those included on tender. Due to unsuccessful procurement, access to seven chemotherapeutics was potentially constrained. For antiemetics and analgesics, eight of nine active ingredients included on the WHO EMLc were also registered in South Africa and on its NEML. An exploratory assessment of private sector formularies showed many gaps in ICON"s formulary and two medical scheme formularies (listing 33% and 24% of the chemotherapeutics, respectively).

Conclusion: Despite alignment of public sector pharmaceutical processes, access constraints to essential chemotherapeutics for children may stem from unsuccessful tenders, forcing healthcare providers to use alternative treatment regimens. Private sector formularies show major gaps, however it is unclear how this translates to access in clinical practice.

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OS 083

The Bio-HEAT study: Investigating the Biological pathways from HEAT exposure to preterm birth and other adverse maternal and child health outcomes in South Africa

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Heat exposure during pregnancy is linked to adverse maternal and neonatal outcomes, yet the biological mechanisms remain poorly understood. The Bio-HEAT study investigates how heat may influence these outcomes through systemic inflammation, gene expression, and epigenetic changes.

We are following 200 pregnant women in Johannesburg, South Africa, from the second trimester through one year postpartum, alongside their infants. Recruitment began in February 2025 and is expected to be completed by November 2025, capturing seasonal variation in heat exposure during pregnancy. Data collection includes: (1) social and behavioural factors (e.g., mental wellbeing, sleep quality); (2) clinical assessments (maternal anthropometry, hydration, serial ultrasounds, cord blood gas analysis); and (3) biospecimens (blood, urine, saliva, group B streptococcus swabs, placenta). Heat exposure is tracked using personal, facility-level, and community temperature monitoring, along with geospatial data. Birth outcomes (preterm birth, stillbirth, birthweight) and infant development will be monitored. Three nested sub-studies will explore: (1) sleep, activity, and heart rate in high-risk women using wearables; (2) lived experiences through qualitative interviews; and (3) breastmilk composition and volume. Preliminary analysis is ongoing.

We will analyse inflammatory, metabolic, hormonal, and renal markers in maternal samples; use RNA sequencing to assess inflammatory gene expression; and examine epigenetic changes in placental tissue. Causal models will map pathways of vulnerability and resilience from pregnancy into early life.

This study will generate new mechanistic insights into how heat exposure during pregnancy affects infant health, to inform climate-responsive interventions in vulnerable populations.

OS 084

Multi-domain interventions delivered during preconception, pregnancy and early childhood to improve birth outcomes, growth, and neurodevelopment at 24 months

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Objective: To determine the effect of integrated and concurrent delivery of health, nutrition, water, sanitation and hygiene (WaSH), and psychosocial care interventions during the preconception period alone, during pregnancy and early childhood, and throughout preconception, pregnancy, and early childhood on birth outcomes, neonatal adiposity, linear growth and neurodevelopment at 24 months of age compared with routine care.

Methods: The Women and Infants Integrated Interventions for Growth Study (WINGS) was an individually randomised trial with factorial design, conducted in urban low-to-mid socioeconomic neighbourhoods of Delhi, India. 13500 women were randomised to receive preconception interventions or routine care. Pregnant women from both groups were randomised again to receive pregnancy and early childhood interventions or routine care. The interventions were in the domains of health, nutrition, psychosocial care and support, and WaSH.

Key findings: The intervention package delivered during the preconception and pregnancy periods reduced the risk of low birth weight by 24%, with more than half of the reduction attributed to preconception interventions alone. Pregnancy and early childhood interventions increased neonatal fat-free mass without increasing fat mass. Stunting at 24 months reduced by 51%; almost all attributable to pregnancy and early childhood interventions. Children who received interventions in the preconception, pregnancy, and early childhood periods had higher cognitive, language, motor, and socio-emotional scores than those in the control group.

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OS 085

Underrecognized Legacies of Preeclampsia: A Call for Interdisciplinary Research in Sub-Saharan Africa

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Preeclampsia is a significant yet underrecognized contributor to long-term maternal and child health risks, particularly in sub-Saharan Africa (SSA), where both prevalence and severity are disproportionately high. While its acute effects are increasingly understood, especially in high-income countries (HIC), its intergenerational consequences remain insufficiently studied. Drawing on the Developmental Origins of Health and Disease (DOHaD) framework, we outline how preeclampsia shapes maternal vulnerability to chronic disease and affects children"s developmental, immunological, neuropsychiatric, and metabolic trajectories. These legacies unfold amid structural inequities, limited health literacy, and gaps in ante- and postnatal care - conditions that not only challenge short- and long-term outcomes of child and maternal health but also the applicability of conventional research models rooted in HICs. We call for a DOHaD-informed, biological and social (biosocial) research agenda that addresses the interplay of biological programming with infectious disease exposure, maternal and child mental health, immune development, and the social conditions of care. Existing studies investigating mechanisms underlying the high incidence of PE in SSA should be expanded towards interdisciplinary, longitudinal research for developing sustainable, equitable maternal-child health strategies that move beyond acute care toward life-course and intergenerational health promotion.

OS 086

Design of sampling strategies for household surveys in rural areas – a case study of a snakebite survey in Malawi

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Introduction: Household surveys are valuable tools for collecting data on the health, behaviours, and economic status of populations. To save resources, a random selection of households to include in the survey is made from a sampling frame (a list of all households). However, reliable sampling frames are often lacking in low and middle-income countries. Resources such as satellite images, OpenStreetMap (OSM), and Open Building (OB) offer resource-effective methods for identifying households and constructing sampling frames.

Methods: In July 2023, during the planning of a household-based survey in two districts of Malawi (Neno and Mwanza), we compared sampling frames constructed from manual pinning on satellite images ("M"), OSM, and OB in six study areas. During the household survey, we then collected the GPS coordinates of all buildings in the six study areas to assess the accuracy of the three approaches in detecting household compounds, defined as main buildings and/or secondary buildings (e.g., outdoor toilets).

Results: Across the two districts, the OB sampling frame contained the most buildings (672), followed by the M (583) and OSM (395) sampling frames. While the OSM sampling frame contained the most buildings in Neno (OSM=363; M=264; OB=239), it contained very few buildings in Mwanza (OSM=32), where OB identified the highest number (OB=433; M=319). Based on the number of buildings detected in all areas, we used the OB sampling frame in our survey. In reality, the study areas contained 428 household compounds, of which we detected 344 (80.4%) manually and 327 (76%) through OB. Using updated satellite images from late 2023, this proportion increased to 92.5% (396) for manual detection.

Discussion: In this study, manually pinning buildings on satellite images provided an adequate sampling frame. For larger areas, or in the absence of sufficient resources, OB was an adequate alternative. However, for both methods, the accuracy depends on how recent the satellite image was captured. In addition, non-residential structures may be misidentified as buildings. This must be accounted for by oversampling or replacement techniques. OSM is a good

alternative in areas such as Neno, where a mapping initiative took place in 2022–2023, but was inadequate in other rural areas. While all methods are promising, their advantages and limitations must be carefully considered when designing household surveys.

OS 087

Overview on One health activities in the Horn of Africa

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Ethiopia's agricultural sector is a cornerstone of its economy, characterized by the largest livestock population in Africa and diverse husbandry practices ranging from intensive market-oriented farms to smallholder systems and pastoralism. We present examples of key One Health activities in Ethiopia, emphasizing cross-border collaborations with Somaliland, Somalia, and Kenya to enhance disease preparedness and response. We discuss five critical initiatives: (1) addressing tuberculosis and bovine tuberculosis in animals and humans; (2) implementing integrated animal-human brucellosis surveillance in the Afar pastoral region; (3) the Jigjiga One Health Initiative in the Somali region; (4) vector-borne disease surveillance in pastoral areas; and (5) monitoring water-borne diseases. These examples underscore the necessity of a One Health approach in Ethiopia, demonstrating its vital role in addressing zoonotic diseases, improving public health, and fostering regional cooperation in disease management.

OS 088

One Health from the Perspective of an International NGO

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The One Health approach, recognizing the interdependence of human, animal, and environmental health, is increasingly central to addressing complex global health challenges. For international non-governmental organizations (NGOs), operationalizing One Health requires balancing scientific evidence, local realities, and humanitarian imperatives. Malteser International, implements programs across Africa, Asia, the Middle East, Latin America and Ukraine, with active One Health–related initiatives in Kenya, Ethiopia, the Democratic Republic of Congo (DRC), and Uganda.

In these contexts, One Health functions not only as a technical framework but also as a practical entry point to strengthen community resilience. Programmatic activities include integrated surveillance and response systems to reduce zoonotic disease risk; support to local health systems in detecting and responding to diseases; and livelihood programs that promote sustainable animal husbandry while safeguarding household nutrition and income. Cross-sectoral collaboration between human health services, veterinary structures, and community-based organizations is fostered to develop prevention and preparedness strategies that are locally adapted and sustainable.

Here it will be examined how NGOs can act as facilitators within the One Health paradigm: translating global strategies into context-sensitive interventions, bridging sectors and disciplines, and advocating for inclusive approaches that prioritize vulnerable communities. Malteser International's field programs illustrate that One Health can be effectively applied through humanitarian and development work when interventions are participatory, multisectoral, and grounded in long-term partnerships.

OS 089

One Health Units as innovative models for integrated health service delivery in pastoralist communities of the Horn of Africa

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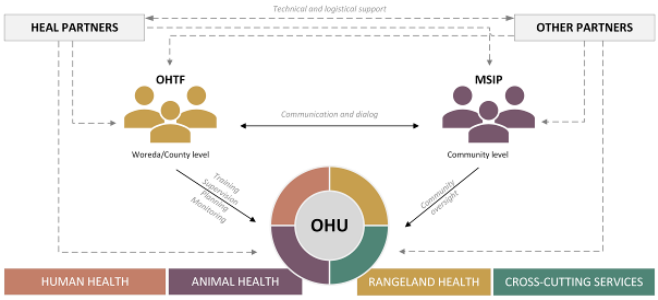
Nomadic pastoralists are among the most hard-to-reach communities in the Horn of Africa. Constantly on the move over wide geographical areas in search of pasture and water, they have limited access to essential health services and are excluded from disease surveillance programmes. Yet, they are highly vulnerable to human, animal, and zoonotic infectious diseases. The One Health for Humans Animals Environment and Livelihood (HEAL) project adopts a bottom-up, evidence-based, and transdisciplinary approach to enable these communities to access the services they need.

Working with stakeholders, the project designed the One Health Unit (OHU), an integrated service delivery model to improve access to quality human and animal health services and enhance natural resources management in pastoralist areas of Ethiopia, Kenya and Somalia. The multidisciplinary OHU team provides services for the benefit of pastoralists, their livestock and the rangeland they both rely on. Governance and management of the OHU is a shared responsibility of the pastoralist communities, through the Multi-Stakeholder Innovative Platform (MSIP), and the local authorities, through the One Health Task Force (OHTF).

After an 18-month Inception Phase (2018-2020) which aimed to understand the local context, the Pilot Phase (2020-2024) established 14 OHUs supported by 8 OHTFs and 38 MSIPs. The project developed Standard Operating Procedures (SOP) to guide the operationalisation of the OHUs, while ensuring their harmonisation across countries and localities. A Training Package was also developed to support the operationalisation of One Health in pastoralist settings, and 50 service providers were trained as trainers. The OHUs provided preventive and curative services to over 186,000 people and 1.6 million animals. A client survey (n=1,631) revealed that 99% of OHU users are satisfied with the services provided, with 89% appreciating the integration of services and 97% reporting that the OHU was the nearest service provision site to their residence.

The OHU is an innovative approach to reaching remote communities and contributing to universal health coverage in pastoralist areas of the Horn of Africa. The shared responsibility of pastoralist communities and local authorities in planning, managing and supervising the OHU enhance its effectiveness and sustainability. Solid evidence on the OHU"s effectiveness will help to scale it as a viable solution for service delivery in pastoralist communities.

Fig. 1



OS 090

The multinational force health protection nexus – Allies´ mutual power in knowledge management

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Comprehensive digital knowledge management is the only way to ensure a preventive, situational and situation-adapted response that minimizes potential health risks and problems. A co-operation between the Munich co-located Bundeswehr Medical Intelligence & Information department and the NATO Military Medical Center of Excellence"s Force Health Protection Branch builds the backbone of a multinational Nexus with the aim of creating a common operational picture (COP) which can provide expert information, assessments and recommendations at any time – the so called Multinational Force Health Protection Nexus (MN FHP Nexus).

This offers a comprehensive, digital picture of the "one health situation" not only within the armed forces, but also across all theatres of operation. The MN FHP Nexus combines Medical Intelligence and Information (MI2) as well as Surveillance: various data sources from public, civilian databases, NATO Allies but also from other partner countries, to create a digital situation picture for all participating nations. The comprehensive scalability of the representations means that all levels required for successful force health protection can be made available at any time for FHP experts as well as military medical leaders and medical planners.

OS 091

New trends and developments in military medical entomology

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The military was one of the first public institutions which grasped the risk arthropod vectors pose to human health, particularly in tropical and subtropical settings. From a very early stage onwards, they invested heavily in research and development of medical entomology and contributed significantly to its establishment as an independent research entity. Nowadays, most of the major armies collaborate with medical entomologists or operate their own units to protect the health and endurance of warfighters in their deployed arena. Recent shifts in the geopolitical landscape, rapid advances in digital technologies and the ongoing geographic expansion of vector-borne diseases are shaping both the possibilities and demands that need to be addressed.

Some of the most pressing challenges in military medical entomology arise from the expected increase of competent vector populations and pathogen transmissions in scenarios of conflict, the dwindling usability of insecticides, and the shortfall of qualified personnel available for intervention, surveillance and prevention measures. Modern technical innovations, like smartphone, remote sensors and artificial intelligence will surely play a more dominant role in the future than they have before.

For example, reporting applications for certain groups of vector species using the integrated camera of smartphones are already available in the civilian sector and are likely to be integrated in the military context. Image pattern recognition governed by machine-learning algorithms may lead to fast, automated and reliable identification of vectors and other dangerous arthropods of interest. Connecting such information with those of existing data sources and improved sensors of entomologically relevant data would lead to a highly comprehensive operational picture ensuring the best possible protection of armed forces against vector-borne disease threats.

OS 092

Active case finding for tuberculosis among Ukrainian soldiers at the German Armed Forces

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Background: Since the outbreak of the war between Russia and Ukraine, the German Armed Forces have been training Ukrainian soldiers in Germany. We aimed to evaluate the active case finding strategy for active pulmonary tuberculosis among Ukrainian soldiers upon arrival.

Methods: We performed a retrospective analysis, based on electronic health records. Between November 2022 and May 2024, 13,620 Ukrainian soldiers underwent active screening for pulmonary tuberculosis. All Ukrainian soldiers received a chest x-ray. In case of findings suspicious of pulmonary tuberculosis this was followed up by non-enhanced computed tomography. Active pulmonary tuberculosis was diagnosed by positive PCR for Mycobacterium tuberculosis (*Mtb*) in sputum and/or bronchoalveolar lavage. Antimicrobial resistance testing was conducted by bacterial culture and/or multiplex PCR. Furthermore, all bacterial isolates underwent whole genome sequencing.

Results: A total of 45 cases (0.3 %) with findings highly suspicious of active pulmonary tuberculosis were detected by chest x-ray and computed tomography. Twenty-three cases of active tuberculosis were confirmed by PCR. This yields a number needed to screen of n=592 to find one confirmed case of pulmonary tuberculosis. Seven out of 23 (30.4%) isolates of *Mtb* were resistant to at least one tuberculostatic drug, 3 out of 23 isolates (13 %) were MDR-TB, 2 out of 23 (8.7 %) pre-XDR-TB and 2 out of 23 (8.7 %) others. Whole genome sequencing was performed on 16 cultured *Mycobacterium tuberculosis* complex strains. We found no evidence of transmission among the screened soldiers. All confirmed cases were successfully treated.

Conclusion: This study underscores the importance of active case finding in populations of active service members from high-TB-incidence countries for tuberculosis and it demonstrates the successful initial treatment of multidrug-resistant tuberculosis.

OS 093

Infections in deployed soldiers and policemen

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Maintaining the health and operational readiness of government personnel is a major challenge during international missions, particularly in low-resource settings where infectious diseases pose a significant risk. Using a before-after study, we assessed the prevalence of gastrointestinal pathogens in German police officers on predominantly tropical deployments, primarily United Nations missions. We performed a PCR-based screening for a broad panel of enteroinvasive bacteria, enteropathogenic protozoa, and enteric helminths before and after deployment.

The study included 133 police officers. The results showed that 12 (9.0%) officers tested positive for gastrointestinal pathogens after deployment, while none were positive before. All affected officers were asymptomatic at the time of the medical assessment, though the majority had reported gastrointestinal symptoms during the mission. Our findings demonstrate a present risk to the health and operational capacity of personnel deployed in such environments. These results underscore the critical importance of a robust surveillance system and targeted training to mitigate these risks and ensure mission readiness

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OS 094

Dermatological findings in soldiers deployed to tropical areas

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Military personnel deployed to tropical regions are routinely exposed to environmental and occupational conditions that predispose them to a high burden of dermatological disease. Constant heat, humidity, prolonged use of occlusive footwear, limited access to hygiene, and extended periods of field activity create an ideal environment for the development of infectious and inflammatory skin disorders. These conditions represent the most frequent non-combat medical issues among deployed troops, with a direct impact on individual health, mobility, operational performance, and, in many cases, mission continuity due to medical evacuation or treatment delays.

This presentation examines the spectrum of dermatological conditions observed in soldiers operating in tropical settings, with special emphasis on fungal foot infections, particularly plantar tinea, and the often underdiagnosed yet operationally debilitating condition keratoma sulcatum. The latter is characterized by malodor, deep painful plantar sulci, maceration, and hyperkeratosis, and is closely linked to prolonged use of wet or non-breathable boots, poor foot ventilation, and sweat accumulation. Other frequently observed conditions included exacerbations of atopic and irritant eczema, superficial bacterial infections such as folliculitis and impetigo, cutaneous mycoses, hyperergic insect bite reactions, scabies, contact dermatitis, and, in endemic areas, cutaneous leishmaniasis. Limitations in field conditions, such as delayed access to dermatological expertise, inadequate supplies for foot care, and lack of effective preventive protocols, contribute significantly to the persistence and progression of these disorders.

Effective prevention requires an integrated approach that includes pre-deployment skin health education, appropriate, breathable footwear, routine foot inspection and hygiene protocols, and early therapeutic interventions. Enhancing awareness of common skin diseases and their presentations among military healthcare providers is essential to reduce morbidity and maintain operational readiness.

OS 095

Introduction: Vulnerability and long-term associated risk of childhood severe acute malnutrition & pediatric oncology

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Childhood malnutrition is underlying 45% of all mortality under the age of 5 years. Most of this mortality occurs in low- and middle-income countries (LMIC). Specific groups of children are at increased risk of poor outcomes secondary to malnutrition including mortality. These groups are: infants under the age of 6 months (<6M), children with cancer and children with cerebral palsy (CP). This vulnerability is incompletely understood currently and affects quality of life and prognosis.

The aim of this presentation is to highlight the concept of vulnerability secondary to childhood malnutrition, also in children with cancer. Secondly, to show that this vulnerability occurs both pre-hospital, during hospital admission, as well as up to 6 months after discharge. We will share data from on-going (PhD) projects in Malawi, Kenya, and Tanzania.

After this presentation, the attendant will have an increased understanding of the concept of vulnerability due to malnutrition in children and how to better recognize and act on this vulnerability.

OS 096

Prevalence of malnutrition under the age of 6 months in Yemen

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The first six months of life are important in terms of a child"s growth—a period of particular vulnerability to malnutrition. At least 9 million infants aged under six months (< 6M) are malnourished in low-and middle -income countries (LMICs). Data on prevalence and severity of malnutrition among infants < 6M in Yemen are limited.

This study analyzed 5,053 infants < 6M in two governorates in Yemen. It revealed that approximately one in five infants < 6M is wasted or stunted; one in three is underweight; and more than one in three exhibits two or more forms of malnutrition at the same time. It also revealed that a weight-for-age below -2 z scores (WAZ < -2) of 2006 World Health Organization Median, better identified different forms of malnutrition than mid-upper-arm circumference in infants < 6M.

Our findings call for preventive measures: low exclusive breastfeeding and low antenatal coverage are key determinants of infant malnutrition. Current programs fall short; therefore, innovative multisectoral programs are needed. Where feasible, WAZ < -2 should be prioritized for screening.

OS 097
Global Pediatric oncology: vulnerability and risk based outcomes
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Every year, more than 400,000 children develop cancer worldwide, the majority in low- and middle-income countries (LMICs) where survival remains far lower than in high-income settings. Malnutrition is a major contributor to poor outcomes, as up to 75% of pediatric oncology patients in LMICs is malnourished. Malnourished children with cancer face higher risks of infections, treatment delays, and increased treatment-related toxicity, ultimately lowering survival rates.

At Moi Teaching and Referral Hospital (MTRH) in Kenya, we evaluated nutritional status and care in children with cancer. We found that more than half of patients were malnourished at diagnosis, yet follow-up and standardized care practices were inconsistent. Nutritional support was provided to some patients, but availability of therapeutic foods and use of interventions such as nasogastric tube feeding varied widely. Interviews with healthcare providers highlighted barriers at administrative, provider, and patient levels, but also pointed to facilitators such as strong multidisciplinary teamwork.

Our findings underscore the urgent need for standardized, oncology-specific nutrition protocols and targeted interventions to improve outcomes for children with cancer in LMICs.

OS 098
Swallowing difficulties in children with Cerebral Palsy in Mangochi Malawi
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Cerebral palsy (CP) is the most common physical disability in childhood and evidence suggests that children with CP are particularly vulnerable to malnutrition. This risk is particularly pronounced in low-income countries (LIC), where the general burden of undernutrition is already high due to systemic poverty, limited health care access and food insecurity. In children with CP, undernutrition is often attributed to a combination of inadequate dietary intake, oropharyngeal dysfunction (affecting chewing, food ingestion and swallowing), increased nutrient requirement due to increased muscle tone (dystonia), and social factors like stigma and misconceptions surrounding disability.

In a cross-sectional study in Mangochi District, in southern Malawi we examined the prevalence and determinants of undernutrition among children with CP in Malawi. 260 children aged 2–18 years with CP and 259 age- and sex-matched controls were included. Anthropometric assessments, caregiver questionnaires, and structured tools on feeding difficulties and food security were administered.

Children with CP had significantly poorer nutritional outcomes across all indicators. Stunting affected 90.9% of children with CP versus 45.6% of controls, underweight was found in 81.5% versus 33.2%, and wasting in 42.2% versus 12.3%. Over half of the caregiver-reported feeding difficulties. Severity of motor impairment (GMFCS IV–V), spastic CP subtype, and prior admissions for malnutrition or outpatient therapeutic feeding were additional risk factors.

Findings highlight the urgent need for integrated nutrition and disability services, caregiver support, and targeted feeding interventions to reduce malnutrition and associated morbidity among children with CP in Malawi.

OS 099
Pediatric Post-Discharge Mortality in Low- and Middle-Income Countries in Africa and Asia: results from a Systematic Review and Meta-analysis
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Each year, millions of children are hospitalized in low- and middle-income countries (LMICs), and while survival during admission has improved, many deaths still occur after discharge. Post-discharge mortality remains a substantial but under-recognized contributor to child mortality, with little evidence of decline over recent decades.

In this systematic review and meta-analysis, we examined post-discharge outcomes among children across LMICs. We found that children with conditions such as HIV, severe malnutrition, anaemia, or sepsis face the highest risk of death after discharge. A substantial proportion of these deaths happen in the community rather than in health facilities, pointing to major gaps in continuity of care and access to timely follow-up. Although multiple interventions have been tested, including preventive therapies and health worker incentives, few have shown consistent benefit, and none directly target post-discharge mortality.

Our findings highlight the urgent need to treat post-discharge mortality as a distinct outcome and to design multi-component, long-term strategies that focus on high-risk children and address the community-level barriers where most deaths occur.

OS 100
One Health and its fields of application
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While clinical medicine focuses primarily on the patient, public health aims to prevent and combat disease at the population level. Integrated approaches to health broaden public health by recognizing the inextricable link between humans, animals, plants, and their environment. They aim to simultaneously improve human, animal, plant, and environmental health, depending on the type of approach. Currently, the EcoHealth, One Health, and Planetary Health approaches are at the forefront. Of these three comparable approaches, One Health is currently the most deeply rooted in policy and practice. The One Health High Level Expert Panel (OHHLEP) defines One Health as an integrated approach sustainably balancing and optimizing the health of humans, animals, plants and the environment. By this definition One Health transforms contemporary philosophy of science by a post-humanist ontology away from an anthropocentric orientation towards a perspective of humans in their environment. This affects the way governments, universities, non-governmental organizations, and the private sector organize themselves. The One Health Lancet Commission Report presents a comprehensive summary of its fields of application. Main topical fields of application have also been established by the Quadripartite (WHO-FAO-WOAH-UNEP) Joint Plan of Action. They include pandemic prevention, antimicrobial resistance, the control of endemic zoonoses but also non-communicable diseases, chemical contamination, and the sustainable use of

natural resources. The European Union has presented a scientific recommendation on the implementation of the One Health approach, which is based and extended from various existing policies and calls for enhanced cooperation between different sectors and between Member States. Many other countries establish One Health platforms and One Health policy frameworks.

OS 101

Right to health and access to drugs for NTDs in Italy – challenges and solutions

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Organised Session ECMITH 01/10/2025: Equity and solidarity in health: Overcoming the obstacles to access to medicines for parasitic tropical diseases in Europe

Many essential drugs for neglected tropical diseases (NTDs) are unavailable in Italy, even when they are first-line or irreplaceable treatments. Their supply is regulated by the Ministerial Decree of 1997, which allows the importation of drugs not authorized in Italy but registered in other countries. Although this mechanism partially compensates for gaps in the National Health System (NHS), it is hindered by bureaucratic, logistical, and financial barriers that delay availability. Moreover, recent manufacturing shortages in exporting countries have further restricted access.Although both Italian and European screening guidelines recommend testing migrants for schistosomiasis and strongyloidiasis, the high prevalence of these parasitic infections among migrants contrasts sharply with limited access to treatment. Praziquantel, the drug of choice for schistosomiasis, is neither registered nor marketed in Italy, while ivermectin, used to treat strongyloidiasis, is classified as a Class C drug, ie it is not reimbursed by the NHS and must be paid for entirely by the patient—an often prohibitive cost for socioeconomically vulnerable individuals. Similar barriers affect other orphan drugs, which are the only therapeutic options for certain parasitic diseases, including benznidazole (Chagas disease), diethylcarbamazine (lymphatic filariasis), suramin (African trypanosomiasis), miltefosine (leishmaniasis), triclabendazole (fascioliasis).A partial solution has been implemented through the Parasitology Unit at the University Federico II, designated as WHO Collaborating Center ITA-116, which functions as a national reference hub for the distribution of selected medications for NTDs. While this represents a valuable resource, it cannot substitute for a comprehensive and coordinated national strategy.In line with the principle of the universal right to health, an advocacy initiative has recently been launched by the NIH, Migration and Poverty in Rome, in collaboration with the Medicines Agency .The initiative aims to facilitate access to WHO-designated essential medicines for the treatment of NTDs within the Italian healthcare system, thereby ensuring equitable and timely access to appropriate therapies.

OS 102

Barriers to access services for schistosomiasis in Germany and other European countries

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Organised Session ECMITH 01/10/2025: Equity and solidarity in health: Overcoming the obstacles to access to medicines for parasitic tropical diseases in Europe

Schistosomiasis is a parasitic disease that if left untreated can lead to chronic consequences. Adequate knowledge and awareness regarding diseases are essential to offer and access healthcare services particularly for asymptomatic diseases. Female Genital Schistosomiasis (FGS) is one of the chronic consequences of schistosomiasis and is a non-sexually transmitted gynaecological disease caused by the presence of *Schistosoma haematobium* eggs in the female genital tract and the resulting immune response that causes tissue damage. It is estimated to affect 56 million women, mostly in sub-Saharan Africa (SSA), where healthcare workers (HCWs) have limited awareness and knowledge of FGS. Most migrants in Europe are female, often from SSA and therefore at risk of FGS. Through an online survey we were able to show that HCWs across Europe are poorly aware of this condition limiting the possibility to provide adequate health care services for many women in the continent that might be suffering from the condition.

OS 103

The long road to Chagas treatment – Why Spain must do better

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Organised Session ECMITH 01/10/2025: Equity and solidarity in health: Overcoming the obstacles to access to medicines for parasitic tropical diseases in Europe

Despite being home to one of the largest populations affected by Chagas disease outside Latin America, Spain still faces major challenges in ensuring equitable and timely access to treatment. Over the past 15 years, some autonomous communities have developed regional protocols to screen pregnant women for *Trypanosoma cruzi* infection, yet it was not until 2025 that congenital Chagas screening was officially included in the national portfolio of health services. While the recent registration of nifurtimox and the ongoing process for benznidazole represent significant regulatory progress, both medications are still dispensed as foreign drugs, requiring additional administrative steps. Access to treatment remains fragmented and unequal across regions, hindered by complex referral pathways, the need to visit multiple healthcare facilities, bureaucratic hurdles, and in some cases, the payment of fees. This presentation will provide a critical overview of the current landscape of Chagas disease treatment in Spain, explore regional disparities in care, and argue for a coordinated, patient-centered approach fully integrated into the public health system. Spain must do better—not only for the thousands affected within its borders, but also to uphold its role as a leader in global and migrant health.

OS 104

Current therapeutic gaps in the treatment of tropical diseases in Belgium

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Tropical diseases are usually infections acquired during a stay in tropical or subtropical regions and are frequently diagnosed in international travelers and migrants. Most tropical diseases are caused by parasites, either protozoa (e.g. malaria, giardiasis, leishmaniasis, trypanosomiasis,…) or helminths (e.g. strongyloidiasis, schistosomiasis, soil-transmitted helminthiases, filariasis,…). Many of them can cause significant chronic morbidity and even be life-threatening if no timely treated. Treatments are often complex, and not always strongly evidence-based in the nonendemic setting. For several years, clinicians in Belgium, like elsewhere in Europe, are increasingly confronted with inconsistent drug production and availability, sudden disruption of supply, or highly volatile prices. Based on a few recent clinical cases, this talk will provide an overview of the current therapeutic gaps in, or threats against, treatment of these tropical diseases in Belgium. Ad-hoc solutions will be highlighted, while waiting for a more structural and sustainable approach of this issue, that should be addressed at the European level.

OS 105

The impact of the COVID-19 pandemic and the war in Ukraine on TB epidemiology among Ukrainians in the EU/EEA.

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Question: What were the impacts of the COVID-19 pandemic (2020) and the Russian invasion of Ukraine (2022) on tuberculosis epidemiology patterns among people of Ukrainian origin in the European Union and European Economic Area (EU/EEA)?

Methods: We analyzed routine tuberculosis notification data from the European Surveillance System (TESSy) operated by the European Center for Disease Prevention and Control (ECDC) for 30 EU/EEA countries between 2019 and 2022. Cases were defined as individuals holding Ukrainian citizenship or born in Ukraine. We examined geographical distribution, drug resistance patterns including rifampicin-resistant/multidrug-resistant (RR/MDR) TB, pre-extensively drug-resistant (pre-XDR) TB, and extensively drug-resistant (XDR) TB. Population denominators used Eurostat data including Ukrainian citizens with usual residence and those granted temporary protection status in 2022.

Results: The COVID-19 pandemic initially reduced TB notifications among Ukrainians from 235 cases in 2019 to 164 cases in 2020 (-30.2%), with notification rates dropping from 19.6 to 12.6 per 100,000 Ukrainian citizens, likely due to travel restrictions, disrupted diagnostic services, and altered healthcare-seeking behavior. However, the Russian invasion of Ukraine in 2022 dramatically reversed this trend, with cases increasing almost fourfold to 780, while rates remained relatively stable (13.4/100,000). Ukrainian cases represented 0.51% of all foreign-origin TB in 2019 but rose to 2.2% in 2022. Three countries (Czechia, Germany, Poland) accounted for 71.3% of Ukrainian cases in 2022. Drug resistance patterns worsened substantially: DR-TB among Ukrainians increased from 23.2% of the laboratory confirmed cases (n = 43) in 2019 to 31.9% (n = 194) in 2022, with Ukrainians representing 19.7% of all drug-resistant TB cases among foreign-origin populations in 2022 compared to only 4.2% in 2019. Four XDR-TB cases were reported in Ukrainians in 2022, with none in previous years.

Conclusions: The COVID-19 pandemic suppressed TB detection among Ukrainians in the EU/EEA, therefore likely increasing the diagnostic gap in this population. The war in Ukraine caused unprecedented surge in both total cases and drug-resistant TB burden in the EU/EEA. The displacement of 5 million Ukrainians fundamentally altered TB epidemiology, requiring enhanced surveillance, drug susceptibility testing, and targeted healthcare services for effective prevention and control.

OS 106

Implementing a patient monitoring system in a low-resource setting

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Introduction: Continuous monitoring of critically ill children is essential for timely identification of deteriorating vital signs. However, monitoring is often intermittent in low-resource settings, affecting the quality of care. This study assessed the implementation barriers and facilitators of Malawi's locally adapted, robust, low-cost continuous monitoring system.

Methods: A mixed-method implementation study of a patient monitoring system was conducted in the paediatric High-dependency unit of a tertiary hospital from November 2022 to October 2023. Direct observations (300+ hours), in-depth interviews with healthcare providers (n=14), and caregivers of admitted children (n=9), and questionnaire-based surveys with healthcare providers (n=24) and caregivers (n=72) were conducted. Qualitative data were analysed thematically using both inductive and deductive approaches with NVIVO QSR version 14 software. Quantitative questionnaire-based survey data were entered into STATA version 17 for analysis. Descriptive statistics, including frequencies and percentages, were calculated for categorical variables; means and standard deviations were estimated for continuous variables.

Results: Healthcare providers and caregivers indicated that the monitoring system improved care by providing the ability to measure reliably multiple vital signs, with long-lasting (4 hours) backup power and alarm provisions. Healthcare providers reported spending less time monitoring children (1.8 hours daily compared to 3.3 hours pre-monitoring system). Still, they recognised alarm fatigue, limitations in knowledge of the technology, and staff shortage as barriers to the

monitoring system use. Some caregivers expressed concerns about the reliability of the monitoring system.

Conclusion: Healthcare providers and caregivers generally received continuous monitoring devices. It was perceived to save time and improve the quality of care. Opportunities to enhance engagement with the device further include strengthening caregivers' knowledge and involvement to address their concerns about it, minimising false alarms, and providing ongoing training to healthcare providers so that new, existing, and rotated staff know how to use it.

OS 107

Biomarkers for diagnosing bacteremia, malaria, and viral infections in critically ill children

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Background: In resource-limited settings, distinguishing between bacterial, viral, and parasitic infections remains a challenge due to non-specific clinical presentations and limited diagnostics. Biomarkers provide an objective method for improving diagnostic accuracy and guiding appropriate treatment.

Methods: This sub-analysis of the IMPALA project evaluated the diagnostic accuracy of CRP, ST2, ANG2, MXA1, and HRP2 in 320 critically ill children under five admitted to a Malawian HDU. Serum, PAXgene tubes, and nasopharyngeal swabs were analyzed using ELISA and BioFire. AUC-ROC analysis, Youden Index, and logistic regression assessed the biomarkers" ability to differentiate between infections.

Results: **Bacteremia:** CRP showed excellent diagnostic accuracy (**AUC-ROC 0.89**, sensitivity 82%, specificity 88%). **Viral Infections:** MXA1 (**AUC-ROC 0.91**) and ST2 (**AUC-ROC 0.85**) demonstrated high predictive ability. **Malaria:** HRP2 exhibited strong accuracy (**AUC-ROC 0.92**, sensitivity 90%, specificity 88%). **Mixed Infections:** A combination of CRP, MXA1, and HRP2 yielded the highest diagnostic precision (**AUC-ROC 0.93**).

Conclusions: CRP, MXA1, HRP2, and ST2 demonstrated strong diagnostic potential for bacterial, viral, and malaria infections in critically ill children. The integration of these biomarkers into clinical workflows could enhance infection classification and targeted treatment in LMIC settings. Further studies are needed to refine biomarker-based diagnostic strategies.

OS 108

Conventional and Machine learning (AI) models predicting outcome in a low-resource setting

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Paediatric in-hospital mortality remains a significant challenge in low-resource settings like Malawi. Clinical deterioration, which can lead to adverse outcomes such as transfer to the paediatric intensive care unit (PICU), cardiopulmonary resuscitation (CPR), or death, often goes undetected by conventional intermittent vital sign monitoring. This research aims to develop predictive models that can identify children at risk early using continuous vital signs collected using the IMPALA monitor.

A prospective observational cohort study was conducted in the high-dependency units of two tertiary hospitals in Malawi. A total of 774 children aged 28 days to 60 months were recruited. Data collection included continuous vital sign monitoring during the first hour of admission, along with clinical information and biomarkers. Survival analysis, utilising Cox proportional hazard models and a Random Survival Forest model, was used to predict clinical deterioration events (PICU admission, CPR, or death). The models were evaluated using the Area Under the Curve (AUC), and variable selection was performed through backwards selection, feature ranking and domain knowledge.

The study observed 71 clinical deterioration events, which represented 9.2% of the cohort—the average admission to the first event was 39.8 hours (SD 59.6). The models demonstrated improved predictive performance by incorporating continuous vital sign data. Specifically, a model using only vital signs (ECG heart rate, blood pressure, respiratory rate and oxygen saturation) achieved an AUC of 0.86 on the training set and 0.84 on a held-out test set. When key clinical signs on admission—including malnutrition, prostration, history of convulsions, and elevated lactate—were added to the model, the AUC improved to 0.89. The median values of vital signs over the first hour were found to be the most predictive compared to minimum or maximum values.

The findings suggest that continuous vital sign monitoring only during the first hour of a child's admission or combined with key routine clinical variables can effectively predict clinical deterioration in a high dependency unit setting in Malawi. This approach provides a robust and generalisable method for early warning and timely prioritisation of care, with the potential to significantly reduce paediatric in-hospital mortality.

OS 109

The impact of the IMPALA monitoring system on pediatric mortality at Zomba Central Hospital, Malawi

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Background: In sub-Saharan Africa, health system limitations continue to contribute to preventable child deaths. Medical technology can potentially reduce mortality, yet technological design and implementation should be adjusted to use in low-resource settings (LRS). This study evaluates the impact of a continuous monitoring system (IMPALA), designed for use in LRS, on in-hospital pediatric mortality and clinical interventions at Zomba Central Hospital (ZCH) in Malawi.

Methods: We conducted a before-and-after cohort study at ZCH, including children admitted to the pediatric medical ward between January and June 2022 (pre-IMPALA) and 2023–2024 (post-IMPALA). The primary outcome was in-hospital mortality, which was stratified by disease category. Mortality rates were compared using chi-square tests and Fisher"s exact tests. In a subgroup of children that were admitted to the High Dependency Unit, we repeated the analyses using matching for severity using Targeted Maximum Likelihood Estimation (TMLE) to estimate the Average Treatment Effect (ATE). We further compared the frequency and timing of medical intervention pre- and post-IMPALA.

(Preliminary) Findings: We included 1,840 children pre-IMPALA and 6,255 children post-IMPALA, reflecting a more than threefold increase in admissions during the final recruitment year, primarily due to malaria cases (22% in 2022 vs. 65% in 2024). Mortality decreased from 3.75% pre-IMPALA to 2.80% post-IMPALA, a 25.3% reduction (p=0.043), with a 45.3% decrease in non-malaria mortality (p<0.001). Mortality increased in malaria cases (+15%, p=0.789).

Interpretation: The IMPALA monitoring system was associated with a statistically significant reduction in overall and non-malaria mortality, despite a more than threefold increase in hospital admissions. These findings suggest that continuous digital monitoring may improve survival outcomes in critically ill children in LRS.

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Development and implementation of a new real-time warning score integrated into a patient monitoring system – Next steps

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Background & Aim: Every year, over three million children in low-resource settings (LRS) die due to contextual barriers that impede the delivery of high-quality care. Many of these deaths are preventable through the use of readily available low-cost medical interventions. Vital sign monitoring and early warning scores have been shown to reduce morbidity and mortality in high-resource settings; however, their implementation in LRS has lagged behind and may require adaptation for successful integration.

This study aims to adapt and deploy IMPALA, a durable and robust vital signs monitoring system, to facilitate the early detection of patient deterioration. IMPALA integrates a vital sign monitor with a clinical support application, enabling remote patient surveillance and dynamically calculating a stratified risk score. The system is designed for healthcare workers operating in high-workload, low-resource environments to enhance the quality of care, reduce stress of healthcare workers, and ultimately save costs and lives.

Methods: We collected vital signs data with the IMPALA system and clinical data using REDCAP from pediatric patients (

Results: The initial clinical study captured vital signs and clinical data from a total of 774 pediatric patients. We developed the IC-LEN risk score based on the already developed Physiological Health Score. The score was dynamically calculated hourly, up to 12 hours before an event, and demonstrated the capability to predict death or intensive care admission with an AUROC of 0.82 on the development dataset. In the pilot the score was calculated for all patients (n=192) every 15 minutes and achieving an AUROC of 0.87.

Conclusion: It is feasible to develop and deploy a robust monitoring platform in LRS that provides essential clinical decision support to overburdened healthcare workers. The IMPALA system, together with its integrated IC-LEN score, has the potential to enhance patient care and outcomes.

Figure 1: (L) The IMPALA vital sign monitor in use; (R) The IMPALA tablet application displaying the IC-LEN risk score and patient history.

Fig. 1

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Safety and efficacy of praziquantel 40 mg/kg versus 80 mg/kg in preschool-aged children with intestinal schistosomiasis in Uganda: a 2 × 2 factorial, double-blind, placebo-controlled, phase 2 randomised trial

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Optimal dosing of praziquantel (PZQ) for schistosomiasis in children younger than 5 years is not established and some studies suggest need for a higher dose per kilogram in this age group. We assessed the safety and efficacy of a split dose of PZQ tablets 80 mg/kg given 3 hours apart versus the recommended single dose of 40 mg/kg for treatment of

Schistosoma mansoni in children aged 12-47 months in Uganda.

In this placebo-controlled, phase II randomised trial using 2 × 2 factorial design, children aged were randomly assigned in a 1:1:1:1 ratio to receive crushed praziquantel tablets at single standard (40 mg/kg) versus double standard dosing (80 mg/kg delivered as two 40 mg/kg doses 3 hours apart) and same dose or placebo at 6 months. Co-primary outcomes were parasitological cure and egg reduction rate at 4 weeks. Secondary outcomes included antigenic cure at 4 weeks, adverse events and clinical toxicity 12 hours after treatment, and morbidity markers at 6 months and 12 months.

Between February 18 and December 14, 2021, 354 children were randomly assigned to either praziquantel 40 mg/kg at baseline and placebo at 6 months (n=88); 40 mg/kg at baseline and 40 mg/kg at 6 months (n=86); 80 mg/kg at baseline and placebo at 6 months (m=89); or 80 mg/kg at baseline and 80 mg/kg at 6 months (n=91). 181 (51%) participants were boys and median age was 36 months (28–42). Cure rate at 4 weeks was 67% in the 40 mg/kg group and 90% in the 80 mg/kg group (absolute difference 23% [95% CI 14–31]; p<0·001); for egg reduction rate the difference was 2% (95% CI 1–3; p<0·001) based on geometric mean and 22% (5–59; p<0·001) based on arithmetic mean. At 12 months, biannual treatment reduced prevalence of faecal occult blood compared annual treatment, and 80 mg/kg dose reduced prevalence of faecal calprotectin compared to 40mg/kg. No severe adverse events related to the study drug were reported and there were no differences in adverse event rates between the trial groups.

Two 40 mg/kg doses given 3 hours apart are safe, well tolerated, and more effective in achieving parasitic cure than the current proposed single 40 mg/kg dose. The use of crushed tablets with this dosing strategy can be recommended for young children in *S mansoni*-endemic areas until a paediatric formulation of praziquantel is available. The higher dosing and twice-a-year treatment individually reduce intestinal morbidity markers compared with standard dosing and once-a-year treatment respectively.

OS 112

The importance of a comprehensive and comparable health outcome for schistosomiasis monitoring, evaluation and research: from health-related quality of life to capability wellbeing

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Background: Monitoring, evaluation, and research in schistosomiasis require comprehensive health measures, comparable across health issues. Traditional metrics such as infection intensity and clinical morbidity often overlook the broader impacts of disease on health-related quality of life (HRQoL), and standardised tools may not fully capture lived experiences of affected individuals. To inform development of meaningful outcome measures, we explored how affected communities define and assess health and wellbeing using standardised tools and how individuals feel they should be improved to better reflect their lived experiences and what is important for a good life.

Methods: A mixed-methods study in four Ugandan communities (non-endemic, low, moderate, and high endemicities) and two Cameroon communities (rural and peri-urban). A total 890 participants aged ≥5 years (423 in Uganda; 477 in Cameroon) completed a socio-demographic survey and age-appropriate HrQoL (EQ-5D), capabilities, (ICECAP) and mental health instruments (WEMWBS/SCWS). Focus group discussions and in-depth interviews were conducted to explore local perceptions of the surveys administered.

Results: Reported symptoms included diarrhoea (36%), nausea (20%), blood in stool (15%), and abdominal pain (53%). Mean scores were 0.44 (HRQoL), 0.71 (ICECAP), and 0.65 (mental health). Internal consistency (α) was highest for WEMWBS/SCWS (0.81), followed by ICECAP (0.61–0.77) and EQ-5D (0.56–0.69). ICECAP showed weak to moderate convergent validity with EQ-5D (r=0.25) and WEMWBS/SCWS (r=0.37), suggesting it captures overlapping but distinct wellbeing dimensions. Instruments showed strong construct validity, with lower wellbeing scores associated with symptom severity—for general weakness (all instruments), abdominal pain (ICECAP/WEMWBS/SCWS), chills (EQ-5D, ICECAP), vomiting (ICECAP), and muscle pain and rash (EQ-5D). Qualitative data revealed a disconnect between local priorities and standard tools. Common themes included structural insecurity, interdependence, dignity, emotional endurance, and the psychosocial effects of poor sanitation—especially among women and older adults. Phrases like being "settled," "having peace of mind," or "feeling respected" highlighted domains missing from standard instruments.

Conclusion: This study supports the need to adapt or supplement existing instruments to capture the lived experiences and broader impacts of schistosomiasis and other health issues in these communities.

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Understanding Capabilities, Wellbeing and Quality of life in limited-resource settings with varying Schistosomiasis endemicities in Cameroon and Uganda

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Introduction: Schistosomiasis continues to be a significant public health challenge in low- and middle-income countries, with an estimated 236 million people at risk and 2.5 million disability-adjusted life-years (DALYs) lost annually. However, there is a poor understanding of the broader impacts of infection—particularly on health-related quality of life (HRQoL). Existing HRQoL instruments, often based on Western health values, have shown inconsistent results, especially in cases of mild or asymptomatic infection, underscoring the need for a more comprehensive evaluative framework. The aim of this study was to understand the perceptions of health-related quality of life and factors contributing to having a good life in urban and rural schistosomiasis-endemic communities in Cameroon and Uganda.

Methods: A mixed-methods approach was used in selected resource-constrained rural and urban communities, including Yorro 1 and 2 (Bokito), Plateau, and Gondon (Bafia). Qualitative data were obtained through 40 in-depth interviews, 12 focus group discussions, and 10 photo elicitation interviews in Cameroon, and 20 in-depth interviews, 30 focus group discussions, and 10 Photo elicitation interviews in four communities in Mayuge and Jinja districts (Uganda). Thematic analysis is ongoing.

Results: Qualitative findings across both countries highlighted key contributors to wellbeing, including safe water and meeting necessities of life, access to medical care. Having a family and a reliable source of income to ensure food security and manage health-related issues. Photo elicitation revealed the importance of nature and local plant species, not only as sources of income and recreation but also as fulfilling activities that support family wellbeing and help address health concerns, offering good hospitality to visitors was valued for a good life. In addition to physical health, participants cited challenges related to financial stability, personal development, social inclusion, and psychosocial wellbeing. Context-specific dimensions such as false appearances, solidarity, ability to host and autonomy emerged as vital components of quality of life—factors often overlooked by conventional HRQoL tools but some considered in capability wellbeing instruments.

Conclusion: These findings underscore the need to reorient schistosomiasis monitoring and evaluation strategies toward frameworks that incorporate locally grounded understandings of wellbeing. By identifying and validating community-relevant attributes of quality of life, this study supports the development of more responsive, equitable, and effective intervention strategies in schistosomiasis-endemic settings.

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Performance evaluation of standard and innovative urine-based tests for *Schistosoma haematobium* diagnosis in a near elimination setting on Pemba island, Tanzania

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Background: The World Health Organization aims to eliminate schistosomiasis as a public health problem by 2030. In areas approaching elimination, *Schistosoma* infection prevalences and intensities decline, posing challenges to the diagnostic performance of standard procedures. Therefore, improved diagnostic tools are essential for accurately determining prevalence thresholds, guiding intervention strategies, conducting surveillance and validating elimination efforts.

Methods: In a prospective diagnostic accuracy study on Pemba Island, Tanzania, a setting approaching *Schistosoma haematobium* elimination, we collected urine samples over five consecutive days from 262 students across two schools. All samples were examined with urine filtration microscopy. A single sample per child was also tested with i) Artificial Intelligence (AI) scanners for egg detection, ii) qPCR and iii) recombinase polymerase amplification (RPA) approaches targeting *S. haematobium* DNA, iv) up-converting particle lateral flow strip tests for the detection of circulating anodic antigen (UCP-LF CAA), and v) Hemastix reagent strips to detect microhematuria. We calculated the sensitivity and specificity of each test against the composite quintuple urine filtration result.

Results: The proportion of *S. haematobium* infected individuals identified with urine filtration increased considerably with the examination of multiple samples. The increase was most prominent for light intensity infections, which were most common in our study population. Among the methods evaluated, only the AI scanner and qPCR demonstrated both high sensitivity and high specificity for diagnosing light intensity infections.

Discussion and Conclusion: For accurate estimates of the prevalence of *S. haematobium* infections in elimination settings, multiple samples should be examined with standard urine filtration microscopy. Alternatively, the AI scanner and qPCR showed a high accuracy for single samples analyses. While the qPCR requires specialized laboratory infrastructure, the AI scanner with its trained software may offer a more practical alternative for clinical use, monitoring and surveillance, and test-and-treat strategies in programmatic settings.

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Approaches to treatment and surveillance in a very low *S. haematobium* setting in Pemba Island, Tanzania

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The World Health Organization aims to eliminate schistosomiasis as a public health problem worldwide by 2030. Pemba Island, Tanzania, achieved this goal in 2017 and is now aiming for interruption of transmission. While many areas have a *Schistosoma haematobium* prevalence of <3%, some continue to have moderate to heavy transmission. To address the spatial heterogeneity, the SchistoBreak study (2020-2024) investigated new adaptive intervention approaches for their contribution to elimination.

Annual cross-sectional school- and community-based surveys were conducted to classify areas as low-prevalence and hotspot areas, and to monitor prevalence and intervention impact. In low-prevalence areas, a surveillance-response approach with test-treat-track-test-treat (5T) and reactive snail control activities was implemented. In hotspot areas, multi-disciplinary interventions were implemented, including annual praziquantel mass drug administration, behaviour change activities, and snail control.

Each year, more than 6000 individuals were surveyed. Across 3 years, the surveillance-response approach showed a sensitivity of 43%, with low prevalence levels remaining below 1%. The number of hotspot areas per year decreased from five in 2021 to four in 2022 and to three in 2023. In hotspots, prevalences significantly declined in schoolchildren and showed a decreasing trend in the community in years 1 and 3, though a slight increase was observed in year 2. Hotspot areas were characterised by rural settings, poor and rural households, and proximity to waterbodies containing *Bulinus*. Overall prevalence remained ~1% across all years, with heavy intensities ≤0.3%. Following snail control, the number of *Bulinus* decreased or remained absent in 56.7% (38/67) of visits at WBs when compared with the previous visit in 2021, 54.9% (28/51) in 2022, and 33.3% (32/96) in 2023.

The adaptive intervention approach maintained the low *S. haematobium* prevalence, but did not interrupt transmission within the three-year period. Yet, the study generated valuable evidence and practical insights to guide programmatic decision-making and contribute to the development of schistosomiasis elimination guidelines.

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Clinical signs of skin-related NTDs
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Skin-related NTDs such as leprosy, cutaneous leishmaniasis, mycetoma and scabies, constitute a substantial public health burden in low- and middle-income countries, particularly in remote and underserved communities. These diseases frequently lead to chronic morbidity, disability, and social stigma, yet they remain underdiagnosed due to limited access to dermatological expertise and diagnostic tools.

Accurate and timely clinical recognition is critical for early diagnosis, prompt treatment, interruption of transmission chains, and reduction of disease-associated disabilities. This presentation proposes a practical, syndromic approach to the dermatological diagnosis of skin-related NTDs, based on three interrelated pillars: (1) regional epidemiological prevalence; (2) individual risk exposure, including environmental, occupational, and social determinants; and (3) the patient"s reported symptoms and observable skin signs.

This presentation explores the identification of key primary lesions, such as macule, papule, pustule, plaque, nodule, vesicle and bulla, as well as secondary dermatological signs including scales, crust, excoriation, erosion, ulcer and scar. Particular emphasis is placed on recognizing these features across a spectrum of skin phototypes, where inflammation, pigmentary changes, and lesion morphology may present differently and challenge classical textbook descriptions.

In resource-limited settings, incorporating this dermatologically oriented, patient-centered strategy into simplified syndromic algorithms may enhance frontline diagnostic capacity and has the potential to reduce diagnostic delays, prevent complications, and support broader NTD control and elimination strategies.

OS 117
Recognising neglected tropical diseases through changes on the skin
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This presentation highlights the dermatological manifestations associated with systemic neglected tropical diseases (NTDs), emphasizing their diagnostic and clinical importance.

Although many neglected tropical diseases (NTDs) are systemic rather than primarily dermatological, the skin often offers early and visible clues that can aid timely diagnosis, especially in resource-limited settings. Recognizing these cutaneous manifestations, particularly when considered alongside epidemiological context and patient history, is crucial for identifying potentially life-threatening infections that might otherwise go undetected.

The following outlines typical dermatological manifestations associated with specific neglected tropical diseases (NTDs).

In lymphatic filariasis, chronic skin changes such as lymphedema, a peau d"orange skin, and hyperkeratotic verrucous plaques develop secondary to lymphatic damage. Human African trypanosomiasis should be considered in patients presenting with intermittent rashes, urticaria, and facial edema during the hemolymphatic stage. Trematode infections—including schistosomiasis and fascioliasis—can cause a range of dermatological manifestations, from transient cercarial dermatitis ("swimmer"s itch") to chronic urticaria-like lesions and nonspecific pruritus, often resulting from immune complex deposition. In cystic echinococcosis, rupture of superficial hydatid cysts may lead to rare cutaneous presentations, such as fistulation or palpable subcutaneous nodules.

In Chagas disease (*Trypanosoma cruzi* infection), the patient in acute phase may present with exanthema, Romaña"s sign—unilateral, painless periorbital edema—and localized, indurated swelling (chagoma) at the site of vector inoculation. Post-kala-azar dermal leishmaniasis (PKDL) serves as a classic cutaneous indicator following treatment for visceral leishmaniasis, typically presenting with hypopigmented or nodular lesions. Onchocerciasis is characterized by intense pruritus, papular dermatitis, atrophic skin changes, and the distinctive 'leopard skin' pattern of depigmentation, which often appears before the onset of ocular involvement.

The recognition of these cutaneous signs and linking them to endemic exposures and risk factors is of immense importance. In that way, clinicians can broaden their diagnostic perspective and improve case detection of systemic NTDs. This approach is particularly valuable in primary care and community health settings, where diagnostic resources may be limited, but the skin remains readily accessible for clinical assessment. Early identification not only improves individual patient outcomes but also contributes to broader efforts in NTD control, surveillance, and public health response.

OS 118
Common (non-NTD) skin conditions
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This presentation focuses on common non–neglected tropical disease (non-NTD) skin conditions, exploring their prevalence, diagnosis, and management across different global settings. Emphasis is placed on the contrasting burden and presentation of these diseases in industrialized versus tropical countries.

While much attention has been given to NTDs, common non-NTD skin conditions—such as acne, dermatophytosis, eczema, scabies and bacterial skin and soft tissue infection (SSTI)(e.g. impetigo, abscesses and cellulitis) —also pose substantial morbidity and contribute to reduced quality of life aggravated by limited access to dermatologic care, diagnostic tools, and affordable treatments.

By highlighting these disparities, the presentation aims to foster a better understanding of context-specific dermatological challenges and the need for tailored public health and clinical approaches.

OS 119
Control activities for skin-related NTDs
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Control activities for skin-related NTDs involve a combination of prevention, early detection, and integrated management strategies. The challenges and opportunities on the ground will be discussed by looking at two specific skin conditions relevant in the Ethiopian context: leprosy and cutaneous leishmaniasis.

OS 120
Integrated interventions for skin NTDs in Etiophia
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[1]*Bahir Dar University, College of Medicine and Health Sciences, Bahir Dar, Ethiopia*

Background: Skin-related neglected tropical diseases (skin NTDs), including mycetoma, chromoblastomycosis, and other subcutaneous mycoses, are chronic, stigmatizing conditions that disproportionately affect underserved populations in tropical regions. In Ethiopia, despite their significant health and socio-economic burden, these diseases remain underdiagnosed and poorly managed due to fragmented health services and limited access at the primary healthcare (PHC) level.

Objective: This study aims to evaluate the feasibility and effectiveness of integrated, decentralized diagnosis and management of mycetoma and other skin NTDs through the primary healthcare system in Ethiopia, using a community-driven and health system-embedded approach.

Methods: A mixed-methods implementation research project was conducted in four high-burden regions in the Amhara, Afar, Southern nation state and Tigray regions. Activities included mapping disease burden, training PHC providers and health extension workers (HEWs), developing context-specific diagnostic tools and referral pathways, and utilizing digital tools (Koboo tool) for case documentation. About 100,000 community members were screened. Laboratory-confirmed diagnoses were supported with clinical photography.

Results: Preliminary findings indicate improved case identification, increased community awareness, and enhanced referral practices. The integration of services at the PHC level improved accessibility and early management, especially among marginalized groups. Training of frontline health workers significantly raised diagnostic suspicion and reduced delays in care. Engagement with communities and stakeholders fostered local ownership and policy alignment. Cases of Mycetoma, Cutaneous leishmaniasis, scbies, podoconiosis, noma and other skin NTDs were identified.

Conclusions: Integrated interventions for skin NTDs at the PHC level are both feasible and impactful in resource-limited settings. Decentralized care, combined with workforce training and community engagement, can enhance early detection, reduce disease burden, and serve as a scalable model for other endemic regions. These findings support Ethiopia"s national and WHO"s global strategies to mainstream NTD services and promote health equity.

OS 121
Looking at atypical populations – Seeing the elephants we keep outside the room
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Public health systems are often focused on fixed populations, and surveillance systems are typically built on population data that assume stability, residency, and administrative legibility. What happens when entire populations fall outside those expectations? This talk examines the "atypical populations" that are routinely excluded from health surveillance, service delivery, and even conceptual inclusion in public health planning. While refugees receive some attention, internally displaced persons (IDPs) often receive far less. Beyond both categories lie others: people unable or unwilling to leave conflict zones; mobile populations in limbo between origin and destination; informal laborers such as gold miners and loggers; unhoused individuals; incarcerated people; pastoralists and nomadic groups. These groups are frequently left out of censuses, surveys, and health systems not because they are small or insignificant, but because they do not fit neatly into the dominant models of population governance. Their exclusion is both a logistical challenge and a reflection of structural neglect. This talk argues that recognizing these populations, and redesigning health systems and data infrastructures to include them, is not only technically necessary but also a moral imperative. They may be hard to count, but they are still important.

OS 122
Research frameworks for use in volunerable populations – Limitions and ideas for next steps
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[2]*Boston University, Center on Forced Displacement, Boston, MA, United States*
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Forcibly displaced persons—whether migrants, asylum seekers, internally displaced or stateless persons—are routinely subject to poor living conditions, unstable political landscapes, lack of adequate healthcare and routine socioeconomic vulnerability. Thus, when researchers perform research that is extractive and marginalizing on communities, these inequities are only deepened. To date, there has been much discussion about research frameworks that ensure community participation and involvement but there are two facets that should be discussed further: the use (or lack thereof) of these frameworks by researchers today and importance of including community participation in the ideation process of research.

A study done by Gross et al (1) and ongoing work in our lab, has shown that these frameworks are rarely utilized. This means that despite considerable effort to ensure that research benefits everyone systematically, research that is being conducted in vulnerable settings is a gamble; sometimes the research will be done ethically and with an eye towards community participation and ensuring that it will lead to long term positive results and other times it will be purely extractive. Finally, it must be noted that forcibly displaced communities are not a monolith, and any framework must be flexible in

order to be applicable to a wide range of conditions and experiences.

Finally, our lab has seen that typically research has been conducted as follows. A research question is proposed by a researcher, a study plan is created, and then the community to be studied is found and the process of working with the community is started. This community engagement is certainly better than nothing, but we argue that it is important to consider how community engagement can be achieved from the start. How can we engage the communities that we work with such that they can ask research questions and propose study plans in conjunction with the researchers? Only by ensuring that key voices are heard throughout the entire process will research be able to fully move away from extractive practices that can harm forcibly displaced persons.

References:

1. Gross, N., Tarnas, M. C., Sayeeda, R. J., Ching, C., Flynn, D., & Zaman, M. H. (2024). Current infectious disease research practices with forcibly displaced people in the top ten low-and middle-income host countries: A Systematic Review. medRxiv, 2024-09.

OS 123

Infectious disease research in forcibly displaced populations – A systematic review in low- and middle-income host countries

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[3]Boston University, Biomedical Engineering, Boston, MA, United States

Question: Infectious disease research is essential for disease prevention and management within refugee camps and informal settlements. The objective of this study is to identify the characteristics of existing infectious disease research in these settings and to assess stated research challenges, ethical considerations, and studied interventions within these studies.

Methods: This is a systematic review of forty primary studies focused on infectious disease research conducted among displaced populations. Included studies are published in English between 1995 and 2023. Three databases were searched, PubMed, Embase, and Web of Science, and this review was registered with PROSPERO (CRD42023461567). The risk of bias of the studies was assessed using the Mixed Methods Appraisal Tool.

Results: 85% of studies (n=34) researched an intervention for infectious disease prevention or control and 70% of studies (n=28) were randomized controlled trials. 75% of studies were located in Bangladesh (n=15) or Pakistan (n=15). 40% of studies focused on diarrheal diseases (n=16) and 28% on malaria (n=11). Common identified research challenges included population mobility, limited external validity, and low recruitment. No studies included the community in the initial study conception or investigated the research impact on the community. Community involvement was often through community health workers (45%). Of the 18 studies that studied a resource-based intervention, 20% explicitly noted that the intervention was unsustainable.

Conclusions: While guidelines for conducting research in displaced settings exist, there are gaps in their utilization. We identified a disconnect between where displaced individuals reside and where research is conducted, as well as a prioritization of particular infectious diseases. Researchers identified numerous challenges in conducting research in these settings, though the community was rarely involved in the research. Context-specific considerations and community involvement are vital in research with displaced communities.

Fig. 1

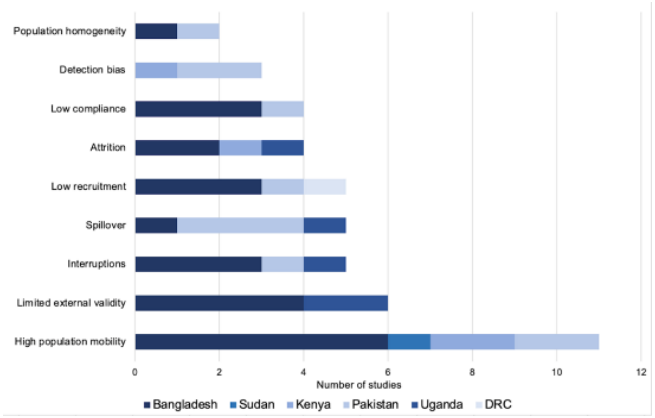
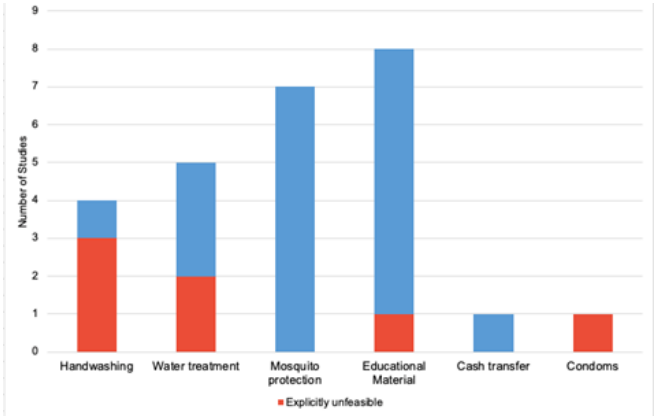


Fig. 2



OS 124

Navigating social context in diabetes care – Experiences of female health volunteers in Nepal through a social capital lens

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Introduction: As non-communicable diseases (NCDs) rise, community health workers (CHWs) are increasingly vital in low-resource settings. While their clinical role is well known, their social navigation, especially in chronic care like type 2 diabetes (T2D) remains underexplored.

Objectives: To explore the experiences of female community health volunteers (FCHVs) involved in a community-based T2D intervention in western Nepal, with focus on social challenges and the role of social capital,

Methods: A qualitative phenomenological design was used, including two focus group discussions and nine in-depth interviews with 14 and 9 FCHVs, respectively. Thematic analysis was guided by Social Capital Theory to explore bondings, bridging, and linking ties.

Findings: FCHVs reported significant challenges such as building trust, navigating gender and class-based power dynamics, and maintaining motivation amid limited support. Nevertheless, they used strong social ties, community recognition, and personal resilience to build cohesion and deliver care. Bonding and linking social capital helped establish credibility and continuity of services. However, systemic gaps, such as insufficient training and weak institutional support threatened long-term engagement.

Conclusions: Social capital is central to the success of FCHV-led interventions. Strengthening support systems and integrating social dimensions into program design is essential for sustainable impact—moving beyond traditional systems thinking

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OS 125

Socio-demographic correlates of self-care practices for hypertension and Type 2 Diabetes – Insights from Rural Kenya

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Background: Hypertension (HTN) and type 2 diabetes (T2D) are major contributors to adult morbidity and mortality in Kenya, where access to healthcare, particularly in rural areas, is often limited. This study examined sociodemographic factors linked to self-reported self-care practices among adults living with HTN or T2D [1].

Methods: A cross-sectional, community-based study was conducted in November 2019 as part of the Kenyan Red Cross Society"s Baseline Assessment for NCD Prevention and Control in Imenti South, Meru County. Data was collected from 435 adults. Chi-square tests and logistic regression were used to examine associations between socio-demographic variables and self-reported self-care. Crude and adjusted odds ratios (AOR) with 95% confidence intervals (CI) were reported.

Results: Among the 435 participants, 37.0% self-reported HTN and 15.4% reported living with T2D. Differences in self-care practices were observed between conditions, particularly in fruit and vegetable intake and blood pressure screening. A majority of individuals reported insufficient fruit and vegetable consumption: 94% with T2D and 98.7% with HTN (p = 0.042). Blood pressure screening was more common among those with HTN (71.4%, p = 0.031). Participants over 40 had significantly higher odds of appropriate HTN self-care compared to younger individuals (AOR = 4.67, 95% CI: 1.53–14.27, p = 0.007). Residents of Mitunguu ward were less likely to report good HTN self-care compared to those in Abogeta (AOR = 0.29, 95% CI: 0.09–0.90, p = 0.033). No socio-demographic factors were significantly associated with T2D self-care after adjustment.

Conclusion: Age (>40 years) and geographic location (Mitunguu) were associated with HTN self-care practices, while no socio-demographic variables were significantly linked to T2D self-care. Gender, education, marital status, religion, employment, and income were not significantly associated with self-care for either condition. These findings underscore the need to potentially consider the role of social capital, especially across age groups and geographic areas, may be relevant in shaping self-care behaviors for people living with HTN and T2D.

OS 126

Effectiveness of an FCHV-Led community-based intervention for hypertension prevention and control in Nepal – A cluster-randomized trial

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[2]*Norwegian Institute of Public Health, Oslo, Norway*

Background: Hypertension affects 25% of adults aged 15–69 in Nepal [1] and is a major public health issue in low- and middle-income countries (LMICs). The WHO Package of Essential Noncommunicable Diseases (PEN) faces implementation barriers, limiting interventions to health facilities. Nepal"s Female Community Health Volunteers (FCHVs), though successful in maternal and child health, remain unused for noncommunicable disease (NCD) prevention and control. Evidence suggests that FCHVs can support hypertension detection and management through community-based approaches [2]. This cluster randomized controlled trial assessed the effectiveness of an FCHV-led group counseling intervention, to improve hypertension control in rural Nepal.

Methods: The trial was conducted in 12 health facilities in Namobuddha Municipality. Six clusters received a 3-month FCHV-led intervention including health education on lifestyle counseling, medication adherence, and referrals. The control group received usual facility-based care. Participants (N=520, aged 30–75) had elevated blood pressure (SBP ≥130 mmHg, DBP ≥80 mmHg, or on treatment). The primary outcome was change in systolic blood pressure (SBP). Secondary outcomes included hypertension knowledge, medication adherence, lifestyle behaviors, and BMI. Data were analyzed using Generalized Estimating Equations (GEE) for intention-to-treat and per-protocol analyses.

Results: The intervention did not significantly reduce SBP (mean difference: 0.6 mmHg; 95% CI: –2.4 to 3.5; p=0.890) or improve hypertension control (OR: 1.1; 95% CI: 0.7 to 1.7; p=0.789). However, it significantly improved hypertension awareness (mean difference: 1.4; 95% CI: 0.3 to 2.4; p<0.001) and medication adherence (Hill-Bone score: –4.0; 95% CI: –5.2 to –2.7; p<0.001; drug-taking score: –2.7; 95% CI: –3.7 to –1.6; p<0.001). No significant changes were seen in diet, BMI, or diastolic BP.

Conclusion: FCHV-led interventions improved hypertension knowledge and medication adherence but did not significantly lower blood pressure or change health behaviors.Knowledge alone may be insufficient for physiological outcomes in hypertensive populations. Future strategies should involve longer interventions and tackle structural barriers to behavior change.

OS 127

Healthcare provider and patient/self-perceived barriers and facilitators for adopting and sustaining self-care practices for managing hypertension and type 2 diabetes mellitus in rural Nepal

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[1]*University of Copenhagen, Public Health, Copenhagen, Denmark*

Background: In Nepal, adherence to self-care practices in people living with chronic diseases such as type 2 diabetes mellitus (T2DM) and hypertension remains a public health challenge. Maintaining optimum blood glucose and blood pressure levels involves many lifestyle behavioral changes

that are heavily impacted by the social determinants of health and social capital of the patients.

Aim: The aim of this qualitative study was to identify the factors influencing patient self-care practices for managing hypertension and T2DM in people diagnosed no less than six months before data collection, in the rural and remote municipalities of Sindhupalchok District, Nepal.

Methods: Individual semi-structured in-depth interviews were conducted with 20 patients, five healthcare providers and four ward chairmen. Additionally, two focus group discussions were carried out with ten female community health volunteers (FCHVs). Social capital and the five social determinants of health [1], as key health equity indicators for people living with hypertension and T2DM, were analyzed in relation to self-care practices.

Results: Several barriers and facilitators predicted the self-care practices of patients with hypertension and T2DM living in the study area. They consisted of limited access to education, as well as reduced health literacy, knowledge and awareness of disease risk factors, challenges in accessing healthcare beyond the primary level, a built environment characterized by remote mountain ranges menaced by earthquakes, and a precarious economic situation with low-income levels and limited job opportunities beyond day labor. Nevertheless, facilitators included minimal discrimination, strong social capital through community cohesion, social integration and peer support, FCHVs who challenge existing social structures, institutions and norms, as well as deep family ties and trust in the primary healthcare providers.

Conclusion: Community-based interventions with the involvement of informal caregivers present potential for improving self-care practices for managing increasingly prevalent chronic health conditions such as hypertension and T2DM in the rural, remote and resource-deprived communities of Sindhupalchok District, Nepal.

OS 128

Understanding genetic barriers to gene drives for malaria vector suppression

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[3]*Biocentis, Terni, Italy*

Gene drives offer a promising strategy for malaria control by spreading traits such as impaired fertility or parasite resistance through mosquito populations. CRISPR-Cas9-based gene drives function by introducing double-stranded breaks at specific target sites in germline chromosomes and copying themselves during repair, resulting in biased inheritance. However, their success in wild populations depends on the durability of the drive system against resistance — a challenge that cannot be fully captured by conventional laboratory tests. Using diverse *Anopheles gambiae* strains, we show that general genomic heterogeneity, including chromosomal rearrangements and background divergence, has minimal impact on drive performance. In contrast, sequence variation at the CRISPR-Cas9 target site presents a major risk to long-term effectiveness. To address this, we developed a scalable screen that deliberately enriches for function-preserving resistance alleles via nuclease-induced end joining. This approach enables orders-of-magnitude higher throughput than previous methods and allows resistance outcomes to be evaluated in complex, variable genetic backgrounds. Our findings provide a practical framework for identifying robust target sites and anticipating resistance risk at the scale needed to inform field deployment decisions.

Fig. 1

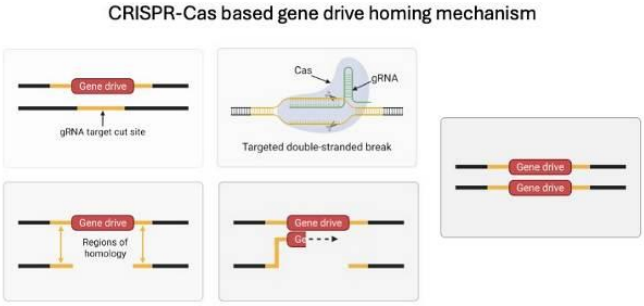
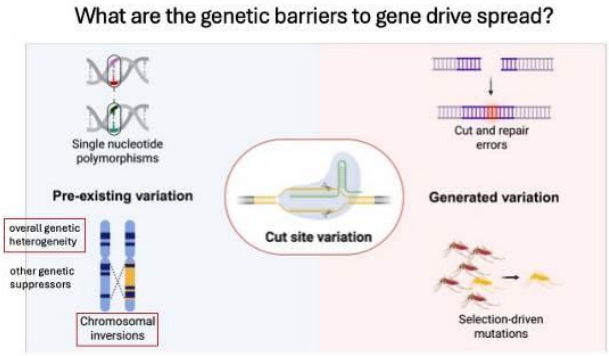


Fig. 2



OS 129

Gene drive-based population control of the malaria vector *Anopheles stephensi*

*X. Xu[1], J. Champer[1]
[1]*Peking University, Beijing, China*

Gene drives are alleles that can bias the inheritance of specific traits in target populations for the purpose of modification or suppression. Here, we constructed both a homing suppression drive and a modification drive in the major urban malaria vector *Anopheles stephensi*. The suppression drive targets the female-specific exon of *doublesex* to reduce fertile females and eliminate populations. Our results indicate that the drive was recessive sterile in both females and males, with various intersex phenotypes in drive homozygotes. Heterozygotes carrying *nanos*-Cas9 exhibited moderate drive conversion, with amplicon sequencing revealing minimal resistance allele formation. When combined with a *vasa*-Cas9 source, the drive achieved 100% drive conversion, demonstrating its potential for self-limiting population suppression with substantially reduced release rates compared to SIT or even fsRIDL. To improve self-sustaining performance, we used *zpg*-Cas9, achieving up to 100% drive conversion. However, a fitness cost reduced cage performance. We also constructed a modification drive targeting the haplosufficient gene *hairy*, utilizing a "toxin-antidote" mechanism to remove resistant individuals lacking the drive allele. This allows confinement of the drive to a target population. The drive exhibits biased inheritance, although its cleavage efficiency was only moderate. Our research contributes valuable insights to the development of more efficient and environmentally friendly pest control tools for disrupting disease transmission and improving public health.

OS 130
Developing strategies for the genetic control of *Aedes albopictus*
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[1]*Inserm, IBMC, Mosquito Immune Responses, Strasbourg, France*

In an effort to develop new genetic control methods against the invasive disease vector mosquito *Aedes albopictus*, we seek to establish M-linked editors (MLE) and M-drives (MD). Both approaches use CRISPR-Cas9 transgenes associated with the masculinizing factor *Nix*, which is able to convert females into functional males. In MLE, Cas9 targets female-essential genes resulting in mutations by the non-homologous end joining DNA repair pathway, so that daughters of MLE males inherit viability and / or fertility defects. In MD, Cas9 targets the insertion locus of the transgenic cassette itself, which should result in a homing gene drive of the masculinizing cassette and conversion of female descendants into new driving males. We will report on our efforts to optimize the CRISPR/Cas9 system in *Aedes*, which is proving more challenging than in *Anopheles* or *Drosophila* but is a crucial prerequisite for these genetic control approaches to work.

OS 131
Advances in field trial design of gene drive technologies
*A. Simoni[1]
[1]*Imperial College of London, Ascot, United Kingdom*

Malaria is a global health issue still causing the death of nearly 600,000 people every year. Despite current interventions, mainly based on insecticide-treated bednets, indoor-spraying and drugs helped reducing the burden of the disease, biological, logistical and economical aspects prevent malaria eradication. Novel tools are urgently needed.

Gene drives represent a promising technology for vector control, offering the potential for long-term, sustainable reduction of malaria transmission. Gene drives are genetic elements that bias their own inheritance, allowing them to spread within target populations. Designed to target the mosquitoes' capacity to reproduce or to transmit the malaria parasite, gene drives offer promising complementary tools to malaria elimination.

One envisioned causal pathway for gene drive interventions involves the release of modified mosquitoes, transmission and spread of the gene drive system in the target population, and subsequent reductions in vectorial capacity and disease burden.

As gene drive technologies approach readiness for potential field implementation, there is a need for initial field trial designs that can safely and effectively test these systems under real-world conditions. Drawing on experiences from field trials of other biological and vector control tools, this presentation explores key considerations for initial gene drive field trials. These include a stepwise evaluation of efficacy, phased testing strategies, site selection, community engagement and effective monitoring.

OS 132
Spatial spread of gene drives – The role of environmental granularity
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[1]*Sorbonne Université / CNRS, Paris, France*

[part of the panel: "Advancing gene drive technologies for vector-borne disease control".]

Some methods for the management of populations, like artificial gene drive, involve the spread of positive frequency-dependent alleles. Whether the allele spreads spatially or not depends on its introduction threshold, but also on the granularity of the environment. In a landmark study, Barton (1979) showed that in a spatially discrete environment, too wide steps could halt the spread of a wave that would otherwise travel in a spatially continuous environment. The identification of the step width threshold however involved approximations. Here, we revisit this study with a detailed numerical exploration, and we show that the step width threshold is actually larger than Barton's approximation, meaning that in some conditions, an allele will spread while it was predicted to be stalled. We also extend these results to population control systems involving two loci, like a toxin-antidote pair. Our findings have implications for the careful use of artificial gene drives for the control of natural populations.

OS 133
"Local" gene drives
*L. Alphey[1]
[1]*University of York, Biology, York, United Kingdom*

For the panel: "Advancing gene drive technologies for vector-borne disease control"

Genetic control methods are being developed for several major insect pest species, based on genetic modification of the insect pest followed - after much further work in scientific, regulatory and social spheres - by release of modified insects into target population(s). Modifications may aim to reduce the numerical size of the pest population ("population suppression") or to reduce the vector competence of insects carrying the novel genetic trait ("refractory insects"). While mass-release of modified insects may work well in some cases, especially for some small or accessible target populations, in many cases more self-sustaining genetic systems - gene drives - are likely essential. CRISPR/Cas9-based artificial selfish DNA elements ("gene drives") have been described that might be capable of spreading through an entire species or species complex. However, this may require prior regulatory/political approval by many countries simultaneously, likely hard to achieve. We focus instead on "local" gene drives that will sustainably modify a target population but not invade other populations of the same species. Principles, progress and some limitations will be discussed.

OS 134
Collaborative action for global health – The global centres for health and pandemic preparedness
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[1]*German Academic Exchange Service (DAAD), Programme Department, Bonn, Germany*

To promote education and research on Global Health and Pandemic Prevention in a globally interconnected manner - and simultaneously develop context-specific solutions - the German Academic Exchange Service (DAAD) launched the Global Centres programme in 2021.

Through this initiative, the DAAD is supporting the establishment of four Global Centres for Health and Pandemic Prevention (as well as four Centres for Climate and

Environment), funded by the German Federal Foreign Office through 2030. Based at higher education institutions in the Global South and working closely with German partners, these Centres advance education and research by building locally adapted expertise and putting it into practice—fostering collaboration across academia, the public and private sectors, and civil society.

The centres address a wide range of topics, including capacity building to better respond to infectious diseases such as malaria and dengue, the development of new vaccines and therapies, and research into the root causes of global pandemics and the key elements of resilient health systems. They will present their diverse expertise during this session.

Their activities include co-supervised and funded PhD and Master"s programmes, research and study exchanges, other educational offerings such as expert seminars, short courses, and MOOCs, train-the-trainer initiatives, investment in infrastructure such as (mobile) laboratories, and events designed to facilitate knowledge exchange and its practical application - such as policy dialogues and conferences.

Explore the outcomes of nearly five years of collaboration - and discover opportunities to partner with the Global Centres for the future!

OS 135

German - Latin American Centre of Infection & Epidemiology Research & Training (GLACIER) – Supporting research and capacity building in Panama

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The German - Latin American Centre of Infection & Epidemiology Research & Training is a large consortium that include about 35 partners from Germany and several Latin American countries. It includes important higher education institutions, such as the Charité - Universitätsmedizin (Berlin), the Martin-Luther-University Halle-Wittenberg, The University of Havana (Cuba), the UNAM (Mexico) and others. The Institute of Scientific Research and High Technology Services (INDICASAT AIP) is a Partner of the GLACIER consortium. The INDICASAT AIP is a research center under the Panamanian National Secretary of Science, Technology and Innovation, dedicated to scientific research in areas highly relevant to the country, such as Biomedicine, Biotechnology and Biodiversity. Main research interests covered by researchers include Plasmodium, Trypanosoma, Toxoplasma, Leishmania, arboviruses (mainly Dengue virus) and SARS-CoV-2. Several of the research projects are dedicated to make used of the Panamanian biodiversity to discover new potential molecules against these parasites and against cancer. A project is ongoing to identify and characterize new antivirals against Dengue virus and SARS-CoV-2, as well as genomics and vaccine development against Leishmania panamensis, the main causative agent of cutaneous and mucocutaneous leishmaniasis in Panama. The INDICASAT AIP also has an important role for the preparation of new scientists in Panama. Through involvement in several doctoral programs with national and international universities, more than thirty new PhDs have been incorporated into the research activities in the country. We are also partners for international courses on important topics such as Genomics and Molecular Epidemiology of SARS-CoV-2 and several others, organized periodically by PAHO, OMS and CDC (USA) to strengthen lab capabilities and preparedness of Latin American countries for public health emergencies. The GLACIER center has been key for INDICASAT AIP as a partner, allowing us to increase our scientific networking with other members of the network. Several coordinating meetings and courses have been taking places between our scientists and those of Cuba, México, and Germany.

OS 136

Together for Tomorrow: The PAN ASEAN coalition for epidemic and outbreak preparedness (PACE-UP)

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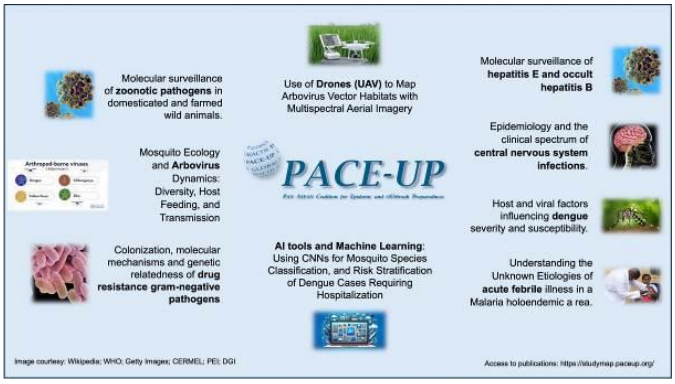
The PAN ASEAN Coalition for Epidemic and Outbreak Preparedness (PACE-UP), a global health hub based at the Vietnamese-German Center for Medical Research in Hanoi, is a dynamic, multi-country initiative fostering interdisciplinary collaboration to address one of today"s most pressing global health challenges: emerging and reemerging infectious diseases. Active across Southeast Asia and supported by partners in Africa and Europe, PACE-UP (2021 to 2030) brings together leading institutions from Vietnam, Malaysia, Indonesia, and Germany to strengthen epidemic preparedness, outbreak response, and health systems resilience.

Addressing critical yet often neglected health threats such as dengue, arboviruses, occult hepatitis B, hepatitis E, central nervous system infections, respiratory diseases, antimicrobial resistance, and climate sensitive vector borne diseases, PACE-UP promotes integrated research, cross border surveillance, and improved access to affordable diagnostics in low and middle income settings. At its core, the initiative prioritizes research based training and academic capacity building to empower the next generation of public health professionals across the Global South. By catalysing change through exchange of knowledge, expertise, and innovation, PACE-UP fosters equitable partnerships and mutual learning across regions.

This session will present PACE-UP"s approach to translating science into impact, highlight key findings, and demonstrate how inclusive regional partnerships are shaping the future of pandemic preparedness and control. Join us to explore how scalable and collaborative strategies can close the gap between knowledge and action in global health.

To learn more about the initiative, visit: www.paceup.org and www.vgcare.org

Fig. 1



OS 137

A phase II randomised controlled clinical trial assessing multidrug combination regimens containing pyronaridine, fosmidomycin, atovaquone-proguanil, and clindamycin in combination with artesunate for the treatment of uncomplicated malaria in sub-Saharan Africa

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The MultiMal study assessed the safety and efficacy of the two antimalarial combination treatments of artesunate-pyronaridine-atovaquone/proguanil (APAP) and artesunate-fosmidomycin-clindamycin (AFC) in comparison to standard treatment with artesunate- pyronaridine (AP). This open-label randomised controlled trial was conducted in Lambaréné, Gabon and Kumasi, Ghana. Recruitment of malaria patients in three age groups was performed in a step-down procedure: First, 20 semi-immune patients aged 18-65 years, then 40 patients aged 11-17 years and finally 40 patients aged 6 months to 10 years. Weight-adjusted oral doses were administered under direct supervision over three days once daily for AP and APAP regimens and twice daily for AFC. Participants were followed up over a 42-day period. Adverse events were ascertained over the whole observation period and adequate clinical and parasitological response (ACPR) was ascertained on day 28 and day 42 of follow-up as efficacy measure. In the PCR-uncorrected intention-to-treat population ACPRs28 (%; 95% CI) were 85% (62-97), 87.5% (73-96) and 82.5% (67-93) for AP, APAP and AFC, respectively. ACPRs42 were 70% (46-88), 75% (59-87) and 75% (59-87), respectively. In the PCR-corrected per protocol population ACPRs28 and ACPRs42 were all 100% for AP and APAP, but were 97% (85-100) for ACPRs relating to AFC. Interestingly, the proportion of patients with treatment emergent adverse events (TEAEs) did not differ across study arms (p=0.37).

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Efficacy, safety and tolerability of a single dose sulfadoxine-pyrimethamine plus artesunate-pyronaridine (SPAP) for the treatment of uncomplicated malaria in adults and children in Gabon: the 1-D-CURE study – a pragmatic randomized controlled clinical trial

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Background: Simplified antimalarial regimens, such as single-dose treatments, are needed to improve adherence, reduce costs, and prevent resistance. This study evaluates the efficacy, safety, and tolerability of a single-dose sulfadoxine-pyrimethamine plus artesunate-pyronaridine (SPAP) regimen, with a focus on children under 10 years.

Methods: This is a pragmatic, randomized, open-label, non-inferiority trial comparing single-dose SPAP with standard 3-day artemether-lumefantrine (AL) for uncomplicated *Plasmodium falciparum* malaria. Patients with positive RDT/microscopy are randomized in a 1:1 ratio after a signed informed consent. Blood samples were collected for microscopy, PCR, haematology and biochemistry. Follow-up visits are performed at home on Days 7, 28 and 42. The primary efficacy endpoint is Day 28 adequate clinical and parasitological response (ACPR) in intention-to-treat and per-protocol populations. A minimum of 1000 patients will be enrolled.

Results: Between May 2024 and July 2025, 800 patients were screened, and 753 enrolled across four Gabonese sites: Tchibanga 291 (42.7%), Lambaréné 225 (33.0%), Sindara 91 (13.3%), and Four-Place 75 (11.0%). A total of 682 were analysed- 361 (52.9%) were randomized to SPAP and 321 (47.1%) to AL. Median age was 13 years (IQR: 6-24), with over 40% under 10 years. There was a slight female predominance. Day 28 ACPR was 93% (237/256) in the SPAP group and 88% (205/232) in the AL group, showing a 5.0% higher cure rate with SPAP [95% CI: –2.6%, +9.0%]. As the lower bound is above 5% margin, non-inferiority was demonstrated. Vomiting of the investigational medicinal products occurred in 4% of SPAP group vs 1% in AL. Adverse events were mild to moderate and transient. No serious adverse events were related to the study drugs.

Conclusion: Single-dose SPAP demonstrated non-inferiority to the standard 3-day AL regimen in treating uncomplicated malaria, with high cure rates and acceptable safety. These findings support its potential as a simplified, effective treatment, especially in children.

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Development of an antibiotic-based multidrug combination fosmidomycin-artesunate-clindamycin (FAC) for the treatment of severe malaria

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Severe malaria is a major cause of preventable morbidity and mortality in children living in endemic areas. The latest World Malaria Report highlights that 76% of all malaria deaths were among children aged below 5 years in sub-Saharan Africa (WHO 2024). Severe malaria has a risk of being overdiagnosed as approximately one third of children with this diagnosis have another infection, most commonly sepsis, as the main cause of their illness.

Parenteral artesunate is the current standard-of-care (SOC) for severe malaria. If widespread resistance to artemisinin

drugs were to develop, antimalarial drug therapy would be severely compromised.

A novel antibiotic-based multidrug combination, fosmidomycin-artesunate-clindamycin therapy (FACT) for severe malaria is proposed. The FACT will simultaneously treat concomitant bacterial bloodstream infections: activity against gram-negative bacteria and anaerobic infections by clindamycin and activity against gram-positive bacteria. Additionally, synergy action of these three drugs, which are effective against parasites, have different modes of action will delay the development of resistance that threatens artemisinin derivatives. The FACT project aims to evaluated efficacy, safety, tolerability and pharmacokinetics of FAC for severe malaria in pediatric population (6 months to < 17 years) by conducting a Phase II and a Phase III clinical trials.

Phase II, age de-escalation age groups, monocentrique trial will be conducted in Africa children with uncomplicated malaria. They will be randomized to receive FAC either orally or in intravenous versus SOC therapy. The primary endpoint will be exposure expressed as area-under-the-concentration time curve, and pharmacokinetic parameters across the investigated age groups.

Phase III, age de-escalation age groups, multicenter trial in children aged 0.5–<17 years with confirmed severe malaria. Patients will be treated with FAC therapy in IV versus SOC therapy. The primary endpoint will be proportion of participants clearing ≥99% of their admission parasitaemia at 24 hours.

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Safety, tolerability, and pharmacokinetics of different orally administered regimens of the combination ZY19489-Ferroquine in adult asymptomatic *Plasmodium falciparum* carriers – ZYFER 1 – Phase Ib, single-center, randomized controlled study

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Malaria remains a life-threatening parasitic disease, with the effectiveness of current first-line Artemisinin-based Combination Therapies (ACTs) declining due to poor adherence and emerging resistance, now observed in sub-Saharan Africa.

To address this challenge, there is an urgent need for novel, non-artemisinin-based combinations with shorter treatment durations to improve compliance and therapeutic outcomes. The SINDOFO project aims to evaluate such an approach by assessing the efficacy, safety, tolerability and pharmacokinetics of a promising drug combination: sutidiazine (ZY19489), a triaminopyrimidine, and ferroquine (FQ), a next-generation 4-aminiquinoline.

We are conducting a Phase I dose-escalation study in Lambaréné, Gabon. Healthy, asymptomatic carriers of *Plasmodium falciparum* aged 18 to 55 years are enrolled after informed consent. Participants are randomized 4:1 (intervention: placebo) into three cohorts of 12 individuals each. The combination is administered as a single dose in cohort 1 (600 mg/600 mg) and cohort 2 (900 mg/900 mg), and once daily for two days in cohort 3 (600 mg/600 mg). Safety data up to day 15 are reviewed at the end of each cohort before dose escalation.

Between August 2024 and June 2025, the first two cohorts have been completed with 46 participants screened and 24 randomized. The median age was 22.5 years (IQR: 20.7-30), and 75% (18/24) were male volunteers. Adverse events occurred in 92% (cohort 1) and 58% (cohort 2) of participants, all mild to moderate and transient. No serious adverse events were reported. A drop in hemoglobin > 2g/dl from baseline was a common adverse event of special interest.

Pharmacokinetics analysis in cohort 1 revealed a threefold higher Cmax for sutidiazine compared to FQ, with a shorter half-life (~28 hours vs ~7.3 days), and lower metabolite contribution (16.6% vs 106%). In Cohort 2, increased dosing reduced sutidiazine clearance and increased FQ clearance. Compared to healthy Australians, African participants exhibited 51% lower sutidiazine exposure due to faster clearance. Parasite clearance at 48 hours post-treatment occurred in 83% (10/12) of participants in each cohort.

Based on these findings, cohort 3 will proceed, followed by a planned multicentric, randomized, phase II trial to evaluate the treatment"s efficacy in symptomatic populations including adults, adolescents and children.

***Keywords**: ZY19489, Ferroquine, Safety, Tolerability, Pharmacokinetics.*

OS 141

Capacity building in the PEP4LEP project – Preliminary findings of integrated approach to gain expertise in the diagnosis of leprosy among other skin diseases

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Background: The PEP4LEP and PEP4LEP 2.0 projects aim to identify feasible approaches for integrated skin screening and leprosy chemoprophylaxis in Ethiopia, Mozambique, and Tanzania. With limited leprosy expertise in many settings, strengthening the diagnostic capacity of primary healthcare workers is essential. The approaches include structured training, mentoring, and mobile health support (via the NLR SkinApp), aiming to improve identification and management of leprosy and other skin diseases.

Methods: To evaluate training impact, capacity assessment tools were developed with an educational specialist. Written assessments were administered at four timepoints: pre-

training, post-training, mid-project, and toward project end. Each included 30 questions (multiple choice and case-based) covering leprosy and other skin conditions. Participants were encouraged to use the SkinApp. In Tanzania, qualitative interviews with ten healthcare workers explored how they applied knowledge gained from training, mentoring, and field experience during skin screening events ("skin camps").

Results: Assessment completion varied by country, with higher participation in Ethiopia and fewer completions in Mozambique due to COVID-19 disruptions. Ethiopian participants were younger and predominantly male, while Mozambique and Tanzania had more gender-balanced teams. Across countries, an average of 11% improvement in test scores was observed post-training. However, a 14% decline was seen in the third assessment, especially in Ethiopia and Tanzania, suggesting challenges in sustaining knowledge. Tanzanian health workers highlighted the value of hands-on experience, mentoring, and the SkinApp in reinforcing both formal and informal learning.

Conclusion/Discussion: Preliminary findings underscore the importance of ongoing capacity strengthening to sustain gains from initial training. Combining structured instruction with mentoring, digital tools, and real-world practice supports lasting improvements in diagnostic capacity. Further research is needed to evaluate long-term impact and develop strategies to maintain skills over time.

PEP4LEP is part of the EDCTP2 programme supported by the European Union. It also received funding from the Leprosy Research Initiative (LRI). PEP4LEP 2.0 is supported by the Global Health EDCTP3 Joint Undertaking and its members. The funders had no role in study design, data collection/analysis or publishing.

OS 142

Effectiveness of ongoing SDR-PEP implementation under routine program conditions

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Background/Introduction: A recent literature review (period of inclusion up to 21 May, 2024) on rifamycin-based post-exposure prophylaxis (PEP) for leprosy identified five articles reporting on efficacy of PEP, four cluster randomized trials (RCT) and one retrospective time series analysis. The RCTs reported reductions in leprosy incidence of 35-75% for single dose rifampicin (SDR) and 84% for rifapentine. The retrospective time series analysis was based on routine data from Morocco where PEP has been introduced at national level in 2012. This was followed by an augmentation in the decrease of the annual case detection rate from -4.68% to -16.83%. An additional study form Nepal was published in December, 2024. This study evaluated outcomes of SDR-PEP provision under program conditions, details are provided below.

Methodology: Four districts were selected that had all been part of a feasibility study. In all four districts home visits were made to all leprosy patients diagnosed since January 1st, 2015 and contacts were listed and screened. In two districts SDR-PEP was provided as a rolling intervention, the other two districts served as comparator. A Cox model was applied to compare risk of developing leprosy among contacts between intervention and comparator districts.

Findings: Case notification rates declined in all four districts but the steepest declines were observed in the intervention districts. When comparing the risk for the contacts, it was significantly lower in the intervention districts (hazard ratio(HR) 0.28, 95% CI 0.18-0.44). The protective effect observed was equally strong in blood related contacts (HR 0.29 versus 0.27 in others, p=0.32) and the proportion of MB cases among incident patients did not differ between the two arms (51.4% vs. 53.6%, p=0.82).

Conclusions: RCTs showed a favourable impact of PEP, either SDR-PEP or rifapentine, but trial conditions are different from routine programme conditions. When PEP is administered under program conditions it is however a continuous intervention. The study from Morocco was a time series analysis and as such could not control for many potential confounders such as improved socio-economic conditions. The study from Nepal compared four districts at the same time and found a consistent reduction in leprosy risk in the intervention districts. Integration of SDR-PEP as a rolling intervention appears to be feasible and effective.

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The NTD inclusion score card – Strengthening capacity within NGOs to meaningfully include persons affected by NTDs

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The inclusion of persons affected by neglected tropical diseases (NTDs) in the design, implementation, and governance of programs is increasingly recognized as essential to achieving equitable, accountable, and effective global health responses. In response to calls from affected communities, a group of NTD-focused non-governmental organizations (NGOs) initiated a participatory research process to strengthen internal mechanisms for inclusive decision-making. This process led to the development of the NTD Inclusion Score Card (NISC), a self-assessment tool designed to support organizations in assessing and enhancing the meaningful participation of persons affected by NTDs in their organizational processes.

The tool was developed through a two-phase, mixed-methods approach. Phase 1 involved exploratory workshops with persons affected by NTDs and NGO staff to identify key components of meaningful participation. These insights informed the structure and content of the draft Score Card, organized into six domains. In Phase 2, the tool was piloted across ten NGOs. Data were collected via 22 semi-structured interviews and 43 surveys before and after implementation. Qualitative data were analyzed thematically, and quantitative data were analyzed descriptively.

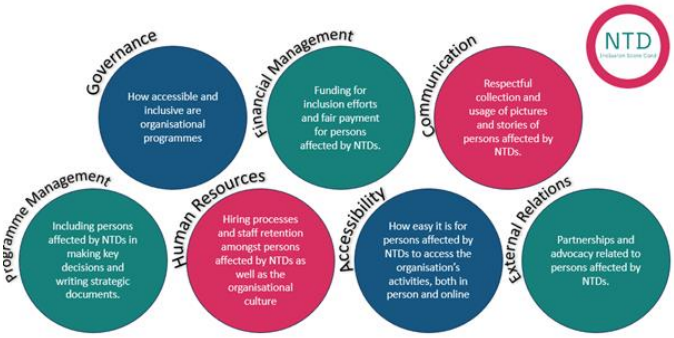
Findings from the pilot highlighted strong support for the tool"s relevance, structure, and usability. Participants emphasized the importance of contextual adaptation, sustained organizational commitment, and clear communication. A

communication domain was added in response to these insights into the final version of the NISC.

Broader uptake of the NISC allowed for testing its relevance in diverse NGO settings. Internal rollouts involving staff, partners, and persons affected by NTDs highlighted key success factors, including strong leadership commitment and meaningful cross-departmental participation. Lessons learned from early implementation have informed the refinement of the tool and offer critical guidance for its continued use, scaling, and dissemination.

The NISC offers a practical framework for NTD organizations to systematically reflect on and improve their inclusion practices. By embedding the perspectives of persons affected by NTDs into institutional processes, program quality, accountability, and impact can be enhanced. This session will present the development, pilot and implementation of the NISC, and offer recommendations for its application across diverse organizational contexts.

Fig. 1



OS 144

Cognitively-Based Compassion Training (CBCT®) for healthcare workers in Jharkhand, India – A mixed-methods study to address Leprosy Stigma with compassion

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Background: Compassion is a critical component of quality healthcare, yet when healthcare workers (HCWs) stigmatize persons affected by any condition, including leprosy, it can undermine their care delivery. Existing leprosy training programs neglect stigma reduction and cultivation of compassion. Since 2004, Cognitively-Based Compassion Training (CBCT®) has been implemented worldwide to improve the empathy, resilience, and wellbeing of HCWs, patients, and community members. This study developed and tested a stigma-informed CBCT® intervention tailored for HCWs engaged in leprosy care.

Methods: A mixed-methods baseline study was conducted in 2024–2025 in Jharkhand, India. Quantitative data were collected from 80 persons affected by leprosy and 80 HCWs: SARI Stigma Scale, Human Flourishing Tool (HFT), and CARE Measure for persons affected by leprosy; and Social Distance Scale (SDS) and Pommier Compassion Scale (PCS) for HCWs. In-depth interviews and focus groups enriched findings and informed the intervention. The culturally adapted, stigma-informed version of CBCT® was delivered to HCW groups by local certified trainers, integrating participant feedback iteratively. Complementing materials in Hindi and English were developed and given to HCWs by their role type, including a charter guiding daily compassionate practices.

Results: At baseline, persons affected by leprosy reported moderate stigma (mean SSS: 22.3), flourishing (mean HFT: 68.6), and compassionate care (mean CARE: 30.4), with older age and multibacillary leprosy associated with reduced flourishing. HCWs showed moderate stigma (median SDS: 2.5) and compassion (mean PCS: 69.4); more experience and prior leprosy training were associated with higher compassion. Qualitative findings emphasized compassion"s value, societally and within healthcare, but revealed widespread discriminatory behaviors. Training participants evidenced high engagement with the exercises and reported emotional and behavioral need for the education. Participants voiced differences between CBCT® and medical training, and thus a gap in preparedness to deliver compassionate, stigma-free care.

Conclusion: Baseline findings highlight persistent stigma in healthcare settings and critical gaps in compassionate care. Tailored compassion training is feasible and well-received among HCWs. The impact evaluation can be used to scale-up stigma-informed compassion training among leprosy programs in India and elsewhere.

Fig. 1

OS 145

Empowering the next generation – The impact of youth in tackling neglected tropical diseases

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The WHO"s 2030 roadmap outlines the challenges, progress and priorities in addressing the global burden of neglected tropical diseases (NTDs). It recognizes the crucial role of youth-led initiatives in engaging their energy and innovation to increase the dissemination of information, in developing creative solutions, and in building young networks for the translation of programs to fight NTDs. In recent years, several such initiatives have emerged globally, forming a growing movement that bridges research, advocacy, and implementation. Their successes are reflected in community engagement campaigns, participatory research, and contributions to both national and global NTD strategies, while strengthening international collaboration. Nevertheless, the translation of knowledge and policy into practice remains challenging, particularly for complex and understudied diseases such as Noma or snakebite envenoming. Conversely, interventions targeting water, sanitation and hygiene (WASH) have demonstrated substantial reductions in the burden of several NTDs, including trachoma, dracunculiasis and soil-transmitted helminthiases. We explore the role of youth-led initiatives in policy and implementation efforts to combat NTDs, especially within complex environments marked by systemic inequalities and constrained resources. Fostering inclusive collaborations between partners from both the Global South and North and including implementing organizations is essential for the sustainable integration of NTD programs. Youth-led action represents a key driver in accelerating progress towards the 2030 NTD targets, supporting a more equitable, inclusive, and effective global response. The input of the young generation and of its creative thinking is particularly important in this geopolitical time of reduced resources and recent cuts in funding for global health, including NTDs.

OS 146
Multi-actor perspectives in parasite diagnosis and epidemiology
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Parasitology has long been acknowledged at the international level as both a multidisciplinary and interdisciplinary field, contributing extensively to a wide spectrum of basic and applied research. In recent decades, the demand for integrated scientific approaches and cross-sectoral collaboration in parasitology has intensified, driven by technological advances in the diagnosis of parasitic infections in humans and animals, as well as in epidemiological modeling and field-based applications.

The discipline inherently promotes integration across diverse scientific domains—including ecology, geoinformatics, information technology, the social sciences, and economics—facilitating a more comprehensive understanding of host–parasite interactions. Such transdisciplinary collaboration enables a systems-level approach to parasitism and supports more informed prioritization of interventions that transcend conventional public health frameworks.

Recent developments in artificial intelligence (AI) and machine learning (ML) are reshaping parasitological research and practice. These technologies enhance the sensitivity and specificity of diagnostic tools, improve the efficiency of data analysis, and facilitate more accurate modelling of disease dynamics, thereby strengthening surveillance and control strategies for parasitic diseases.

Parasitology may be conceptualized as a "meta-discipline"—a field that synthesizes methodologies and insights from multiple scientific domains to address complex biological questions that are not resolvable within a single discipline. Emerging subfields such as paleoparasitology, geoparasitology, digital parasitology, socio-parasitology, eco-parasitology, citizen parasitology, AI-driven parasitology, and IT-integrated parasitology illustrate the field"s dynamic and adaptive nature. These developments underscore the continual evolution of parasitological tools, methods, and conceptual frameworks, positioning the discipline at the forefront of innovation in biomedical and environmental sciences.

OS 147
Tackling health risks with geographic information and geospatial technologies in a dynamically changing environment – vector-borne diseases to disaster epidemiology
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More than 2.6 billion people have been affected by disasters in the last decade with over 350 million people affected each year. As climates change, the impact on health and health-related services will affect populations unequally around the world with some areas more affected than others. Disaster events can act as a catalyst for diseases by enhancing the interactions between a pathogen (or disease agent), a susceptible host in an altered environment. Although a wide variety of diseases, some with epidemic potential, are associated with disasters, six main disease types, some of which are highly transmittable and vaccine-preventable can occur.

Epidemics do not occur spontaneously, instead they arise as a result of interactions between a pathogen agent, a susceptible host in an environment conducive to transmission which may be intensified due to exposure during a hazard type (HE), vulnerabilities in the population (V) and coping capacity or lack their off (CC) in the geographic region. Taking these factors into consideration, several steps can be taken to prevent and minimize disease occurrence during different phases of a disaster event.

During this talk, I will highlight the role geographic Information and geospatial technologies can play in tackling health risks in a multi-dimensional changing environment from preparation to rescovery in both the short-term and long-term. This talk will be centered around an integrated health approach from the ecological drivers to thinking about how to respond and communicate with geospatial data and technologies. Examples will range from vector-borne diseases, disaster epidemiology to extreme weather events and accessibility to health facilities.

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OS 148

Realistic accessibility modelling for better health system planning

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Access to healthcare remains a critical challenge in low- and middle-income countries (LMICs), where geographical barriers often prevent populations from receiving timely care. This presentation will highlight the critical role of realistic accessibility modeling in supporting informed health service planning in LMICs. We will first showcase several use cases in sub-Saharan Africa where optimization of population coverage of different health services was done using the open-source software AccessMod. We will then discuss several challenges that still limit the quality and accuracy of these approaches, notably issues pertaining to using (big) open data services on travel constraints, the incorporation of dynamic changes in population distribution, and the consideration of the urban-rural continuum.

OS 149

Integrated social, geographical, medical and technological approaches to understand health challenges of vulnerable population groups

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Vulnerable groups at the margins of societies in Europe, such as residents of deprived neighbourhoods, people with low socio-economic status, representatives of ethnic minorities, or older adults often live under problematic conditions, excluded from access to health-promoting services with increased exposure to environmental hazards and infectious disease. Understanding the extent of related high health risk, and providing assistance through targeted interventions are complicated by the invisibility of such groups, and the inaccessibility of reliable, up-to-date information.

Several inter- and transdisciplinary research projects will be presented that (i) combine in a novel way social, geographical, medical and technological approaches to (ii) understand complex health challenges in vulnerable groups, (iii) co-create health-promoting solutions, and (iv) assess and reflect on the feasibility of different methods in research with vulnerable populations.

Health challenges addressed in this talk include

- Environment and health insecurity in ethnic minority communities in Slovakia
- Climate-sensitive and health-promoting spaces for vulnerable urban populations in the Netherlands
- Water and health insecurity and implications of extreme weather in people experiencing homelessness in Germany

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OS 150

Developing a spatial vulnerability index for infectious diseases of poverty in the Caribbean

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Background: Infectious diseases of poverty (IDoP) disproportionately affect marginalized and resource-limited populations, creating spatial patterns of vulnerability across and within countries. Yet, no standardized spatial index exists to quantify this vulnerability at fine geographical scales—such as municipalities or provinces—limiting policymakers" ability to allocate resources and target interventions effectively. This study aims to develop and validate a spatial vulnerability index tailored to the Caribbean, using the Dominican Republic (DR) as a case study.

Methods: The framework includes three components. First, a scoping review and expert consultation were conducted to identify key spatial determinants of IDoP vulnerability. Second, the Fuzzy Analytic Hierarchy Process (Fuzzy AHP) will be used to assign weights to these factors, incorporating expert judgment while accounting for uncertainty. These weights will inform the construction of a spatial composite index using open-source geospatial and national survey data for the DR. Third, the index will be validated using surveillance and seroprevalence data for at least three IDoPs at the municipal level, including data from a 2021 national field survey.

Results: The review identified six primary categories of vulnerability factors: (1) socioeconomic conditions (e.g., income, GDP, female literacy, health spending); (2) environmental exposures (e.g., temperature, precipitation, Oceanic Niño Index, water coverage, drought intensity); (3) healthcare access (e.g., walking time to public facilities); (4) household conditions (e.g., water source/treatment, mosquito control, housing materials, open sewer proximity); (5) macroclimatic variables; and (6) a gap in demographic indicators. Associations included higher Hepatitis C and HIV risk in low-income areas, and an inverse relationship between public health spending and TB incidence. Environmental factors like precipitation and Oceanic Niño Index were linked to dengue, giardiasis, and other arboviral diseases. Index development and evaluation are ongoing.

Conclusions: This spatial vulnerability index will support the identification of high-risk areas and guide equitable public health responses in the Caribbean. Its flexible structure allows adaptation to other settings based on local data and disease profiles.

OS 151

Prevalence and co-infection dynamics of human Papillomavirus and female genital Schistosomiasis among Women of reproductive age in Kilifi County, Kenya

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Introduction: Cervical cancer remains a significant cause of cancer-related deaths among women. According to GLOBOCAN 2022, it ranks as the fourth most common cancer in Kenya, with 5,845 new cases and 3,591 deaths annually. High-risk human papillomavirus (HR-HPV) types, particularly HPV 16, 18, and 45, are known contributors to cervical lesions that can develop into cancer. Another often-overlooked factor is Schistosoma haematobium, a parasitic worm causing Female Genital Schistosomiasis (FGS), a disease characterised by genital lesions and inflammation that may increase susceptibility to HPV infection. Both HPV and FGS are highly prevalent in sub-Saharan Africa, including Kenya, where cervical cancer presents a major public health challenge. FGS often affects women in marginalised communities with limited access to clean water, sanitation, and healthcare. Lack of awareness about both FGS and HPV among women in endemic regions remains a barrier to cervical cancer prevention. This study aimed to assess the prevalence of FGS and HR-HPV among women of reproductive age in Kilifi County, Kenya.

Methods: High vaginal swabs (HVS) were self-collected from consenting participants. Each sample was suspended in phosphate-buffered saline (PBS), and DNA was extracted using the GeneProof Pathogen-Free DNA Isolation Kit (Czech Republic). High-risk HPV genotypes were identified using the GeneProof HPV Screening Kit, which tests for 24 HR-HPV genotypes and differentiates between HPV types 16, 18, and 45. For FGS diagnosis, DNA was extracted from the same HVS samples and tested using real-time PCR targeting the Dra1 gene of S. haematobium.

Results: In this pilot cross-sectional study involving 261 women in Kilifi County, real-time PCR revealed a 36% prevalence of FGS. Screening for 24 HR-HPV genotypes showed a 48.7% prevalence of HR-HPV. Of these HR-HPV cases, 60% involved genotypes 16, 18, or 45. Notably, 36.2% of HR-HPV-positive women were co-infected with S. haematobium.

Conclusion: The study emphasises the urgent need for integrated screening and treatment strategies for both schistosomiasis and HPV to reduce the risk of cervical cancer. Future research should explore the interaction between these infections and guide public health strategies addressing both parasitic and viral contributors to cervical disease.

OS 152
Educating women for impact – How training women enhances One Health and medicine
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As global health challenges become more complex and interconnected, solutions must be interdisciplinary, inclusive, and equity-driven. One Health, a framework that links human, animal, and environmental health, requires diverse leadership and systems thinking. Yet gender inequities persist in health education and leadership, particularly in the Global South.

This presentation explores how educating and training women improves the quality, reach, and impact of both One Health and medicine. Drawing on the experience of the University of Global Health Equity (UGHE) in rural Rwanda, we examine how gender-responsive educational approaches can shift the practice and potential of both fields. UGHE"s Master of Science in Global Health Delivery and medical programs are grounded in interprofessional, field-based learning and prioritize women"s inclusion.

Evidence from UGHE is paired with global literature showing that women"s participation in health leadership leads to stronger systems, improved outcomes, and greater trust in services. Educated women are more likely to invest in family and community health, advocate for underserved populations, and bring holistic perspectives to health system challenges. This presentation calls for reimagining One Health and medical education to center women as leaders, innovators, and essential contributors to both One Health and broader health system resilience.

OS 153
Integrating gender and veterinary medicine for global impact
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Veterinary medicine plays a critical role in promoting animal health, food security, and sustainable livelihoods. However, gender disparities persist both within the veterinary profession and in access to veterinary services, particularly in low-resource settings. Women often serve as primary caregivers for livestock but are not necessarily represented among veterinary service providers. They also face systemic barriers to accessing animal health services, participating in decision-making, and advancing within the veterinary workforce.

This presentation highlights the importance of gender integration for achieving equitable, effective, and sustainable veterinary systems. Drawing on evidence from research and initiatives implemented across sub-Saharan Africa, it demonstrates how gender inequalities are embedded along livestock value chains and how veterinary services can affect men and women differently. It also presents examples of gender-responsive innovations, including training women as animal health service providers, establishing basic veterinary infrastructure such as cold chains, and engaging male champions. These approaches have improved vaccine access, strengthened community trust, and economically empowered women.

The presentation further examines persistent leadership gaps within the veterinary profession and emphasizes the need for mentorship, flexible policies, and inclusive training to promote women"s advancement. Practical recommendations for researchers, policymakers, and implementers are provided to support the scaling of gender-responsive approaches. These efforts are essential for building more resilient and equitable One Health systems globally.

OS 154

How gender barriers hinder effective implementation of the One Health approach

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Despite its integrative promise the One Health (OH) approach - linking human, animal, and environmental health - remains hampered by systemic gender inequities. Women are vital to healthcare delivery, community-level surveillance, livestock management, and ecosystem stewardship, yet often excluded from decision-making, research leadership, and policy formulation. This presentation explores how gender barriers undermine OH implementation across sectors and regions.

Drawing on empirical evidence, we identify three key mechanisms: (1) underrepresentation of women in OH governance and science limits gender-sensitive perspectives in policy and risk communication; (2) unequal access to training, funding, and career advancement restricts women"s participation in surveillance, response, and research; (3) gendered labor roles and mobility restrictions reduce women's visibility in formal systems while increasing their exposure to zoonotic risks.

For example, during avian influenza control efforts in Vietnam, women"s exclusion from veterinary networks hindered biosecurity messaging, despite their central role in poultry care1. In Nigeria, structural and cultural barriers limit women veterinarians from participating in field-based OH activities, reinforcing occupational segregation2. Evidence shows that female leadership in health systems improves community trust, reduces inequalities, and strengthens health outcomes3. Gender equity is not an add-on but essential to operational effectiveness in OH4.

We call for reframing gender as a core operational pillar of OH. We propose evidence-informed recommendations for gender-responsive OH implementation and offer a practical framework for integrating equity into OH policy, research, and training. Only by dismantling gendered barriers can we fully realize the transformative potential of One Health.

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3 Kalbarczyk A *et al.* A scoping review on the impact of women"s global leadership: evidence to inform health leadership. BMJ Glob. Health 2025;10:e015982. doi:10.1136/ bmjgh-2024-015982

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OS 155

Animal and human health in crisis contexts

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Armed conflicts are not only political and humanitarian crises but also major drivers of global health emergencies, disrupting the balance between humans, animals, and ecosystems. While the One Health paradigm highlights these interdependencies, humanitarian responses remain largely anthropocentric. Wars generate mass displacement, collapse of veterinary infrastructures, abandonment of farms, uncontrolled animal movements, biodiversity loss, and environmental contamination, all of which exacerbate zoonotic risks and food insecurity. In 2024, forced displacement reached 122.6 million people, a record, also involving millions of livestock and companion animals facing abandonment, hunger, and lack of veterinary care. Wildlife is similarly affected: 80% of conflicts occur in biodiversity hotspots, intensifying bushmeat hunting and zoonotic spillover (Braga-Pereira et al., 2020; IFAW, 2023).Case studies illustrate the systemic impact. In Ukraine, the war has caused massive migration of people and pets, breakdown of veterinary surveillance, drug shortages, and farm abandonment. Consequent increases in rabies, leptospirosis, botulism, and salmonellosis have been reported, alongside heavy metal soil contamination and risks of radionuclide release (FAO, 2023). In Syria, over a decade of conflict and sanctions dismantled veterinary services, fueling the resurgence of brucellosis, leishmaniasis, and Crimean-Congo hemorrhagic fever, with regional spillover into Lebanon, Iraq, Turkey, and Jordan (Al-Kubaisy et al., 2020). Along the Balkan route, prolonged transit in informal, squalid settlements facilitates uncontrolled cohabitation of people and animals, increasing zoonotic risks. In protracted crises, such as the Sahrawi refugee camps, livestock are vital for food security and cultural identity, while pets provide psychosocial support and resilience (Angeloni et al., 2018).Yet, international humanitarian law lacks binding provisions for animal protection, veterinary services, or ecosystem safeguarding during hostilities (Bartolini et al., 2021). This legal gap undermines public health, epidemic prevention, and recovery capacity. Adopting a One Health approach in armed conflicts is not only an ethical imperative but also a strategic necessity for resilience, peacebuilding, and long-term global health security. Without such integration, humanitarian responses risk remaining fragmented, anthropocentric, and insufficient to meet the systemic health challenges of contemporary crises.

OS 156

Perceptions, practices, and challenges of domestic animal ownership in displaced communities around N'Djamena, Chad – A socioanthropological insight focusing on rabies risk

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This study was conducted as part of the SNF funded project investigating multiscale rabies transmission at the urban–rural interface in Chad. Specifically, it explores the socioanthropological dynamics between displaced populations and their domestic animals in two temporary refugee camps around N"Djaména, the capital city of Chad. People were displaced due to floods (Ngueli site) or ethnic conflicts (Farcha-Guilmey site). Using qualitative methods—including immersive fieldwork and indepths interviews—the study examined perceptions and veterinary practices surrounding domestic animals, particularly dogs and cats.

Results reveal that domestic animals hold significant symbolic, economic, and emotional value for displaced individuals, often serving roles in security, transportation, and companionship. However, knowledge about animal diseases, especially rabies, remains limited. While some owners seek veterinary care, many rely on traditional practices or abandon ill animals due to financial constraints or lack of access to professional services. During displacement—especially due to flooding—many households were forced to abandon their animals, particularly larger livestock, while those able to flee with animals typically brought only smaller species like dogs or poultry. Among returnees, only 17% reported finding any of their abandoned animals again. A veterinary service was operational in the Guilmey refugee camp, supported by the Ministry of Livestock, offering consultations, treatments, and rabies vaccination. Refugees themselves, particularly dog owners, actively manage hygiene by disposing of animal waste properly and have built improvised shelters for their animals.

The study recommends implementing mobile veterinary outreach, state-subsidized vaccination campaigns, and culturally adapted education programs to improve disease prevention and animal welfare in refugee camps to prevent transmission of zoonotic diseases between animals and humans, but also between local and refugee animal populations.

OS 157
Ethical considerations for applying the One Health approach in forced migration
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In forced migration contexts, animals often remain excluded from humanitarian responses out of public health concern for zoonoses – diseases transmissible between animals and humans. This marginalises the relational significance of animals, vital to nutrition, livelihoods, cultural identity, and mental health. Moreover, this may lead to risk taking and trade-offs whereby displaced populations choose between accessing critical humanitarian aid or their animals. To address these concerns, the interdisciplinary One Health approach can be utilised, which nominally "optimises" animal, ecosystem and human health. The most common interpretations of One Health have remained largely anthropocentric however, considering animals as either assets or threats to human health and wellbeing, rather than important contributors to a more holistic approach to health.

Through a targeted scoping review and thematic analysis of peer-reviewed publications investigating current ethical debates around One Health and forced migration, this study explores the ethical dimensions of applying One Health in forced migration scenarios. It shows how an ethical framework drawing on the Ethics of Care and two-factor egalitarianism, can support expanding moral consideration to encompass both human and non-human lives. This approach repositions animals not merely as vectors of disease or economic assets, but as sentient co-participants in mobility, health and wellbeing. By integrating care-based ethics with a justice-oriented egalitarian model, the framework offers a more inclusive and context-sensitive interpretation of One Health, acknowledging the complex interdependence between displaced people and their animals for health as well as welfare.

This reframing has implications for equitable health policy, humanitarian response, and ethical decision-making; calling for a transformative shift toward a truly holistic, multispecies understanding of health in forced migration.

OS 158
Global Oncology and the Future of Cancer Care
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The projected rise in global cancer incidence is in full swing, with low- and middle-income countries (LMICs) bearing much of the impact. While the issue is well recognized, the challenge lies in preparing health systems — historically focused on infectious diseases — to address the growing need for noncommunicable disease care. Cancer care, in particular, requires a coordinated effort across sectors to ensure continuity from early detection to follow-up. Unfortunately, patients often fall through gaps at transition points within overstretched health systems, especially those whose autonomy is affected by financial and gender inequality.

Our session highlights the work of young scientists striving to complete the cancer care continuum in LMICs. Using innovative technologies like virtual case discussions, app-based patient navigation, and point-of-care molecular tumour sequencing, we partner up internationally to provide means for comprehensive care. These projects aspire to inspire broader changes, enabling LMICs to "skip ahead" in building adaptive healthcare infrastructure. The session will include a virtual case discussion and presentations on two GIZ-sponsored partnerships between Germany, Ethiopia, and Tanzania, followed by a panel discussion featuring speakers from all represented countries.

OS 159
Virtual Case Discussion: The Online Outreach Cancer Clinic (OOCC)
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Virtual Case Discussion: The Online Outreach Cancer Clinic (OOCC) Question: How can virtual multidisciplinary case discussions improve timely cancer diagnosis and management in low-resource settings where most patients present with late-stage disease? Methods: The Online Outreach Cancer Clinic (OOCC) was established in Tanzania to link primary health care (PHC) facilities with oncology specialists. Weekly virtual meetings bring together clinicians from three PHC sites (Marangu Lutheran Hospital, Amani Alama Health Center, and Urban Care Clinic), referral specialists from Kilimanjaro Christian Medical Centre (KCMC) and Mnazi Moja Hospital, and international experts. Patient data (clinical notes, imaging, cytology, laboratory findings) are shared via a secure KoboTool Box platform. Discussions focus on diagnosis, referral pathways, and treatment planning. Complementary interventions include: (i) training PHC clinicians in point-of-care ultrasound (POCUS) for cancer staging, (ii) strengthening cervical cancer screening through VIA and thermocoagulation, and (iii) training Community Health Workers (CHWs) to raise awareness and promote early care seeking. In our ECTMIH 2025 session, we will simulate one of these case discussions, illustrating how PHC physicians present suspected oncology cases and receive real-time input from Tanzanian and German oncologists. Results: Since 2024, the OOCC has facilitated over 120 case discussions on breast, cervical, prostate, esophageal, and hematological cancers. Outcomes include earlier cancer detection, faster referrals, and increased treatment initiation.

CHW-led awareness activities have improved community knowledge and screening uptake in rural areas. PHC clinicians report enhanced confidence in managing oncology cases, supported by ongoing expert mentoring. Conclusions: The OOCC demonstrates that virtual multidisciplinary case discussions, combined with targeted PHC capacity building, can strengthen cancer care in low-resource settings. By bridging rural facilities with regional and international specialists, the model improves timeliness of diagnosis, supports professional development, and holds promise for reducing late-stage cancer presentations. Scaling such digital innovations will be critical for equitable cancer care in sub-Saharan Africa.

Fig. 1

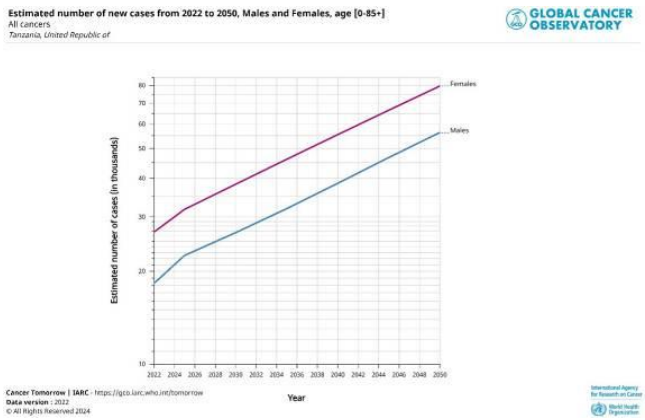
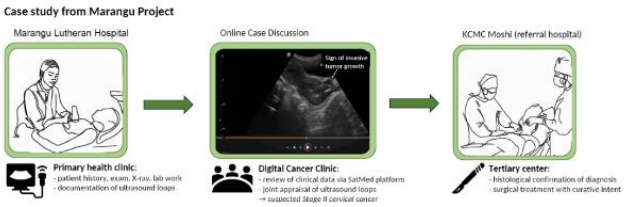


Fig. 2



OS 160

Nanopore Sequencing for Fast and Accurate Breast Cancer Diagnosis in a resource-constraint setting - FAST-ABCD Study

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Background: Breast cancer is the most diagnosed cancer and leading cause of cancer death in women globally. In Sub-Saharan Africa (SSA), mortality rates are disproportionately high, driven in part by delayed diagnosis and limited access to diagnostics. While effective treatments like hormonal and HER2-targeted therapies are increasingly available, routine diagnostic capacity remains a major gap. In many SSA settings, breast cancer is diagnosed without hormone receptor or HER2 testing, often weeks post-biopsy due to barriers in cost, infrastructure, and turnaround time for immunohistochemistry.

Nanopore sequencing presents a novel method that offers rapid and cost-effective access to molecular level diagnostics. It provides genome-wide DNA methylation profiles and copy number alterations within hours and allows to determine breast cancer subtype (HR+/HER2+ vs. HR+/HER2- vs. triple-negative) by assessing HER2 copy number status directly and methylation profile as a proxy to discriminate luminal/HR+ vs. basal/TN tumors. This approach may overcome current delays, enabling faster and more accurate treatment decisions and improving outcomes in low-resource settings.

Trial Design: The FAST-ABCD study (NCT06633276) is a prospective, observational single-center study conducted at Kilimanjaro Christian Medical Center in Tanzania. 100 patients with suspected breast cancer and planned biopsy after specialist consultation will be enrolled. Low-pass nanopore whole genome sequencing will be performed on tumor DNA extracted from excess tissue from routine biopsies. DNA methylation-based classification, HER2 amplification detection, and according breast cancer subtype assignment will prospectively be benchmarked against current standard diagnostic methods to evaluate the non-inferiority, turnaround time and feasibility of nanopore sequencing for classification of invasive breast cancer in a resource-limited setting.

OS 161

Transdisciplinary education for non-communicable disease care – Experience and learnings from the CAPSTONE project

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Background: Globally, the prevalence of non-communicable diseases (NCDs) is rising; more than 15 million people between the ages of 30 and 69 die world-wide from an NCD every year; 85% of these premature deaths occur in low- and middle-income countries (LMIC). While many LMIC including in sub-Saharan Africa, have policies to address the disease burden of NCDs, the shortage of skilled health care professionals to facilitate implementation is compounded by gaps in higher education institutions equipped to train students in these roles. The Capacity Strengthening of Transdisciplinary Education for Non-Communicable Disease Care in West Africa (CAPSTONE) project seeks to educate and develop a future-proof health workforce to respond to the increasing burden of NCDs.

Objective:

- Facilitate dialogue on innovative curricula, teaching, and capacity strengthening approaches for non-communicable disease care with a focus on West Africa.

Specific objectives:

- Introducing NCD burden, training needs and innovative teaching methodology and innovative curricula to address the burden of NCDs in a global context;
- Share case studies from Ghana and The Gambia, West Africa to address NCD burden from a health professional capacity strengthening perspective by use of the CAPSTONE project experience;
- Facilitate discussion on how to apply, enhance, and scale-up the learnings from the CAPSTONE project, with a focus on promoting equality and equity.

Format: Setting the scene: NCD burden, capacity strengthening needs, challenges, and opportunities for NCD-related health professional education (20 min), case studies from West Africa (max 20 min in total); Mini-workshop on innovative teaching methodology (challenge-based learning) tailored to NCDs (40 min); summary and way forward (10 min).

Expected session benefit to the audience: Getting acquainted with innovative curricula, teaching, and capacity strengthening approaches addressing the burden of NCDs.

OS 162
The 2021–2030 neglected tropical disease road map – Progress, challenges and the path ahead
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As outlined in the World Health Organization"s *Global report on neglected tropical diseases 2025*, coordinated efforts over the past two decades have led to substantial reductions in the burden of neglected tropical diseases (NTDs), with nearly one third fewer people now requiring NTD interventions compared to 2010. WHO has supported countries through strategic guidance, the provision and management of nearly 1 billion donated medicines in 2024 alone, and the integration of NTD programming into national health systems.

Significant gains have been recorded in preventive chemotherapy coverage, developing integrated skin NTD strategies, national ownership, and disability management. However, progress remains uneven. Disease-specific data gaps, imperfect access to water and sanitation, stagnation in reducing NTD-related deaths, and declining external funding threaten sustained advancement. Climate change, humanitarian crises and geopolitical instability further complicate delivery of services to affected populations, and in some places, are increasing the need for those services.

In response, WHO has strengthened cross-sectoral collaboration, established the Global Coordination and Stewardship Committee for donated medicines, expanded technical support for integrated and people-centred approaches, and promoted domestic financing and sustainability planning. New tools, including the forthcoming Research and Development Blueprint for NTDs, should help guide work at all levels.

For the future, a greater focus on integration, climate-sensitive programming and surveillance, and a shift in global operating models to enhance country ownership, will all be critical. The path to the 2030 targets will require not only resources and political commitment but also a transformation in how global health partners work together to ensure that no one is left behind in the fight against NTDs.

OS 163
A clear vision – Combating river blindness through collaborative action
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Onchocerciasis, commonly known as river blindness, is a parasitic disease caused by the filarial worm *Onchocerca volvulus*, transmitted through the bites of infected blackflies. Historically, onchocerciasis has posed significant public health challenges in many endemic regions, particularly in sub-Saharan Africa, leading to severe visual impairment, blindness and debilitating skin conditions. Large progress has been made with IVM distribution campaigns. The World Health Organization Roadmap for Neglected Tropical Diseases provides a strategic framework that emphasizes the importance of integrated approaches to disease management, including surveillance, community engagement, and strengthening health systems.

Despite significant progress in the fight against onchocerciasis, several gaps remain that hinder the complete elimination of the disease. These include challenges in reaching remote populations, insufficient health infrastructure, and financial constraints to ensure that treatment coverage is maintained.

To address these gaps, a multifaceted approach is essential. Strengthening community awareness and involvement, innovative delivery strategies, and a better integration of onchocerciasis control efforts with other health initiatives, can improve access to treatment in hard-to-reach areas. Furthermore, investing in research for new therapeutic options and diagnostic methods will be critical to overcoming current limitations. By fostering collaboration among stakeholders, including governments, NGOs, and the private sector, a sustainable framework should be created that not only aims for the elimination of onchocerciasis but also enhances overall health outcomes for affected populations.

OS 164
Country-Led models for NTD control in Africa
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Achieving sustainable NTD control—and maintaining elimination status in countries that have achieved it—requires an urgent shift toward national leadership, domestic resource allocation, and integration of NTDs into national health systems. Our research highlights the critical importance of increasing **domestic financing** for NTD control in Africa, especially in the context of shifting priorities among international funders.

Prioritising NTDs within primary health care strengthens sustainability and builds resilience. Our analyses show that strong, integrated NTD ecosystems can be rapidly adapted to respond to other health emergencies. This not only benefits African countries but enhances **global health security**, as resilient African health systems improve surveillance and early detection of potential global threats.

Country ownership fosters local innovation and buy-in, enabling context-specific interventions. Our work on water, sanitation and hygiene, and consultations with affected communities, underscores the importance of engaging local actors—patients, community health workers, clinicians, and policymakers—in **co-creating solutions** for NTD control and management of related disabilities.

As African nations grow their NTD leadership roles, **collaboration with international development partners** remains essential. Strategic partnerships can sustain the gains already made and accelerate progress toward full elimination. Transitioning to country-led, inclusive models of programme delivery not only aligns with universal health

coverage goals but also supports long-term health sovereignty, regional stability, and global health resilience.

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Fig. 1

OS 165

Leishmaniasis – on track for 2030? Assessing progress against the WHO road map for NTDs

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The leishmaniases present a persistent global health burden, with increasing cutaneous leishmaniasis (CL) cases across 87 endemic countries and a rising visceral leishmaniasis (VL) burden in Brazil and eastern Africa, contrasting with declines in Southeast Asia. The WHO Road Map for Neglected Tropical Diseases (NTDs) 2021-2030 sets ambitious targets: 85% CL detection/reporting and 95% treatment; VL elimination as a public health problem in 85% of endemic countries; and 100% post-kala-azar dermal leishmaniasis (PKDL) detection/treatment.

Despite these targets, current interventions and strategies are proving inadequate. Existing methods for case detection and management, including both laboratory and clinical approaches, face significant limitations in resource-limited settings. These challenges hinder comprehensive surveillance and timely treatment, particularly for CL where many cases remain unconfirmed, and for VL where effective tools are not always accessible.

Achieving the 2030 goals still needs a sustained multi-faceted approach. This includes enhancing access to effective case detection and treatment, strengthening health systems, and ensuring the availability of appropriate tools adapted to endemic contexts. Continued efforts in research and development are crucial to overcome existing barriers, improve patient outcomes, and accelerate progress towards the control and elimination of the leishmaniases globally.

OS 166

The Mummy and Baby Programme – Supporting women in South Africa to reduce their alcohol consumption during pregnancy

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Objective: South Africa has the highest global prevalence of Fetal Alcohol Spectrum Disorders (FASD), especially in the Western Cape. Hazardous alcohol use during pregnancy contributes to negative health outcomes for the children, most notably FASD and is also associated with adverse consequences for the mother. The aim of the study was to adapt and finally evaluate a low-intensity psychological intervention, entitled the "Mummy and Baby Programme" to reduce hazardous drinking among pregnant mothers.

Methods: An existing evidence-based brief psychological intervention for hazardous alcohol misuse was adapted for pregnant mothers in South Africa. This included formative research to investigate explanatory models for alcohol misuse (N= 28), a Theory of Change workshop to explore health system barriers to care, a treatment development workshop to finalise intervention content, and a before-and-after study to explore acceptability and feasibility of the intervention (N=10). A pilot RCT (N=40) will be conducted with pregnant women who drink to explore methodological trial procedures and early implementation outcomes in preparation of a definite RCT.

Results: The manual has been adapted based on participant feedback, and delivery structures were amended accordingly. Visual aids and illustrations were incorporated to improve content accessibility, while session formats were revised to allow for shorter, more flexible engagements. Cultural sensitivity was strengthened by addressing stigma and integrating community health workers as trusted facilitators. Practical adjustments, such as transport, refreshments, and non-monetary incentives, were acknowledged as important for participation, though concerns about long-term sustainability remain. The manual was further refined by simplifying language, clarifying key concepts like the craving cycle, and enhancing its focus on emotional support and trauma-informed care. Participants reported perceived effectiveness about the intervention.

Conclusions The programme will be the first community-based, lay-delivered counselling intervention addressing alcohol use in pregnancy in South Africa. Designed through local collaboration and global evidence, it holds promise for improving maternal and child health outcomes. Ongoing evaluation will guide future scale-up and policy integration.

OS 167

Advancements in bladder cancer early detection and treatment in Malawi

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In 2022,more than 600,000 individuals were diagnosed with bladder cancer (BC), and 220,000 died worldwide. Smoking and occupational exposure are the major risk factors in Western countries where Urothelial carcinoma (UC) accounts for 90% of BCs, while chronic infection with Schistosoma haematobium in low and middle income countries (LMIC), has been associated with the development of Squamous Cell Carcinoma (SCC) and accounts for the main total burden of BC. In 2012, the World Health Organization (WHO) estimated that 249 million people in 78 countries require preventive antiparasitic therapy for schistosomiasis. Long lasting urogenital schistosomiasis constitutes a risk factor for squamous bladder cancer. In Malawi, schistosomiasis is still a highly prevalent disease, especially at the shore of Lake Malawi.

Absence of reliable screening methods, invasiveness of diagnostic modalities, and high recurrence rates, makes BC one of the most challenging and expensive cancers to diagnose and treat. Therefore, finding robust and cost-effective non-invasive biomarkers to complement or replace the gold-standard invasive cystoscopy for the early detection of this disease, is of paramount importance and could help in decreasing the burden of this cancer worldwide.

Telomerase reverse transcriptase promoter mutations (TERTpm) are the most frequent genetic alterations that are detected in 60-85% of BCs. Recently, we developed a Next Generation Sequencing (NGS)-based assay and a Droplet Digital PCR assay for the detection of TERTpm. Using a case-control study, the detectability of these mutations in the urine was shown with an excellent sensitivity (87.1%) and specificity (94.7%) that outperforms urine cytology in detecting all forms of UC. However, these results are based on urothelial carcinoma. There is little known about the prevalence of TERTpm in SCC of the bladder.

To examine this, a Malawian bladder cancer (BC) case-control study (140 BC cases and 140 controls) was initiated, investigating, whether the urinary biomarker uTERTpm can be used as a non-invasive biomarker for the detection of Schistosoma-related BC. DNA from total urine samples and tumor tissue will be performed using the Zymo Quick-DNA™ Urine Kit and the Qiagen Gentra Puregene Tissue Kit respectively. Urinary and tumor DNAs will be screened for the two most frequent mutations and three rare ones.

In addition to that and focusing on locally adapted approaches for health care worker training and evidence-based patient education, we aimed to combine screening for bladder cancer with implementation of urology services and thereby improve the adherence of the population to appropriate medical care. This will be achieved through a BC health literacy "train the trainer" campaign that is developed cross-sectional and conducted by health science master students. This may result in raising awareness of urologic disorders at population and medical staff und increasing the number of patients undergoing urology diagnostic and therapeutic services.

Implementing a non-invasive biomarker for detection of BC would be a milestone to early detect schistosomiasis related bladder cancer for about 250 million people affected worldwide.

OS 168

Examining the impact of antiretroviral therapy regimens on cardiometabolic complications in adults living with HIV, featuring insights from an African prospective cohort

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Question: Weight gain effects related to antiretroviral therapy (ART) use are increasingly reported as countries are adopting dolutegravir (DTG)-based regimens as first-line, but there is limited data on the risk of other metabolic outcomes such as hypertension and type 2 diabetes mellitus.

Methods: First, a systematic review was conducted to systematically investigate the available evidence on the burden of metabolic outcomes among adults living with HIV on different ART regimens. Second, data from a well-established prospective cohort in Malawi were analyzed to evaluate the incidence and determinants of hypertension and weight change after transitioning to DTG-based ART.

Results: A total of 6,827 records were screened, and 39 studies comparing ART-treated adults living with HIV and those not taking ART were systematically reviewed. Metabolic syndrome was most reported (13 studies; 33 %), followed by type 2 diabetes mellitus and dyslipidemia (each 6 studies; 15 %). Four DTG-focused studies were reported between 2021 and 2025, underlining its recent introduction as first-line ART; half of these evaluated metabolic syndrome and half assessed type 2 diabetes mellitus. Further, interrupted time series analysis showed an average weight gain of 1.24 kg per year overall (of which 36.5 g/year occurred during DTG treatment) whereas systolic blood pressure increased by 0.33 mmHg/year in general but by 2.63 mmHg/year on DTG.

Conclusions: Adults living with HIV receiving ART have a significantly higher cardiometabolic burden than those not yet on therapy. In addition, switching to DTG led to an increase in blood pressure and the risk of hypertension independently of additional weight gain. This highlights the need for routine monitoring and tailored risk-reduction strategies when selecting and managing ART regimens.

OS 169

Children"s well-being – Investigating the role of family dynamics and parental mental health in shaping children's well-being

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Children affected by armed conflict and forced displacement are susceptible to an elevated risk of developing trauma-related mental health problems. Nevertheless, the role of family dynamics in shaping these outcomes over time remains under-explored, particularly in low-resource, protracted displacement contexts. This five-year longitudinal study examines the mental health trajectories of 332 forcibly displaced Iraqi and Syrian children in the Middle East, with a focus on how parental trauma, mental health status, and parenting behaviours influence children's psychological outcomes. Standardised and culturally validated instruments were utilised to assess war-related trauma exposure, family violence, and symptoms of PTSD and depression across two time points. The findings indicated a substantial decline in exposure to traumatic events and family violence over the course of the study. However, the overall prevalence of probable mental health disorders among children remained statistically unchanged. The interplay between family functioning, parental distress, and the broader displacement environment will be discussed.

OS 170

CaLioS – Improving cancer-related health literacy using online stories in sub-Saharan Africa, illustrated by the example of Kenya

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Question: The global cancer burden is growing, including in sub-Saharan Africa; consequently, the demand for more and better health services has increased. Moreover, a cancer diagnosis necessitates that cancer patients have the capacity to find, understand, assess, apply, and communicate health information to support cancer care (i.e., cancer health literacy). On a global scale, patients have inadequate cancer health literacy. The potential of promising approaches, such as using the lived experiences of cancer survivors for educational purposes and leveraging the internet's widespread availability to improve cancer health literacy, remains largely unexplored and underutilized, especially in Sub-Saharan Africa.

Methods: The CaLioS project comprised five phases. First, a scoping review of cancer health literacy in Kenya was conducted. Second, the potential of using lived experiences for cancer education was qualitatively explored. Third, narrative interviews were conducted with 40 Kenyan cancer survivors to capture their lived experiences. Fourth, an educational website (maishanacancer.co.ke) was developed jointly. Fifth, the usability and effectiveness of the website were evaluated in an online pre-post intervention feasibility study with more than 800 cancer patients across Kenya using a self-developed and validated cancer health literacy scale (26 items).

Results: To date, cancer patient education in Kenya has focused on clinical topics, rather than on the effects of cancer on daily life, social networks, finances, and existential questions. Stories of cancer survivors help uncover the full spectrum of cancer-related experiences and help prepare cancer patients and their families for living with the disease. However, minor edits are necessary to eliminate incorrect information. The feasibility study revealed that cancer health literacy is generally low, yet the website is user-friendly and can successfully initiate learning and improve cancer health literacy.

Conclusion: In countries where cancer is widely associated with death, sharing the stories of cancer survivors can inspire hope and prepare affected individuals for the various challenges they may face and improve their cancer health literacy. Also, this approach can help prepare future healthcare providers to understand the full scope of life with cancer, foster empathy, reveal cancer patients' agency, and inform policies that promote more person-centered healthcare.

OS 171

Transforming digital teaching and learning though AI integration

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At the Clinical Sciences Department of the Institute of Tropical Medicine (ITM), Antwerp, we are actively adopting artificial intelligence (AI) to enhance the quality, accessibility, and effectiveness of global health education across both short courses and master programs. This presentation explores how AI-driven tools are meaningfully integrated into our blended learning ecosystem—including the eSCREM (e-Short Course on Clinical Research and Evidence-based Medicine), the Patient ImmunoMonitoring (PIM1) course, and the Master of Science in Tropical Medicine (MTM).

In our research-focused components (MTM and eSCREM), AI tools help students structure and refine research protocols by improving the formulation of PICOT questions, clarifying research problem statements, suggesting suitable research methodologies, and supporting literature gap identification. AI also enhances the assessment process: faculty use AI-generated, rubric-aligned feedback when reviewing executive summaries, helping students improve clarity and scientific communication in language accessible to both technical and interdisciplinary audiences.

In PIM1, AI supports backward instructional design by helping educators align intended learning outcomes with appropriate levels of Bloom"s taxonomy, suggesting clear, measurable action verbs. Using platforms like RISE Studio AI, instructors can generate formative learning activities and create media-rich, interactive content, deepening student engagement and promoting active learning.

AI tools also enable the automation of self-assessments and formative quizzes. Students receive immediate, targeted feedback on their performance, which strengthens motivation and supports self-directed learning. Furthermore, AI-assisted learning analytics help educators monitor progress, identify learning gaps, and personalize support to individual student needs.

This session will present practical examples, curated AI toolkits, and actionable strategies for responsible, ethical, and context-aware AI integration in global health education. Special emphasis will be placed on enhancing engagement, scalability, assessment quality, and overall learning experience across diverse learner populations and settings.

OS 172

Virtual reality training for mobile laboratory deployment – The eVeeR experience

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Virtual reality (VR) technology offers significant opportunities to enhance safety-critical training through increased presence, safe failure environments, and ability to simulate scenarios that are financially prohibitive or too dangerous to replicate in real-world settings.

We present eVeeR (Educational Virtual Environment for Epidemic Response), a pilot VR training application designed to prepare professionals for deploying mobile laboratories during outbreak responses, particularly in resource-limited and challenging environments. Developed as a standalone, offline unity application, it encompasses three learning modules: (i) understanding mobile laboratory concepts and setup procedures, (ii) familiarizing professionals with biosafety and biosecurity risks, and (iii) exploring operational workflows in challenging field environments. eVeeR utilizes a modular, adaptable approach to integrate with other educational tools and diverse training settings, including hybrid outbreak simulations.

A qualitative methodology including focus groups and key informant interviews informed both the design process and evaluation of eVeeR, aiming to explore its feasibility and acceptance for mobile laboratory training. Initial findings suggest that VR training approaches have the potential to enhance laboratory personnel's preparedness for field missions while optimising operational awareness and workflows in challenging environments. Further, eVeeR demonstrates how VR can transform mobile laboratory training by providing realistic, risk-free practice environments for critical deployment scenarios. The modular architecture enables both progressive skill development through additional training modules and integration with existing training programs, allowing customization based on specific outbreak contexts.

Future development aims to expand eVeeR to include advanced modules addressing complex biosecurity, biosafety and laboratory protocols, ultimately improving global outbreak response capabilities through enhanced mobile laboratory preparedness.

OS 173
Generative artificial intelligence for data analysis – A randomised controlled trial in a public health research institute

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Generative artificial intelligence (AI) has become an important tool with regards to academic writing. However, there remain questions how generative AI tools can and should be used for data analysis in epidemiology and public health research and how it can enhance students" competences in data analysis.

In order to assess the performance of generative artificial intelligence (GenAI) as a tool in epidemiological data analyses, postgraduate students and academic staff at the Swiss Tropical and Public Health Institute were invited to participate in a randomised controlled trial (RCT). Qualitative methods and a survey were used to generate complementary information to the RCT.

For the RCT, participants were randomized to analyse a simulated cross-sectional dataset using ChatGPT"s code interpreter (integrated analysis arm) vs. a statistical software (R/ Stata) with ChatGPT as a support tool (distributed analysis arm). The primary outcome was the trial task score (out of 17, using an assessment rubric). Secondary outcome was the time to complete the task.

This session will present the results of RCT and of the complementary research but also aims for an open discussion on how to balance generative AI capabilities and human expertise in education at a global public health research institute.

OS 174
New and creative approaches to online education – Online international summer and spring schools in global health

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Global health education in the format of online tuition-free training can result in broad geographic and disciplinary outreach, increased accessibility, and novel opportunities for networking and collaboration.

Since 2021, ISGlobal has offered a series of seven online Summer and Spring Schools in the context of two periods of designation as a Severo Ochoa Centre of Excellence by the Spanish State Research Agency (2021-2024 and 2024-2028). The methodology has been informed by learnings developed through the COVID-19 pandemic, which forced a rapid transfer of postgraduate programmes and short courses to the online modality. These trainings have largely met their originally established objectives of:

- Offering courses in research areas developed and supported through the Severo Ochoa programme (during 2021-2024: eHealth, Data Science and Health Impact Assessment and during 2024 - 2028: Molecular mechanisms and health determinants for major disease and Knowledge and tools for population health resilience);
- Expanding ISGlobal"s offer of training courses courses;
- Develop trainings that are accessible for participants from LMICs;
- Increasing the geographic reach of ISGlobal training courses; And
- Reinforcing ISGlobal"s e-learning capacities

Each Summer or Spring School is a five-day online training offering between five and 6 10-hour course modules led by ISGlobal researchers on specific topics that have included*: Endemic and Pandemic Diseases and their Disruptive Impact on Society*, *Implementation Science in Public Health: Bridging the Gap between Research and "Real World" Implementation*, *Introduction to Biomedical Data Science and Machine Learning*, *Exposome Concepts and Innovative Tools*, and *Health Impact Assessment: Principles and Practices.* In five Schools, modules were offered in English only and in two Schools modules were offered in both English and Spanish.

Over the first seven editions of the Summer and Spring Schools more than 4,000 individuals have registered for the training. The training approach - both pedagogical and operational - has been adapted and refined over time.

Moving forward, ISGlobal will look towards a diversification of the online training offered in the context of the Severo Ochoa Centre of Excellence to include Summer and Spring Schools in collaboration with regional partners and advanced, intensive online courses for smaller groups of participants.

OS 175

Developing a genetically attenuated malaria vaccine through controlled human malaria infection studies

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Controlled human infection models are an essential tool in tropical medicine, enabling the early, rigorous and ethically controlled testing of new interventions. The most advanced model is malaria, where controlled human malaria infection (CHMI) studies have transformed the development of drug and vaccine candidates by providing rapid safety, immunogenicity and efficacy data.

The next generation of malaria vaccines is based on whole *Plasmodium falciparum* (PfSPZ) sporozoites that have been attenuated by genetic modifications. This enables the precise deletion of genes that are essential for liver-stage development, ensuring safety while being strongly immunogenic. Such vaccines offer hope of providing durable sterile protection.

This presentation will outline the clinical development path of a next-generation, late-arresting, replication-competent PfSPZ-LARC2 Vaccine.

OS 176

Controlled Human Hookworm Infections model in Lambaréné to advance medical research and the fight against soil transmitted Helminth infections

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Question: Hookworm, a major contributor to the global disease burden, affects over 230 million people worldwide. Among the features of Neglected Tropical Diseases: 1) the lack of a suitable animal model of Hookworm infection that matches Human infection; 2) the challenges in studying naturally hookworm-induced infection; 3) challenges to define adequate target profiles for new products, including drugs and vaccines. It is conversely anticipated that the preventive chemotherapy with benzimidazoles, the primary public health strategy, is not a sustainable approach to achieve long-term control and elimination. Controlled Hookworm Human Infection (CHHI) models are essential as a polyfunctional method to address substantially each of the features of NTDs listed above.

Methods: A CHHI model was successfully established in Lambaréné, Gabon, using the local and field strains of *Necator americanus.* Sample analysis and further clinical trials are underway, marking a significant step forward in the fight against hookworm.

Results: The CHHI model of Lambaréné is based on infection with 50 infective L3 larvae. 100% of volunteers were infected and experienced mainly grade 1-2 adverse events, which they recovered from. Pathogen functions, human immune responses characterisation, combination of PC + vaccine candidates in clinical trials and vaccine antigens identification are ongoing

OS 177

Central African Infectious Diseases and Epidemics Alliance (CAIDERA) - A joint international partnership centred around aresearch-practice oriented M.Sc. programme

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CAIDERA is an educational initiative that brings together infectious diseases specialist from three main partner institutions: University of Tübingen, Centre de Recherches Médicales de Lambaréné and Institut Pasteur Paris in close collaboration with national and regional partners application. At the centre of the project is a 2-year DAAD-funded M.Sc. programme "Infection Biology and Control" that offers a degree from Tübingen, is hosted by the CERMEL in Lambaréné and targets students mainly from Central but also West and East African countries (https://uni-tuebingen.de/ibc). The programme provides current research practice-oriented teaching structured in 3-week modules on topics ranging from immunology, virology, parasitology and microbiology to mathematical modelling, scientific writing and clinical research ethics; offers stipends; and for best-performing students a chance to select a specialised lab in affiliated institutions for the M.Sc. thesis in the final fourth semester.

Fig. 1

Fig. 2

OS 178

Leveraging informal food businesses to improve the community food environment in South Africa – Lessons from the field

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The risk of diet-related diseases is linked to the food choices individuals make, which are shaped by their environmental and socio-economic circumstances. Access to nutritious food is affected by the community and the nutritional landscape available to consumers. In South Africa, many individuals depend on informal food sources, particularly street vendors and spaza shops, for their food needs. Street food refers to ready-to-eat meals and drinks sold by vendors in public spaces. Spaza shops on the other hand are informal community convenience stores typically operated from homes, offering a limited selection of groceries and often lacking formal registration. This study aims to update and adapt an existing Informal Food Business Model to include Spaza shops.

South African spaza shops present a paradox. They are essential for many consumers and play a significant role in improving food security, yet they also pose health risks in the township communities. On the one hand, they provide vital income and support to the community, offering basic goods in small and affordable quantities, are conveniently located, and extend credit to loyal customers who may not have cash for daily necessities. On the other hand, they present several health risks, including foodborne illnesses from contaminated or expired products, poor food handling practices, the sale of fake or adulterated foods, and the operation of unregulated shops that sell unsafe food items. There have been several recent incidents of food poisoning from food sold through spaza shops that have attracted significant media attention. These cases also potentially damage the reputation of spaza shops overall.

In response, the South African government has enacted stricter regulations and closed non-compliant spaza shops and has advised consumers to purchase from registered and reputable spaza shops. They also implemented the Spaza Shop Support Fund, a government initiative to empower local spaza shop owners with finance and infrastructure, providing training, and technical help to support spaza shops to enhance their business growth and sustainability. However, this support has faced criticism from some who argue it excludes spaza shop owners who are foreign nationals.

In this case study, we provide evidence of the value of a new Informal Business Model for empowering informal food entrepreneurs to run financially sustainable and health-compliant businesses that encourage healthier food choices for consumers.

OS 179

Supporting community health workers for context-specific food and nutrition literacy – Implementation of a multi-media edutainment intervention for South Africa

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As part of a comprehensive initiative aimed at preventing non-communicable diseases in South Africa, there is a need to create a palatable public education curriculum focused on healthy eating and its supporting factors. An edutainment approach, utilizing storytelling through comic booklets and short videos, has proven to be an effective way to communicate nutrition and health related messages. Additionally, community health workers (CHWs), referred to as "community role models," and "health champions" who provide nutrition and health education and counseling at the household level, have been recognized as valuable human resources despite the current health worker constraints in South Africa.

This study involved formative research to inform the creation of a nutrition education curriculum that aligns with the financial limitations and informational needs of low-income households in major peri-urban areas (townships) of South Africa. Three focus group discussions and surveys were conducted to investigate the factors influencing CHWs' food and nutrition literacy, as well as their perspectives on what affects this concept in the communities they serve. Key factors identified included credit issues, food insecurity, food practices, and optimizing household budgets. This information was then used to collaboratively develop short stories, which were presented as 2-page comic booklets and 90-minute video clips. These materials will be shared via messaging services such as WhatsApp, MMS, and SMS to empower CHWs as community role models with a curriculum designed to enhance their foodways and nutrition literacy. We had developed similar materials for CHWs before, and outcomes demonstrated positive improvements in meal preparation, planning, food label usage, and eating behaviors among CHWs in these townships. Notably, qualitative feedback from CHWs involved highlighted an increase in their confidence in sharing this health information with the communities they serve.

This study therefore highlights the significance of formative research in creating nutrition-focused communication in multicultural, low-income urban settings in South Africa. It also underscores the potential success of the educational entertainment curriculum delivered through social media channels such as WhatsApp, MMS, and SMS, aimed at enhancing the nutrition and health knowledge of individuals without formal health education, particularly CHWs.

OS 180

Using group model building to understand drivers and levers of the double burden of malnutrition in the Cape Town Metro

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South Africa is facing a double burden of malnutrition (DBM), the coexistence and interaction of multiple forms of malnutrition within individuals, households, and communities across the life course. The DBM is influenced by social,

political, economic, and cultural dynamics and is both an outcome and part of a complex adaptive system. The aim of this study was to use a complexity-informed approach using group model building (GMB) to engage multi-sectoral stakeholders in creating systems maps of the drivers and levers of the DBM at the individual and household (micro), and the community and policy (meso) level in the Cape Town Metro, Western Cape. The study received ethics approval from all involved research institutions and used a participatory approach including individual, semi-structured interviews with stakeholders from academia, community and government (n=35) to elicit seed variables for the GMB workshops. Interviews were transcribed verbatim, translated into English by two native isiXhosa speakers where needed, and coded inductively drawing on grounded theory. The variables were used to develop an interrelationship diagram and seed model for 3 GMB workshops with 13 stakeholders at micro- and eight stakeholders at meso-level. Complex systems maps were created with causal loop diagrams (CLDs) using Vensim PLE 10.2 to identify leverage points for action. The CLDs were discussed within the research team and with GMB participants for final validation.

The maps revealed complex patterns of interaction between socio-economic drivers (poverty, crime, substance abuse, access to land and cooking resources), trust and relationships (with informal food providers, family), food and nutrition literacy, and food safety, with the ability to purchase and consume healthy food at micro-level. Meso-level actors highlighted the role of leadership, innovation, policy mandates in agenda setting and the importance of partnerships and intersectoral collaboration. They also stressed the social environmental vulnerability, the influence of the private sector, and the need for food-sensitive urban design and planning.

Leverage points at micro-level included the need for government support programs and food gardens, and at meso-level, an emphasis on the first one thousand days of life, strengthened networks, and a systems response. The findings will be discussed with stakeholders through a policy dialogue and community reflection to help address the DBM within the local context

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OS 181

Policy implementation and recommendations to address the double burden of malnutrition in South Africa – Expert assessment using the expanded Healthy Food Environment Policy Index (Food-EPI)

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South Africa faces a rapid nutrition transition and increasing double burden of malnutrition (DBM), the coexistence and interaction of multiple forms of malnutrition (undernutrition, micronutrient deficiencies, and overweight/obesity) within individuals, households and communities across the life-course. The DBM is significantly influenced by the food environment, which can be assessed by the Healthy Food Environment Policy Index (Food-EPI) to evaluate the implementation of public food environment policies in comparison with international best practice. The aim of this study was to assess the extent of implementation of healthy food environment policies in South Africa using an expanded Food-EPI tool which includes indicators related to the DBM, benchmark implementation against international best practices, compare its progress since the 2016 assessment, and develop a list of priority policy actions.

The assessment was conducted in a stepwise approach which included adaptation to the local context using expert and policy reviews, identification of international best practice and validation of the evidence, and two workshops involving a panel of national experts (13 and 17 experts, respectively) from government, academia and civil society to benchmark current food environment policies across 60 indicators and prioritize a list of policy actions based on perceived implementation gaps.

Overall, 70% of the 60 indicators were rated at very low to low levels of implementation. Of the 48 original indicators, the mean level of implementation improved from 2016 to 2024, driven by the introduction of a sugar-sweetened beverage tax in 2018, evidence uptake and health impact assessments in policy development, and the new draft food labelling regulation. Of the 12 indicators that addressed the DBM, eight were rated at very low to low levels of implementation, related to maternal protection and regulation of the marketing directed at children, access to WASH in public spaces, and support of the informal sector. Priority policy actions considered relevant and achievable include the need to regulate food marketing directed at children, increase the SSB tax to an effective level, supplement income support programs, and ensure affordability of healthy foods for vulnerable populations. Policies are also needed to regulate the relationship with industry, ensure adequate resource allocation, and implement monitoring and evaluation mechanisms to increase accountability.

OS 182

The role of the food industry in addressing malnutrition and improving population diets – Systematic review and Delphi study to inform a pilot intervention in South Africa

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The formal food industry plays a crucial role in shaping food environments that contribute to the double burden of malnutrition (DBM), i.e. simultaneously high rates of undernutrition and overnutrition or diet-related noncommunicable diseases in populations, households or individuals. The BIA-Obesity (Business Impact Assessment on Obesity and Population-level Nutrition) tool developed by INFORMAS (International Network for Food and Obesity / Non-communicable Diseases Research, Monitoring and Action Support) aids to systematically assess food industry commitments and practices related to obesity and unhealthy diets. However, it currently does not fully account for the realities of the DBM, in particular undernutrition and food insecurity.

To fill this gap, we conducted a systematic review to identify, map and synthesize recommendations, lived experiences and

existing frameworks on the role of the food industry in addressing undernutrition, with or without other coexisting forms of malnutrition. Thematic mapping was aligned with the domains of BIA-Obesity, and additional relevant themes. We synthesized our findings into 28 recommendations for the food industry in general, and additional recommendations for specific industry sectors (e.g., food and non-alcoholic beverage manufacturers, retailers, quick-service restaurants).

Subsequently, we implemented a three-round Delphi study with 30 international experts to gather feedback from participants on the new undernutrition and/or DBM indicators identified through our systematic review. Consensus for inclusion was reached for nine of the indicators in the final round of the Delphi study: Breastmilk substitutes, Complementary foods, Breastfeeding support, Parental leave, Food fortification, Traditional foods, Discounts and donations, Healthy diets at work, and Corporate strategy.

The new indicators will be reported as BIA-DBM, a complementary extension to BIA-Obesity, enhancing the latter by offering a comprehensive and resource-efficient approach to assess food industry commitments and practices in countries with a DBM. BIA-DBM is currently being pilot-tested in South Africa, examining the voluntary commitments and practices of 13 food manufacturers, 2 non-alcoholic beverage manufacturers, 4 supermarket chains, and 10 quick-service restaurants. Application of BIA-Obesity and BIA-DBM aims to increase the accountability of the food industry as part of efforts to improve diets in low- and middle-income countries.

OS 183
Access to vaccinations for migrants – Barriers and improved strategies

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Question: Ensuring access to vaccination for migrants, particularly Newly Arrived Migrants (NAMs), is a priority in the EU/EEA. Many may be unvaccinated or under-vaccinated in their countries of origin, making them vulnerable to vaccine-preventable diseases. Immunization is a vital global health measure, yet persistent structural and systemic barriers often hinder fair access. This raises a key scientific question: How can vaccination access for NAMs be improved in EU/EEA countries, given the risks associated with low coverage? The EU-funded project Access To Vaccination for Newly Arrived Migrants (AcToVax4NAM) addresses this by identifying and overcoming barriers and strengthening vaccination literacy within healthcare systems to ensure equal and guaranteed access. ethods: The project applies a scientific and participatory approach involving collaboration among stakeholders, healthcare providers, and policymakers. Activities include mapping and reviewing reception and vaccination systems for NAMs, identifying key barriers, and designing strategies to overcome them. Tools were developed to strengthen cooperation among institutions, improve health worker competencies, and promote migrant-sensitive practices in health services. The project also conducted pilot studies to evaluate the feasibility and effectiveness of proposed solutions.

Results: Preliminary findings offer an updated understanding of how NAMs are received and vaccinated in Italy, Spain, Greece, Romania, Germany, Poland, Cyprus, and Malta. Significant barriers emerged, including healthcare professionals" limited awareness of migrants' entitlements and the lack of explicit mentioning of NAMs in official immunization plans. A General Conceptual Framework was developed to guide actions toward improving vaccination uptake. Country-specific insights and practical tools were produced to support migrant-sensitive approaches and increase vaccination literacy among professionals. Pilot testing confirmed the relevance of these strategies in addressing existing gaps and enhancing access for NAMs. Conclusions: Equal access to immunization for migrants reduces the risk of outbreaks and strengthens public health protection. It also contributes to migrant well-being, social inclusion, and the creation of healthier societies. A core objective of the project is to deliver concrete, actionable recommendations and practices to address current challenges and foster equitable vaccination strategies across the EU.

OS 184
Migration and Mental Health

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Migration involves changes that test people's abilities. It is a complex phenomenon, in which numerous factors come into play and which impacts mental health in one way or another. Mental health professionals need to acquire the necessary skills to be able to offer quality care to an increasingly diverse population. This presentation will reflect on cultural competence in mental health. It will also address the need to take a comprehensive approach to the mental health of migrants, including psychosocial aspects. In addition, the experience of the Transcultural Psychiatry Programme at Vall d'Hebron University Hospital in training community mental health workers will be shared.

OS 185
Primary follow-up of non-comunicable diseases in migrant popiulations

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The migrant population has specific health needs related to their country of origin and conditions in host country, which are different from those of the native population and can sometimes go unnoticed in our healthcare system. Primary care is the gateway to the Spanish healthcare system. If professionals are sensitive to the health needs of this group, a significant impact on their health can be achieved.

Despite not being a homogeneous but rather a very diverse population, their health is much better than that of the population in their countries of origin and even in the host countries. Most people who migrate to Spain do so for economic reasons, which leads to the migration of healthier individuals, who will be able to cope with the often difficult migration process and the often adverse conditions in the host country. Although morbidity and mortality are usually lower upon arrival in the host country, over the years of residence in the host country, health deteriorates more rapidly than expected. Most migrants arrive in their host countries in good health. They will often suffer the most negative aspects of the social determinants in their new country: poorly maintained housing, overcrowded conditions, job insecurity, low income, and poor knowledge of local resources. Situations of racism and discrimination, both interpersonal and systemic and internalized, can have a very negative impact on their health.

There is the time traveler effect: improvements in infectious and maternal and child mortality are almost immediate when the conditions of the host health system improve, but mortality worsens due to the increase in chronic cardiovascular and oncological diseases caused by poor social conditions in the host country decades later. The primary care model is the most appropriate for addressing all these social determinants of health and reducing health inequities among migrants.

The migration phenomenon has exposed personal and systemic deficiencies that impede the development of a biopsychosocial approach versus a purely biomedical one. Cultural humility shifts the focus from the professional to the patient and sparks the professional's interest in the patient, awakening their interest and allowing for construction from both perspectives. In this session, we will propose how to approach non-communicable diseases with a culturally humble approach, taking into account the specific characteristics of the most common diseases in our daily practice settings.

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