

A Special Issue of abstracts presented during the 13<sup>th</sup> Scientific Conference of The Muhimbili University of Health and Allied Sciences

The Muhimbili University of Health and Allied Sciences (MUHAS) held its 13<sup>th</sup> Scientific Conference on 18<sup>th</sup> & 19<sup>th</sup> June 2025, at the East African Centre of Excellence for Cardiovascular Sciences, MUHAS Mloganzila Campus, Dar es Salaam. The conference Theme was: “**Reorganizing Health Systems in Africa: Prioritizing Innovation and Research for evolving Global Health Challenges**”, with Subthemes; *Non-Communicable Diseases, Mental Health, Surgery and Nutrition; Communicable Diseases and Antimicrobial Resistance; Maternal, Newborn, Child and Adolescent health; Oral, Eye, ENT Health and Care; Social Determinants for Health (One health); Health Systems Research; Traditional and Alternative Medicine, Drug Discovery and Vaccine Development; Cross-cutting issue; Ethics and Professionalism, Artificial Intelligence, Technology and Occupational Health*. Tanzania Medical Journal expressed its readiness to collaborate with the organizing committee of this successful conference in publishing abstracts presented during the conference. The abstracts are presented in their respective subthemes. The scientific subcommittee for this conference was responsible for the peer review of the abstracts.

## Subtheme: Health systems research

### 1 The influence of quality care on the quality of life of patients with prostate cancer

**Authors:** *Obadia Nyongole, Castory Munishi, Njiku Kimu, Raphael Z. Sangeda, Mark Mseti, Emmanuel Lugina, Frank Kiwara, Nathanael Sirili, Frank Chacha, Bartholomeo Nicholas, Herry Mruma, Gasto Frumence, Daudi Simba, David Urassa, Bruno Sunguya*

**Background:** The increasing global burden of prostate cancer challenges the quality of services in low- and middle-income countries (LMICs) due to infrastructure limitations. The study hypothesizes that high-quality services (measured using patient satisfaction as a proxy) influence treatment outcomes, namely HRQoL.

**Objective:** This study was designed to assess patients' satisfaction with quality of services and its association with health-related quality of life

**Methods:** This cross-sectional study recruited 248 prostate cancer patients from five Tanzanian hospitals via systematic sampling. Researchers assessed satisfaction and Health-Related Quality of Life (HRQoL) using standard questionnaires and EPIC, employing descriptive and regression analyses to evaluate service quality and patient outcomes.

**Results:** The study found about two-thirds of prostate cancer patients were not satisfied with the quality of services. Specific areas of dissatisfaction included long waiting times (75.4%), limited counselling services (77.4%), and a lack of opportunity to discuss their problems with doctors (67.3%). The overall HRQoL score was low (36 out of 60 score), with sexual domain scoring the lowest 5.81%. Specifically, a unit

increase in patient satisfaction was associated with seven-times increase in HRQoL (7.19 CI (4.45, 9.82)).

**Conclusion:** Service quality significantly impacts Health-Related Quality of Life (HRQoL). Low satisfaction and poor outcomes highlight systemic challenges, underscoring the need to enhance patient experiences to improve overall quality of life.

**Recommendation:** Enhancing prostate cancer care requires improved communication, counselling, and follow-up clinics, alongside early detection strategies, emphasizing continuous quality improvement for better patient outcomes.

## 2

### Examining Quality Indicators and Obstacles in Ethics Reviews of Research Protocols in Developing Countries

**Authors:** David Machaku, Bruno Sunguya, Elizabeth Bukusi, Richard Waddell, Connie Ulrich.

**Background:** The global expansion of medical research into developing countries makes evaluation of ethical oversight vital. Research Ethics Committees (RECs) safeguard participant rights and safety, yet differences in capacity and transparency remain key concerns in ongoing discussions about review quality and consistency.

**Objective:** To examine the quality indicators for the ethics review process and identify the barriers to quality.

**Methods:** Peer-reviewed articles (2004–2024) on clinical research review quality in developing

countries were analyzed using thematic and quantitative analysis from 398 retrieved articles from Scopus, Embase, PubMed, Google Scholar, and Wiley.

**Results:** 31 articles were eligible for the final analysis: 51.6% of studies focused on overall REC functions, 48.4% on key indicators like efficiency, effectiveness, and compliance. Efficiency was measured by turnaround time. Effectiveness was measured through content analysis of reviewers' comments, and there was no specific assessment for compliance. Operational and administrative challenges, inadequate training and capacity building, ethical and procedural concerns, resource constraints, lack of member diversity and expertise, and technological limitations were found to be barriers.

**Conclusion:** This review underscores the predominance of quantitative studies, highlighting the need for more qualitative research to gain a deeper understanding of the review process. The lack of consensus on the quality indicators makes it hard to assess them as individual aspects of quality. Hence, a lack of specific tools for quality assessment of the review process.

**Recommendation:** Several tools have been proposed as items for assessing the quality of the review process, but they need to be updated to also focus on the individual aspects of quality. Addressing the barriers to quality could involve the implementation of standardized guidelines, improved resource allocation, capacity building, and enhanced stakeholder collaboration.

## 3

### Revolutionizing clinical data management for improved patient outcome: Unveiling the power of

#### integrated Electronic Medical Records

**Authors:** *Diana Rwegasira, Honest Kimaro, Vincent Minde, Bernard Mussa, Henry Kalist*

**Background:** The Electronic Medical Records (EMR) in the digital health landscape is an important tool for integration to improve healthcare quality by centralizing and digitizing patient records. It provides access to real time and accurate data with comprehensive patient information, which leads to better diagnostic and treatment decisions. The system has now been used at the UDSM health center under the platform iCare Connect to manage the overall patient journey.

**Objective:** Demonstrate the application of EMR in the hospital management process in the integration process: A case at UDSM hospital.

**Methods:** The EMR process normally utilizing the agile and participatory approach towards development and integration. The model has been customized to handle all issues related to patient, focuses on user experience-based solution, and has the capability to extend external systems such as DHIS2, NHIF and GePG systems. Towards deployment, the use of a single source of metadata is enhanced.

**Results:** EMR with GePG application: The reduced time during payment services EMR with NHIF: iCare system is integrated with NHIF systems via secure APIs to enable real-time verification of members, treatment status tracking,

and electronic claims submission. Data is encrypted during transmission to ensure confidentiality and compliance with healthcare data standards. The integration enhances efficiency and reduces the manual NHIF paperwork EMR with other Lab machine integration: Reduced time and provides a summary in case of the breakout of diseases.

**Conclusion:** The system provides benefits as listed: User-friendly user interface (UI) system Enabling quick and secure access to medical records Supports efficient and effective patient journey execution (from admission, consultation, billing, diagnosis, lab testing, and hospital discharge). It supports the exemption and loan mechanism for patients with financial challenges. Direct linkage with DHIS2 national data warehouse.

**Recommendation:** It is recommended to adopt this technology due to: Effective software for medium- and large-sized clinics and hospitals Reduced costs through decreased paperwork, improved safety, reduced duplication of testing, and improved health Promotion of digital medical records management with online tracking and reporting Facilitation of communication between healthcare providers Secure and improved medication safety.

## 4

### The Role of Pharmaceutical Trade in Strengthening Health Systems and Promoting Inclusive Growth

**Authors:** *David Mtweve, Senia Nhamo*

**Background:** This study explores how pharmaceutical trade drives inclusive growth, enhancing healthcare access and economic development. The global pharmaceutical market, valued at \$1.3 trillion, contrasts with Africa's \$25 billion market, where 61% of medicines are imported. Despite Africa's 24% global disease burden, it produces only 3% of drugs. Trade policies can address disparities, promote innovation, and foster equitable growth, particularly in Africa, by improving access to medicines and supporting local industries.

**Objective:** This study analyses pharmaceutical trade's impact on inclusive growth, focusing on enhancing health systems and healthcare access in LMICs.

**Methods:** This study employed a pooled Ordinary Least Squares (OLS) regression model to analyse the relationship between pharmaceutical trade openness and an inclusive growth index controlling for GDP per capita, education levels, and infrastructure development. Data were obtained from reputable global sources, including the UNCOMTRADE for pharmaceutical trade data, the UNCTAD for the inclusive growth index, and the World Development Indicators for control variables covering 105 countries for the year 2021.

**Results:** The findings indicate a statistically significant positive relationship between pharmaceutical trade openness and inclusive growth. This suggests that increased pharmaceutical trade enhances both economic progress and equitable healthcare access. The

results highlight the potential role of pharmaceutical trade in strengthening health financing, improving supply chain efficiency, and expanding access to essential medicines, particularly in low- and middle-income countries.

**Conclusion:** The findings are particularly relevant for low- and middle-income countries, where strengthening health systems and ensuring equitable access to pharmaceuticals are critical for achieving universal health coverage. Policymakers should consider trade policies that facilitate the equitable distribution of pharmaceuticals, investigate the role of domestic pharmaceutical production and its interaction with trade policies while addressing affordability and regulatory challenges.

**Recommendation:** Future research incorporating longitudinal data and advanced econometric techniques is needed to provide a deeper understanding of the complex dynamics between pharmaceutical trade, healthcare accessibility, and inclusive growth. Furthermore, examining how different trade policies, intellectual property regulations, and regional trade agreements affect pharmaceutical access, and inclusive growth would provide deeper insights.

## 5

### Exploring caregiver willingness to pay for school-facilitated and clinic-based preventative care visits for adolescents

#### adolescents

**Authors:** *Happiness Pius Saronga, Emma Ackerman, Katalia Alexander, Emmanuel Muhingo, Anna Agape, Isaac Lema, Rachel Jared*

Mtei, David Gitagno, Alyssa Martinez, Arisa Shichijo, Eric Van Praag, Joseph R Egger, Sylvia Kaaya, Joy Noel Baumgartner

**Background:** Tanzania's 2021-2025 National Accelerated Action and Investment Agenda for Adolescent Health and Wellbeing outlines the country's efforts to improve adolescent healthcare access and outcomes, namely by promoting youth-friendly reproductive health (RH) services. However, non-RH preventative services remain unaddressed within this framework. Understanding family caregivers' willingness to pay (WTP) for these services is important, as a funding model for expansion of adolescent preventive healthcare does not currently exist.

**Objective:** This exploratory study describes caregivers' WTP for health check-ups, called Adolescent Wellness Visits (AWVs).

**Methods:** The VITAA clinical trial tested a school-clinic partnership providing AWVs for standard seven primary school students in Tanzania, where teachers escort students to and from health facilities to receive vision, dental, nutrition, mental health, and RH screenings with optional HIV testing (N=1095). Caregivers of adolescent study participants were purposefully selected (30 intervention arm, 9 control arm). Content and thematic analysis was conducted on qualitative data from semi-structured caregiver interviews.

**Results:** Most caregivers were willing to pay at least 2 USD for a one-time AWV if an external payer were to subsidize the cost. In this scenario, most were willing to pay 1.86– 3.72 USD, with a "median" amount of ~2.59 USD. While most

caregivers were women (30/39), male caregivers (9/39) generally reported a willingness to pay higher amounts. For both genders, caregivers with paid employment reported greater WTP, though paid employment was more common among men.

**Conclusion:** Caregiver WTP for AWVs was influenced by the ability to pay and perception of AWVs.

**Recommendation:** While school-facilitated AWVs may help address the current adolescent preventative care service gap, adoption requires the development of a sustainable pricing policy to ensure effectiveness and equitable access for families. The present findings provide a basis for further investigation into the willingness-to-pay (WTP) for adolescent preventative care services.

## 6

### Home-Based Palliative Care in Kilimanjaro Region: A Cost Comparative Analysis

**Authors:** Grunert Katharina, Priscus Audifas, Frank Richard, Simbila Satta, David Raymond Mwenesano, Andrew Elisante Malisa, Nosim Peter Sarikwa, Chantal Morel, Lukas Radbruch, Oliver Henke, Paul Mmbando

**Background:** Home-based palliative care aims to enhance the quality of life for both the patient and their family by bringing medical care directly to them, fostering a sense of control and dignity throughout the illness journey. Several studies from both high-income and low- to middle-income countries have demonstrated the cost-effectiveness of home-based palliative care.

**Objective:** This study assessed the cost-effectiveness of home-based palliative care versus standard care in Tanzania's Kilimanjaro region.

**Methods:** A matched-pairs cost comparison was conducted using data from deceased beneficiaries in the Tanzanian National Health Insurance Fund (NHIF) database. Seventeen patient pairs (34 total) were matched by diagnosis, sex, age ( $\pm 5$  years), and, when necessary, by residency, closest age, and date of death. Cost indicators included NHIF expenditures for outpatient services, inpatient care, medications, and overall healthcare costs during the final six months of life.

**Results:** In a cost comparison study, palliative care patients had significantly lower costs than standard care in 14 of 17 matched pairs. On average, palliative care costs only 60% of standard care (Tsh. 670,784 vs. Tsh. 1,113,216). The greatest savings were in medication, with palliative patients incurring just 27% of the costs (Tsh. 105,612 vs. Tsh. 391,053). Outpatient costs were 36%, and inpatient costs were 66% of those in standard care (Tsh. 276,877 vs. Tsh. 416,742).

**Conclusion:** This study presents promising evidence that home-based palliative care has potential cost-saving benefits, especially for end-of-life patients in Tanzania. These findings support the integration of PC into the National Health System.

**Recommendation:** Further research should explore the feasibility of conducting a larger-scale

study through improved methodological design to ensure more robust and generalizable findings.

## 7 Assessing Stakeholder Readiness for Cord Blood Banking in Tanzania: A Mixed-Methods Analysis

**Authors:** *Aisha Fikirini, Remigius Shirima, Zainab Karim Manji, Fadhlun Al-Beity, Mohamed Zahir Alimohamed*

**Background:** Umbilical cord blood (CB) is a rich source of hematopoietic stem cells used in treating various genetic and haematological disorders. Despite its promise, awareness and acceptance of CB donation and banking remain limited in many low- and middle-income countries, including Tanzania. Understanding the knowledge, attitudes, and perceptions of key stakeholders is essential to inform the development of a sustainable CB banking system.

**Objective:** This study aimed to assess the awareness, attitudes, and perceptions of healthcare workers, pregnant women, and the public toward CB.

**Methods:** A concurrent mixed-methods design was used. The quantitative component included structured surveys of 849 healthcare workers from various healthcare centres across Tanzania, 400 pregnant women from five major hospitals in Dar es Salaam, and 550 members of the public. The qualitative component involved in-depth interviews with 15 mothers who had previously donated CB and 8 healthcare providers experienced in CB collection.

**Results:** Preliminary findings reveal varied levels of awareness and acceptance across stakeholder groups. Healthcare workers generally demonstrated moderate awareness, while notable knowledge gaps were observed among pregnant women and the public. Qualitative data highlighted both enthusiasm and concerns regarding CB donation, particularly issues around trust, informed consent, and insufficient information.

**Conclusion:** The study highlights a clear need for targeted education campaigns to raise awareness and acceptance of CB donation and banking in Tanzania. Empowering Healthcare providers as champions of CB banking and directly addressing public concerns will be crucial to establishing a successful national CB banking program.

**Recommendation:** This study recommends the development of a national public education campaign to increase awareness and acceptance of umbilical cord blood (CB) donation and banking in Tanzania, particularly among pregnant women, the public, and healthcare workers. Empowering and training healthcare providers to serve as advocates for CB donation is essential, as is addressing concerns related to trust and informed consent.

## 8 Implementing HIV Pre-Exposure Prophylaxis Protocols in Bagamoyo District, Tanzania: A qualitative study

**Authors:** *Raphael A. Senkoro, Gladys Reuben Mahiti, Pankras Luoga.*

**Background:** The global fight against HIV/AIDS remains challenging, especially among key and vulnerable populations, including sex workers and people who inject drugs with high rates of HIV prevalence. About 70% of new HIV infections occur within these groups and their partners, of which Tanzania is similarly affected. Pre-exposure prophylaxis (PrEP) has the potential to reduce HIV risk by up to 90% when used consistently.

**Objective:** To evaluate the facilitators and obstacles to the implementation of HIV PrEP initiation protocols by healthcare providers in Bagamoyo District, Tanzania.

**Methods:** A Case study design was used from PrEP service providers. In-depth interviews with purposively selected study participants, including 4 clinical officers, 3 Community Volunteers, and 4 nurse midwives, were conducted. Content analysis was used to analyze data.

**Results:** Quality assurance mechanisms, including routine audits, data collection, standard operating procedures (SOPs), and quality control processes, were crucial in maintaining service standards. In addition, supportive supervision, technical assistance, and ongoing evaluations were frequently noted as essential contributors to protocol adherence. Further, effective implementation, such as technical assistance and resource allocation, was also found. Individual, community, organizational, and policy-level barriers were also found to affect implementation. Logistical and resource constraints were acknowledged as areas needing improvement.

**Conclusion:** The study found facilitators and barriers of implementing PrEP initiation protocols service provision, including stigma, logistical challenges, and financial constraints, indicate that while the protocol is robust, practical obstacles limit its complete execution, particularly in resource-limited settings.

**Recommendation:** Addressing stigma and misconceptions about PrEP is needed. Absence of hepatitis B testing and variability in targeted trainings for health workers, community sensitization to reduce stigma, and promoting the Improved Community Health Fund to alleviate financial barriers.

## 9 Effectiveness of the Rapid Alert Systems in combating Substandard and Falsified Medicines in Sub-Saharan Africa

**Authors:** *Erick G. Philipo, Eulambius M. Mlugu, Nelson E. Masota, Ragnhild Haugse, Eliangiringa A. Kaale.*

**Background:** Access to quality, safe, and effective medicines is essential for reducing morbidity and achieving universal health coverage by 2030. However, substandard and falsified (SF) medicines pose a significant public health threat. In response, the World Health Organization launched the Rapid Alert Systems (RAS) to promote reporting of SF medicines by various stakeholders. However, compared to other settings, Regulatory Authorities (RAs) in Sub-Saharan Africa largely lag in providing SF alerts.

**Objective:** We aimed to profile SF alerts and recalls while identifying barriers and enablers for effective implementation of RAS.

**Methods:** A mixed-methods study was conducted among RAS in Eastern and Southern Africa. Key informant interviews (KIIs) explored regulatory barriers for improving RAS implementation. A customized data extraction sheet was used to capture quantitative data from RAs' websites and shared databases.

**Results:** Factors related to limited resources and political environment were echoed as key barriers in implementing SF Rapid Alert Systems. On the other hand, aspects related to existing frameworks and technology adoption, among others were highlighted as crucial enablers.

**Conclusion:** This study has highlighted aspects critical for the smooth implementation of SF Rapid Alert Systems by RAs in the wider region of SSA. Their possible adoption by respective RAs will substantially contribute to the ongoing efforts in combating the SF medicines crisis.

**Recommendation:** RAs in SSA should consider adopting the suggested changes in their routine operations to enhance public health outcomes through more robust surveillance for SF medicines.

## 10 Transforming Healthcare in Tanzania: Leveraging Artificial Intelligence for Diagnostics, Surveillance, and Health Systems Optimization

**Authors:** *Sabina Mugusi, Deogratias Mzurikwao*

**Background:** Artificial Intelligence (AI) holds immense potential to improve diagnostic precision, streamline healthcare delivery, and bridge service gaps in low-resource settings. In Tanzania, a multidisciplinary effort has applied AI across key areas such as infectious and non-communicable diseases, cancer screening, and health systems strengthening. This initiative aims to enhance health outcomes through scalable, data-driven, and context-specific AI applications tailored to the country's unique healthcare challenges and needs.

**Objective:** To develop and assess AI tools and datasets enhancing disease detection, surveillance, risk assessment, and healthcare delivery in Tanzania.

**Methods:** The methodology involved applying AI techniques across eight health-related projects in Tanzania using retrospective and prospective data, including medical imaging, clinical records, and social media. Machine learning and deep learning models like Convolutional Neural Networks (CNN), Artificial Neural Networks (ANN), and Gradient Boosting were developed and validated against gold-standard diagnostics. Field implementation occurred through hospitals and mobile clinics, with performance assessed using accuracy, specificity, and other metrics in real-world healthcare

**Results:** Artificial intelligence tools in Tanzania showed strong performance in health diagnostics. A TB tool (CAD4TB) achieved 99% accuracy, surpassing human readers. Breast cancer detection reached 76.29% accuracy, and rabies

prediction models were highly accurate. A socio-economic tool showed 94.2% specificity. For dilated cardiomyopathy, segmentation achieved a Dice score of 0.90 and AUC of 0.93. Cervical cancer screening identified a leading model, and social media trends reflected COVID-19 data. AI tools for heart failure remain under development and validation.

**Conclusion:** AI demonstrates high potential to improve diagnostic accuracy, enhance disease surveillance, and inform targeted health interventions in Tanzania. Its applications span from infectious disease screening to chronic disease risk modeling and public health monitoring via social media.

**Recommendation:** To maximize impact, AI tools should be scaled in decentralized settings for diseases like tuberculosis and breast cancer. Strengthening data sharing, multi-center validation, and regulatory frameworks is essential as the technology also poses some significant risks. Integrating AI-driven socio-economic tools into immunization programs and enhancing training for health workers will support adoption.

## 11 Multicenter cross-sectional study on clinician's opinions, views and expectations on radiological reports in Dar Es Salaam

**Authors:** Amon Frank Danda MD, Zuhura Nkrumbih, Jerry Hella

**Background:** Radiology reports are medium of communication between radiologists and attending clinicians. There is no formal feedback

providing mechanisms. This study has unveiled the undiscussed interspecialty disagreements with radiology reports but also the degree of adherence to principles of good reporting. Tanzania being in a transformative medical imaging era. It is imperative to obtain clinicians' opinions, views and expectations now to assess the perceived quality of radiologists' output amidst these advancements.

**Objective:** To assess clinician's opinions, views and expectations on radiological reports among hospitals in Dar es Salaam region.

**Methods:** A multicenter cross-sectional study in Dar es Salaam region was conducted which involved 320 clinicians. A self-administered questionnaire and a backup google form were used for data collection. Analysis was done using Epi InfoTM version 7.2.0.1. Descriptive statistics were used to summarize data at a univariate level, employing frequency distribution, proportions and means. Chi square test was used to analyze statistical significance

**Results:** Majority of clinicians have a positive opinion on understandability (79%), clarity (92%) and relevance (91%) of radiology reports, standardized report format (83%) is preferred. There was equitable preference on the location of positive findings (54% vs 46%). Use of standardized lexicons/grading systems were applicable (93%) are clarification of radiological terms used in the conclusion (55%) were also more appealing to clinicians. Majority were satisfied with content (87%) and radiology reports

in general (86%). They acknowledged their importance in decision making.

**Conclusion:** The study has revealed that majority of clinicians in Dar es Salaam region have a very positive opinions/views and expectations on radiology reports. A Few shortcomings were also exposed.

**Recommendation:** There is need for improvement in the aspect of timely delivery and in person timely communication of critical/urgent findings to attending clinicians.

## 12 Assessment of the Afya Msafiri Surveillance System Using COVID-19 as a Case Study at Julius

### Nyerere International Airport

**Authors:** *Authors: Leopardo Alvalius Ngetwa, Dr. Hussein Mohamed, Elibariki Mwakapeje, Josephine Kapinga*

**Background:** COVID-19, caused by the SARS-CoV-2 virus, emerged in Wuhan, China, in December 2019 and rapidly became a global pandemic. By December 2024, over 776 million confirmed cases and 7 million deaths had been reported worldwide. In response, Tanzania implemented the Afya Msafiri Surveillance System to monitor traveler health at official Points of Entry (PoEs).

**Objective:** This study evaluated the Afya Msafiri Surveillance System's performance in achieving its objectives by assessing its usefulness and key attributes

**Methods:** A descriptive cross-sectional study was conducted in March 2025 at Julius Nyerere

International Airport (JNIA), using data from May 2021 to December 2024. Data collection involved structured questionnaires completed by 50 Port Health staff; in-depth interviews with 3 Port Health HQ representatives; observation checklists over two days; review of system logs, reports, and 366 randomly selected COVID-19 surveillance forms. The evaluation followed the CDC's Guidelines for Evaluating Public Health Surveillance Systems

**Results:** Between May 2021 and December 2024, 12.26 million travellers were screened, with 10.24% tested for COVID-19 and 0.523% testing positive. All 50 staff demonstrated clear understanding of case definitions, used electronic tools efficiently, and submitted reports within 20 minutes. The system adapted to include Marburg and Mpox and was implemented at all 58 official Points of Entry. Despite 75% system stability, no staff received training in the past year. Data quality was poor (28.6%) due to validation issues, and testing

**Conclusion:** The system improved real-time reporting, response to health alerts, and adaptability to disease changes. However, data quality issues, incomplete form variables, lack of integration with systems like eIDSR, and delayed feedback hinder timely awareness and overall surveillance efficiency. Addressing these challenges is essential to enhance the system's effectiveness and responsiveness.

**Recommendation:** The Ministry of Health should improve Afya Msafiri by enhancing data validation, integrating it with eIDSR, and providing regular staff training. Strengthening feedback

mechanisms and reinstating the system for all travelers is essential. Surveillance at informal borders should be expanded, and a sustainable funding model developed to reduce donor reliance and ensure long-term effectiveness of the system.

## 13 Assessment of Neglected Tropical Diseases Surveillance System in Focus on Trachoma from January 2023 to December 2024 from Chamwino District

**Authors:** Nyemo Ainea Mapuga, Loveness John Urio, Stephen Mbwambo, Faraja Lyamuya, Clarer Jones

**Background:** Trachoma, caused by *Chlamydia trachomatis*, remains the leading infectious cause of blindness globally, with the burden falling disproportionately on poor communities. In Tanzania, it is endemic in multiple districts, including Chamwino in the Dodoma Region. Despite national interventions such as Mass Drug Administration (MDA) and integration into the DHIS2 surveillance platform, assessing the performance of the Neglected Tropical Diseases (NTDs) surveillance system remains essential.

**Objective:** This study evaluated key attributes of the NTD surveillance system using Trachoma data from Chamwino District between January 2023 and December 2024.

**Methods:** A cross-sectional study was conducted to assess trachoma surveillance. Demographic and clinical data were obtained from the health facility registers and DHIS2. Other data sources were the program surveillance reports, the

surveillance guidelines, and interviews with health workers at the selected facilities, district, regional, and national levels, where two personnel were interviewed at each level. Microsoft Excel was used for data analysis.

**Results:** Between 2023 and 2024, 78 trachoma cases were reported. The surveillance system showed flexibility by adapting Trachoma TT and TF case definitions, including surgical interventions. It was timely, with reports submitted to DHIS2 within timeframes. The system was simple to operate and accepted, with full participation from all 80 reporting sites. However, 10.3% of cases had incomplete data, and no cases were reported in children under 15. Sensitivity and PPV were not evaluated due to a lack of confirmation diagnostics.

**Conclusion:** While the Trachoma surveillance system in Chamwino District is functional and supports public health action, improvements in the incorporation of confirmatory diagnostic testing that will increase the accuracy of case detection, improve data reliability and guide better control efforts, and representativeness for all affected populations will provide accurate, equitable interventions and the system's effectiveness.

**Recommendation:** To strengthen trachoma surveillance, the Ministry of Health (MOH), RHMTs, and CHMTs should conduct routine supportive supervision to enhance data quality. The MOH should mobilize resources to align the system with elimination goals, integrate it with national reporting platforms to reduce reporting

errors, and strengthen diagnostic confirmation capacity for improved case verifications.

## 14 The Journey of Ending HIV Pandemic: Stigma and Discrimination observation in High Density Health Facilities

**Authors:** *Emilia Kitambala, Jessie Mbwambo, Linda Mlunde, Bonnie Betson, Rahma Kova, Neema Mkumbwa, Laura Nyblade, Sarah Roberts, James Mulilo, Mutale Chonta, Sue Clay, Emma Gyamera, William Osafo-Mahama, Priscilla Arthur-Baiden, Hephzibah Gyimah, Agnes Oppong-Baah; Frederick Nsatimba, Florence Animwaa Darko, Rosemary Sitsofe Ayebi- Arthur, Virginia Bond.*

**Background:** HIV-related stigma and Discrimination (S&D) in healthcare settings is a significant barrier towards optimal HIV related services. More data on the magnitude of HIV-related S&D from healthcare settings in Tanzania is needed. We present HIV-related stigma levels in two secondary and tertiary level hospitals in Tanzania.

**Objective:** To assess the magnitude of negative attitudes amongst health facility staff in relation to HIV stigma.

**Methods:** Baseline survey was conducted late in 2024 to provide HIV S&D insights for a Total Facility Approach (TFA) intervention in two hospitals. The survey involved 600 health facility staff. We assessed staff's opinion and feelings on risk of HIV transmission and provision of services towards People Living with HIV (PLHIV) and

special population groups (adolescent and young adults and drug users). Descriptive analysis was conducted to obtain the magnitude of HIV S&D.

**Results:** We found a very high proportion of health facility staff with negative attitudes towards adolescent girls (95.7%), PLHIV (91.5%) and young men (94.2%). We observed that enacted stigma to PLHIV was 91.5% among the staff (Clinical: 85.4%, non-clinical: 72.5%). About 41.7% of the staff (Clinical; 46.6%, non-clinical; 26.8%) reported witnessing their fellow staff enacting stigma (discrimination) when providing service to a patient/client.

**Conclusion:** These baseline results call for the urgent need to address HIV S&D in the health care settings, especially in high density facilities, utilizing approaches such as Total Facility Approach, along with tailored stigma-reduction tools.

**Recommendations:** It is recommended to provide continuous education and refresher training to health facility staff to enhance awareness and effectively address stigma and discrimination in health service provision.

## 15 Investing in Tanzania's Future Health Workforce for Stigma-Free Care: Piloting Stigma-Reduction Training in Pre-Service Education

**Authors:** *Emilia Kitambala, Jessie Mbwambo, Linda Mlunde, Bonnie Betson, Rahma Kova, Neema Mkumbwa, Laura Nyblade, Sarah Roberts, James Mulilo, Mutale Chonta, Sue Clay, Emma Gyamera, William Osafo-Mahama,*

*Priscilla Arthur-Baiden, Hephzibah Gyimah, Agnes Oppong-Baah; Frederick Nsatimba, Florence Animwaa Darko, Rosemary Sitsofe Ayebi-Arthur, Virginia Bond.*

**Background:** Stigma and discrimination in healthcare settings hinder HIV prevention and care in Tanzania. The expanded Total Facility Approach (eTFA) aims to reduce stigma among both pre-service and in-service healthcare providers through targeted training. To tackle stigma early, a pilot pre-service stigma-reduction curriculum was introduced at Muhimbili College of Health and Allied Sciences (MUCOHAS), targeting mid-level health and allied science students for long-term impact in care delivery.

**Objective:** To pilot the stigma reduction training curriculum in pre-service education to through the expanded total facility approach intervention.

**Methods:** The pre-service component of eTFA involved integrating a stigma-reduction curriculum into nine health training programs through a Ministry-led minor curriculum review. At MUCOHAS, the curriculum was piloted in five programs using a module-based, participatory approach across ten tutor-facilitated sessions, in May 2025.

**Results:** Initial feedback showed promising changes in student attitudes. Many students demonstrated improved knowledge of HIV transmission, reduced fear-driven biases, and enhanced empathy toward people living with HIV and other marginalized groups. Tutors reported increased confidence and competence in delivering content, crediting the preparatory

sessions for this growth. Observers noted high engagement and comprehension among students. Both students and tutors appreciated the interactive nature of the sessions, which fostered deeper understanding of stigma's roots and actionable strategies to address it in.

**Conclusion:** Integrating stigma-reduction content into pre-service health education is feasible and impactful. Engaging stakeholders and preparing tutors contributed to the effective delivery of the curriculum. Participatory, context-specific methods promoted student reflection and attitude shifts.

**Recommendation:** Integrating stigma-reduction training into pre-service education is a scalable and sustainable strategy to promote compassionate, equitable healthcare. The experience at MUCOHAS demonstrates the feasibility of this approach and highlights the importance of preparation and participatory methods in transforming student attitudes early in their careers.

## 16 Cost saving and Health Workers Perceptions of Pharmacist Integration in Operating Rooms: A Mixed-Methods Cross-Section

**Authors:** Deus Buma, Solobi Ngasa, Arnold Ndesangia

**Background:** Background: Developed nations maximize pharmacists, while developing nations underutilize them, especially in operating rooms (ORs), necessitating cost-effectiveness and feedback evaluations.

**Objective:** To investigate the impact of pharmacist involvement in operating rooms (OR) at Muhimbili National Hospital

**Methods:** We contrasted a "before era" (BE) without pharmacists to an "after era" (AE) with their presence. We conducted a comparative observational analysis. We examined data from April 1, 2016, to June 30, 2018 (BE), and July 1, 2018, to September 2020 (AE). We interviewed 127 OR Health workers to appreciate pharmacist presence during AE. We performed statistical analysis using Stata 12/IC. We set statistical significance at  $p < 0.05$ .

**Results:** In the BE, 32,568 patients had surgery (31.7% male), compared to 40,195 in the AE (40.2% male). Payment methods were similar ( $p=0.68351$ ). Total medication/supply costs decreased from TZS 8,631,547,372 (BE) to TZS 6,695,832,350 (AE). Despite a TZS 1,409,400,000 pharmacist integration cost, a net saving of TZS 526,315,022 was achieved (ICER: TZS 69,007 savings/patient). Health worker satisfaction with 40 pharmacists was 98.4%, and 92.9% of OR staff were content.

**Conclusion:** Pharmacists are indispensable members of healthcare teams, particularly in ORs, where their contributions significantly improve patient outcomes and reduce costs.

**Recommendation:** The findings strongly support increased pharmacist deployment in healthcare facilities and further research to explore their impact on healthcare resource utilization.

## Subtheme: Non-communicable Diseases, Mental Health, Surgery and Nutrition

### 17 Improving TBI Emergency Care in Tanzania: GCS-Based Predictions and Early Outcomes at a Tertiary Hospital

**Authors:** *Mussa John Masunga, Dr. Anthony Assey*

**Background:** Traumatic brain injury (TBI) is a major cause of disability and death worldwide, particularly in low- and middle-income countries (LMICs) such as Tanzania. The Glasgow Coma Scale (GCS) is widely used to assess the severity of TBI, but its effectiveness in predicting the early treatment outcome in LMIC settings remains underexplored.

**Objectives:** To assess how GCS scores and demographic factors predict early treatment outcomes within 24 hours among TBI patients at Muhimbili Orthopedic Institute (MOI).

**Methods:** A retrospective cross-sectional study was conducted involving 327 patients diagnosed with TBI and admitted to MOI between January and June 2024. Data on age, sex and GCS score at admission and 24 hours treatment outcomes which were defined as discharge, need for further intervention, or death. TBI severity was classified based on GCS: mild (13–15), moderate (9–12), and severe (3–8). Bivariate and multivariate logistic regression analyses were used to assess the relationship between GCS, demographics, and early outcomes using SPSS version 27.

**Results:** A total of 327 participants were included, with a mean age of 31.9 years (SD = 14.6). The majority (71.6%) were aged between 15–45 years, while 10.1% were below 15 years and 18.3% were above 45 years. Most participants were male (83.2%). Based on Glasgow Coma Scale (GCS) scores, 83.5% had mild traumatic brain injury (TBI), 12.8% had moderate TBI, and 3.7% had severe TBI. Within 24 hours of admission, 36.1% were discharged, 60.6% required further intervention, and 3.4% died. Age and GCS score were significantly associated with 24-hour treatment outcomes ( $p = 0.029$  and  $p < 0.001$ , respectively), with no significant association observed with sex ( $p = 0.232$ ). Logistic regression analysis identified mild (AOR = 0.012, 95% CI: 0.002–0.073,  $p < 0.001$ ) and moderate TBI (AOR = 0.109, 95% CI: 0.020–0.609,  $p = 0.012$ ) as independent protective factors against early mortality. The 15–45 age group showed a trend toward reduced mortality (AOR = 0.241, 95% CI: 0.055–1.051,  $p = 0.058$ ).

**Conclusion:** Initial GCS score is a strong independent predictor of early outcomes in TBI patients and should guide triage and care decisions. Patients with lower GCS scores, particularly those with moderate or severe TBI, are at higher risk of early mortality.

**Recommendation:** From the study findings, the routine use of GCS scoring to guide triage and risk stratification in TBI patients is highly recommended. Triage protocols should integrate demographic risk profiling, prioritizing patients with lower GCS scores and older age for early

intervention. Future research should explore integrating these predictors into decision-making algorithms to improve early outcomes.

## 18 Alcohol use disorders among medical students at MUHAS: prevalence and associated factors

**Authors:** *Dr. Andronicus Aloyce, Dr. Ester Steven Mzilangwe, Mr. Mrema Noel Kilonzo*

**Background:** Alcohol use is a significant public health concern worldwide. Among university students, it is linked to poor academic performance, violence, and risky behaviors. Despite previous research on the prevalence of Alcohol Use disorders (AUD) and associated factors in Tanzania's general population and among young people; the same is unknown among medical students

**Objective:** This study aimed to determine the prevalence of AUD and the associated individual, relationship, and community factors among medical students

**Methods:** We conducted a cross-sectional survey among 234 MUHAS medical students in 2024, recruited by stratified sampling followed by proportionate simple random sampling. We measured AUD using the AUDIT. A structured questionnaire was used to collect information on independent variables. Descriptive statistics were summarized. Factors with AUD we examined using Bivariate analysis, and Multivariate regression analysis was to examine the independent associations between AUD and

independent variables. P values equal to or below 0.005 was considered statistically significant.

**Results:** In the study period 21.8% of participants (n = 51) reported using alcohol. Heavy Episodic Drinking (HED) was reported by 12.4% (n = 29). AUD (AUDIT≥8) was reported by 10.7% (n = 25). Male medical students (aPR = 5.10; 95% CI: 1.09-23.89; p = 0.039); those in the clinical study years (aPR = 2.89; 95% CI: 1.38-6.06; p = 0.005); and who reported experiencing mental distress (aPR = 3.84; 95% CI: 1.82-8.08; p<0.001) were more likely to report AUD

**Conclusion:** AUD is common among MUHAS medical students; associated with being male, in the clinical years of study and reporting having mental distress.

**Recommendation:** This study underscores the need for routine screening of medical students for AUD and linking them to care. Further research is recommended at MUHAS to include medical students and other allied professionals. Our results may serve as the foundation for the government and other stakeholders to establish and strengthen public health policies, and interventions to curb alcohol use among medical students.

## 19 Health facility assessment (HFA) for severe acute malnutrition (SAM). A

### Case Series in Dar Es Salaam

**Authors:** *Frida Mollel, Karimu Manji, Helga Naburi, Elias Bukundi and Jenipha Metodi*

**Background:** Severe Acute Malnutrition (SAM) is a critical public health issue in Tanzania, affecting

around 100,000 children under five, with 4% suffering from severe wasting, which significantly contributes to high morbidity and mortality rates. Despite WHO guidelines for managing SAM, there are ongoing concerns regarding their implementation and compliance in health facilities. Addressing these management challenges is essential for reducing malnutrition rates and improving child survival outcomes in the country.

**Objective:** To assess the health facility's capacity to deliver quality care for children with SAM in Dar-Es-Salaam

**Methods:** This study will assess six public health facilities that manage SAM in Dar es Salaam. Using a case series design, we will adopt the Nutrition Service Delivery Assessment Tool, to assess four key areas of service delivery such as availability and training of healthcare personnel, physical infrastructure, essential equipment, nutritional services offered, and data management practices related to SAM treatment. we will assign a poor, fair, good, or excellent score.

**Results:** Preliminary results show that SAM management is still inadequate. Limited Competency among staff working in malnutrition, inadequate nutrition training, inadequate equipment, and supplies, and inadequate service provision may be some of the major contributing factors in meeting the quality of care.

**Conclusion:** Our results may provide insight into the ongoing policy discussion that calls for the improvement management of SAM. We expect to

identify barriers and opportunities for integrating SAM treatment into existing health systems and providing insight into the ongoing policy discussion.

**Recommendation:** To improve SAM management, it is essential to provide ongoing training for healthcare staff, ensure a steady supply of healthcare supplies, improve infrastructure. and reinforce institutional support and policies to enhance the quality of SAM treatment and care.

## 20 Gastric Cancer in Tanzania: Factors Influencing the Survival Status, a Call for Multidisciplinary Approach.

**Authors:** *Dr. Alfred Chibwae, Dr. Nashivai Kivuyo, Dr. Daniel Kitua, Dr. Salum Kitembo, Prof. Cameron Gaskil, Dr. Ally Mwangi*

**Background:** African countries are faced with poor registry as well as underestimation of the burden of the gastric malignant patients. Less is known about gastric cancer in Tanzania, especially on survival status, as well as clinical profile and histopathological factors for survival among the gastric cancer patients Tanzania. The analysis of factors for survival will optimize different management of patients, improve preventive measures, especially earlier diagnosis of gastric malignancies.

**Objective:** To determine the survival status and factors influencing the survival status of the gastric cancer patients attended at MNH.

**Methods:** This retrospective study involved 125 endoscopically and histopathological confirmed and managed gastric cancer patient. Clinical profile including the staging of the disease and treatment modalities as well as the histopathological profiles were retrieved from electronic medical record. The survive status were confirmed by phone call after informed consent was obtained. Statistical analysis of survival and survival I rates and predictors was done using Crosstab, Kaplan mayer and Cox regression.

**Results:** Adenocarcinoma was diagnosed in 111(88.8%) with 101(80.8%) metastatic disease. Mortality of 86.4% with mean survival time (9.61±13.31) months, survival rate of 24.1%, 5.6% and 0.9% in one, three and five years, respectively was observed. Mortality was associated with metastatic to distant organs, clinical stage IV and non-surgical treatment OR (95% CI), 0.17(0.042,0.66), 0.16(0.04,0.69) and 10.96(1.26,95.21) respectively. Risk of death was decreased by single metastases 0.002(0.02-0.419), increased by palliative intended surgeries (11 times) and post-total gastrectomy patients by 71.7 times 0.005(3.5-14433.39).

**Conclusion:** The survival rate was observed to be low due to late presentation of the patient to the health facilities with metastatic disease. Surgical management and adjuvant therapy h improved the survival status of the patient. However, metastatic disease and Total gastrectomy had increased the mortality of patients with Gastric cancer.

**Recommendation:** Further studies are recommended especially on factors leading to delayed presentation and diagnosis among patient with gastric cancer. Also, molecular and genetic studies are recommended as may improve survival after Neoadjuvant therapy and surgery.

## 21 Dietary patterns in Tanzania's transitioning rural and urban areas

**Authors:** Linda Simon Paulo, Virissa C. Lenters, Pilly Chillo, Milka Wanjohi, Gonçalo J. Piedade, Daniel R. Mende, Vanessa Harris, Appolinary Kamuhabwa, Gideon Kwesigabo, Folkert W. Asselbergs & K. Klipstein-Grobusch

**Background:** Like other Sub-Saharan Africa (SSA) countries, Tanzania is undergoing socio-economic changes that impact lifestyles and dietary choices. Traditionally, differences in dietary habits between rural and urban areas in Tanzania and other SSA countries were prominent. However, recent research indicates converging lifestyles and dietary choices associated with increased risk of cardiometabolic diseases.

**Objective:** The objective of the current study was to investigate differences and similarities in dietary patterns, energy, and food groups

**Methods:** Dietary habits were assessed by use of a Food Frequency Questionnaire (FFQ) for 442 respondents aged 44–65 years in urban (Ubungo -Dar es Salaam) and rural (Kilindi- Tanga) districts of Tanzania. Dietary patterns were determined using Principal Components Analysis (PCA).

Bivariate analyses identified determinants of dietary patterns in urban and rural Tanzania.

**Results:** Two dietary patterns, a “mixed pattern” characterized by whole grains, potatoes, fruits, vegetables, meat, fried potatoes and tubers, alcohol, sugar-sweetened beverages (SSB), sugar and sweets, and added oils and a “plant-rich pattern” characterized by whole grains, fruits, pulses and peas, seasoning vegetables and salads, SSB, sugar and sweets, and added oils were identified. Urban residents contributed more to the mixed pattern, while rural residents had a higher contribution to the plant-rich pattern.

**Conclusion:** We identified two distinct dietary patterns: a “mixed pattern” prominent in urban and a “plant-rich pattern” more common in rural. Urban diets were more diverse, with slightly higher energy intake.

**Recommendation:** These findings underscore the effects of urbanization on diets and the need for targeted nutritional intervention for both rural and urban populations.

## 22 Patterns and Clusters of Diet in Relation to Metabolic Syndrome in Rural and Urban Tanzania

**Authors:** Linda Simon Paulo, Gonçalo J. Piedade, Simeon Mayala, Vanessa Harris, Virissa C. Lenters, Daniel R. Mende, Appolinary Kamuhabwa, Gideon Kwesigabo, Folkert W. Asselbergs, Pilly Chillo, K. Klipstein-Grobusch

**Background:** Unlike well-established diets with proven health benefits - such as the Mediterranean, Dietary Approaches to Stop

Hypertension (DASH), Nordic, and traditional Asian diets (Korean, Chinese and Japanese), the relationship between both traditional and contemporary SSA diets and Metabolic Syndrome remains largely underexplored.

**Objective:** In this study, assessed the relationship between dietary patterns and clusters with MetS/MetS components in rural and urban

**Methods:** We conducted a cross-sectional study with 379 respondents in two urban and rural districts of Tanzania. Data were collected using validated tools. Dietary habits were assessed using a food frequency questionnaire; dietary patterns were derived by principal component analysis (PCA) and diet clusters by hierarchical clustering on PCA (HCPC). Regression analysis identified the associations between diet, lifestyle factors, and MetS.

**Results:** The overall prevalence of MetS is high, with no notable difference observed between rural and urban participants. While dietary patterns and clusters were associated with dyslipidemia and central obesity, they showed no relationship with MetS or its other components.

**Conclusion:** Further studies are needed to establish reliable predictors of cardiovascular diseases in SSA.

**Recommendation:** Measures to address the burden of the components of MetS are needed in both rural and urban Tanzania.

## 23 Exploring Pharmacogenetic Factors Influencing Hydroxyurea

### Response in Tanzanian Sickle Cell Disease

#### Patients: A Genomic Medicine

**Authors:** *Siana Nkya, Collin Nzunda, Emmanuel Saukiwa, Frida Kaywanga, Eliud Buchard, David Solomon, Heavenlight Christopher, Doreen Ngowi, Julieth Johansen, Florence Urio, Josephine Mgaya, Christina Kindole, Mbonea Yonazi, Salman Karim, Mohamed Zahir Alimohamed, Raphael Z. Sangeda, Clara Chamba, Collet Dandara, Enrico Novelli, Emile R. Chimusa, Julie Makani.*

**Background:** Sickle cell disease (SCD) poses a persistent health burden in sub-Saharan Africa. Although hydroxyurea (HU) has proven effective in increasing fetal hemoglobin (HbF) and improving clinical outcomes, approximately 30% of patients show suboptimal responses. The variability in therapeutic outcomes is hypothesised to be genetically driven. This study explores pharmacogenetic determinants influencing HU response in Tanzanian SCD patients, focusing on genes regulating HbF and drug metabolism pathways.

**Objective:** To determine the pharmacogenetic variants in CYP2C9, KLF10, BCL11A, ARG2, HBG1, SAR1A, MYB, and NOS1 associated with hydroxyurea treatment response.

**Methods:** This study enrolled 148 Tanzanian SCD patients, 60 of whom underwent targeted sequencing across 13 hydroxyurea-response loci. Responders and non-responders were classified

based on HbF increase post-treatment. Genomic DNA was extracted, sequenced, and variants annotated using ANNOVAR. Population structure, allele frequency, and gene-gene interaction analyses were conducted using BWA, GATK, Enrichr, and GeneMANIA to identify functional SNPs linked to drug metabolism and fetal hemoglobin regulation.

**Results:** Genomic analysis of 60 Tanzanian SCD patients revealed significant differences in pathogenic variants between hydroxyurea responders and non-responders. Notably, only MYB, HBG1, NOS1, and ARG2 variants were found in responders. Enrichment and interaction analyses confirmed involvement in drug metabolism and HbF induction pathways. Responders exhibited higher frequencies of functional SNPs except at CYP2C9. These findings suggest cumulative and interactive genetic effects modulate hydroxyurea response, reinforcing the value of pharmacogenetic stratification in SCD treatment optimization.

**Conclusion:** This study highlights the pivotal role of genetic variants in influencing hydroxyurea response among Tanzanian SCD patients. Loci involved in HbF synthesis and drug metabolism showed significant associations with treatment outcomes. These findings underscore the importance of pharmacogenetic screening to guide therapeutic decisions, offering a path toward more personalized and effective SCD management strategies in Africa.

**Recommendation:** We recommend incorporating pharmacogenetic testing into

standard SCD care to predict hydroxyurea response and tailor treatment. Health systems should invest in genomic infrastructure and clinician training. Future studies should validate these findings in larger, ethnically diverse African cohorts to enhance clinical utility and promote equitable access to precision medicine in sickle cell disease management.

## 24 Developmental Reticulocyte Transcriptome Profiling Identifies Regulatory Networks Driving Fetal Hemoglobin Decline in Sickle Cell Disease

**Authors:** *Siana Nkya, Collin Nzunda, Frida Kaywanga, Salmaan Karim, David Solomon, Emmanuel Saukiwa, Heavenlight Christopher, Doreen Ngowi, Julieth Johansen, Florence Urio, Josephine Mgaya, Clara Chamba, Fadya Hashim, Emmanuela E. Ambrose, Solomon Ofori-Acquah, Emile R. Chimusa, Julie Makani*

**Background:** Fetal hemoglobin (HbF) levels significantly affect Sickle Cell Disease (SCD) severity. Understanding how HbF is regulated during development is key to designing targeted treatments. This study explores transcriptomic differences in erythroid cells from birth to 18 months in Tanzanian children to identify genes influencing HbF expression. Findings may inform strategies for gene-based and pharmacologic therapies for sickle cell disease.

**Objective:** To identify differentially expressed genes in erythroid cells between birth and 18 months that influence fetal haemoglobin expression in SCD.

**Methods:** We enrolled 24 Tanzanian infants and collected cord blood at birth and peripheral blood at 18 months. Reticulocytes were enriched using leukofiltration, CD45 depletion, and CD71-positive selection. RNA was extracted and sequenced on an Illumina NovaSeq 6000. Differential gene expression, co-expression networks, and pathway enrichment analyses were performed using DESeq2, PyWGCNA, and cluster Profiler to identify regulatory networks associated with the developmental decline of fetal hemoglobin in sickle cell disease.

**Results:** Transcriptomic analysis revealed 1,245 differentially expressed genes, with 631 upregulated at birth. PCA and heatmaps showed distinct gene expression profiles. Modules correlated with age and HbF levels highlighted genes regulating cell cycle, immunity, and metabolism. Hub genes such as UCP2, COPS5, and EIF4EBP2 were enriched in pathways relevant to erythropoiesis, oxidative stress, and immune regulation. These findings provide insight into regulatory networks potentially modulating HbF and offer targets for therapeutic intervention.

**Conclusion:** Our study uncovered gene expression signatures linked to HbF regulation and erythroid maturation. Distinct transcriptional programs were observed at birth versus 18 months. Genes associated with cell cycle, metabolism, and immune responses may influence HbF decline. These findings support the potential for transcriptomic profiling in guiding new therapeutic strategies for SCD.

**Recommendation:** We recommend extending transcriptomic studies to larger SCD cohorts and integrating proteomics and epigenomics to validate regulatory targets. Applying this knowledge may improve precision therapies aimed at inducing HbF and modulating erythropoiesis, potentially transforming care for patients with sickle cell disease in low-resource settings.

## 25 Unravelling Prognostic Significance: Long-Read Nanopore Sequencing of TP53 and IGHV in Chronic Lymphocytic Leukemia Patients

**Authors:** Collin Nzunda, Eliud Buchard, Jeffer Bhuko, Emmanuel Saukiwa, Heavenlight Christopher, Caro Mollel, Rehema Shungu, Clara Chamba, Helene Dreau, Kate Ridout, William Mawalla, Anna Schuh, Antony Cutts, Ahlam Nasser, Adam Burns, Doreen Kamori.

**Background:** Chronic lymphocytic leukemia (CLL) demonstrates significant clinical heterogeneity, necessitating robust biomarkers for risk stratification. TP53 mutations and IGHV somatic hypermutation status are critical prognostic indicators influencing therapy decisions. However, conventional sequencing methods may miss complex or sub clonal alterations. This study applies long-read nanopore sequencing to comprehensively profile TP53 and IGHV in Tanzanian CLL patients, aiming to enhance prognostic accuracy and guide personalized treatment strategies in resource-limited settings.

**Objective:** To identify TP53 mutations and IGHV status using nanopore sequencing and evaluate their prognostic relevance in Tanzanian CLL patients.

**Methods:** Genomic DNA materials were extracted from 35 CLL patients enrolled in this study. TP53 exons 1–11 and the full-length IGHV region were PCR-amplified and sequenced using Oxford Nanopore's MinION Mk1C. Reads were aligned with Minimapp2, and variants were called using Samtools. IGHV somatic hypermutation and gene usage were assessed via IMG/TV-QUEST. Annotation of TP53 variants followed HGVS nomenclature and referenced COSMIC and ClinVar for clinical interpretation.

**Results:** Among 35 CLL patients (median age 67 years), fatigue, fever, and night sweats were common. Targeted sequencing of TP53 (NM\_000546.5) identified seven coding variants: c.745C>G (p.Arg249Gly, VAF 67%), c.817C>T (p.Arg273Cys, VAF 38%), c.1037A>T (p.Glu346Val), c.1118A>G (p.Lys373Arg), c.904G>A (p.Gly302Arg), c.916C>T (p.Arg306Ter, VAFs 13.5% and 10.06%), and c.731G>T (p.Gly244Val, VAF 10.12%). Five of these were classified as pathogenic, although only p. Arg249Gly was validated. IGHV profiling revealed a predominance of unmutated cases. These findings underscore the utility of long-read sequencing in refining CLL.

**Conclusion:** Our findings demonstrate that long-read sequencing reliably detects clinically significant TP53 mutations and IGHV profiles in CLL patients. The presence of multiple pathogenic

variants highlights the genomic complexity of CLL. Implementing molecular profiling in resource-limited settings can enhance risk stratification and guide targeted therapies, offering a foundation for precision oncology in low- and middle-income countries.

**Recommendation:** Studies with larger cohorts are needed to validate these findings and support the development of locally adapted, genomics-informed treatment guidelines for CLL in low-resource settings. Furthermore, integrating long-read sequencing into routine diagnostic workflows for CLL, particularly in settings where standard molecular testing is limited is recommended. Capacity building in genomic analysis and interpretation is essential.

## 26 Early-Life Clinical and Hematological Profiles: A Comparative Study of Children with and without Sickle Cell.

**Authors:** *Siana Nkya, Isihaka Mahawi, Rehema Shungu, Collin Nzunda, Frida Kaywanga, David Solomon, Theogloria Kerrety, Emmanuel Josephat, Heavenlight Christopher, Doreen Ngowi, Julieth Johansen, Florence Urio, Josephine Mgaya, Upendo Masamu, Clara Chamba, Raphael Sangeda, Fadya Hashim, Emmanuela Ambroise, Lulu Chirande, Agnes Jonathan, Emmanuel Balandya, Solomon Ofori Acquah, Julie Makani.*

**Background:** Sickle cell disease (SCD) causes significant morbidity and mortality in early childhood. Understanding the hematological and

clinical outcomes during the early years of life is crucial to improving care for affected populations. This study explores fetal hemoglobin (HbF) decline and its clinical impact in children with SCD to identify early disease patterns and guide timely interventions.

**Objective:** To compare early clinical and hematological profiles of children with and without SCD and assess fetal hemoglobin decline.

**Methods:** This longitudinal study recruited and followed up children aged 0-3 years. Clinical complaints and hematological parameters were recorded at each visit. Statistical analyses explored associations between HbF levels, hematological parameters, and clinical outcomes in children with SCD and without SCD.

**Results:** 414 children were recruited, 35.5% with SCD and 64.5% without SCD. Children with SCD experienced a higher frequency of clinical complaints. The hospital admission rate was higher among children with SCD (19.6%) compared to those without (1.7%) ( $p \leq 0.007$ ), with severe anemia was the leading cause of admission (56.3%). At birth, children with SCD had higher HbF levels (72.87%) that declined over time. The rate of decline correlated with an increased frequency of clinical events in children with SCD.

**Conclusion:** The results emphasize the need for early intervention and continuous monitoring of HbF levels to reduce clinical complaints in children with SCD.

**Recommendation:** Strengthening newborn screening and monitoring HbF levels to assist find

factors associated rapid decline of HbF levels in children with SCD. Further research is recommended to explore the impact of different interventions on improving the maintenance of HbF levels and improving the quality of life and survival rates of children with SCD

## 27 Artificial Intelligence for Early Detection of Dilated Cardiomyopathy: A Deep Learning Approach Using Echocardiogram Images

**Authors:** *Deogratias Mzurikwao, Lulu Fundikira, Lulu Sakafu, Simeone Mayala, Gladness Urassa, William Daudi Mjalu, Asa Kalonga, Sabina Mugusi, Bruno Sunguya*

**Background:** Dilated cardiomyopathy (DCM) is a leading cause of heart failure, often presenting with late symptoms and diagnostic challenges. In resource-limited settings like Tanzania, access to timely and accurate diagnosis is constrained by limited cardiology expertise. Leveraging artificial intelligence, particularly deep learning on echocardiogram images, offers a promising solution for early detection of DCM. This approach can enhance diagnostic efficiency, reduce clinical workload, and improve patient outcomes through timely intervention.

**Objective:** To develop and validate an AI-based tool for early detection of idiopathic dilated cardiomyopathy using echocardiogram images.

**Methods:** The project utilized echocardiogram data from JKCI, including over 20,000 DICOM images. Images were anonymized, labeled by cardiologists, and split into training, validation, and

testing sets. Deep learning models, particularly CNNs, were developed using Python, TensorFlow, and PyTorch. Model performance was evaluated using accuracy, F1-score, and AUC. The best-performing model was embedded into a computer-based tool for near real-time DCM detection and validated in a clinical setting.

**Results:** The developed AI model demonstrated high diagnostic performance, with an AUC of 0.93 and a mean absolute error of 0.4 in predicting ejection fraction. The segmentation model achieved a Dice coefficient of 0.90 in outlining the left ventricle. The tool accurately classified DCM cases and highlighted key cardiac features for expert verification. A computer-based application integrated with the model was successfully deployed for clinical validation. Preliminary results show promise for real-time, point-of-care DCM screening in resource-limited settings.

**Conclusion:** The developed AI tool achieved high diagnostic accuracy and holds promise as a scalable, point-of-care solution in resource-limited settings. This study confirms that deep learning can accurately detect idiopathic dilated cardiomyopathy using echocardiogram images.

**Recommendation:** The integration of AI in clinical workflows offers significant potential to improve diagnostic efficiency and accessibility. This study recommends that further research be conducted to demonstrate the feasibility and effectiveness of using deep learning models for the early detection of idiopathic dilated cardiomyopathy (DCM) from echocardiographic images in real-time clinical settings.

## 28 Oral health knowledge and practice of final-year pharmacy students

**Authors:** *Mussa Selemani, Doreen Mloka*

**Background:** It is estimated that over 480 million people in Africa experience oral health issues, including dental caries, periodontal disease, and tooth loss, even though most of these conditions are avoidable. Pharmaceutical personnel in the community pharmacies are often the first point of contact for clients to get advice on health issues, including oral health

**Objective:** To assess oral health knowledge and practice of final-year pharmacy students

**Methods:** A cross-sectional study was conducted at five Pharmacy Schools, namely Muhimbili University of Health and Allied Sciences (MUHAS), Kampala International University (KIU), Catholic University of Health and Allied Sciences (CUHAS), and St Joesph University (SJUT) using a self-administered, structured questionnaire with close-ended questions. Descriptive statistics were used to present the data. A one-way ANOVA test was used to assess the difference in oral knowledge among students from the various universities.

**Results:** The study surveyed 348 out of 368 final-year pharmacy students. Most students were male, 55.7%, 83% knew that using fluoride toothpaste daily prevents cavities, children from 24 months onwards can use fluoride-containing toothpaste (62.4%), bad breath may be caused using sedatives (43.4%) and that a manual toothbrush needs to be changed every 4 months

(60.6%). Most of the respondents agreed that final year pharmacy students should be able to provide oral health advice/recommendations (85%).

**Conclusion:** Final year pharmacy students have a good level of knowledge about causes and types of oral health problems but have limited knowledge about oral health products and treatments.

**Recommendation:** There is a need to improve oral health training for pharmacy students so that they can support the oral health care team in providing evidence-based advice about oral health to clients.

## 29 Prenatal detection and identification of clinically significant red blood cell antibodies among pregnant women

**Authors:** *Dr Peter David Masasi, Dr Magdalena Lyimo, Dr Fadhilun Al-Beity*

**Background:** Clinically significant red cell antibodies typically develop from immune sensitization caused by pregnancy or multiple blood transfusions, unlike the naturally occurring antibodies in the ABO system. These antibodies are crucial in transfusion management, particularly during obstetric haemorrhage, as they can lead to transfusion reactions or haemolytic disease of the foetus and newborn (HDFN). However, no studies have been conducted in Tanzania to determine the prevalence of unexpected antibodies

**Objective:** Study aims to determine the frequency and specificities of clinically significant red cell antibodies among pregnant women attending tertiary Hospital

**Methods:** This cross-sectional study, conducted over three months at three tertiary hospitals, aims to detect clinically significant red cell antibodies in pregnant women during antenatal visits. With informed consent, blood samples and personal information were collected. Additional data on blood group, haemoglobin levels, and Rh factor will be extracted from antenatal cards. Antibody screening will be performed using standardized methods, and the results will be systematically recorded and analysed.

**Results:** The study revealed a 5.5% prevalence of clinically significant red cell antibodies. The most common antibody detected was anti-D (40%), followed by anti-Kell (35%), and then anti-E and anti-C. These antibodies showed significant associations with Rh negativity ( $p < 0.01$ ), history of miscarriage ( $p < 0.001$ ), stillbirth ( $p < 0.01$ ), and prior blood transfusion ( $p < 0.02$ ). Interestingly, some Rh-positive mothers were also found to have antibodies, which was unexpected. Parity, however, showed no significant association with the development of clinically significant antibodies.

**Conclusion:** Clinically significant red blood cell antibodies are a notable concern in Tanzania, affecting approximately 1 in every 18 pregnant women in Dar es Salaam. These antibodies are strongly associated with a history of miscarriage, Rh-negative status, and prior blood transfusions.

The most detected antibodies in this study were anti-Kell, anti-D, and anti-E, highlighting the need for routine antenatal antibody.

**Recommendation:** To manage red cell antibodies among pregnant women in Tanzania, routine antenatal screening should be introduced, particularly for Rh-negative women. National guidelines should be established to improve detection and management. Additionally, laboratory capacity must be strengthened to support accurate screening, and close follow-up should be ensured for pregnant women identified with these antibodies.

## 30 Prevalence and Factors Associated with Acute Transfusion Reactions Among Patients Receiving Blood Transfusions

**Authors:** Dr Raymond Mushi, Dr. Magdalena Lyimo, Dr. Koga Luhula, Dr. Jamila Makame

**Background:** Acute transfusion reactions are serious immunologic or non-immunologic complications occurring within 24 hours of blood transfusion, manifesting as febrile nonhemolytic, allergic, anaphylactic reactions, post-transfusion purpura, transfusion-associated circulatory overload, or lung injury. In Tanzania, regional hospitals primarily use non-Leuk reduced whole blood, with underutilized hemovigilance systems. The lack of data on ATR prevalence and associated factors limits the development of targeted strategies to enhance transfusion safety.

**Objective:** To determine the prevalence and associated factors of acute transfusion reactions among patients receiving transfusions

**Methods:** A hospital-based cross-sectional study was conducted in three regional hospitals from October 2024 to March 2025. A total of 151 patients who were transfused were evaluated for ATRs. Data were obtained using standardized hemovigilance tools and analysed via Poisson regression to determine adjusted prevalence ratios (aPR) at 95% CI. Immunohematology testing supported diagnostic confirmation.

**Results:** ATRs occurred in 33.8% of patients. Febrile non-haemolytic reactions (43.1%) and allergic reactions (31.4%) predominated. Blood groups AB (aPR=2.84), B (aPR=2.16), and O (aPR=2.53) were significantly associated with ATRs. Obstetric patients had reduced risk (aPR=0.39, p<0.001).

**Conclusion:** A high prevalence of acute transfusion reactions was found, predominantly febrile non-haemolytic and allergic types. Significant predictors included blood group and clinical diagnosis, while age and sex were not. Findings emphasize recipient-related risks and justify implementing extended blood group typing, component therapy, and robust hemovigilance systems to enhance transfusion safety and reduce adverse outcomes.

**Recommendation:** Introduce component therapy, leukoreduction, and routine antibody screening. Strengthen hemovigilance systems and standardize clinical monitoring protocols.

Training for transfusion teams is essential to improve safety and reduce ATR burden.

## 31 Erythropoietic Dynamics in Sickle Cell Disease Patients Undergoing Hematopoietic Stem Cell Transplantation in Tanzania.

**Authors:** *Abdulkarim Mbaraka, Florence Urio, Siana Nkya, Stella Malangahe, Daima Bukini, Kassim Kassim, Aisha Rifai, Fabio Giglio, Grace Moshi, Julie Makani.*

**Background:** Sickle cell disease (SCD) is a significant public health challenge in Tanzania, with high morbidity and mortality. Despite treatment advancements like exchange transfusion and stem cell transplantation the variability in disease severity and treatment outcomes remains a challenge. Emerging evidence suggests that this variability may be influenced by underlying erythropoietic processes. Understanding erythropoietic kinetics patterns is essential to improve post-treatment monitoring and enhance therapeutic strategies for SCD patients undergoing advanced.

**Objective:** To investigate erythropoietic kinetics and chimerism patterns in SCD patients before and after HSCT and correlate with clinical outcomes.

**Methods:** This study used a mixed-methods approach, combining a cross-sectional in vitro study for erythropoiesis kinetics, and a prospective cohort study for post-HSCT chimerism monitoring, conducted at MNH, BMH and MUHAS. The study involved consented

patients aged 5 years and above, diagnosed with SCD (HbSS), who are receiving ExBT and undergoing HSCT and Ethical Committee of Muhimbili University of Health and Allied Sciences.

**Results:** Preliminary experiments were successful performed by using the existing erythroid culture systems at MUHAS. Also, flow cytometry Protocols and panel consisting of 5 antibodies (CD 36, CD71, CD 235a, anti-HbF and anti-HbS) were successful optimized. Optimization of STR and qPCR protocols is on progress.

**Conclusion:** This study is currently in the implementation phase, with preparatory work and protocol optimization underway. Upon completion, the findings are anticipated to contribute novel insights into erythropoietic kinetics and chimerism patterns in SCD patients undergoing HSCT in Tanzania.

**Recommendation:** It is recommended to proceed with data collection and analysis, and to consider future integration of erythroid chimerism tools into post-transplant follow-up protocols based on the study's outcomes.

## 32 Low-Density Lipoprotein Cholesterol: Goal Attainment and associated factors among patients with coronary artery disease (CAD) at Jakaya Kikwete Cardiac Institute.

**Authors:** Kairuni Doto, Reuben Mutagaywa, Jackson Mlay

**Background:** Dyslipidemia remains a critical risk factor exacerbating ischemic heart disease, particularly as the global burden of Non-communicable Diseases (NCDs) continues to rise. In Sub-Saharan Africa, where cardiovascular morbidity is increasing, effective secondary prevention is essential to reduce Major Adverse Cardiovascular Events (MACE). Despite global guidelines emphasizing LDL-C reduction among patients with established Atherosclerotic Cardiovascular Disease (ASCVD), data on LDL-C goal attainment and its associated factors remain limited in Tanzania.

**Objective:** To assess 3-month LDL-C goal attainment and associated factors among coronary artery disease (CAD) patients attending JKCI as per ESC guidelines.

**Methods:** A hospital-based prospective cohort study was conducted among patients with CAD using lipid-lowering drugs between September 2024 and February 2025. Baseline data on demographic, clinical, and adherence scores were collected using a structured questionnaire and validated MMAS-8. Laboratory measures, including LDL-C, were taken at baseline and after 3 months. Multivariable logistic regression identified independent predictors of goal attainment. Ethical approval was obtained, and informed consent was secured from all participants.

**Results:** Of the 214 CAD patients (mean age  $63.8 \pm 11.5$ ; 58.4% male), 87.4% were insured, 46% used alcohol, and 13.1% smoked. Mean BMI was  $28.13 \text{ kg/m}^2$ ; 48.3% were overweight.

Baseline LDL-C averaged 3.21 mmol/L. At 3 months, 37.4% achieved LDL-C  $\leq$  1.4 mmol/L, and 46.5% had good adherence. Independent predictors of goal attainment included being insured (aOR 2.67, 95% CI 0.97-7.29,  $p=0.04$ ), good adherence (aOR 2.01, 95% CI 1.03-3.90,  $p=0.02$ ), polypharmacy (aOR 2.38, 95% CI 1.15-4.94,  $p=0.01$ ), and LDL-C baseline  $\geq$  3.3 mmol/L (aOR 9.05, 95% CI (3.89-20.99),  $p=0.001$ ).

**Conclusion:** LDL-C goal attainment among CAD patients at JKCI was sub-optimal, with less than half of the patients reaching the ESC-recommended target of  $\leq$  1.4 mmol/L. Poor adherence, higher baseline LDL-C, and limited statin titration contributed to this gap. Addressing these barriers is essential to reducing recurrent cardiovascular events in a setting already burdened by rising non-communicable disease prevalence.

**Recommendation:** Dyslipidaemia management in Tanzania among CAD patients requires adherence through patient-centred education and individualized cardiovascular risk assessment integration into follow-up care. Additionally, close routine LDL-C monitoring and implementing clinical protocols for dose titration to achieve goal attainment is necessary. National strategies to prioritize lipid control within NCD programs can enhance outcomes and reduce the burden of IHD.

### 33 Complete Heart Block with SARS-CoV-2 Infection Inducing Permanent Pacing: A Case Report

**Authors:** Clement Kabakama, Pendo Ibrahim, Venance Wilfred, Zahra Daud Khan, Roberty Mvungi.

**Background:** Cardiac complications due to Coronavirus disease 2019 (COVID-19) have been associated with worse patient prognosis. Myocardial infarction, myocarditis, heart failure, cardiomyopathy, venous thromboembolism, arrhythmias, and pulmonary embolism have all been reported as cardiovascular consequences.

**Objective:** Presenting the case of a complete heart block, diagnosed with SARS-CoV-2 infection, who underwent Permanent Dual Chamber.

**Case summary:** A 63-year-old female with no history of known chronic illnesses. Presented with acute onset of pre-syncope spells preceded by a 5-day history of fever, dry cough, vomiting, and diarrhoea. On examination, she was febrile  $T = 37.8^\circ\text{C}$ , dyspnoeic (SPO<sub>2</sub> = 89%, RR = 24 bpm) on room air, bradycardia PR = 46 bpm ECG showed a complete heart block with a ventricular rate of 30–40 beats per minute.

**Results:** The patient had elevated troponin levels in blood and septal wall motion bounce on an echocardiogram. This indicates that the reason could be either a transient deterioration in coronary perfusion or direct myocardial tissue injury. Even though her inflammatory markers were decreasing during her hospital stay, the Heart block did not resolve spontaneously, indicating possible myocardial damage. The findings observed in this study mirror those of another study in which the patient still had

symptoms of complete heart block after four weeks of Hospitalisation.

**Conclusion:** Persistent complete heart block in the setting of elevated troponin and septal wall motion bounce, despite normalization of inflammatory markers, suggests direct myocardial injury or sustained perfusion impairment rather than a purely transient inflammatory phenomenon. These findings, consistent with prior reports of prolonged atrioventricular conduction disturbances, underscore the need for vigilant long-term monitoring and consideration of early pacing strategies in similar cases.

**Recommendation:** Our case report recommends that Complete Heart Block involves the implantation of a pacemaker to alleviate symptoms and enhance survival. However, during the COVID-19 Pandemic, Hospitals postponed invasive procedures to reduce the risk of infection for patients and health care workers. There is a rational approach to prioritising these Procedures in various Hospital settings.

### 34 Correlation Between Clinico-Radiological and Histopathological Diagnoses of Benign Tumours of the Jaws Among Patients Attending MNH

**Authors:** Azumesi Nguni Forchin, Elison N.M. Simon, Paulo J. Laizer

**Background:** The diagnosis of benign jaw tumors is based on the clinical, radiological, and histopathological features of the lesion. Clinically, these tumours present as slow-growing, painless facial swellings with insidious onset and teeth

displacement. Radiologically, they present as radiolucent, radiopaque, or mixed radiolucent and radiopaque lesions. These clinical and radiological features usually overlap between different tumours. Hence, the histopathological study of the lesion is required for a definitive diagnosis.

**Objective:** To determine the correlation between the clinico-radiological and histopathological diagnoses of benign tumours of the jaws among patients attending MNH.

**Methods:** All patients attending the MNH, with clinico-radiological diagnoses suggestive of benign tumours of the jaws during the study period, were included. A clinical examination was carried out, an orthopantomogram (OPG) was performed, and all clinical and radiological features were recorded in a special form. Incisional biopsy was done, and the sample was sent for histopathology, from which the histological diagnosis was obtained. Data was entered and analysed using SPSS 27.0, and the Kappa test was used to check for agreement.

**Results:** Ninety participants were included. 20 - 29 years was the most represented. 57.8% had a complaint of swelling, with a mean duration of 2.5 years. Clinically, 56.6% were firm in consistency, and cortical bone expansion was noted in 73.3%. 63.3% were radiolucent, 14.4% were radiopaque, and 22.2% were mixed. Additionally, 77.9% of the tumours were in the mandible, 70.0% had clear margins, and root resorption was noted in 57.8%. Ameloblastoma was the most diagnosed tumour. The overall correlation rate was 80.6%, with the

highest rate found in ameloblastoma at 78.6%, followed by fibrous dysplasia at 72.1%.

**Conclusion:** Clinico-radiological diagnosis after detailed patient anamnesis and thorough clinical examination remains the foremost diagnostic instrument in making the patient's initial management plan. Hence, its capacity and prognostic potential as a sensitive and specific diagnostic instrument cannot be overemphasized.

**Recommendation:** A more advanced study involving the use of immunohistochemistry and for a longer duration should be conducted. Given that most of our patients were mainly from the rural areas, the availability of imaging facilities like the OPG should be considered in most dental settings.

### 35 Comparative Study of Cross-Sectional Imaging and Histopathology for the Detection of Intra-orbital Tumours.

**Authors:** Grace Dickson, Lulu Fundikira, Joachim Kilemile

**Affiliation:**

**Background:** Intra-orbital tumours include a broad spectrum of neoplasms within the orbit. Computed tomography (CT) and magnetic resonance imaging (MRI) play a vital role in the initial assessment of orbital tumours, showing detailed anatomical delineation and tissue characterisation. Histopathological analysis remains the gold standard for definitive diagnosis,

providing critical insights into tumour morphology, cellular composition, and architectural patterns.

**Objective:** To correlate cross-sectional imaging and histopathological findings in patients with intra-orbital tumours.

**Methods:** A retrospective cross-sectional study was conducted involving 98 patients of all ages with intra-orbital tumours referred for CT scan /MRI at MNH and MOI from June 2021 to June 2024. Data were collected using a structured checklist, which included sociodemographic and clinical findings, MRI/CT scan findings, and histopathological findings. The sensitivity, specificity, and diagnostic accuracy of CT scan/MRI were calculated. All data were coded and analysed by using SPSS version 25.

**Results:** Ninety-eight patients with intra-orbital tumours were evaluated. Most patients were of the paediatric population, 84/98 (85.7% aged 0–12 years). Retinoblastoma was the most common tumour, accounting for 79/98 (80.6%) of images and 77/98(78.6%) of histological diagnoses. Leukocoria 59/98 (60.2%) and proptosis 17/98(17.3%) were the leading clinical presentations. Cross-sectional imaging correlated highly with histopathology in 82/98(83.7%) cases. CT showed 100% diagnostic accuracy for retinoblastoma but lower specificity for squamous cell carcinoma 83.0% and a negative predictive value (NPV) of 20.0%.

**Conclusion:** Intra-orbital tumours in this cohort were primarily paediatric and dominated by retinoblastoma. Cross-sectional imaging (CT/MRI) demonstrated high diagnostic

performance, particularly for retinoblastoma and benign soft tissue lesions. However, imaging alone was less reliable for certain adult-onset tumours, highlighting the indispensable role of histopathology for definitive diagnosis.

**Recommendation:** Cross-sectional imaging should be maintained as a frontline in intra-orbital tumours.

### 36 Outcomes of pull-through surgery among children with hirschsprung's disease in Tanzania: A Comparative Study

**Authors:** Ramadhani Hassani Khamisi, Tom Samora Edward, Mohamed Salim, and Zaitun M. Bokhary

**Background:** Surgical treatment of Hirschsprung Disease (HD) has been done through a variety of procedures throughout surgical history. All techniques evolved through a process of seeking optimal surgical outcomes. Two procedures are currently in use at our centre: the Swenson procedure and Rehbein's procedure. So far, there have been no studies to determine which procedure is superior in terms of relieving the functional obstruction while minimizing the anticipated complications of surgery.

**Objective:** We aimed to review and compare outcomes between Swenson and Rehbein's procedures routinely used at MNH to treat Hirschsprung's disease.

**Methods:** A retrospective study was conducted involving the review of hospital records of patients who underwent Pull-through surgery at MNH. The

primary outcome of the study was to assess bowel performance following surgery. Chi-squared and Fisher's exact tests were utilized to detect any difference between the Swenson and Rehbein's procedure groups. Logistic regression was used to analyse the association of the variables.

**Results:** A total of 55 patients' data were reviewed, and 49 patients were analysed. These patients were operated on between 1<sup>st</sup> January 2018 to 31<sup>st</sup> July 2020. A total of 31 patients and 18 underwent surgery using the Swenson and Rehbein's procedure respectively. Most patients, 75% of all 31 patients who underwent Swenson's procedure, had an acceptable bowel performance after surgery, compared to 33% of all Rehbein's procedures ( $p = 0.01$ ).

**Conclusion:** Our study has found that Swenson's pull-through technique gives better outcomes compared to Rehbein's procedure among patients operated on for HD in terms of voluntary bowel function, fewer postoperative complications, and the need for reoperation or additional operation.

**Recommendation:** We recommend a prospective study in HD children to evaluate this procedure further

### 37 Erectile Dysfunction and its treatment among young adult males in Dar es Salaam

**Authors:** Amani Idris Kikula, Alfateresia Peter Mwasangama, Belinda Anselmi Laizer, Loveness John Kimaro, Matilda Alfred Mkonyi, Andrea Barnabas Pembe.

**Background:** Erectile dysfunction (ED) is accompanied by social stigma and a lack of awareness on how to manage it. This has contributed to the rise and use of readily available sex-enhancing substances (SES) in the community.

**Objective:** To assess ED prevalence and associated factors and explore awareness and local remedies used among young adult males in DSM.

**Methods:** A cross-sectional study was conducted in June 2024 among 503 young adult males in Ilala District, Dar es Salaam. The quantitative data was analysed to provide descriptive statistics and logistic regression to identify factors associated with ED.

**Results:** The prevalence of ED was 29.2%; age showed a significant association with ED (aOR 2.39, 95% CI: 1.23-4.47). Participants showed good awareness of ED and preferred using SES due to their accessibility, affordability, and perceived effectiveness in enhancing women's sexual satisfaction. Common SES mentioned were "vicks", "vumbi la kongo", power, alcohol cocktail, honeymoon, "ngoka", and "putururu". While some believed SES was effective and safe, others reported side effects such as addiction and worsening of ED.

**Conclusion:** The prevalence of ED is significantly high, which may explain the increasing use of SES in the community.

**Recommendation:** There is a need for chemical analysis for these SES, strict regulations, and the inclusion of men in sexual and reproductive health

and rights (SRHR) campaigns, which have so far focused mainly on women.

## 38 Short term outcome and mortality predictors of acute kidney injury among patients admitted in medical ICU at the Muhimbili National Hospital

**Authors:** Irene Wambura, Elizabeth Msangi, Muhammad Bakari

**Background:** Acute kidney injury (AKI) is a common condition in intensive care units (ICUs), contributing to prolonged hospital stays, increased costs, and high mortality. However, limited data exists on its short-term outcomes and mortality predictors in low-resource settings like Tanzania.

**Objective:** To assess short-term outcomes and identify predictors of mortality among patients with AKI admitted to the medical ICU at Muhimbili.

**Methods:** A prospective cohort study was conducted from July 2024 to January 2025, involving 182 adult ICU patients diagnosed with AKI. Data was collected through structured questionnaires and hospital records. Descriptive statistics summarized patient characteristics, and Cox regression analysis was used to analyse predictors of 30-day mortality.

**Results:** The median age was 58 years (IQR: 44–72), and 53% were female. Common comorbidities included hypertension (23.6%) and diabetes (15.4%). Sepsis was the leading AKI trigger (31.3%), and 83% of patients required

mechanical ventilation. AKI staging showed 52.7% had stage 1, 21.4% stage 2, and 25.8% stage 3. During the 30-day follow-up, 29.1% required dialysis, and mortality was 36.3%. Mortality was higher in patients aged  $\geq 80$  years and those with stage 2 or 3 AKI that was complicated with metabolic complications.

**Conclusion:** Short-term outcomes of AKI in the ICU were poor, with high early mortality.

**Recommendation:** Timely recognition, aggressive management, and early dialysis may improve survival. Further multicentre studies are needed to inform tailored intervention strategies in similar low-resource settings.

### 39 Adapting NAMWEZA for HIV-Positive Drug Users on MAT in

**Tanzania: Lessons from Trainer Preparation**

**Authors:** Dorothy Mushi, Peter Sakejo, Sylvia Kaaya, David Huh

**Affiliation:**

**Background:** People who use drugs and live with HIV (PUD-LWH) on Medically Assisted Treatment (MAT) in Tanzania face significant psychosocial and structural barriers that impede adherence to both HIV and methadone treatments. NAMWEZA (Swahili for "Yes, together we can"), a peer-led psychosocial intervention, has demonstrated benefits for people living with HIV but has not yet been tailored to meet the unique needs of PUD-LWH

**Objective:** To identify adaptation needs of NAMWEZA for PUD-LWH in MAT and document lessons from a Training of Trainers process.

**Methods:** A seven-day training of trainers' workshop was conducted with 10 MAT-affiliated peer educators and healthcare providers. Participants reviewed the NAMWEZA manual, practiced facilitation, and gave structured feedback. Two trained facilitators then led ten sessions with PUD-LWH clients (n=10), followed by debriefs to assess feasibility, engagement, and contextual adaptation needs.

**Results:** Key challenges included low engagement, short attention spans (under two hours), and difficulty understanding abstract concepts. Full-day sessions proved too long and cognitively taxing. Despite this, participants showed positive shifts: some re-engaged with HIV care after recognizing clinic stigma, while others committed to safe-sex dialogues, indicating increased self-efficacy and interpersonal agency.

**Conclusion:** The adaptation process highlighted the need for simplified content, shorter sessions, and context-specific examples. Despite engagement challenges, early signs of behaviour change suggest the intervention's promise.

**Recommendation:** A pilot feasibility study of the adapted NAMWEZA is recommended, alongside facilitator capacity-building and a structured evaluation of clinical and psychosocial outcomes.

### 40 Spectrum, yield, and predictors of positive CT brain among patients with altered mental status

**Authors:** Abadi Mweyo, Saidi Kilindimo

**Background:** Altered mental status is a change in consciousness presenting with a Glasgow

Coma Score less than 15. Globally, computed tomography is frequently used in patients with nontraumatic altered mental status, but it may be overused despite a reported low yield. However, there is a literature gap in Tanzania and across the developing world on computed tomography findings and their predictors among patients with nontraumatic altered mental status.

**Objective:** To determine the spectrum, yield, and predictors of positive CT brain among patients with nontraumatic altered mental status.

**Methods:** A cross-sectional study. Secondary data was collected from both pediatric and adult patients who presented at the emergency department of Muhimbili National Hospital with nontraumatic altered mental status between January 2021 to December 2024 using a systematic random sampling method. Descriptive statistics were used to describe the socio-demographic and clinical characteristics of the study participants, while logistic regression analysis was used to determine the predictors of positive CT brain.

**Results:** Out of the 266 recruited patients, 58.6% were male and 41.4% were female, with a mean age of 55.5 years. Altered mental status (73%), unilateral body weakness (44%), and aphasia (17%) were the most common presenting medical complaints, with a mean duration of symptoms of around 2 days. The median GCS score was 11 out of 15. 63.5% of patients had positive CT, whereby hemorrhagic stroke was the most prevalent finding (55%). Focal neurological deficit was a strong predictor of positive CT.

**Conclusion:** Bedside assessment is crucial to identify physical findings like focal neurological deficit to guide the CT brain imaging decision-making at the emergency department for patients presenting with nontraumatic altered mental status.

**Recommendation:** To reduce overutilization of scarce medical resources like brain CT, physicians should evaluate patients for clinical findings like focal neurological deficits to help decide on CT brain imaging, especially in the emergency setting.

## 41 Co-inheritance of sickle cell disease and beta-thalassemia among individuals with sickle cell disease, Dar-es-Salaam, Tanzania

**Authors:** Anna Madibi, Collin Nzunda, Abdilahi Kiula, Emmanuel Josephat, Heavenlight Christopher, Florence Urrio and Siana Nkya.

**Background:** Co-inheritance of sickle cell disease (SCD) and beta thalassemia is a chronic condition affecting red blood cells, characterized by abnormal hemoglobin production and reduced beta-globin chain synthesis. Globally, 5-7% of the population experiences significant hemoglobinopathies, such as sickle cell anemia. Early detection is essential to reduce morbidity and mortality. However, data on the co-inheritance of SCD and beta thalassemia is scarce in our population.

**Objective:** To determine the prevalence of beta-thalassemia among sickle cell disease individuals in Dar-Es-Salaam, Tanzania.

**Methods:** This nested study, approved by Muhimbili University Ethics Committee (Ref. No. DA.282/298/01.C/1917), included SCD patients aged 5 and above. DNA samples were collected and analyzed for quality using Nanodrop and Qubit 3.0 fluorometers, followed by targeted sequencing using Oxford Nanopore Technology (MinION mk 1c). Bioinformatics pipelines processed the raw sequencing data.

**Results:** In this cohort of 108 SCD patients, we selected 21 individuals with elevated HbA2 levels (>5.0%) and specific red blood indices Mean Cell Volume (MCV) <79 fl, Mean Cell Hemoglobin (MCH) <27 pg). Our analysis identified start-loss and frame-shift mutations linked to beta thalassemia, with a mutation frequency of 12% in this group. Notably, 13 patients co-inherited beta-thalassemia mutations, highlighting a significant occurrence. Additionally, we discovered a novel c.T28C.S10P variant of unknown significance, previously unreported.

**Conclusion:** Genetic testing is crucial for identifying SCD and beta-thalassemia co-inheritance, as it supports precise diagnosis and personalized treatment plans. Early detection enables healthcare providers to anticipate and manage complications effectively for affected individuals.

**Recommendation:** While the criteria we employed, MCV 4.0%, are widely recognized indicators that suggest the potential presence of beta-thalassemia, it's important to note that these clinical parameters alone cannot provide definitive confirmation. Genetic testing is essential for

definitive confirmation in sickle cell disease (SCD) and beta-thalassemia cases.

## 42 Non-contrasted Brain Computed Tomography Findings in Adult

### Patients

**Authors:** *Helena Machibya, Ikupa Mwasumbi, Immaculata Kafumu, Debora Hoza, Mlangwa Mguta, Lulu Fundikira*

**Background:** Non-contrast CT (NCCT) brain is the primary imaging tool for adults with neurological symptoms. Previously, before Temeke Regional Referral Hospital (TRRH) had a computed tomography (CT) scanner, patients were referred to tertiary hospitals, delaying diagnosis and treatment. Since its installation two years ago, TRRH has performed about 200 CT scans monthly, 80% of which are brain scans, thus highlighting the need to understand local imaging trends for better resource use.

**Objective:** To assess the frequency and patterns of non-contrast brain CT findings in adults and their association with patient demographics.

**Methods:** A retrospective cross-sectional study was conducted at TRRH among adult patients who underwent non-contrast brain CT scans from February to March 2025. Data on demographics and imaging findings were collected and analyzed. Descriptive statistics were used to summarize the data.

**Results:** A total of 246 non-contrast brain CT scans were reviewed, with 58.5% being male and

ages ranging from 18 to 102 years (mean: 51.4). Abnormal findings were observed in 79.3%, most commonly ischemic infarcts (27.6%) and trauma (23.2%). Some patients had multiple diagnoses (n=287), with ischemic infarct (23.7%) and trauma (19.9%) being the most prevalent; tumors were the least common. Trauma was significantly more frequent in younger males ( $p=0.003$ ), while brain atrophy and infarcts were more common in older adults ( $p<0.0010$ ).

**Conclusion:** NCCT plays a crucial role in diagnosing neurological conditions in adult patients, as evidenced by the high prevalence of abnormal findings. Availability of CT scans has greatly improved timely diagnosis and management of such patients; for instance, patients with ischemic stroke can be managed at TRRH.

**Recommendation:** These findings can guide resource optimization and guideline development.

## 43 Clinical manifestations of Sickle Cell Disease in Africa and its association with foetal hemoglobin parameters

**Authors:** Amuzu Evans Xorse, Urio Florence, Dogbe Elliot Eli, Ponsian Peter, Abubakar Suraj Yawnumah, Okeke Chinedu, Olasinbo Olumuyiwa Balogun, Ozumba Petronilla Oluchi, Osei-Akoto Alex, Paintsil Vivian, Nnodu Obiageli, Balandya Emmanuel, Makani Julie, Madu Anazoeze, Ansong Daniel, Nkya Siana.

**Background:** Sickle cell disease (SCD) is prevalent in African countries, contributing 7–16% of under-five mortality. To bridge the gap in management and cognate research, the Sickle in Africa consortium was established in 2017 to facilitate collaboration among African nations. This work utilized the Sickle in Africa platform to study the levels of HbF and F cells and their relationship with sickle cell disease clinical manifestations in Ghana, Nigeria, and Tanzania.

**Objective:** The study investigates the correlation between HbF levels and clinical complications of SCD in individuals from Ghana, Nigeria, and Tanzania.

**Methods:** The study included 290 hydroxyurea-naïve people with stable state SCD who were at least five years old. Automated analyzers were used to determine the hematological parameters, and an interviewer provided a questionnaire to gather the clinical history. Age-adjusted logistic regression was used to evaluate the relationship between HbF and clinical symptoms.

**Results:** The most reported complication of SCD requiring management in a hospital setting is pain crises, ranging from 66% to 96%, with the highest in Tanzania and lowest in Ghana. HbF and F cell parameters show significant association with transfusion rates, frequency of painful crises and episodes of febrile illness.

**Conclusion:** The Study found that HbF, F cells, and HbF/F cell ratio vary between adults and children and correlate with pain crisis frequency, transfusion rate, and febrile illness episodes. The HbF/F cell ratio is only associated with transfusion

rates and febrile illness frequency. High HbF levels provide protection from SCD clinical manifestations, offering opportunities for HbF modifying therapies to reduce SCD severity.

**Recommendation:** Future studies should use randomized selection to reduce bias, get long-term funding, and expand sample sizes in line with national disease loads to enhance generalizability and validity. Combining self-reports with comprehensive medical records will yield accurate data, and balanced enrollment across age groups, especially in countries with newborn screening programs, ensures more representative sample for trustworthy results to guide policy.

## 44 Prevalence and Factors Associated with Hepatorenal Syndrome Among

### Adults with dACLD at MNH, Tanzania

**Authors:** Joshua Karaba, Ewaldo Komba, Amunga Meda.

**Background:** Patients with decompensated advanced chronic liver disease (dACLD) may develop hepatorenal syndrome (HRS), a severe, functional renal failure. In environments with few resources, it frequently goes undetected and is linked to a high death rate. There is still paucity of information on the frequency and contributing causes of HRS in Tanzania, despite the country's increasing burden of dACLD. Finding important predictors can help direct early diagnosis and enhance clinical results.

**Objective:** To determine the prevalence and factors associated with HRS among adult patients

with dACLD admitted at Muhimbili National Hospital.

**Methods:** From July to December 2024, a cross-sectional study was carried out at Muhimbili National Hospital. One hundred dACLD patients in all were enrolled. Laboratory studies, clinical evaluations, and structured interviews were used to gather data. The International Ascites Club 2019 criteria were used to diagnose HRS. To find independent factors, multivariable robust Poisson regression and bivariate analysis were used.

**Results:** The median age of participants was 46 years; 69.0% were male. The prevalence of HRS was 11.0%. Hyponatremia (serum sodium <125 mmol/L) and hypoalbuminemia (serum albumin <2.5 g/dL) were significantly more common among HRS patients. In multivariable analysis, hyponatremia (aPR = 3.95; 95% CI: 1.36–11.51;  $p = 0.012$ ) and hypoalbuminemia (aPR = 4.94; 95% CI: 1.20–20.28;  $p = 0.027$ ) were independently associated with HRS. Upper gastrointestinal bleeding showed a non-significant trend (aPR = 2.74;  $p = 0.107$ ).

**Conclusion:** HRS affects approximately one in ten of hospitalized patients with dACLD at MNH. Hyponatremia and hypoalbuminemia were independently associated with HRS. These findings emphasize how crucial early detection and focused monitoring are to restricting the course of liver disease and improving outcomes for patients in settings with limited resources.

**Recommendation:** All patients with decompensated liver disease should have their serum albumin and salt levels routinely checked.

To lower the prevalence and complications of hepatorenal syndrome in settings with limited resources, local treatment guidelines should include early correction of these abnormalities, prompt fluid management, and avoidance of nephrotoxic drugs.

## 45 Prevalence and clinical characteristics of inflammatory bowel disease among patients undergoing colonoscopy at a tertiary hospital

**Authors:** Abbas Godian, Ewaldo Komba, & Beatrice Kombole

**Background:** Inflammatory bowel diseases (IBD), including Crohn's disease (CD) and ulcerative colitis (UC), are chronic gastrointestinal disorders with rising global prevalence. Colonoscopy is essential for diagnosing IBD through direct visualization and biopsy. However, data from developing regions like Tanzania are limited.

**Objective:** To determine IBD prevalence, clinical features, and endoscopic and histologic findings among patients undergoing colonoscopy at Muhimbili National Hospital, MNH.

**Methods:** A hospital-based cross-sectional study was conducted at MNH from 19th September 2024 to 31st January 2025. Data were collected via structured questionnaires, and colonoscopy and histopathology results were retrieved from the hospital system. IBD cases were identified and analyzed using SPSS v27. Prevalence was calculated as the proportion of histologically confirmed cases. Chi-square or Fisher's Exact

tests assessed associations, with p-values < 0.05 considered statistically significant.

**Results:** A total of 202 participants were enrolled, with 54.0% being male. IBD prevalence among colonoscopy patients was 8.4%. UC was most common (70.6%), followed by indeterminate colitis (17.6%) and CD (11.8%). Most IBD patients were aged 35–50, with a slight female predominance (F:M = 1.3:1) and presented with severe disease. Common symptoms included diarrhea, abdominal pain (88.2% each), and hematochezia (70.6%). UC often involved the rectum; CD and indeterminate colitis frequently affected the ileocecal junction.

**Conclusion:** IBD is relatively prevalent among patients undergoing colonoscopy, with a rate of 8.4%. UC is the dominant subtype, primarily affecting young to middle-aged adults, with a slight female predominance. Most patients present with severe disease, commonly reporting diarrhea, abdominal pain, and hematochezia. These findings highlight the importance of early recognition and accurate diagnosis in this setting.

**Recommendation:** Routine use of standardized endoscopic and histopathological tools should be implemented to improve IBD diagnosis. Expanding colonoscopy access and establishing a National IBD Registry are essential for data collection and disease monitoring. Strengthening IBD research through multi-center, longitudinal studies will help identify incidence, risk factors, and outcomes, ultimately guiding better management of IBD in Tanzania.

## 46 Lung Cancer and its Associated factors at Muhimbili National Hospital, an ambispective study, Jan-Dec 2024

**Authors:** *Sugra Sajjad Fazal, Mwanaada Kilima, Sibtain Moledina*

**Background:** Lung cancer remains a significant health challenge globally, being the foremost cause of cancer-related morbidity and mortality. Smoking accounts for over 80% of lung cancer cases in the western world, making it the most preventable cause of death globally. In Tanzania, lung cancer comprises 4.6% of cancer-related deaths, yet data on its prevalence and risk factors remains scant, highlighting a critical knowledge gap.

**Objective:** To determine the prevalence and associated factors of lung cancer among patients undergoing lung biopsy within a Tanzanian tertiary hospital.

**Methods:** An ambispective cross-sectional study was conducted at Muhimbili National Hospital between January and December 2024. A total of 170 patients who underwent bronchoscopy or CT-guided lung biopsy were included. Data on sociodemographic, clinical symptoms, and lung cancer diagnosis were collected using Redcap database and analyzed using STATA version 16.1. Modified Poisson regression assessed associations with lung cancer.

**Results:** Median age was 58 years, with nearly equal gender distribution. Of 170 patients, 88 (51.8%) had lung cancer, predominantly

adenocarcinoma (52.3%) and squamous cell carcinoma (35.2%). Cough (78.2%) and dyspnea (55.3%) were the most reported symptoms. Age  $\geq$  55 years and dyspnea showed a trend toward association with lung cancer, despite not reaching statistical significance. Multivariable analysis revealed no independent predictors of lung cancer in this specific cohort.

**Conclusion:** This study revealed a high prevalence of lung cancer among patients undergoing lung biopsy at MNH, with adenocarcinoma being the predominant histologic subtype, followed by squamous cell carcinoma. While no predictors of lung cancer were identified, further exploration in larger, adequately powered studies could be beneficial.

**Recommendation:** The findings highlight a significant burden of lung cancer and emphasize the need for early diagnostic interventions at MNH, targeted screening for high-risk populations, and tobacco control. Further research should include larger, multi-centre studies with rural populations to better understand risk factor profiles in Tanzania.

## 47 The risk for Obstructive Sleep Apnea and associated factors among asthma patients attending the pulmonology

**Author:** Linda Minja

**Background:** Coexistence of asthma and obstructive sleep apnea (OSA) complicates asthma management and control. In resource-limited settings, OSA is often underdiagnosed,

particularly in asthma patients, due to symptom overlap and limited access to polysomnography.

**Objective:** We assessed the burden of high risk for OSA, its associated factors, and asthma control in asthma patients attending the

**Methods:** A cross-sectional study was conducted using socio-demographic and clinical data. OSA risk was assessed with the STOP-BANG questionnaire (score 0–2 = low risk;  $\geq 3$  = high risk). Asthma control was evaluated using the Asthma Control Test (ACT), with scores  $\leq 19$  indicating poor asthma control. Modified Poisson regression identified factors associated with high OSA risk. A  $p < 0.05$  was considered statistically significant.

**Results:** Among 185 asthma patients, 35.1% (65/185) were at high risk for OSA based on the STOP-BANG questionnaire. Poor asthma control (ACT score  $\leq 19$ ) was observed in 83.1% (54/65) of patients with high OSA risk, compared to 42.5% (51/120) of those with low OSA risk ( $p = 0.01$ ). The risk of OSA was significantly higher among patients with comorbidities: Diabetes mellitus (aPR = 2.1; 95% CI: 1.41-3.30), GERD (aPR = 2.8; 95% CI: 1.75-4.51), and malignancy (aPR = 3.3; 95% CI:

**Conclusion:** Over one-third of asthma patients had high OSA risk. Poor asthma control was significantly more common among patients with high OSA risk. Diabetes, GERD, and malignancy were independently associated with increased OSA risk.

**Recommendation:** Routine screening for obstructive sleep apnea (OSA) in patients with

asthma particularly those with comorbid conditions may lead to earlier diagnosis and targeted interventions, ultimately improving overall asthma control and management outcomes.

## 48 Patients' Characteristics, in hospital and post discharge mortality among mechanically ventilated adults at MNH

**Authors:** Cassius Rwebangira, Sibtain Moledina, Mwanaada Kilima, Grace Shayo

**Background:** Mechanical ventilation remains a cornerstone of intensive care unit (ICU) management for respiratory failure and airway protection. However, the association between patients' characteristics and in-hospital as well as post-discharge mortality among ventilated patients in Tanzania is poorly documented.

**Objective:** To describe patients' characteristics and their association with in-hospital, and 30-day post-discharge mortality among mechanically ventilated adult patients at

**Methods:** A hospital-based prospective cohort study was conducted from August 2024 to January 2025 among 190 adult patients ventilated for  $\geq 24$  hours in medical and surgical ICUs. Data were collected on patients' demographics, comorbidities, type of ventilation, and laboratory tests. Patients were followed up to record mortality during ICU stay and up to 30 days post-discharge. We defined in-hospital mortality as deaths occurred in the ICU and in the wards after.

**Results:** The median (IQR) age was 54.5 (38.25–67.00) years; 62.6% were male. Three participants were lost to follow up. In-hospital mortality was 63.2% (120/190). The actual 30-day post-discharge and overall mortality are 10% (7/70) and 66.8% (127/190) respectively. Thinking of the worst-case scenario that those who were lost to follow up died, the 30-day and overall mortality are 14.3% (10/70) and 68.4% (130/190) respectively. Stroke (19.7%) and chronic kidney disease (CKD) (14.2%) were the leading causes of death.

**Conclusion:** Mortality among mechanically ventilated patients at MNH is high both in-hospital and post-discharge. Factors other than those studied may explain the mortality.

**Recommendation:** Further studies are recommended to identify factors associated with ICU and post-discharge mortality among mechanically ventilated patients at MNH.

## 49 Adherence to Antihypertensives, influencing factors, and BP Control in Insured versus Non-insured Hypertensive Patients

**Authors:** Nabeel S Khatri, Irene Jonathan, Muhammad Bakari

**Background:** Hypertension affects over 1.2 billion adults globally. In low- and middle-income countries like Tanzania, hypertension control remains suboptimal despite the availability of effective medications. Health insurance may influence treatment adherence and blood pressure (BP) outcomes, yet local data are

limited. Understanding how insurance status affects adherence and BP control is essential for guiding health policies and clinical interventions aimed at improving cardiovascular outcomes.

**Objective:** To determine adherence to antihypertensive medication, its determinants, and BP control among insured and non-insured hypertensive patients at the JKCI

**Methods:** A hospital-based cross-sectional analytical study was conducted from September to December 2024 at JKCI. Participants aged  $\geq 18$  years and fulfilling inclusion criteria were consecutively enrolled and categorized based on insurance status. Data were collected using structured questionnaires and medical records. The Morisky Medication Adherence Scale (MMAS-8) was used to assess adherence. Analysis was done using SPSS version 27, with Chi-square tests being used for determining associations. A p-value  $< 0.05$  was statistically significant

**Results:** A total of 538 participants were recruited. Their median (SD) age was 59 years, and 63.0% of them were male. Overall, 55.6% had high adherence to medications, with insured patients having significantly higher adherence (71.7%) compared to non-insured (39.4%,  $p < 0.001$ ). Educational level was significantly associated with adherence ( $p = 0.019$ ). Blood pressure control was achieved in 57.2% of participants but was not significantly different between insured and non-insured individuals ( $p = 0.486$ ).

**Conclusion:** Health insurance and higher education level were associated with good

adherence to antihypertensive medications. However, insurance status did not independently predict BP control

**Recommendation:** Policymakers should prioritize expanding health insurance for better BP control and eventual cardiovascular outcomes.

## 50 Prevalence of depression, anxiety and associated factors among colorectal cancer patients at ORCI

**Authors:** Geoffrey Mbosoli, Mamsau Ngoma, Salum Lidenge

**Background:** Colorectal cancer patients face numerous challenges when it comes to the illness's diagnosis and its treatment and post treatment. This is attributed due to the emotional state faced by the diagnosis of the cancer, the adverse effects of the treatment with anxiety and depression being the two most common mental health related issue faced by the patients. Understanding the prevalence and contributing factors is essential for improving patient care.

**Objective:** To determine the prevalence of depression, anxiety and its associated factors among patients with colorectal cancer at ORCI

**Methods:** The study was a hospital based cross sectional study which provided a quick snapshot of the prevalence of a depression and anxiety and its associated characteristic within a patient who attended ORCI during the study period.

**Results:** The prevalence of depression and anxiety was found to be 34.4% and 49.2% respectively with stage of disease, level of education, employment status, age, sex were

found to be among factors associated with the two conditions.

**Conclusion:** The findings highlight the critical need for integrating psychosocial support into the care of colorectal cancer patients, particularly before, during, and after treatment.

**Recommendation:** Tailored psychosocial support programs should be developed to address the unique challenges faced by these vulnerable subgroups. incorporation of mental health professionals into multidisciplinary oncology teams.

## 51 Effect of Age at Diagnosis on Breast Cancer: A Comparative Study

**Authors:** Skyna Martin Bendera, Mariam Uledi, Shaban Juma, Jerry Ndumbalo, Emmanuel Lugina.

**Background:** Women over 40 are primarily affected by breast cancer (BC). However, there are significant rates of BC among young women aged less than 40 years, which is termed early-onset breast cancer (EOBC) and accounts for approximately 6% to 10% of all cases of BC in resource-rich nations. As for resource-limited nations, this percentage rises to 20%. In young women, it is characterized by its highly aggressive nature.

**Objective:** To determine the effect of age on the pattern and treatment outcomes of breast cancer in patients treated at ORCI.

**Methods:** This retrospective cohort study included histologically confirmed BC patients who attended ORCI. Recruited using a systematic

sampling technique. The characteristics of patients with EOBC and late-onset breast cancer (LOBC) were compared, as well as their treatment outcomes and predictors of 3-year overall survival (OS). Survival curves were drawn using Kaplan-Meier analysis and compared using a log-rank test. Cox regression was used in multivariate analysis.

**Results:** Significant differences were noted between EOBC and LOBC groups. LOBC patients were more likely to be insured, married, retired, or farmers, and alcohol users. EOBC patients were younger, single, more educated, employed, and had lower parity. EOBC showed more non-ductal carcinoma, distant metastasis, and HER2 positivity, with higher rates of liver, brain, and multiple metastases. LOBC patients had better 3-year disease-free survival (68% vs. 45%) and overall survival (62% vs. 41%), with statistically significant differences in survival outcomes.

**Conclusion:** The study reveals significant clinical, demographic, and prognostic differences between early-onset (EOBC) and late-onset breast cancer (LOBC) patients. EOBC is associated with more aggressive disease features, including higher rates of distant metastasis, HER2 positivity, and poorer survival outcomes, despite generally more favorable socioeconomic indicators like education and employment. In contrast, LOBC patients exhibit better survival rates and less aggressive disease.

**Recommendation:** Tailored management, earlier screening and detection programs, raising awareness, and further research.

## 52 Clinical profile, treatment, and outcomes of nasopharyngeal cancer patients in the 3dcrt era at ORCI

**Authors:** Isack Pascal Nyange, Salum Lidenge, Emmanuel Lidenge

**Background:** Majority of nasopharyngeal carcinoma (NPC) patients present with an advanced stage of the illness (Stage III-IV), which necessitates the use of chemotherapy as a neoadjuvant, adjuvant, or concomitant treatment with radiation therapy. Three-dimensional conformal radiotherapy (3DCRT) is predominantly used in advanced-stage disease, but when paired with chemotherapy, it improves overall survival. The outcome of patients treated with 3DCRT is not known despite the reported advanced stage at diagnosis.

**Objective:** To determine the clinical profile, treatment patterns, and outcomes of NPC patients treated in the 3-DCRT era at ORCI.

**Methods:** This was a retrospective cohort study conducted at ORCI. Patients with age >18 years with histologically confirmed NPC and treated with 3DCRT from January 2018 to December 2021 were included.

**Results:** Three-year overall survival rate of nasopharyngeal cancer patients was 55.9%. ECOG performance status was a true predictor of overall survival, in subgroup analysis. Induction chemotherapy and radiation doses of more than 50Gy were found to be associated with improved survival in locally advanced cohort.

**Conclusion:** Chemotherapy and escalation of radiotherapy doses have a role in treatment of advanced stage nasopharyngeal carcinoma.

**Recommendation:** Education for both community and health care providers to increase awareness of early presentations and detection for better treatment outcomes. Large prospective study is needed to confirm the role of induction chemotherapy and use of concurrent chemotherapy among nasopharyngeal carcinoma at ORCI.

## 53 The Use of Contraceptive Methods among Women and the Growing

### Burden of Overweight and Obesity

**Authors:** Hanifa M. Bilali, Ali Habib Said, Amani I. Kikula, Magdalena A. Lyimo, Medinah Wandela, and Bruno F. Sunguya

**Background:** The rise in overweight and obesity has become a global health concern, particularly among women of reproductive age. In Tanzania, modern contraceptive use has increased significantly, from 7% in 1991 to 31% in 2022. Recent evidence suggests a possible link between hormonal contraceptives and weight gain, potentially contributing to this growing public health issue.

**Objective:** This study investigates the association between modern contraceptive use and the burden of overweight and obesity among women in Tanzania.

**Methods:** This analytical cross-sectional study utilized secondary data from seven Tanzania Demographic and Health Surveys (TDHS)

conducted between 1991 and 2022. We analysed the data from a total of 203,884 women aged 15-49 years who met eligibility criteria. Trend analyses were conducted to observe changes in the prevalence of overweight/obesity over time, while modified Poisson regression was used to explore the association between modern contraceptive use and overweight/obesity after adjusting for confounders.

**Results:** The prevalence of modern contraceptive was 32.5% and prevalence of overweight/obesity was 69.7% among women of reproductive age in 2022. In 2022, among 37,521 women of reproductive age, majority were married (60.9%), living in rural areas (71.8%), using modern contraceptive (32.5%) and having primary education (57.6%). Between 1991-2022 overweight prevalence increased from 6.8% to 11.2% ( $P=0.125$ ) and obesity from 31.0%-58.4% ( $P=0.756$ ). Use of modern contraceptive increase prevalence ratio of overweight/obesity among women of reproductive age (adjusted PR = 1.025 (1.011 to 1.039)).

**Conclusion:** There is a significant association between modern contraceptive use and overweight/obesity.

**Recommendation:** The findings have important implications for policymakers to design evidence-based policy approaches to obesity prevention for women of reproductive age and at large for government to recognize that there are some negative consequences of modern contraceptives on women's health.

## 54 Obstructive Coronary Artery Disease Patterns, Treatment Modality and Outcome among Patients attending Jakaya Kikwete Cardiac Institute

**Authors:** Michael Lucas Kisoka, Jackson Mlay, Mohamed Yakub Janabi

**Background:** Cardiovascular diseases (CVD) have become a global burden. Within CVDs, Coronary artery disease accounts for over 17 million deaths annually. Urbanisation and lifestyle changes and traditional cardiovascular conditions are among the drivers for this shift. Despite advancements such as catheterization labs, data on obstructive coronary artery disease (CAD) patterns, treatment, and outcomes remain scarce in Tanzania.

**Objective:** To assess clinical presentation, management, and short-term outcomes among patients with obstructive coronary disease (OCAD) at JKCI.

**Methods:** Prospective observational cohort study conducted at JKCI catheterization lab from July 2024 to February 2025. Patients with OCAD were enrolled using convenience sampling. Data on socio-demographics, angiographic findings, treatment offered, and outcomes were collected. Angina symptom progression and 90-day survival were assessed. Analysis performed using SPSS v27.0. Descriptive statistics summarized baseline characteristics. Kaplan-Meier and log-rank tests evaluated survival across all treatments. Generalized Estimating Equations analysed

changes in clinical stages over time, with significance at  $p < 0.05$ .

**Results:** Of the 103 patients enrolled, single and multivessel disease were equally prevalent (33%), with the left anterior descending artery (LAD) most frequently affected (75.7%). The 90-day mortality rate was 6.8%, with lowest survival probability observed in patients undergoing coronary artery bypass grafting (CABG), particularly within the first 20 days. Symptom improvement was evident across all treatment modalities offered; however, elderly and hypertensive patients had higher rates of persistent angina after treatment. Complications included arrhythmias (4.9%), and a major cerebrovascular event was observed in 7.8% of patients.

**Conclusion:** Obstructive CAD in this Tanzanian cohort revealed a significant burden of both single and multivessel disease with severe stenosis. CABG was associated with the highest short-term mortality. While most patients experienced improvement in symptomatic angina, elderly and hypertensive individuals had persistent symptoms. These findings underscore the necessity for earlier diagnosis and personalized, enhanced post-treatment care.

**Recommendation:** Standardize post-CABG care to reduce early mortality. Implement tailored follow-up for elderly and hypertensive patients with persistent angina risk. Use risk stratification tools to guide personalized care, particularly in diabetics. Support multicentre, long-term studies to improve local evidence and treatment outcomes for CAD patients.

**55** Clinical Profile, Treatment Modalities, and 2-Year Survival of Patients with endometrial Cancer

**Authors:** Betty Kaitira, Nazima Dharsee, Jerry Ndumbalo, Angela Thomas

**Affiliation:**

**Background:** Endometrial cancer has an increased burden in low- and middle-income countries due to obesity, delayed childbearing and lack of awareness. Its data in Tanzania is limited data on clinical characteristics, treatment modalities, and survival patterns. This study aimed at determining the above limited data at two national hospitals, Ocean Road Cancer Institute (ORCI) and Muhimbili National Hospital (MNH).

**Objective:** To determine clinicopathological and sociodemographic traits, forms of treatment, and 2-year overall survival of women with endometrial cancer.

**Methods:** The study was a retrospective cohort study conducted at Ocean Road Cancer Institute and Muhimbili National Hospital recruiting patients who were diagnosed with endometrial cancer between January 2017 to December 2022. The study included all female cancer patients with histologically confirmed endometrial cancer who were treated at ORCI and MNH from January 2017 to December 2022. The outcome was a 2-year overall survival.

**Results:** The 2-year overall survival rate was 61.4%. Patients with Grade 2 tumors had a 20-fold increased risk of poor survival compared to those with Grade 1, while those who received a total

radiotherapy dose (EQD2) <65Gy had 4.54 times higher risk of mortality. The mean age at diagnosis was 62 years, with 64% aged between 51-70 years. Most patients had endometrioid adenocarcinoma type of histology, and in majority of them, surgery was the primary treatment modality.

**Conclusion:** The 2-year overall survival for endometrial cancer in this Tanzanian cohort was lower than that reported in high-income countries. Histological grade and adequacy of radiotherapy dosing emerged as significant prognostic factors. These findings show that enhanced diagnostic accuracy, optimized treatment protocols, and improved access to radiotherapy services are needed to improve outcomes for endometrial cancer patients in low-resource settings.

**Recommendation:** Clinically, emphasis should be placed on strengthening early detection, especially among postmenopausal women presenting with abnormal bleeding, and ensuring accurate tumor grading and risk stratification. Healthcare providers should also be supported to adhere to standard radiotherapy dosing protocols, particularly ensuring that patients receive total radiotherapy dose of at least 65 Gy, which was shown to significantly improve survival.

**56** Molecular Genomics Landscape of Acute Lymphoblastic Leukemia; Double-Centre Experience Study

**Authors:** Jeffer Bhuko, Collins Nzunda, Emmanuel Josephat, Eliud Buchard, Heavenlight Christopher, Erius Tebuka, William Mawalla,

Clara Chamba, Anthony Cutts, Fredrick Mashili, Anna Schuh

**Background:** Acute lymphoblastic leukemia (ALL) cancer diagnosis may be improved by using targeted therapies of tyrosine kinase inhibitors (TKIs) for the management of gene translocation for p190 Philadelphia (BCR-ABL) positive and somatic mutations referred to as single-nucleotide variants (SNVs). Molecular diagnosis has led to targeted therapies for specific molecular profiles.

**Objective:** To determine the frequency of somatic pathogenic mutations for ALL and uniformity of p190 Philadelphia q-PCR with next-generation sequencing (NGS).

**Methods:** A cross-sectional study from MNH and BMC diagnosed ALL cancer by cellular morphology. A library preparation was performed using the AmpliSeq for Illumina Myeloid Panel sequencing. To filter out variants with a higher likelihood of being common benign variants, exclude variants with an allele frequency greater than 0.1 in the African population from the Genome Aggregation Database (gnomAD). This filtering step helps prioritize potentially pathogenic variants for analysis.

**Results:** Among the forty-two acute lymphoblastic leukemia (ALL) patients, fifteen (35.7%) had detectable somatic variants. The oncogenic variant classifications included four (9.5%) variants detected in the SF3B1, DNMT3A, PTPN11, and BCOR genes, while seven (16.6%) were classified as likely oncogenic. Additionally, six (14.3%) variants were identified as having uncertain significance. Translocations were

observed in five (11%) samples, including a BCR: ABL1 rearrangement detected in next-generation sequencing (NGS) compared to three (7%) cases identified via q-PCR in the same patient group. For Target ID T00653, breakpoint A was located at chr22:23524426, while breakpoint B was at chr9:133729451. The patient is currently undergoing TKI management.

**Conclusion:** This study identified the most common somatic pathogenic mutations in acute lymphoblastic leukemia that are presently unidentified in Tanzania, and the molecular profile that determines whether these mutations are associated with poor or favourable outcomes for targeted therapy in ALL

**Recommendation:** The utilization of molecular-based diagnoses for personalized medicine approaches and targeted therapies treatment to raise the overall survival rates and event-free survivals for acute lymphoblastic leukemia cancer patients.

## 57 Factors associated with survival following percutaneous transhepatic biliary drainage in malignant biliary obstruction at MNH

**Author:** Mariam Mundela Elias

**Background:** Malignant biliary obstruction from cancers of the liver, biliary tree, pancreas, or duodenum causes high morbidity and mortality. Percutaneous transhepatic biliary drainage (PTBD), is a minimally invasive procedure used to lower bilirubin levels, ease symptoms, and improve quality of life. Despite its growing use,

data on survival outcomes and associated factors post-PTBD in Tanzania remain limited.

**Objective:** To determine the factors associated with survival following percutaneous transhepatic biliary drainage in malignant biliary obstruction at Muhimbili National Hospital.

**Methods:** This study reviewed patients undergoing PTBD for malignant biliary obstruction at MNH from January 2021 to December 2023. Data collected included demographics, comorbidities, symptoms, obstruction cause/type, and laboratory results pre- and post-PTBD. Statistical significance was set at  $p < 0.05$ . Survival probabilities were illustrated using Kaplan-Meier curves, while Cox's proportional hazards model assessed associations between baseline factors and survival time

**Results:** The mean patient age was 57 years, with 78.9% having no comorbidities. Most obstructions were from cholangiocarcinoma (71.1%) and pancreatic head tumors (19.7%). PTBD had 100% technical success, with 62.5% achieving  $\geq 20\%$  bilirubin reduction at one week. Complications occurred in 38.7%, mainly minor. Mean survival was 170 days, with 1-, 3-, 6-, and 12-month survival rates of 64.1%, 35.2%, 22.5%, and 13.4%. Oncology treatment and early bilirubin reduction improved survival.

**Conclusion:** This study shows that PTBD is a safe and effective palliative treatment for malignant biliary obstruction in low-resource settings, achieving high technical success and significant bilirubin reduction. However, low chemotherapy uptake post-PTBD highlights

systemic barriers to optimal cancer care, emphasizing the need for better diagnosis, histopathology access, and integrated oncologic services in such environments.

**Recommendation:** To enhance outcomes for malignant biliary obstruction, integrate oncology services with PTBD programs to improve access to chemotherapy and radiotherapy. Develop national guidelines to standardize PTBD use, especially in resource-limited settings. Promote early referral for palliative biliary drainage to reduce morbidity and improve quality of life.

## 58 Integration of early Kaposi sarcoma detection into routine clinical care

### at HIV clinics in DAR ES SALAAM

**Authors:** John R. Ngowi, Salum J. Lidenge, Julius Mwaiselage

**Background:** Kaposi's Sarcoma (KS) remains a leading HIV-associated malignancy in sub-Saharan Africa, particularly in settings with high KSHV seroprevalence. In Tanzania, despite the scale-up of ART, KS continues to contribute significantly to cancer-related morbidity and mortality among people living with HIV (PLHIV). Early detection is hindered by limited diagnostic capacity, weak referral systems, and delayed clinical recognition at the primary care level.

**Objective:** To assess the impact of educational intervention integrating KS screening into routine HIV clinical care—through HIV healthcare worker training.

**Methods:** We conducted a cross-sectional study between April 2024 and December 2024. Forty HCWs were trained across two cohorts in KS epidemiology, clinical presentation, and use of a five-item Cancer Screening Questionnaire (CSQ). PLHIV aged  $\geq 15$  years attending routine ART visits were screened for KS. Those classified as suspects were referred to Ocean Road Cancer Institute (ORCI) for confirmatory histological diagnosis. Sociodemographic and clinical data were analysed to assess referral completion

**Results:** Among 77 patients with complete referral, 45 (58.4%) were histologically confirmed with KS. Most confirmed cases were aged 30–45 years, with a slightly higher burden among males. Referral completion was significantly lower among patients with advanced HIV disease and those on ART for longer durations.

**Conclusion:** This study demonstrates that routine KS screening can be effectively integrated into HIV care platforms using a structured training and referral approach. While diagnostic yield was high, referral completion emerged as a critical gap, especially among clinically advanced HIV patients or those long-term on ART clients.

**Recommendation:** Further training of Health care workers to increase index of suspicion for KS disease, Further investigations into the causes of incomplete referrals

## 59 Prevalence and factors associated with chronic functional constipation among patients attending Amana Regional

**Authors :** Abdallah Mohamed Njate, Ewaldo Komba, Ferdinand Mugusi

**Background:** Chronic functional constipation (CFC) is a prevalent gastrointestinal disorder characterized by infrequent, difficult, or incomplete defecation, significantly impacting quality of life. Despite its global burden, there is limited hospital-based data on its prevalence and associated factors in Tanzania.

**Objective:** This study aimed to determine the prevalence, associated factors, and symptom distribution of CFC among adult patients attending outpatient clinics

**Methods:** A cross-sectional study was conducted from September 2024 to January 2025, involving 671 adult patients aged 18–50 years. Participants were randomly selected from the outpatient department and assessed using the Rome IV diagnostic criteria for CFC. Data collected via structured questionnaires translated into Swahili. The Bristol Stool Form Scale was used to evaluate stool consistency. Descriptive statistics, chi-square tests, and logistic regression analyses were performed using SPSS version 20

**Results:** Of the 671 participants, 40 (6%) met the Rome IV criteria for CFC. The most common symptoms were straining (30.8%), hard stools (26.5%), and incomplete evacuation (25%). Less frequent symptoms included anorectal blockage (14.2%), manual manoeuvres (11.2%), and fewer than three bowel movements per week (6.6%). Low physical activity (<3 times/week) was significantly associated with CFC (adjusted odds ratio [aOR] 2.23, 95% CI 1.09–4.50,  $p=0.03$ ).

Previous abdominal surgery showed a borderline association (aOR 3.52, 95% CI 0.10–1.04,  $p=0.06$ ).

**Conclusion:** CFC prevalence is 6%, lower than global estimates due to Rome IV criteria. L

**Recommendation:** Low physical activity is a key risk factor.

## 60 Carotid Atherosclerosis and Risk Factors among Diabetic Adults at a Tertiary Hospital in Tanzania

**Authors:** Lilian Evaristo Salingwa, Lulu Fundikira, Nathanael Sirili

**Background:** Carotid Atherosclerosis (CA) is increasingly common, paralleling the global rise of Diabetes Mellitus (DM). DM is a key risk factor for atherosclerosis, especially with poor glycemic control, long disease duration, or treatment failure. Coexisting cardiovascular risk factors further elevate CA risk. CA also indicates systemic atherosclerosis. However, local data on its burden and associated risk factors among diabetic patients is limited, highlighting the need for focused research in this population.

**Objective:** To determine the burden of CA and associated clinicopathological factors among adults at the diabetic clinic, Muhimbili National Hospital (MNH).

**Methods:** A hospital-based cross-sectional study included 338 adult DM patients at MNH. After informed consent, data were collected through medical record reviews, interviews, physical exams (BP, weight, height), carotid ultrasound, and lab tests (cholesterol, HbA1c). Data were

entered in Excel and analysed using R. Categorical variables were summarized as proportions; group comparisons used the chi-square test, with  $p$ -values  $< 0.05$  considered statistically significant.

**Results:** Among 338 adults (62.4% female, mean age  $61.2 \pm 9$  years), most were self-employed, married/cohabiting, and had primary/informal education. Key CA risk factors included DM  $>2$  years (88.7%), poor glycemic control (81.5%), unhealthy BMI (79.4%), hypertension (75.6%), and dyslipidemia (60.7%). CA was present in 43.2%, mostly unilateral (63.7%) and left-sided (55.9%). Advanced plaques were common, and over a quarter had vulnerable plaques. CA was significantly associated with cigarette smoking ( $p = 0.012$ ) and female sex ( $p = 0.04$ ).

**Conclusion:** A high proportion of adults with DM at MNH had significant cardiovascular risk factors, notably poor glycemic control, elevated BMI, hypertension, and dyslipidemia. Carotid atherosclerosis was common, predominantly unilateral and left-sided, with many showing advanced or vulnerable plaques that heighten stroke risk. CA has shown a significant association with cigarette smoking and female sex.

**Recommendation:** Strengthen Screening: Enhance routine screening for cardiovascular risk factors in diabetic patients. Health Education: Promote awareness of modifiable risk factors and encourage lifestyle changes. Targeted Carotid Artery Screening: Implement carotid ultrasound screening for high-risk diabetic patients. Support

Ongoing Research: Continuously monitor carotid artery trends and assess prevention strategies in diabetic populations.

## 61 Comparison of HR-HPV DNA Detection Efficiency in Urine Versus Cervical Swab Samples to Inform Cervical Cancer Screening of Tanzanian Women.

**Authors:** Brenda B. Kweyamba, Ditte S. Linde, Daniel Maeda, Mkunde S Chachage, Chacha J. Mwita, Salum J. Lidenge, Julius Mwaiselage, Charles Wood, Peter C. Angeletti.

**Background:** The WHO recommends HPV-based screening; however, the standard screening method in Tanzania remains visual inspection with acetic acid (VIA), which necessitates a gynecologic examination. Cervical cancer screening uptake in Tanzania is low, and there are few studies from Africa among HIV-positive populations that have assessed the accuracy of HPV detection using an alternative sample, urine.

**Objective:** This study aimed to evaluate the test accuracy of first-void urine compared to health provider-collected cervical swabs in detecting high-risk.

**Methods:** 132 cervical screening clients were enrolled at Ocean Road Cancer Institute in Dar es Salaam, and 104 urine samples were included in the final analysis. Extracted DNA from paired samples was tested for HR-HPV using the AmpFire HPV (RT PCR) assay.

**Results:** HR-HPV prevalence was 34% in cervical swabs and 19.2% in urine samples ( $p=0.0169$ ).

HPV16 was the most prevalent HPV type in both samples, and multiple HPV types were more often prevalent than single types. HIV positivity was 10.6%. The agreement for HR-HPV detection was 69.2% ( $\kappa=0.241$ ; fair agreement).

**Conclusion:** HPV-based screening using urine samples was less accurate than provider-collected cervical swab samples. However, HPV-based screening demonstrated greater accuracy than VIA.

**Recommendation:** Since urine samples are less invasive, they may increase screening uptake and be a more precise screening method than VIA, the current primary screening method in Tanzania.

## 62 Factors associated with biochemical failure in localized prostate cancer treated with radical definitive radiotherapy

**Authors:** Atukuzwe Kanyandekwe Kahakwa, Emmanuel Lugina, Christina V. Malichewe

**Background:** Prostate cancer is a leading cancer among males in Tanzania, with a significantly growing health burden in Tanzania. The Ocean Road Cancer Institute (ORCI) transitioned from 2D radiotherapy to 3D conformal radiotherapy (3DCRT) in 2018, enabling higher precision in treatment. However, outcomes of 3DCRT in prostate cancer remain poorly understood in Tanzania, where newer technologies like IMRT and VMAT are often unavailable.

**Objective:** To identify factors associated with treatment failure and its impact on overall survival

in prostate cancer patients treated with Radiotherapy.

**Methods:** This retrospective cohort study reviewed records of patients treated with 3DCRT and ADT at ORCI (2018–2021). Statistical analysis was performed using SPSS 27 to assess factors associated with biochemical failure and survival outcomes. Missing data was handled through imputation and exclusion strategies.

**Results:** Among men with localized prostate cancer, 98% presented with high-risk disease. The median age was 73 years. Median initial PSA was 76.6 ng/mL; 98% had PSA > 20 ng/mL. A strong association was found between higher PSA and advanced Gleason score and T-stage ( $p < 0.001$ ). The three-year biochemical failure rate for all patients was 47.3%. The overall survival rate at 3 years was 43%. Gleason score and PSA were independent predictors of BFS and OS.

**Conclusion:** Most Tanzanian men with localized prostate cancer present with high-risk disease and very high PSA, resulting in poor survival outcomes despite curative treatment with advanced techniques. Early detection remains critical. Gleason score and PSA levels are strong predictors of treatment failure, highlighting the need for risk-adapted approaches and timely intervention.

**Recommendation:** Strengthen early detection strategies, including PSA screening and public awareness. Enhance capacity for risk stratification and treatment planning using the Gleason score and PSA. Expand access to advanced radiotherapy techniques to other centers in

Tanzania to improve survival in prostate cancer patients.

## 63 Molecular characterization of acute myeloid leukemia in Tanzania

**Authors:** Eliud Buchard, Collin Nzunda, Jeffer Bhuko, Emmanuel Saukiwa, Abdilahi Kiula, Heavenlight, Christopher, Caro Mollel, Leila Uliza, Rehema Shungu, Helene Dreau, William Mawalla, Anna Schuh, Ahlam Nasser, Adam Burns, Clara Chamba, Antony Cutts, Sabina Mugusi

**Background:** Genetic mutations are key to diagnosing, managing, and stratifying AML risk, yet the molecular profile in sub-Saharan Africa remains poorly defined. Many pathogenic mutations are unknown, and links between genetic patterns and epigenetic phenotypes are unclear, highlighting the need to understand their impact on AML pathophysiology and clinical care.

**Objective:** This study aimed to determine the frequency of genetic mutations in Acute Myeloid Leukemia patients.

**Methods:** This was a cross-sectional study and included 14 newly diagnosed AML patients from Muhimbili National Hospital. Peripheral blood DNA was extracted using the QIAamp Blood Mini Kit and sequenced with the Ampliseq for Illumina Myeloid Panel on a MiSeq platform. NPM1 mutations were assessed separately via RT-PCR (Cepheid GeneXpert). Variant calling and oncogenicity classification were performed according to AMP/ASCO/CAP guidelines,

addressing the diagnostic, prognostic, and therapeutic significance.

**Results:** AML genomes exhibited a low mutational burden, averaging 10 mutations per patient, with approximately five mutations in recurrently mutated genes. Nearly all 14 patients had at least one nonsynonymous mutation in key gene categories. Mutations were most frequent in signaling genes (59%), followed by epigenetic regulators (44%), tumor suppressors (16%), and spliceosome genes (14%), reflecting a diverse range of leukemogenic mechanisms. Patterns of co-occurrence and exclusivity suggest distinct yet cooperative pathways. Notably, NPM1 and transcription-factor fusion mutations were not prevalent in this cohort.

**Conclusion:** We identified at least one potential driver mutation in nearly all 14 AML samples, revealing a complex interplay of genetic events in AML pathogenesis. This study provides a foundational understanding and underscores the urgent need for larger longitudinal investigations into AML pathogenesis, classification, and risk stratification, especially considering the limited molecular data for patients in Tanzania and Sub-Saharan Africa.

**Recommendation:** This study highlights diverse genetic alterations driving AML pathogenesis in Tanzania and emphasizes the need for comprehensive molecular profiling in affected populations. Future research should focus on larger cohorts to better understand mutation patterns, their interactions, and clinical implications. Enhanced genomic characterization

will improve AML classification, risk stratification, and guide targeted therapies, particularly in underrepresented regions such as Sub-Saharan Africa.

## 64 Prevalence, angiographic patterns, and factors associated with ACS among patients attending chest pain unit JKCI

**Authors:** *Ridhiwani Saidi, Khuzeima Khanbhai, Jackson Jakob Mlay*

**Background:** Cardiovascular diseases are the leading cause of morbidity and mortality globally, accounting for 31% of global deaths. Most cardiovascular-related deaths occur in low and middle-income countries. Acute coronary syndromes account for most deaths among patients with CVD. Existing data on the prevalence, clinical characteristics, and associated factors of ACS in Tanzania have been mainly from retrospective studies that did not examine the angiographic profile of patients undergoing coronary angiography

**Objective:** Determine prevalence, clinical characteristics, angiographic patterns, and factors associated with ACS among patients attending the chest pain unit at JKCI

**Methods:** Hospital-based observational cross-sectional study, conducted for six months, included patients presenting with chest pain, with a sample size of 166. Consecutive enrolment techniques were employed, and data collected

included patients' socio-demographic and clinical characteristics, pertinent diagnostic tests, and angiographic profiles. We reported descriptive statistics using medians and proportions. Multivariable modified Poisson regression analysis was used to identify independent factors associated with ACS, and a p-value of  $<0.05$  was considered statistically significant.

**Results:** Median age was 61 years (51-69), 62.7% were men, and 57.2% presented with cardiac chest pain, with a median time of chest pain onset to presentation being 24 hours (18-39). The prevalence of ACS was 65.7%. Of those who underwent CAG, 93.6% had obstructive coronary artery disease; the most common pattern of coronary artery involvement was single vessel disease, 48.8%, and left anterior descending artery, 73.4%. After adjusting for confounders, three factors, hypertension, diabetes mellitus, and dyslipidemia, were independently associated with ACS.

**Conclusion:** Among patients with chest pain presenting at a chest pain unit at a tertiary cardiac center in Tanzania, the prevalence of ACS was high. Conventional cardiovascular risk factors were found to be strongly associated with ACS, with a significant delay in reporting to the clinic after the onset of chest pain.

**Recommendation:** Our findings highlight the critical need for public health initiatives to control CVD/ACS's risk factors, improve public awareness of cardiovascular disease, and develop systems of care for patients with chest pain. Future multicentre or longitudinal studies

should be conducted to enhance the generalizability of the findings.

## 65 Prevalence and factors associated with metabolic syndrome among patients with SMI attending BMC, Mwanza

**Authors:** Didas R. Msele, Noel Mrema Kilonzo, Matiko Mwita, Samuel Likindikoki

**Background:** Patients with SMI exhibit a significantly higher prevalence of MetS and its components than the general population. This elevated risk may be attributed to the factors such as the mental illness itself, the use of antipsychotic medications, obesity, high-fat diets, low physical activity, and smoking

**Objective:** The study aimed to determine the prevalence and factors associated with MetS among patients with SMI at BMC, Mwanza

**Methods:** A cross-sectional design. It involved adults aged 18 and above who attended the psychiatric clinic at BMC. Systematic random sampling was used. structured questionnaire was used to collect data. Analysis done using STATA v17. Ethical approval was granted by the IRB of MUHAS. Additionally, permission to conduct the study was obtained from the Director General of BMC, and informed consent was secured from participating patients

**Results:** A total of 305 patients participated with a mean age of  $38.5 \pm 14.2$  years. More than half, 176 (58.7%) of participants were male. Thirty-three percent (33.1%) of participants were found to have MetS. Increasing age was found to be strongly associated with metabolic syndrome

where, age group ( $\geq 45$ ) years had five-fold (AOR 5.15, 95%CI: 1.55 – 17.16;  $P \leq 0.008$ ) increased odds of having MetS compared to the young age group.

**Conclusion:** There is a higher prevalence of MetS among patients with SMIs attending BMC. Increasing age was associated with increased risk of developing MetS.

**Recommendation:** Frequent screening measures should be encouraged for the aging population with severe mental illness. Clinicians should educate patients and caregivers about metabolic syndrome and its complications to encourage preventive measures and regular screening. A multi-disciplinary approach is essential for holistic management. Researchers should conduct longitudinal studies to identify causes and interventions.

## 66 Appropriateness of Adult Head CTScan at Muhimbili National Hospital, Tanzania

**Authors:** Naila Shabbir Fazal, Latifa Rajabu, Mboka Jacob Kilasara

**Background:** Head CT scans are vital in diagnosing neurological emergencies like trauma and stroke, but misuse can strain health systems—especially in resource-constrained settings. This study aimed to evaluate the appropriateness and determinants of adult head CT imaging at Muhimbili National Hospital (MNH), guided by the American College of Radiology (ACR) Appropriateness Criteria.

**Objective:** This study aims to determine predictors of appropriate of adult head CT scan at Muhimbili National Hospital by analyzing clinical

**Methods:** A hospital-based cross-sectional study was conducted between January and March 2025, enrolling 158 adults referred for head CT scans. Clinical and demographic data were retrieved from medical records. Scans were categorized using ACR criteria as “usually appropriate,” “may be appropriate,” or “usually not appropriate.” Binary logistic regression was applied to identify predictors of appropriate scan use.

**Results:** The mean patient age was 47.2 years (SD  $\pm 19.5$ ), with males comprising 68.4%. Common indications included trauma (44.9%) and altered mental status (32.9%). Overall, 77.2% of scans met ACR appropriateness standards, while 22.8% were classified as inappropriate. Female sex ( $p = 0.022$ ) and older age were linked to higher rates of inappropriateness. Trauma was a strong predictor of appropriate imaging (AOR = 6.33,  $p = 0.001$ ), whereas seizure-related referrals had reduced odds of inappropriateness (AOR = 0.23,  $p = 0.011$ ).

**Conclusion:** Despite high overall adherence to ACR guidelines, over one-fifth of scans were unwarranted. Inappropriate imaging was more common among females and those presenting with vague symptoms. Reinforcing guideline-based decision-making, clinician training, and decision-support systems is essential to promote rational imaging and preserve healthcare resources.

**Recommendation:** Muhimbili National Hospital should adopt ACR Appropriateness Criteria via decision-support tools and standardized referral protocols. Targeted training is essential, especially for vague symptoms like

**67** headaches and altered mental status. Focus should be placed on elderly and female patients prone to inappropriate imaging. Strengthening cross-disciplinary collaboration and quality assurance will enhance diagnostic accuracy and resource efficiency.

### Ocular sonographic patterns and predictors of raised ICP among paediatric head injury at MOI

**Authors:** Ibrahim A. Bakari, Lulu Sakafu, Mwajabu Saleh

**Background:** Raised intracranial pressure (ICP) is a life-threatening complication of traumatic brain injury (TBI) in children and demands prompt recognition. Conventional ICP monitoring methods, like External Ventricular Drainage, though effective, are invasive and carry procedural risks. Ocular sonography, particularly measurement of the optic nerve sheath diameter (ONSD), offers a non-invasive, accessible alternative for early ICP assessment. However, its utilization in pediatric trauma care remains limited.

**Objective:** To determine the Ocular Sonographic patterns and associated predictors of raised ICP among pediatric patients with head injury attending MOI

**Methods:** A prospective cross-sectional study was conducted involving 113 pediatric TBI patients (GCS  $\leq 14$ ) recruited through convenience sampling. Clinical data were collected using structured tools. Ocular ultrasound of the right eye was performed using B-mode sonography to measure ONSD 3 mm posterior to the globe. Data analysis was conducted using SPSS v25. Chi-square tests and logistic regression analyses were used to explore associations between clinical features and raised ICP.

**Results:** Among 113 participants (mean age 8.1 years; 69.9% male), 74.3% had moderate TBI. Ocular sonography showed optic disc elevation in 6.2%, with no retinal detachment or vitreous hemorrhage. Mean ONSD increased with age. Seizures (68.1%) and vomiting (61.9%) were common, while hydrocephalus (0.9%) and papilledema (1.8%) were rare. Lower GCS scores were significantly associated with raised ICP ( $p = 0.035$ ), while seizures and vomiting were not significant in multivariate analysis.

**Conclusion:** Glasgow Coma Scale score is a significant predictor of raised ICP in pediatric head injury patients. The absence of papilledema and other ocular sonographic patterns does not exclude raised ICP, supporting the utility of ONSD measurement as a rapid, non-invasive screening tool.

**Recommendation:** Conduct studies to establish normative ONSD values in healthy African children for clinical reference. Use larger sample sizes in future research to improve statistical

power. Implement multi-center studies to enhance generalizability. Explore links between TBI severity and ocular sonographic findings.

## 68 Clinicopathological characteristics, treatment modalities and survival of differentiated thyroid cancer patients treated at Ocean Road Cancer Institute

**Authors:** *Arapha Ally Mvugalo, Mariam Uledi, Mamsau Ngoma, Salum Lidenge, Tausi Maftah*

**Background:** Differentiated thyroid cancer (DTC), is a common endocrine malignancy, is being increasingly diagnosed worldwide, including Tanzania. While DTC generally has favorable outcomes, regional data on presentation and survival remain scarce. The findings aim to inform national cancer care strategies and improve early detection, treatment access,

**Objective:** To determine the sociodemographic characteristics, clinicopathological features, treatment modalities and predictors of overall survival among differentiated thyroid cancer patients at ORCI.

**Methods:** A retrospective cohort study was conducted at OCRI using patient records of 2016–2021. A structured questionnaire form that collected patient demographics, clinicopathology, treatment, and outcomes. Survival was assessed through follow-up notes and phone interviews. Data were coded, recorded in Excel, and analyzed in SPSS using descriptive statistics, Kaplan-Meier, and Cox regression. Ethical clearance was obtained from MUHAS and ORCI, and verbal consent was sought during follow-up calls.

**Results:** A total of 104 patients with differentiated thyroid cancer were included in the study. The majority were female (89.4%) and under 55 years. Most presented with a neck mass (100%) and underwent surgery (98.1%), primarily total thyroidectomy. RAI therapy was given to 69.2%. Three-year overall survival was 92%. On multivariate analysis, secondary education level, papillary histology, and not receiving RAI were significantly associated with reduced survival. Stage I was the most common diagnosis (46.2%).

**Conclusion:** There are high survival rates in patients with differentiated thyroid cancer, especially those patients that underwent surgery and RAI therapy. Early diagnosis and access to standard care significantly influence prognosis, emphasizing the need for improved awareness, timely intervention, and equitable healthcare access to optimize outcomes.

**Recommendation:** We recommend strengthening early detection programs, particularly among less-educated populations, to improve outcomes.

## 69 Assessment of CT patterns among patients with oropharyngeal squamous cell carcinomas at Muhimbili National Hospital

**Authors:** *Shella Kwikima, Maria Mtolera, Lulu Sakafu.*

**Background:** Oropharyngeal squamous cell carcinoma (OPSCC) is an emerging global malignancy, increasingly linked to HPV, tobacco, and alcohol. In Tanzania, where HPV testing is

often unavailable, CT imaging remains a vital tool for diagnosis, staging, and prognosis. However, regional data on imaging patterns and their correlation with risk factors are limited.

**Objective:** To evaluate CT imaging features and associated risk factors in OPSCC patients at Muhimbili National Hospital from January 2021 to

**Methods:** A retrospective cross-sectional study analyzed pretreatment CT images of 63 adults with histologically confirmed OPSCC. Demographic data and risk exposures (HPV status, tobacco, alcohol) were retrieved from patients' records. Two radiologists independently reviewed CTs for tumor site, margins, enhancement, invasion, and nodal features. SPSS v25 was used for statistical analysis. Associations were assessed using chi-square and logistic regression;  $P \leq 0.05$  was considered significant

**Results:** Patients were predominantly male (69.4%) with a mean age of 56.7 years. The tonsil was the most affected site (54.8%). Frequent CT features included ill-defined margins (58.1%) and necrotic lymph nodes (61.3%). Only 24.2% had known HPV status. HPV-positive cases often showed well-defined, non-necrotic tumors, while tobacco and alcohol use correlated with infiltrative, necrotic patterns ( $p \leq 0.05$ ).

**Conclusion:** CT patterns in Tanzanian OPSCC patients vary with exposure history. HPV-positive tumors show more favorable imaging characteristics.

**Recommendation:** CT should be strategically used to classify OPSCC features, especially

where HPV testing is limited. Structured CT templates and comprehensive risk documentation (smoking, alcohol, sexual history) are vital for proper diagnosis. Future prospective studies with confirmed HPV status are needed to refine CT-based risk models and guide personalized care in low-resource settings.

## 70 Short-term treatment outcomes and associated predictors in patients with acute myocardial infarction undergoing percutaneous coronary intervention

**Authors:** *Hamis Kiberenge Ibrahim*

**Background:** Acute myocardial infarction (AMI) is the most severe form of Coronary arterial disease (CAD), accounting for over 9.1 million annual deaths globally. Treatment of AMI mainly includes primary percutaneous coronary intervention (PCI) that reduces morbidity and mortality, which is superior to other alternative treatment modalities. Unfavorable outcomes following PCI can include contrast-induced acute kidney injury (CI-AKI), major bleeding, stroke, atrial fibrillation, stent thrombosis, coronary dissection, and coronary perforation.

**Objective:** To assess short-term PCI outcomes and associated predictors among patients with acute myocardial infarction

**Methods:** This was a retrospective cohort study conducted at Jakaya Kikwete Cardiac Institute (JKCI) between 1st January 2022 and 31st December 2024. We included patients who

underwent PCI after a clinically confirmed episode of AMI. Treatment outcome data was extracted from JKCI's electronic patient management system and Catheterization Laboratory charts.

**Results:** Most participants were aged 45-65 years. The median time from symptoms to first medical contact was 19 hours. Most common PCI-related complication was CI-AKI (16.6%), followed by major bleeding (6.6%) and stroke (3.1%). All-cause in-hospital mortality was 14%, with acute heart failure being the most common cause of death.

**Conclusion:** A substantial proportion of patients with AMI who underwent PCI during the study period were of premature age for coronary artery disease (45-64 years age group), reflecting an emerging burden of early-onset coronary artery disease in our setting.

**Recommendation:** Primary preventive interventions targeting younger populations at risk for cardiovascular disease are needed to curb the rising tide of premature AMI.

## 71 Appropriateness of Adult Head CT Scan Utilization at Muhimbili National Hospital, Tanzania

**Authors:** Naila shabbir fazal, Latifa rajabu, Mboka Jacob kilasara

**Background:** Head CT scans are vital in diagnosing neurological emergencies like trauma and stroke, but misuse can strain health systems especially in resource-constrained settings. This study aimed to evaluate the appropriateness and determinants of adult head CT imaging at

Muhimbili National Hospital (MNH), guided by the American College of Radiology (ACR) Appropriateness Criteria.

**Objective:** This study aims to determine predictors of appropriate of adult head CT scan at Muhimbili National Hospital by analyzing clinical and demographic characteristics.

**Methods:** A hospital-based cross-sectional study was conducted between January and March 2025, enrolling 158 adults referred for head CT scans. Clinical and demographic data were retrieved from medical records. Scans were categorized using ACR criteria as "usually appropriate," "may be appropriate," or "usually not appropriate." Binary logistic regression was applied to identify predictors of appropriate scan use.

**Results:** The mean patient age was 47.2 years (SD  $\pm$ 19.5), with males comprising 68.4%. Common indications included trauma (44.9%) and altered mental status (32.9%). Overall, 77.2% of scans met ACR appropriateness standards, while 22.8% were classified as inappropriate. Female sex ( $p = 0.022$ ) and older age were linked to higher rates of inappropriateness. Trauma was a strong predictor of appropriate imaging (AOR = 6.33,  $p = 0.001$ ), whereas seizure-related referrals had reduced odds of inappropriateness (AOR = 0.23,  $p = 0.011$ ).

**Conclusion:** Despite high overall adherence to ACR guidelines, over one-fifth of scans were unwarranted. Inappropriate imaging was more common among females and those presenting with vague symptoms. Reinforcing guideline-

based decision-making, clinician training, and decision-support systems is essential to promote rational imaging and preserve healthcare resources

**Recommendation:** Muhimbili National Hospital should adopt ACR Appropriateness Criteria via decision-support tools and standardized referral protocols. Targeted training is essential, especially for vague symptoms like headaches and altered mental status. Focus should be placed on elderly and female patients prone to inappropriate imaging. Strengthening cross-disciplinary collaboration and quality assurance will enhance diagnostic accuracy and resource efficiency

## 72 Prevalence and associated factors of rheumatic heart disease among secondary students in Karatu district

**Authors:** Dr. Saad H. Mkungura, Professor Pilly Chillo, Dr. Jackson Mlay,

**Background:** Rheumatic heart disease (RHD) is a preventable cause of acquired valvular heart disease caused by Group-A-Beta hemolytic streptococcus infection of the upper airways. The disease is endemic in sub-Saharan Africa, with most documented literature coming from primary school children below 16 years of age. Therefore, less is known about the burden of RHD among older children and adolescents in secondary schools, who may have a higher prevalence of RHD

**Objective:** -To determine the prevalence and associated factors of RHD among secondary school students in Karatu District

**Methods:** A cross-sectional study was conducted from August - October 2024. Multistage sampling was used to select participants. A structured questionnaire obtained socio-demographic and clinical data, while echocardiography assessed the structure and function of the heart utilizing World Heart Federation criteria 2023. Analysis was done using SPSS v27, including chi-square and logistic regression in both univariable and multivariable models. Significance level was set at p-value < 0.05.

**Results:** Of the 4080 invited students, 1761(43.14%) were screened, mostly were males (56.8%) with equal age distribution (14-16 years, 17-20 years). Among 121 positive screens, mitral regurgitation (5.00%), mitral valve thickening (6.87%), restricted valvular opening (4.26%) and aortic regurgitation (0.06%). Confirmatory echocardiography (91 cases) found 34 RHD cases, giving the prevalence of 1.93%. RHD was independently associated with solid fuel use (aOR 2.73, 95% CI 1.04-7.16, p=0.041) and recurrent history of upper respiratory tract infection (aOR 2.64 95% CI 1.01-6.89, p=0.047)

**Conclusion:** Rheumatic heart disease was found to be prevalent at Karatu district by 1.93%, with the proportion being more in older student (17–20 years) by 2.38%. Use of solid fuel and history of upper respiratory tract infection were found to be statistically significant predictors of RHD.

**Recommendation:** These findings suggest that socioeconomic and infectious risk factors play a significant role in the development of RHD. Improving living conditions and infection control might reduce the burden of the disease.

### 73 Clinical pathological features and outcomes of primary bone cancer in adults treated at ORCI and MNH

**Authors:** Gaudence Ajuaye, Nazima Dharsee, Khamza Maunda, Peter Muhoka

**Background:** Primary bone cancer arises from abnormal bone cell growth and potential spread. It accounts for under 1% of global cancers, with a five-year survival rate of 67.9%. In the U.S., incidence is 0.9 per 100,000 annually. In Nigeria, it represents 0.53% of primary cancers, while in Tanzania, long bone cancer comprised 1.2% of all cancer cases recorded from 2011 to 2020. But there is limited data on treatment outcome.

**Objective:** To determine sociodemographic characteristics, clinicopathological features, treatment modalities and predictors of survival among adult patients with primary bone cancer

**Methods:** This retrospective hospital-based cohort study analyzed adult patients ( $\geq 18$  years) treated for primary bone cancer from 2017–2022 at ORCI and MNH. Two-year overall survival was the outcome, with demographic, histologic, and treatment variables as predictors. Data were analyzed using SPSS v25. Kaplan-Meier curves assessed survival, followed by univariate log-rank tests. Significant variables were analyzed with

Cox regression. A p-value  $< 0.05$  was considered statistically significant.

**Results:** Among 140 cases, male to female ratio 1.5:1, with Osteosarcoma being the commonest histology subtype 99(70.7%). Upper and lower limbs 53.6% were the commonest disease site, majority had metastatic disease at diagnosis 46.4%. Surgery was the most utilized modality of treatment 104(74.3%). The 2-year overall survival is 32.8%, while Tumor stage, metastasis, tumor grade, site of lesion, adjuvant chemotherapy and radiotherapy have shown to influence survival in this study as either a positive or negative predictor of survival.

**Conclusion:** In this study Osteosarcoma, Chondrosarcoma and Ewing sarcoma were the most common subtypes of Primary Bone Cancer as expected according to literature. Two-year overall survival was 32.8% which is very low compared to developed countries. Chondrosarcoma had improved overall survival compared to other subtypes. High tumor grade, metastasis at diagnosis, tumor stage, tumor size were all predictors of mortality.

**Recommendation:** 1. Adhering to the treatment guideline: most of the patient were not treated as per treatment guideline this can be achieved through multidisciplinary management of patient by tumor board. 2. Nearly a half of the patient had metastatic disease at diagnosis so, early detection of disease is required by providing more education the clinicians and raising awareness to the community.

## 74 Advancements in HIV care, particularly the widespread use of antiretroviral therapy (ART), have significantly reduced early morbidity and mortality among people with HIV/AIDS

**Authors:** Lilian Evaristo Salingwa, Prof. Emmanuel Ballandya, Dr. Tosi Mwakyandile, Dr. Delfina R. Msanga,

**Background:** Advancements in HIV care, particularly the widespread use of antiretroviral therapy (ART), have significantly reduced early morbidity and mortality among people living with HIV/AIDS (PLHA), transforming HIV into a manageable chronic condition. As a result, the prevalence of non-communicable diseases, including cardiovascular diseases (CVDs), has risen among this population. However, the specific burden and associated clinical-pathological factors of cardiac diseases in PLHA remain poorly characterized.

**Objective:** To determine the burden of cardiac diseases and their associated clinical and pathological factors among PLHA attending Muhimbili National Hospital

**Methods:** A hospital-based cross-sectional study was conducted involving 163 adult PLHA at MNH. After obtaining informed consent, data were collected through structured interviews, medical record reviews, physical examinations (including blood pressure, weight, and height), echocardiography, and laboratory investigations (including serum cholesterol levels). Data were entered in Microsoft Excel and analyzed using R.

**Results:** Of the 163 participants, 75.5% were female, with a mean age of  $50 \pm 10.5$  years. Most participants were self-employed (71.8%), married or cohabiting (63.1%), and had attained primary or informal education (46.3%). Common cardiovascular risk factors included unhealthy body mass index (62.2%), age over 50 years (50.9%), dyslipidemia (40.9%), and cigarette smoking (7.4%). Cardiac diseases were detected in 29.1% of the study population.

**Conclusion:** Cardiac diseases are prevalent among PLHA attending MNH, affecting nearly one-third of the population studied.

**Recommendation:** Routine screening for cardiac conditions in PLHA and further longitudinal research are recommended to better understand and manage cardiovascular comorbidities in this population.

## 75 Peripheral Immune Profile in HIV and (Neuro)cysticercosis

### Coinfection: Evidence from Two Endemic Regions of Tanzania

**Authors:** Yakobo L. Lema, Ulrich F. Prodjinotho, Charles Makasi, Mary-Winnie A. Nanyaro, Andrew M. Kilale, Sayoki Mfinanga, Dominik Stelzle, Veronika Schmidt, H el ene Carabin, Andrea S. Winkler, Eligius F. Lyamuya, Bernard J. Ngowi, Mkunde Chachage, Clarissa P. da Costa.

**Background:** *Taenia solium* causes cysticercosis; brain invasion leads to neurocysticercosis (NCC). HIV prevalence is high in the same regions and coinfection dynamics are poorly understood. This study aimed to identify the

potential impact of HIV coinfection in CC and NCC patients.

**Objective:** To investigate the difference in peripheral immune responses to NCC between HIV+ and HIV- participants.

**Methods:** We conducted a Nested cross-sectional study in Chunya and Iringa (2018–2021). We enrolled 110 HIV-positive adults from CTC and 124 HIV-negative neighbours matched by age and sex. Screened for cysticercosis antigen (Ag-ELISA), antibody (Western Blot IgG), CD4 count, and viral load. Seropositives, their partners underwent CT for NCC staging. Serum cytokines were quantified with a Luminex MAGPIX panel. Analysis was done to compare concentrations of the different cytokines.

**Results:** Antibodies seen in 18.8% overall. Viable antigen rose to 43.6% in HIV-positive versus 28.2% in HIV-negative participants ( $p = 0.016$ ). CT detected NCC in 20.8%. Active cysts in 10.3%. Calcified lesions in 10.3%. HIV raised TNF- $\alpha$  IL-8 IFN- $\gamma$  IL-6 IL-12 IL-17 and lowered IL-18. Coinfection boosted IL-5 and dampened TNF- $\alpha$  IFN- $\gamma$  rises. Men showed lower levels IL-8 IL-17 IL-4 ICAM-1 than women.

**Conclusion:** HIV drives the immune profile, masking any changes caused by NCC. More active NCC in PLWH. Peripheral markers alone therefore offer limited diagnostic value for NCC.

**Recommendation:** Pair antigen screens with imaging when possible and keep patients on effective ART to limit immune activation and cyst progression.

## 76 Sources of interruptions in radiotherapy schedules; the case of

### Ocean Road Cancer Institute

**Authors:** Andrew Julius Dukho

**Background:** Interruptions in radiotherapy are one of the most common challenges in radiotherapy delivery that can have detrimental effects on treatment success, specifically an increase in tumour recurrence and decrease in cancer cure rates. Currently, no data on causes, frequency and duration is available at Ocean Road Cancer Institute. With awareness, policies and protocols, interruptions to radiotherapy schedules may be reduced.

**Objective:** The goal was to ascertain sources, frequency and duration of radiotherapy interruptions at Ocean Road Cancer Institute

**Methods:** Cancer patients, who had been planned and treated with 3DCRT technique of radiotherapy either for curative or palliative intent, at two Varian linacs machines were studied. Radiotherapy is normally delivered on five days a week and two days resting schedule. Interruption occurs when the patient misses one of the five scheduled days. Charts with interruptions was extracted from ARIA and INAYA.

**Results:** 641 patients were enrolled in the study, out of which, 209 had interruptions. Machine breakdown was the leading source, accounting for 56.5% of all interruptions. Patients' deaths and anemia accounted for 14.3% and 10% respectively, while radiotherapy toxicity and social

economic issues accounted for 8.6% and 4.9% respectively.

**Conclusion:** Common sources of interruptions in planned radiotherapy schedules at ORCI are machine breakdown, patients' death, anemia, radiation toxicity, and socio-economic issues.

**Recommendation:** To prevent interruptions, there is a need to have adequate treatment facilities, so that, when one machine is down, interruptions can be avoided by transferring patient to matched machine and treated daily or replan to different machine to continue planned schedule. Compensation of unavoidable interruptions is needed.

## 77 Clinical characteristics of patients with cardiac thrombosis admitted at

Jakaya kikwete cardiac institute JKCI

**Authors:** Dr. Effeso Kago, Professor Patricia Munseri, Professor Pilly Chillo

**Background:** The complications of cardiac thrombosis are mainly stroke and pulmonary embolism that may end up in death. Patients with heart failure, atrial fibrillation, valvular heart disease, and myocardial infarction are at risk for developing cardiac thrombosis. Despite its significance there is limited data in the magnitude clinical characteristics and outcomes of cardiac thrombosis among patients admitted at the Jakaya Kikwete Cardiac Institute (JKCI).

**Objective:** To assess the prevalence, clinical characteristics, and outcomes of cardiac thrombosis in adult patients admitted at JKCI.

**Methods:** A cross-sectional study at JKCI involved admitted adults. Data were collected via structured questionnaires covering demographics, clinical features, FBP, PTT, INR, ECG, and Transesophageal echocardiography. Patients with thrombosis were followed on days 14 and 30; outcomes like pulmonary embolism and stroke were confirmed by CT scan. Thrombus resolution was evaluated at day 30. Data analyzed using SPSS version 25, summarizing clinical characteristics and outcomes using frequencies, percentages, means, and standard deviations.

**Results:** Out of 293 patients, the prevalence of cardiac thrombosis was 6.1%, with 10(56%) in the left ventricle. Most patients 14 (83.3%) were aged  $\leq 65$  years; 44.4% had hypotension, and 8(44.4%) and 9(50%) were in NYHA class III and IV, respectively, on admission. The mean LVEF was  $40.8 \pm 17.2\%$ , with 55.6% exhibiting HFrEF. Mean LVIDd was  $52.7 \pm 9.2$  mm and LADs  $45.1 \pm 9.2$  mm, 7(38.9%) had IHD, 3(16.7%) AF, and 3(16.7%) RHD. Thrombus resolution occurred in 81.3%, while 1(6.7%) developed pulmonary embolism, 1(6.7%) stroke.

**Conclusion:** Cardiac thrombosis is prevalent among hospitalized patients, particularly those with underlying heart disease, presenting with severe symptoms like hypotension and advanced New York Heart Association class, dilated heart chambers and lower ejection fraction. Anticoagulant therapy shows high effectiveness in resolving thrombus within 30 days, though complications may still arise within this period

**Recommendation:** To conduct a large cohort study with a longer follow-up time to determine the outcome of cardiac thrombosis. Conduct a study using other imaging modalities such as TEE to get more comprehensive results.

## 78 Associations of Oral Hypoglycemic Use, Fruit Intake, and Diabetes Duration with Gastrointestinal Autonomic Dysfunction in Zanzibar

**Authors:** Hassan Thabit Haji<sup>1,2\*</sup>, Ashabilan Ebrahim<sup>1</sup>, Ahmed Gharib Khamis<sup>3</sup>, Ramla Muhidin Ali<sup>4</sup>, Reuben Mutagaywa<sup>1,5</sup>, Kaushik Ramaiya<sup>6</sup>, Fredrick L. Mashili<sup>1,7</sup>

**Background:** Gastrointestinal autonomic dysfunction (GAD) is a common complication of Type 2 Diabetes Mellitus (T2DM) that affects quality of life, leading to gastroparesis, constipation, and gastroesophageal reflux disease. However, its prevalence and risk factors remain underexplored, particularly in low-resource settings like Zanzibar. This study assessed the prevalence of GAD and its associations with pharmacological, clinical, and lifestyle factors among T2DM patients in Zanzibar using Composite Autonomic Symptom Score (COMPASS 31) questionnaire.

**Objective:** This study explores GAD prevalence, determinants, and its associations with lifestyle and pharmacological factors to inform prevention strategies in Zanzibar.

**Methods:** A cross-sectional study was conducted among 364 T2DM patients attending clinics in Zanzibar. Participants were recruited from local

healthcare facilities, and data were collected through structured interviews. The gastrointestinal subdomain of the COMPASS 31 questionnaire quantified symptoms of gastrointestinal dysfunction. Descriptive and inferential analyses were performed to explore prevalence and associated factors.

**Results:** Among 364 participants, 38.4% had GAD. Longer diabetes duration significantly increased GAD risk, particularly in those with >7 years of diabetes ( $p = 0.050$ ). Use of oral hypoglycemic agents was linked to lower GAD odds ( $p = 0.007$ ) compared to insulin alone. Additionally, consuming more than two portions of fruit daily reduced the risk ( $= 0.019$ ). Gender and BMI showed non-significant trends. These findings highlight modifiable factors that may guide GAD prevention and management strategies among T2DM patients in Zanzibar.

**Conclusion:** GAD is prevalent among T2DM patients in Zanzibar. Longer diabetes duration increases risk, while oral hypoglycemic use and higher fruit intake are protective. The association with oral agents may indicate early-stage disease, underscoring the value of timely diagnosis and intervention. These findings support integrated lifestyle and pharmacological strategies to reduce autonomic complications. Future longitudinal studies and clinical trials are recommended

**Recommendation:** Given the cross-sectional nature of this study, future longitudinal research including clinical trials are warranted to clarify causal relationships and explore intervention strategies for reducing the burden of GAD in

diabetic populations, particularly in low-resource settings.

## 79 Three-Year Post-Stroke Outcomes in Urban Northwestern Tanzania

**Authors:** Joshua Ngimbwa, Goodluck Nchasi, Innocent Kitandu Paul, Anna Kasala, Lilian Mwamba, Sospeter Berling, Matilda K. Basinda, Gladness Xavier, Benjamin Andrew, Akili Mawazo, Dorice Lucas, Karim Mahawish, Ladius Rudovick, Bahati Wajanga, Robert Peck, Sarah Shali Matuja.

**Background:** Stroke is one of the leading causes of death and disability globally. Despite advancements in acute stroke care, the long-term outcomes in Tanzania have not been extensively studied.

**Objective:** This study aimed to investigate the long-term post-stroke outcomes among adults with stroke admitted at a large tertiary hospital in

**Methods:** Adults ( $\geq 18$  years) with stroke registered at the Lake Zone Stroke Registry Study at Bugando Medical Centre between March 2020 and October 2021 were prospectively followed up to October 2024. Brain imaging was used to confirm and classify stroke, and the National Institutes of Health Stroke Scale was used to assess baseline stroke severity. We collected information on case fatality rates and factors associated with fatality.

**Results:** The study included 301 adults, with a mean age of  $65.5 \pm 14$  years, of whom 51% (153/301) were females and 68% (205/301) had ischemic strokes. The case fatality rate was

96.5% (220/228) at 3 years. Independent factors associated with fatality were severe stroke {aHR 7.9, 95% CI: 2.3-27.4,  $p=0.001$ }, lack of health insurance coverage {aHR 3.7, 95% CI: 1.9-6.8,  $p<0.001$ } and previous stroke {aHR 3.3, 95% CI: 1.3-8.3,  $p=0.01$ }. Attendance of follow-up clinics and physiotherapy was 28.6% (86/301) and 8.6% (26/301),

**Conclusion:** This study highlights the high long-term case fatality rates among adults with stroke in Northwestern Tanzania, with stroke severity, lack of health insurance, and previous strokes being key factors associated with fatality. Low adherence rates to secondary prevention underline the importance of strengthening post-stroke care.

**Recommendation:** There is a great need to strengthen post-stroke care systems, including health insurance coverage, to improve survival and quality of life.

## 80 Early Insights from a National Stroke Surveillance Initiative in a Resource-Limited Setting in Tanzania

**Authors:** Joshua Ngimbwa, Goodluck Nchasi, Innocent Kitandu Paul, Anna Kasala, Lilian Mwamba, Sospeter Berling, Matilda K. Basinda, Gladness Xavier, Benjamin Andrew, Akili Mawazo, Dorice Lucas, Karim Mahawish, Ladius Rudovick, Bahati Wajanga, Robert Peck, Sarah Shali Matuja.

**Background:** Stroke is a leading cause of death and disability worldwide, with low- and middle-income countries, particularly sub-Saharan Africa,

bearing the greatest burden. Tanzania has only one active stroke registry at one hospital health facility, limiting efforts to guide stroke care and policy.

**Objective:** To address this, we expanded this to a multi-centre study across eight large tertiary hospitals to generate baseline data supporting.

**Methods:** Between January and August 2024, we analysed de-identified data from the eight largest tertiary teaching hospitals in Tanzania, which included adults  $\geq 18$  years admitted with a World Health Organization clinical definition of stroke. We collected the following information: demographics, risk factors, brain imaging findings, and in-hospital mortality. Logistic regression was used to examine factors associated with mortality.

**Results:** A total of 1,000 patients were registered with a mean age of  $60.2 \pm 15$  years. The prevalence of all types of strokes was 1,318 per 100,000 adults, and the incidence of stroke was 1,178 per 100,000 adults. Most cases were in the 50–69-year age group, accounting for 46.3% (463/1000). Hypertension was present in 90.1% of patients (901/1000). Hemorrhagic and ischemic strokes accounted for 57.9% (579/1000) and 38.3% (383/1000) of cases, respectively; only 5% of ischemic strokes presented within 4.5 hours of

**Conclusion:** Stroke is a significant health burden in Tanzania, marked by high mortality and delayed hospital presentations. hemorrhagic stroke was the most common subtype of stroke and a high burden of hypertension being a major stroke risk factor for stroke.

**Recommendation:** Strengthening early detection and management of hypertension could significantly reduce stroke incidence. These findings reveal critical gaps in prevention and acute care and provide essential baseline data to inform the development of evidence-based strategies to improve outcomes.

## 81 Implementing Acute Stroke Services in sub-Saharan Africa

**Authors:** Sarah Shali Matuja, Azan Nyundo, Emmanuel Assey, Joel Bwelemo, Marieke Dekker, Sarah Urassa, Emmanuel Makarius, Peter Kishimbo, Yudathadei Baltazar, Baraka Alphonse, Joshua Ngimbwa, Philip Adebayo, Mary Libena, Theresia Lutufyo, Mohamed A Mnacho, Faraja S Chiwanga, Kigocha Okeng'o, Brighton Mushengezi, Getruda Josephat, Henrika Kimambo, Bahati Wajanga, Ladius Rudovick, Michael Nyagwasa, Akili Mawazo, Mohamed Manji, Bruno Mmbando, Anna Mushi, Omary Ubuguyu, Dennis Ngatemelela, Ashabilan Ebrahim, Paschal Ruggajo, Tumaini Nagu, William Matuja

**Background:** Stroke is a leading cause of morbidity and mortality globally, with Africa bearing a disproportionately high burden of poor outcomes. In sub-Saharan Africa, acute stroke care remains inconsistent, with organized stroke units being either absent or rarely available, contributing to the high stroke mortality rates in the region.

**Objective:** To address this, we expanded this to a multi-centre study across eight large tertiary hospitals to generate baseline data supporting.

**Methods:** TSP utilized a three-tier implementation approach to establish a more organized stroke care system in two large academic hospitals. Here, we detail the process of this initiative, which took place between August 2023 and August 2024. The three-tier approach included: 1) The establishment of stroke registries; 2) The training of healthcare workers (HCWs); and 3) The development of acute stroke protocols and establishment of stroke units at Muhimbili National Hospital-Mloganzila

**Results:** Two stroke registries with 460 adults were established. Hemorrhagic stroke was the most common (59% of cases), with hypertension being the main risk factor (81%). Over half of patients (58%) arrived late. Only 11% documented swallowing screenings, and 11% with intracerebral hemorrhage met blood pressure targets. In-hospital mortality was 27%. Evidence-based mentorship training significantly increased HCW participation (57% vs. 23%,  $p=0.002$ ). Stroke unit protocols were developed, leading to dedicated 8-bed units, but their full impact awaits assessment.

**Conclusion:** This was the first initiative to implement stroke services at two large tertiary healthcare centers in Tanzania. Our findings highlight the importance of multi-level stakeholder engagement through a 3-tier approach in countries starting to establish stroke services.

**Recommendation:** There is a need for ongoing quality-of-care monitoring and continuous efforts to sensitize both HCWs and the broader community.

## 82 Pharmacoepidemiology of Cardiovascular Medicines Used

### Among Inpatients at Tertiary Care Hospital in Tanzania from 2016-2022

**Authors:** Justin L. Vassco, Philip Sasi, Raphael Z. Sangeda, Naizihijwa Majani, Peter Richard Kisenge, Mohamed Janabi

**Affiliation:**

**Background:** Cardiovascular diseases (CVDs) are a major public health concern and a leading cause of hospital admissions and mortality worldwide. Monitoring the use of cardiovascular medicines is essential for guiding clinical practice, optimizing hospital resources, and improving patient care.

**Objective:** To assess patterns of cardiovascular medicine, use among inpatients at the Jakaya Kikwete Cardiac Institute in Tanzania

**Methods:** The study involved a retrospective analysis of prescription records of the cardiovascular drugs from the JKCI database over six fiscal years (2016/17–2021/22). The WHO's Defined Daily Dose (DDD) methodology was applied to quantify drug use per 100-bed days. Data were analyzed using descriptive statistics and non-parametric tests due to skewed distribution.

**Results:** Of 290,591 inpatient prescription entries, 224,290 were eligible for analysis after excluding

non-medicinal and topical agents. Cardiovascular medicines accounted for 99,634 prescriptions (44.4%), followed by drugs for the alimentary tract and metabolism (18.1%). Annual prescription volume increased steadily, peaking in 2021/22. The most frequently prescribed drugs were furosemide, spironolactone, and paracetamol. The top 12 medicines made up approximately 50% of all prescriptions.

**Conclusion:** There is a high utilization of cardiovascular medicines at JKCI, with diuretics and supportive agents leading in frequency. These findings can inform strategies to promote rational use, enhance treatment outcomes, and guide national procurement priorities.

**Recommendation:** Efforts should focus on improving adherence to treatment guidelines, especially for high-use medicines. Further studies are needed to explore factors influencing prescribing trends and evaluate interventions that ensure appropriate medicine use in cardiac care settings.

## 83 Prevalence and associated factors of rheumatic heart disease among secondary school adolescents in Karatu

**Authors:** Dr. Saad H Mkungura, Professor Pilly Chillo, Dr Jackson Mlay

**Background:** Rheumatic heart disease (RHD) is a preventable cause of acquired valvular heart disease caused by Group-A-Beta hemolytic streptococcus infection of the upper airways. The disease is endemic in sub-Saharan Africa, with most documented literature coming from primary

school children below 16 years of age. Therefore, less is known about the burden of RHD among older children and adolescents in secondary schools, who may have a higher prevalence of RHD.

**Objective:** To determine the prevalence and associated factors of RHD among secondary school students aged 14 to 20 years in Karatu district

**Methods:** A school-based cross-sectional study was conducted from August - October 2024. Multistage sampling was used to select participants. A structured questionnaire was used to record socio-demographic and clinical data, while echocardiography was used to determine presence of RHD according to the 2023 World Heart Federation criteria. Analysis was done using SPSS v27.

**Results:** Of the 4080 students, 1761(43.14%) were screened (males = 56.8%). In total, 121(6.87%) participants had a positive test. Confirmatory echocardiography was performed in 91 (5.17%) participants. Out of the 91 participants, RHD was confirmed in 34, giving the overall prevalence of RHD of 34/1761 (1.93%). RHD was higher in males 2.39% than in females 1.31%,  $p > 0.05$ . In multivariate analysis, RHD was independently associated with use of solid fuel (aOR 2.73) and history of URTI (aOR 2.64),  $p < 0.05$  for both.

**Conclusion:** The prevalence of RHD among secondary school adolescents in Karatu is 1.93%, like previous findings from the region. RHD was

independently associated with the use of solid fuel and a history of upper respiratory tract infection.

**Recommendation:** These findings suggest that socioeconomic and infectious risk factors play a significant role in the development of RHD. Improving living conditions and infection control might reduce the burden of the disease.

## 84 Investing in Tanzania's Future Health Workforce for Stigma-Free Care: Piloting Stigma-Reduction Training in Pre-Service Education

**Authors:** *Emilia Kitambala, Jessie Mbwambo, Linda Mlunde, Bonnie Betson, Rahma Kova, Neema Mkumbwa, Laura Nyblade, Sarah Roberts, James Mulilo, Mutale Chonta, Sue Clay, Emma Gyamera, William Osafo-Mahama, Priscilla Arthur-Baiden, Hephzibah Gyimah, Agnes Oppong-Baah; Frederick Nsatimba, Florence Animwaa Darko, Rosemary Sitsofe Ayebi-Arthur, Virginia Bond*

**Affiliation:**

**Background:** Stigma and discrimination in healthcare settings hinder HIV prevention and care in Tanzania. The expanded Total Facility Approach (eTFA) aims to reduce stigma among both pre-service and in-service healthcare providers through targeted training. To tackle stigma early, a pilot pre-service stigma-reduction curriculum was introduced at Muhimbili College of Health and Allied Sciences (MUCOHAS), targeting mid-level health and allied science students for long-term impact in care delivery.

**Project Plan:** The pre-service component of eTFA involved integrating a stigma-reduction curriculum into nine health training programs through a Ministry-led minor curriculum review. At MUCOHAS, the curriculum was piloted in five programs using a module-based, participatory approach across ten tutor-facilitated sessions. Tutors received prior training and rehearsal time. Sessions featured interactive methods, including role-plays, picture exercises, and group activities, with feedback collected from tutors, students, and observing experts.

**Progress:** Initial feedback showed promising changes in student attitudes. Many students demonstrated improved knowledge of HIV transmission, reduced fear-driven biases, and enhanced empathy toward people living with HIV and other marginalized groups. Tutors reported increased confidence and competence in delivering content, crediting the preparatory sessions for this growth. Observers noted high engagement and comprehension among students. Both students and tutors appreciated the interactive nature of the sessions, which fostered deeper understanding of stigma's roots and actionable strategies to address it in healthcare settings.

**Conclusion:** Integrating stigma-reduction content into pre-service health education is feasible and impactful. Engaging stakeholders and preparing tutors contributed to the effective delivery of the curriculum. Participatory, context-specific methods promoted student reflection and attitude shifts. The pilot highlights the importance of early,

structured interventions in shaping the attitudes of future healthcare providers and fostering inclusive, stigma-free care environments across healthcare systems.

**Recommendation:** Integrating stigma-reduction training into pre-service education is a scalable and sustainable strategy to promote compassionate, equitable healthcare. The experience at MUCOHAS demonstrates the feasibility of this approach and highlights the importance of preparation and participatory methods in transforming student attitudes early in their careers.

## 85 Maternal Self-Reported Pesticide Exposure and Child Neurodevelopment: Evidence from Small-Scale Horticultural Farming Communities

**Authors:** William Nelson Mwakalasya, Simon Henry Mamuya, Karim Manji, Bente Elisabeth Moen, Aiwerasia Vera Ngowi.

**Background:** With the global rise in pesticide use, particularly in Africa, pregnant women working in horticulture face a significant risk of pesticide exposure, which may adversely affect fetal neurodevelopment.

**Objective:** This study aims to investigate the relationship between self-reported maternal pesticide exposure during pregnancy and neurodevelopmental outcomes in their children, aged 4 to 6 years.

**Methodology:** A cross-sectional design was employed, involving 432 mother-child pairs from three horticulture-intensive regions in Tanzania. Maternal exposure to pesticides was assessed by interviewing the mothers, using self-reported questions about activities during pregnancy, including pesticide spraying, weeding, and handling contaminated clothing. Children's neurodevelopment was evaluated using the International Development and Early Learning Assessment (IDELA), which measures domains such as motor skills, literacy, numeracy, socioemotional development, and executive function.

**Results:** The children of mothers reporting engaging in pesticide spraying during pregnancy scored significantly lower in social-emotional ( $\beta = -6.813$ , 95% CI: -11.53 to -2.096,  $p = 0.005$ ) and executive function ( $\beta = -9.317$ , 95% CI: -16.007 to -2.627,  $p = 0.006$ ) domains, using linear regression analyses. Children exhibited the highest performance scores in fine and gross motor skills (mean =  $62.11 \pm 19.3$ ), while the lowest mean scores were in executive function ( $43.97 \pm 24.3$ ). The study also found that older children (aged 6 years) consistently outperformed younger children across all developmental domains.

**Conclusion and Recommendation:** These findings indicate a relationship between maternal pesticide exposure during pregnancy and adverse neurodevelopment outcomes of their children. However, as the pesticide exposure is based on self-reports, the results should be interpreted with

caution. There is a clear need for comprehensive risk assessments that include objective pesticide exposure measurements, particularly in horticulture settings where women of reproductive age constitute a significant portion of the workforce.

## 86 Exploring the relationship between workplace noise exposure and sleep in Tanzania

**Authors:** Witness J Axwesso, Gloria H Sakwari, Israel P Nyarubeli, Bente E. Moen, Ståle Pallesen and Simon H. Mamuya

**Background:** High noise levels are suspected to increase the risk of sleep disturbances among workers, but research findings so far are inconclusive. Although many countries operate with legal limits when it comes to occupational noise exposure, several developing countries have workplaces with very high noise levels.

**Objective:** This study aims to explore the relationship between workplace noise exposure and sleep in Tanzania

**Methods:** The study was cross-sectional and conducted among 181 small scale metal industrial workers (high noise-exposed workers) from the informal sector and 72 office cleaners (low noise-exposed workers) in Dar es Salaam, Tanzania. The high noise exposed workers had 97.9 dBA, and the low noise exposed workers had 76.6 dBA. An interview-based questionnaire was used to collect data on socio-demographic characteristics and sleep variables (rest periods, daytime naps and bedtime variations). The

Epworth Sleepiness Scale and the Bergen Insomnia Scale (BIS) were also administered. SPSS, version 23 was used for analysis, employing descriptive statistics, independent t-test, Pearson chi-square tests, and binary logistic regression analysis. Results: This study involved 253 male workers with mean age of  $34.2 \pm 9.1$  and  $25.6 \pm 6.2$ , with a response rate of 88.7% and 100% in high and low noise exposed workplaces, respectively. The mean BIS score for workers exposed to high noise levels was  $13.2 \pm 10.6$ , with 40.3% reporting insomnia and 39.8% with excessive daytime sleepiness. Low noise-exposed workers had a mean BIS score of  $15.4 \pm 10.2$  with 51.4% reporting insomnia and 41.7% with excessive daytime sleepiness. The crude odds ratio of having insomnia when exposed to high noise was 1.56 (95% CI = 0.90-2.718,  $P=0.111$ ). Similarly, the crude odds ratio of having excessive daytime sleepiness among the high noise-exposed workers was 1.08 (95% CI = 0.62-1.88,  $P=0.782$ ). Additionally, insomnia and daytime sleepiness among the high noise-exposed workers were not different from the low noise-exposed workers when adjusting for age, marital status, education, smoking, alcohol, coffee consumption and daytime rest periods.

**Conclusion:** No differences between daytime high noise-exposed workers and low noise-exposed workers were found related to self-reported sleep variables.

## 87

## Stigma among health care workers towards people who use drugs in Dar es Salaam, Tanzania

**Authors:** Emilia Kitambala, Linda Mlunde, Sarah Roberts, Alan Lwanga, Nkatya Kasese, Ab Schaap, Jessie Mbwambo, Bonny Betson, Emma Gyamera, William Osafo-Mahama, Phillimon Ndubani, Musonda Simwinda, Laura Nyblade, Virginia Bond

**Background:** People who use drugs (PWUD) often experience stigma due to their drug use, even within health facilities from health staff. Drug use stigma is one of the barriers for HIV prevention and treatment services. Limited data exists on drug use stigma among health facilities' staff. We describe attitudes towards drug use among clinical and non-clinical staff in two health facilities in Dar es Salaam, Tanzania to drug use.

**Objective:** To evaluate the Total Facility Approach (TFA), an intervention to address HIV stigma and drug use stigma

**Methods:** We conducted a baseline quantitative survey from 19th November 2024 to 11th December 2024 in two health facilities in Dar es Salaam, Tanzania. We included 600 health facility staff (clinical: 451; non-clinical staff; 149). We assessed the feelings of health facility staff about interacting with PWUD in different types of situations. We conducted descriptive analyses to summarize the participants' responses.

**Results:** About 38% of all staff (clinical: 40.1%; non-clinical: 30.2%) said they would probably feel upset or disturbed being in the same room with someone who uses drugs. One third of all staff

(clinical: 28.25%; non-clinical: 39.6%) agreed that they have negative reactions towards PWUD despite their professional beliefs. About 12% of all staff (clinical: 13.7%; non-clinical: 6.7%) said they would probably be afraid to have a conversation with someone who uses drugs.

**Conclusion:** These results show a high level of drug use stigma exists among health facilities staff. The results underscore the need to implement an intervention for this population to reduce their negative attitudes towards PWUD and any subsequent effects on HIV service access.

**Recommendation:** It is crucial that implementation of the Total Facility Approach intervention incorporate activities that address the negative attitudes of health facilities staff towards PWUD.

## 88 Improving HIV Care and Reducing Stigma and Discrimination: A Qualitative Assessment Using Trained Expert Clients

**Authors:** Graca Marwerwe Linda Mlunde, Ariana W. K. Katz, Jessie Mbwambo, Virginia Bond, Bonny Betson, Nobutu Muttu, Emmanuel Mankattah, Francisca Dambasea, Laura Nyblade, Sarah T. Roberts, Emma Gyamera, William Osafo-Mahama

**Background:** This study examines HIV-related stigma and healthcare access among people who use drugs (PWUD) and young adults (18–24) in Tanzania. Using the Trained Expert Client (TEC) approach, it assesses healthcare interactions,

facility procedures, and stigma dynamics before and after the Total Facility Approach (TFA) intervention at Muhimbili National Hospital and Mwananyamala Regional Referral Hospital, identifying service gaps and improvements in patient-centered care and stigma reduction for marginalized groups.

**Objective:** Assessing healthcare quality, HIV-related stigma, and client experiences pre/post-TFA using Trained Expert Clients in Tanzania to improve HIV care

**Methods:** This study uses the Trained Expert Client (TEC) approach to assess healthcare worker-client interactions, service quality, and stigma dynamics before and after the Total Facility Approach (TFA) intervention in Tanzania. Conducted at Muhimbili National Hospital and Mwananyamala Regional Referral Hospital, it involves stratified purposeful sampling of PWUD and AYAs. Observational checklists and in-depth interviews inform NVIVO-coded thematic analysis, highlighting barriers, improvements, and recommendations for stigma-free, patient-centered HIV care.

**Results:** Findings demonstrate strong healthcare service efficiency with minimal stigma and upheld confidentiality across service points. Patient trust and engagement were enhanced through peer education and professional interactions, though administrative inefficiencies in biometric registration and record-keeping delays affected service flow. Waiting times were manageable, yet workflow inconsistencies created barriers to timely access.

**Conclusion:** The TEC methodology effectively identified service inefficiencies, monitored stigma trends, and strengthened patient-provider interactions. Key lessons include the need for digital records to streamline patient data, enhanced training for healthcare workers to improve communication and confidentiality, and peer education as a sustainable strategy for stigma reduction, fostering equitable, patient-centered HIV care.

**Recommendation:** To enhance healthcare efficiency and equitable HIV care, key recommendations include digitizing health records to reduce delays, strengthening healthcare worker training in confidentiality and stigma reduction, expanding peer education and anti-stigma campaigns to foster inclusion, and optimizing biometric registration and service workflows to improve accessibility and patient-centered care. These measures ensure seamless engagement and sustained healthcare improvements.

## 89 HIV and outcomes of cervical cancer screening at a tertiary facility in the HAART era

**Authors:** *Lucylight E. Mallya, Deogratias B. Mtei, Chacha J. Mwita, Khadija Msami, Charles Wood, Julius Mwaiselage, Salum J. Lidenge*

**Background:** Since 2016, the WHO adopted a test and treat approach for HIV moving away from the threshold-based approach for HAART initiation. Studies have highlighted a reduction in risk among people living with HIV for developing

HIV defining malignancies and notably an increase of non-HIV defining malignancies. A local study in Tanzania demonstrated women living with HIV had similar treatment outcomes as those without HIV among patients with cervical cancer at the ORCI.

**Objective:** To determine the impact of HIV on outcomes of Cervical cancer screening in the HAART era among WLHIV in Tanzania.

**Methods:** Retrospective data analysis from the cervical cancer screening registry at the Ocean Road Cancer Institute for the year 2021. Variables collected included patient's age, region of residence, HIV status, purpose of screening visit, screening technique and outcomes. The impact of HIV on screening outcomes was assessed by univariate and multivariate analysis of HIV and participant characteristics against screening outcomes. A p-value of <0.05 considered significant.

**Results:** A total of 2,139 women sought cervical cancer screening services. Of the women screened, 326 (15.2%) were women living with HIV (WLHIV) and 27 (1.3%) had an undocumented HIV status. Among the 2,139 screened women, VIA positivity was 6% while 15% had cervical lesions suggestive of malignancy. Both VIA positivity and presentation with lesions suspected of malignancy were associated with HIV status (OR=5.301,95%CI=3.442-8.164, p-value <0.01). Among those with cervical lesions suggestive of malignancy, 78.61% were confirmed to have cancerous histology results.

**Conclusion:** In the year 2021, in the era of test and treat for HIV, the prevalence of HIV among women utilizing cervical cancer screening services was high at the ORCI. Living with HIV was a significant risk factor for VIA positivity and suspicious malignant cervical lesions among women who utilized cervical cancer screening services at the ORCI.

**Recommendation:** Further strengthening of HIV and cervical cancer screening programs in the country. A follow-up study to assess HAART usage, HIV viral suppression and immune response among women living with HIV against the risk for VIA positivity.

## 90 Clinical profile and overall survival among pediatric oncology patients treated with metronomic chemotherapy at Muhimbili National Hospital.

**Authors:** *Agapith Jonas Kimaro, Christina Vallen Malichelewe, Lulu Chirande*

**Affiliation:**

**Background:** Pediatric malignancies are uncommon but contribute to the morbidity and mortality of children globally. Children 10 years old are commonly affected, with more males being affected. Different factors influence the survival of pediatric cancer patients. In low-middle-income countries, challenges include delays in treatment, lack of specialized centers, low number of oncologists, cost, and treatment complications. Metronomic chemotherapy emerges as a suitable protocol for the palliation of advanced malignancy in children.

**Objective:** To determine the clinical profile and overall survival among pediatric oncology patients treated with Metronomic Chemotherapy at Muhimbili National Hospital

**Methods:** The study was a retrospective hospital-based cohort study of pediatric cancer patients treated with metronomic chemotherapy for various cancers at the MNH during the study period

**Results:** Among the researched cohort, the low education level of parents and caregivers, lack of health insurance coverage, and advanced disease at presentation, as well as the central nervous system malignancies associated with poor prognosis at presentation, as well as A higher percentage of patients who were palliated through metronomic chemotherapy. Also, metronomic chemotherapy improves significantly overall survival in the practice cohort.

**Conclusion:** The importance of including metronomic chemotherapy as the palliation basis in advanced childhood malignancy in improving the overall survival of pediatric cancer patients.

**Recommendation:** Quick referral system and improved cancer diagnosis should be emphasized at primary and secondary health care bases to pick up early stage of childhood malignancies, also the emphasis on the use of metronomic chemotherapy among practicing physicians, and oncologists as the improved overall survival in patients treated with this modality.

## 91 Response To Endocrine Therapy and Predictive Factors Among Hormonal Receptor Positive Breast Cancer Patients.

**Authors:** *Shaban Juma Shaban, Skyna M. Bendera, Furahini Yoramu, Sikudhani Muya, Nazima Dharsee.*

**Background:** Hormonal receptor-positive breast cancer, defined by estrogen and/or progesterone receptor positivity via immunohistochemistry, accounts for 60–70% of cases. Estrogen drives this subtype, making hormone-blocking therapies key. While endocrine treatments improve survival, many patients still experience recurrence or progression. More women die from this subtype than others, highlighting endocrine resistance as a major challenge in effective management.

**Objective:** To determine the 3-year overall survival, endocrine therapy resistance, and their predictive factors for hormonal receptor-positive breast cancer patients.

**Methods:** This retrospective cohort study at ORCI reviewed files of patients diagnosed with hormonal receptor-positive breast cancer from January 2019 to December 2021. Categorical data were summarized using frequencies and proportions; chi-square tests compared proportions. Kaplan-Meier curves assessed 3-year overall survival and endocrine therapy resistance. Predictive factors were analyzed using log-rank tests and Cox regression. Statistical significance was defined as a P-value less than 0.05.

**Results:** Overall, most of the patients who participated were above 40 years old (84.7%). The endocrine resistance has been found to be 37.4%, and the 3-year overall survival is 75%. Different factors, including BMI, education level, age, delay in initiating endocrine therapy, duration of endocrine therapy use, marital status, and ER/PR status, have been observed to predict response to adjuvant endocrine therapy. These are preliminary results; we are completing the analysis to come up with results.

**Conclusion:** We have observed a delay in the initiation of adjuvant endocrine therapy, which is an important part of breast cancer treatment in hormone receptor-positive patients. Alongside this, other factors are attributed, including the duration of use of endocrine therapy, BMI, education level, marital status, age, and ER/PR status. We have also noted poor data recording and documentation.

**Recommendation:** We recommend a timely initiation of adjuvant endocrine therapy to improve response in hormonal receptor-positive breast cancer patients. We also recommend the incorporation of management of modifiable predictive factors, such as BMI and duration of use of endocrine therapy.

## 92 Gestational Breast Cancer Challenges in Diagnosis and

### Management: A Case Series

**Authors:** *Shaban Juma Shaban, Skyna M. Bendera, Alfred Chibwae, Zephania D. P. Gega, Magreth Paul Moshi, Shafii Samiji Ramadhani,*

*Angela Mlole, Latifa Rajab Abdallah, David H. Mvunta, Emmanuel L. Lugina.*

**Background:** Gestational breast cancer, occurring during pregnancy, lactation, or within a year postpartum, is rare but clinically significant. This case series from Ocean Road Cancer Institute in Dar es Salaam, Tanzania, presents a case highlighting diagnostic challenges and the need to balance maternal health with fetal safety to ensure the best outcome for both mother and child.

**Objective:** To highlight diagnostic challenges and the need to balance maternal health with fetal safety to ensure the best outcome.

**Methods:** This is a descriptive analytical study.

**Results:** We are presenting 2 cases of gestational breast cancer. A 33-year-old female of African origin, G3P2L2, who was diagnosed with left breast medullary carcinoma, ER/PR- negative, HER2-positive at 13 weeks gestational age, and a 36-year-old female of African origin, G5P4L4, who was diagnosed with de novo metastatic bilateral breast cancer (right breast adenoid cystic carcinoma and left breast lobular carcinoma) at 16 weeks' gestation age.

**Conclusion:** The diagnosis and management of gestational breast cancer is challenging, and a balance between the mother's and fetal safety is essential. This study pinpoints the importance of a high index of suspicion, the role of a multidisciplinary team, and informed patient decisions in the management of gestational breast cancer.

**Recommendation:** We recommend the involvement of a multidisciplinary team in the management of gestational breast cancer. High index of suspicion and proper timing of treatment initiation.

## 93 Determinants of CD4 recovery among adults on second-line art in

**Tanzania: insights from a national cohort**

**Authors:** Glory M Temu, Joan Rugemalila, Revocatus L Baraka, Samuel Masasi, Tosi M Mwakyandile, Rajabu H Mnkungwe, Philip Sasi, Werner M Maokola, Sabina F Mugusi.

**Background:** Second-line antiretroviral therapy (ART) is crucial for people living with HIV (PLHIV) experiencing first-line treatment failure, yet immune recovery remains poorly understood in Tanzania. Despite high ART coverage, 40% of adults on second-line therapy have persistently low CD4 counts, increasing morbidity and mortality. This study addresses these gaps by identifying recovery determinants, informing clinical strategies, and optimizing treatment outcomes for sustainable HIV management in resource-limited settings.

**Objective:** To quantify CD4 changes among adults on second-line ART in Tanzania over six months and identifies key immune recovery determinants

**Methods:** Retrospective cross-sectional study that analyzed data from Tanzania's CTC3 database, including adults ( $\geq 18$  years) who switched to second-line ART between 2018 to 2022. Key variables included CD4 recovery

defined as a  $\geq 50\%$  increase in cell count six months post-switch, virologic suppression, co-infections, ART duration, facility type, sex, and regions.

**Results:** Complete data from 14,042 participants was used, 33.53% achieved CD4 recovery six months after switching regimens. That varied significantly ( $p < 0.001$ ) for facility type and ownership and ( $p = 0.001$ ) for WHO clinical stage and geographic zone. Factors associated with good immune recovery include marital status, facility type and WHO clinical stage ( $p < 0.05$ ). Non-recovery was highest in faith-based facilities (80.9%) and the Western Zone (71.2%). ART duration, viral load at second-line switch, age and sex showed no significant effects.

**Conclusion:** CD4 recovery among Tanzanian adults on second-line ART remains inadequate, with two-thirds failing to achieve immune restoration. Recovery disparities by facility type and geographic zone underscore systemic inequities in care quality and access. The lack of association with clinical predictors suggests that structural factors, rather than patient-level characteristics, may play a greater role demanding targeted health-system interventions to improve outcomes.

**Recommendation:** Targeted health system interventions are urgently needed to address facility- and region-specific disparities in CD4 recovery. Strengthening dispensary capacity, standardizing ART monitoring protocols, and enhancing adherence support can improve outcomes. Policy efforts should reallocate

resources to high-burden zones. Future research must focus on long-term immune recovery patterns and evaluate second-line ART optimization strategies tailored to resource-constrained environments.

**94 Fungal sensitization and nasal polyposis among patients with chronic rhinosinusitis attending otorhinolaryngology clinic at Muhimbili**

**Authors:** Fatuma Kombo Juma

**Background:** Chronic Rhinosinusitis is a prevalent illness with diverse etiologies. Emerging evidence implicates fungal sensitization as a major contributor to disease severity, recurrence, and poor treatment outcomes, particularly in nasal polyposis. Fungi distribution is diverse and influenced by climate and geographical factors, favoring warm and humid areas.

**Objective:** To assess pattern of fungal sensitization among patients with Chronic Rhinosinusitis with or without nasal polyps attending Muhimbili National Hospital

**Methods:** A hospital-based cross-sectional study design, conducted over six months at the Muhimbili National Hospital. Fifty-nine participants over 18 years diagnosed with Chronic Rhinosinusitis were enrolled. Participants underwent Skin Prick Test to five fungal allergens: (*Alternaria alternata*, *Aspergillus fumigatus*, *Cladosporium herbarum*, *Penicillium*, and *Candida albicans*) and positive (histamine) and negative (saline) controls. Total serum IgE titers

were also measured. Data was collected in a self-designed data sheet and analysed in SPSS v. 24.

**Results:** Of the 59 participants with CRS, 61% were males, aged 18- 77 years. 69.5% showed sensitization to at least one fungus. *Alternaria alternata* (58.5%) and *Aspergillus fumigatus* (56.5%) were the most prevalent. Fungal sensitization was significantly higher in those >50 years (p=0.044). While 71.4% with nasal polyposis were sensitized, no significant association was found between nasal polyposis and age, sex, and fungal sensitization.

**Conclusion:** A high prevalence of fungal sensitization was observed in CRS patients, particularly those over 50 years. These findings highlight the role of fungal allergens in the pathogenesis of CRS and support incorporating fungal allergen testing in routine evaluation, especially for older patients.

**Recommendation:** Routine screening of fungal allergens in older CRS patients, further longitudinal studies with a larger sample size, the use of specific tests to validate findings, and to explore targeted interventions such as immunotherapy.

**95 A silent killer: Understanding of intensive care unit-acquired delirium, management and prevention in patients admitted at Muhimbili**

**Authors:** *Oluoch Moses Otieno, Masunga K. Iseselo, Zainab K Manji*

**Background:** ICU-acquired delirium (ICU-AD) is a frequent, often under-recognised complication

in critically ill patients, significantly worsening outcomes like being an independent cause of death, resource exploitation and poor prognosis. Healthcare workers, specifically Nurses, play a central role in recognising, managing and preventing this condition. However, in Low-income countries like Tanzania, little is known about nurses' capacity in this area. Understanding their perspectives is crucial to improving ICU care quality and safety.

**Objective:** Exploring nurses' understanding, management and preventive strategies for ICU-acquired delirium at Muhimbili National Hospital

**Methods:** A descriptive qualitative design was used. Fifteen ICU registered nurses from Surgical-Medical department were selected based on purposive sampling. Data were collected through semi-structured face-to-face interviews and analyzed thematically using NVivo. Audio recordings and field notes ensured data accuracy. The study explored Nurses perspectives, clinical practices and institutional challenges in managing ICU-AD.

**Results:** ICU Registered Nurses demonstrated awareness of ICU-AD symptoms, attributing causes to medication, specifically sedatives. Environmental factors such as poor ICU infrastructure and illness severity. Preventive strategies included minimising noise, ensuring rest and early mobilisation. Challenges included a lack of formal guidelines, inadequate training, inadequate follow-up of this condition by the department leaders and equipment shortages. Despite these, Nurses collaborated well with

physicians and improvised practices based on experience and peer learning. A systematic Approach to this condition should be adapted

**Conclusion:** ICU Registered nurses at MNH show practical awareness of ICU-AD despite limited formal support. Strengthening training, developing SOPs and ensuring types of equipment favourable to the ICU environment, such as noise cancellations, appropriate restraint needs, are among many needs but essential steps to improve early recognition and care. Nurse-led strategies, if supported institutionally, can reduce ICU-AD incidence and improve outcomes.

**Recommendation:** Regular in-service training on ICU-acquired delirium, development and dissemination of standard operating procedures (SOPs), incorporating ICU-AD practices in routine nursing practices, and improved documentation practices are the key to early recognition, management and prevention of ICU-AD. Strengthening interdisciplinary collaboration and ensuring adequate staffing and medical supplies are essential. Institutional support for nurse-led strategies can improve outcomes and reduce these complications.

## 96 Prevalence and factors associated with depressive symptoms among adults with glaucoma at Muhimbili National Hospital

**Authors:** *Jawaher S. Rashid, Celina Mhina, Said Kuganda*

**Background:** Glaucoma is identified as one of the leading causes of blindness worldwide. Its chronic

nature and the potential for irreversible vision loss contribute to significant distress among affected individuals. Studies estimate that around 25% of individuals with glaucoma experience depression, negatively impacting their quality of life and treatment adherence. However, data on the prevalence of depression among people with glaucoma in Tanzania is limited.

**Objective:** To determine the prevalence and factors associated with depressive symptoms among adults with glaucoma at Muhimbili National Hospital.

**Methods:** A cross-sectional study involving 297 adults with glaucoma, recruited consecutively from the ophthalmology clinic at Muhimbili National Hospital. Socio-demographic and clinical characteristics were collected using questionnaires and from medical records. Patient Health Questionnaire-9, and Oslo Social Support Scale were used to assess depressive symptoms and social support, respectively. Bivariate and multivariable analyses were used to identify factors associated with probable depression. Factors with a p-value  $\leq 0.05$  were considered statistically significant.

**Results:** The response rate was 95.2%, and the mean age of participants was 63.6 years (SD  $\pm$  12.8). The prevalence of probable depression was 11.1%, with 11.8% scoring mild, 8.7% moderate, 2.4% moderately severe, and none scoring severe depressive symptoms. Living with family members (OR 0.06; CI: 0.01–0.99; P=0.049), having moderate social support (OR 0.07; CI: 0.03–0.043; P=0.001), and having strong social

support (OR 0.04; CI: 0.02–0.23; P $\leq$ 0.001) were significantly associated with a lower likelihood of probable depression.

**Conclusion:** Approximately 1 in 10 individuals with glaucoma may experience depression. Living with family and having good social support were identified as protective factors against depression in people with glaucoma. These findings underscore the need to integrate mental health services and addressing psychosocial support within ophthalmology clinics.

**Recommendation:** Ophthalmologists and primary care providers to adopt validated tools to screen for depression in individuals with glaucoma and refer to mental health services. Public health stakeholders to promote social support through educational initiatives. Larger longitudinal studies using age-appropriate tools are needed to better explore the mental health needs of people living with glaucoma.

## Subtheme: Communicable Diseases and Antimicrobial Resistance

### 97 Effect of the incubation time on blood culture results and bacterial pathogens causing bloodstream infections

**Authors:** James Thomas, Albert Wasira, Darus Maarafu, Faustin Igogo, Eunice Emmanuel, Roza Ernest, Martha F. Mushi, and Stephen E. Mshana

**Background:** one hour delay in initiating appropriate antimicrobial treatment increases the mortality rate of patients with bloodstream

infections by 2%. This highlights the risk associated with manual blood culture methods, as they tend to have long turnaround time, with an initial incubation period of 18–24 hours, leading to delays in obtaining diagnostic results.

**Objective:** Determined the impact of incubation time on blood culture results and patterns of pathogens causing bloodstream infections (BSIs) in children.

**Methods:** A hospital-based, descriptive cross-sectional study was conducted at Sekou Toure RRH from May to July 2024. The conventional blood culture method, using in-house prepared brain heart infusion broth with slight modifications on the initial time of the blind subculture (at 8, 24 and 120 hrs) was done to isolate the pathogens causing BSIs. Descriptive data analysis was performed using STATA software version 15.

**Results:** The study enrolled 302 children with clinical diagnosis of BSIs. Microbiologically confirmed BSIs were detected in 90 (29.8%) children. Among them, 51.1% (46/90) were detected through blind subculture after 8 h of initial incubation. Additionally, 31 (34.4%) and 13 (14.4%) were detected after 24 h and 120 h of incubation, respectively. Commonly isolated pathogens were *Klebsiella pneumoniae* (25.6%, 23/90) and *Staphylococcus aureus* (24.4%, 22/90), with 45.5% (10/22) being MRSA. Gram-negative bacteria were (71.1%, 64/90), with 62.5% (40/64) being 3rd Ceph-R.

**Conclusion:** Blind subculture after 8 hours of initial incubation correctly detected more than half of the children with microbiologically confirmed BSIs. Incorporating a blind subculture on

MacConkey agar supplemented with 2 µg ml<sup>-1</sup> cefotaxime (MCA-C) after 8 h of incubation resulted in the correct treatment of half of the children with BSIs caused by GNB within 24 hours.

**Recommendation:** In areas with a high prevalence of 3GC resistance, blind subculture within 8 hours should include MC-C for appropriate treatment within 24 h.

## 98 Understanding AMR and IPC Practices in Katavi, Tanzania: Major Barriers, Impactful Interventions, and Behavior Change

**Authors:** Mwinyi Shawwaly Omary

**Background:** Antimicrobial resistance (AMR) poses a critical global health threat, particularly in resource-limited settings such as Tanzania. Inadequate knowledge, scarce resources, and deficient infection prevention and control (IPC) practices exacerbate AMR challenges. By illuminating the prevailing challenges and deficiencies, we can propose effective, targeted interventions that improve IPC practices and counteract the spread of infections.

**Objective:** To assess AMR awareness, IPC practices, and barriers among healthcare workers and community members, guiding targeted intervention strategies.

**Methods:** A cross-sectional study was conducted in Katavi involving 410 participants equally divided between healthcare workers and community members. Using a stratified sampling approach, data were collected in Swahili via a

structured online questionnaire hosted on Google Forms. The survey captured demographic information, AMR awareness, IPC practices, perceived barriers, and behavioral changes following interventions. Informed consent was obtained from participants, and data were analyzed using statistical methods to identify trends, correlations, and differences across groups.

**Results:** Results revealed that 61% of healthcare workers were aware of AMR, compared to 34% of community members. Among participants aged 31–45, awareness reached 78% for healthcare workers and 71% for community respondents. Females reported higher IPC compliance (71% versus 60% in healthcare workers and 64% versus 41% among community members) with tertiary-educated individuals achieving 90% compliance. Limited resources and resistance to change were major barriers. After interventions, hand hygiene and antimicrobial use practices improved markedly, increasing by approximately 10% overall.

**Conclusion:** There were notable differences in AMR awareness and IPC practices between healthcare workers and community members. The findings emphasize the necessity for targeted interventions to overcome barriers such as resource limitations and resistance to change. Strengthening education and infrastructure is essential, as improved compliance can reduce infection rates and mitigate the public health impact of antimicrobial resistance in resource-constrained settings.

**Recommendation:** Investment in education, training, and infrastructure to address AMR and IPC challenges is required. Policymakers and health administrators should implement targeted interventions that prioritize resource allocation and behavior change strategies for both healthcare workers and community members. Collaborative efforts with local organizations will enhance intervention sustainability, ensuring improved infection control practices and a reduction in antimicrobial resistance over time.

## 99 Rifampicin-mono-resistant Tuberculosis: Exploring the Interplay with HIV and Mortality Using Patient-level Data

**Authors:** Anna L. Jazza, Eskedar Getie Mekonnen, Helen Cox, Annelies Van Rie

**Background:** Multidrug-resistant or rifampicin-resistant tuberculosis (MDR/RR-TB) poses a significant global public health challenge. While most people with RR-TB have MDR-TB (resistance to isoniazid and rifampicin), rifampicin mono-resistant tuberculosis (RmR-TB, rifampicin resistance, isoniazid susceptibility) is prevalent in certain regions.

**Objective:** To compare mortality between patients with RmR-TB and MDR-TB and assess potential effect modification by HIV status during treatment.

**Methods:** This study involved a cross-sectional analysis of secondary data involving 16,651 individuals with confirmed drug-resistant tuberculosis, all of whom had drug-susceptibility test results for at least rifampicin, isoniazid, and

fluoroquinolones and had initiated TB treatment. Mixed-effects logistic regression was used to estimate mortality during two-year treatment, adjusting for age, sex, history of TB, disease site, and HIV status. Stratified analyses explored effect modification by HIV status.

**Results:** Among 16,568 patients, 2878 (17.4%) were classified as having RmR-TB, 11,236 (67.8%) as MDR-TB, 2384 (14.4%) as pre-XDR-TB, and 70 (0.4%) as XDR-TB. During the first four months of treatment, the cumulative incidence of mortality was higher among patients with RmR-TB compared to those with MDR-TB, pre-XDR-TB and XDR-TB. Patients with RmR-TB had 14% higher odds of mortality compared to patients with MDR-TB (32.2% vs 23.7%; aOR 1.14; 95% CI: 1.02–1.27). HIV did not modify the effect (p-value interaction 0.362).

**Conclusion:** Using a large patient-level data, this study confirmed the counterintuitive finding of prior smaller studies that the odds of mortality are higher among patients with RmR-TB compared to MDR-TB. While HIV status was not an effect modifier, the higher odds of mortality were only observed among RmR TB patients living with HIV.

**Recommendation:** Further research is needed to elucidate the biological and social determinants contributing to the higher burden of RmR-TB among those with HIV co-infection and the reason for high mortality. Key areas for investigation include the role of immune suppression, drug resistance patterns, and the impact of comorbidities on treatment outcomes.

Furthermore, strengthening surveillance systems to monitor RmR-TB trends and outcomes.

## 100 "Why do women at high-risk of HIV in Tanzania discontinue oral PrEP?" A mixed-methods study

**Authors:** Wigilya P. Mikomangwa, Emmy Metta, Kåre Moen, Elia J. Mmbaga, Melkizedeck T. Leshabari, Stephen M. Kibusi, Christopher R. Sudfeld, Muhammad Bakari, Appolinary A. R. Kamuhabwa, Gideon Kwesigabo

**Background:** High discontinuation from HIV pre-exposure prophylaxis (PrEP) among at-risk populations undermines its effectiveness in preventing HIV infection. However, evidence is scarce on the reasons attributed to a high rate of discontinuation among women at high risk of HIV, such as female sex workers (FSWs) in sub-Saharan Africa.

**Objective:** The study aimed to explore reasons for PrEP discontinuation among FSWs in Tanzania.

**Methods:** We conducted a convergent mixed-method study among FSWs recruited by respondent-driven sampling from 2022 to June 2023 in Tanga. The quantitative data on PrEP use and reasons for discontinuation were collected at months 1, 6, and 12. In-depth interviews were conducted with purposely sampled FSWs who discontinued PrEP use. Separate quantitative and thematic analyses (interpreted using the Health Belief Model) were conducted, and the results were triangulated to generate meta-themes.

**Results:** We enrolled 313 FSWs, with a median age of 27 (IQR: 23-32) years. At 12 months, 67.4% (95%CI: 60.2-74.0) had stopped PrEP in the last  $\geq 3$  months. Self-perceived “medium” to “high” HIV risk was associated with a 20% reduced risk of stopping PrEP use (aRR 0.8, 95% CI: 0.783-0.896). Key reasons for discontinuing PrEP were medical and pharmacological challenges, perceived harmful social norms and societal pressure, perceived unfavourable pill characteristics and dosing schedule, low perceived risk and benefit, and low self-efficacy.

**Conclusion:** Female sex workers discontinued PrEP care due to complex interactions of clinical and negative experiences, self-perceived low risk of HIV, changing priorities, low self-efficacy, and social pressure.

**Recommendation:** We recommend a multiple-component intervention strategy to support PrEP retention, such as the combination of behavioural change strategies with education and awareness campaigns or psychological and social support

## 101 Antibiotic Resistance Patterns in Sepsis Patients from Regency Medical Centre in Dar Es Salaam

**Authors:** Jackline Katabaro, Abdilahi H Kiula, Rose Masalu, Cyprian Beda Mpinda

**Background:** Sepsis is a life-threatening condition caused by a systemic inflammatory response to infection. It may occur due to pathogens entering the bloodstream, causing sepsis, which can later advance to septic shock and organ failure. Mortality and morbidity due to sepsis are on the rise, especially due to the

emergence of antibiotic-resistant bacteria. The emergence of multidrug-resistant bacteria has also posed a great challenge.

**Objective:** The study aimed to determine the causative bacteria of sepsis and their antibiotic resistance patterns in a tertiary care hospital.

**Methods:** Fifty-one (51) pure culture isolates were collected from a hospital laboratory from May to September 2024. The bacteria were identified morphologically and using an automated machine (VITEK® 2 COMPACT). An antibiotic susceptibility test was later performed using the Kirby-Bauer method using a panel of 16 antibiotics. Data was analysed using the latest version of WHONET software.

**Results:** Most isolates were *Escherichia coli* (52.9%) and *Pseudomonas aeruginosa* (19.6%). Other isolates were *Enterococcus faecalis*, *Enterobacter species*, *Klebsiella pneumoniae ss pneumoniae*, *Proteus mirabilis*, *Staphylococcus aureus*, coagulase-negative *Staphylococcus aureus*, and *Staphylococcus epidermidis*. The isolates were highly resistant to cefotaxime (100%), ampicillin (79.6%), erythromycin (77.8%), nalidixic acid (77.8%), and amoxicillin/clavulanic acid (70.7%). The bacteria showed varied degrees of resistance to other antibiotics. 33.3% of all isolates were multidrug-resistant, with *E. coli* accounting for 25% of all MDR isolates.

**Conclusion:** The study shows that some antibiotics are still very effective, especially reserved ones (meropenem, chloramphenicol, and vancomycin). The study also indicates increased resistance to cefotaxime, ampicillin,

amoxicillin/clavulanic acid, nalidixic acid, and erythromycin. These findings underscore the urgent need for targeted antibiotic stewardship and the development of localised antibiograms to improve sepsis management.

**Recommendation:** More studies on sepsis and antibiotic resistance patterns should be conducted, covering different geographical areas. Local antibiograms should be developed for sepsis management. Proper strategies should be put in place to control antibiotic use and misuse.

## 102 Resistance Profiles of Uropathogenic *Escherichia coli* at Maweni Regional Referral Hospital, Tanzania

**Authors:** Hassan Mbaraka Ruanda

**Background:** Antimicrobial resistance (AMR) remains a growing global health concern, particularly in low- and middle-income countries where surveillance and antibiotic regulation are limited. *Escherichia coli*, especially uropathogenic strains (UPEC), is a predominant cause of urinary tract infections (UTIs) and has shown increasing resistance to commonly prescribed antimicrobials. Understanding resistance trends is critical for guiding treatment and antimicrobial stewardship.

**Objective:** To assess the antimicrobial resistance profiles of UPEC isolated from urine samples at Maweni Regional Referral Hospital (MRRH), Kigoma, Tanzania.

**Methods:** A cross-sectional laboratory-based study was conducted from January to December 2024. Midstream urine samples were aseptically

collected from patients with symptoms of urinary tract infections. *Escherichia coli* isolates were identified using standard microbiological and biochemical procedures. Antimicrobial susceptibility testing was performed using the Kirby-Bauer disk diffusion method in line with CLSI guidelines.

**Results:** A total of 86 *E. coli* isolates were analysed. High resistance was observed to ampicillin (96.5%), trimethoprim/sulfamethoxazole (85.0%), and tetracycline (84.1%). Fluoroquinolone resistance was also notable: ciprofloxacin (59.1%) and levofloxacin (74.3%). Conversely, resistance to meropenem (2.1%) and nitrofurantoin (9.8%) was low, suggesting these antibiotics may remain effective for last resort treatment.

**Conclusion:** A total of 86 *E. coli* isolates were analysed. High resistance was observed to ampicillin (96.5%), trimethoprim/sulfamethoxazole (85.0%), and tetracycline (84.1%). Fluoroquinolone resistance was also notable: ciprofloxacin (59.1%) and levofloxacin (74.3%). Conversely, resistance to meropenem (2.1%) and nitrofurantoin (9.8%) was low, suggesting these antibiotics may remain effective for empirical treatment.

**Recommendation:** The findings reveal a high prevalence of multidrug-resistant UPEC at MRRH, limiting the effectiveness of commonly used antibiotics. There is an urgent need to revise empirical treatment protocols, enhance diagnostic capabilities, and implement antimicrobial stewardship programs. Continuous local surveillance is recommended to guide

evidence-based clinical decision-making and policy development.

## 103 Deciphering colistin-resistance among carbapenem-resistant Gram-negative bacteria from humans, animals and the environment in Mwanza, Tanzania

**Authors:** Geoffrey Japhet, Vitus Silago, Zechariah Igembe, Benard Okamo, Ronald Benju, Ofred J. Mhongole, Sophia Kiluvya, Neli C. Msuya, Elibariki Mwakapeje, Stella Kiambi, Benson R. Kidenya, Stephen E. Mshana, Jeremiah Seni

**Background:** Colistin (Polymyxin) antibiotics are reserve antibiotics for the treatment of severe and invasive infections caused by Gram-negative bacteria and are used as alternative antimicrobial therapeutic options to Carbapenem-resistant Gram-negative bacteria (CarbR-GNB) infections in Tanzania. Paradoxically, colistin is widely used as a first-line antimicrobial agent in the veterinary sector, calling for an urgent need to evaluate the burden of Colistin resistance (ColR)

**Objective:** To determine colistin-resistance among carbapenem-resistant Gram-negative bacteria from humans, animals and the environment in Mwanza, Tanzania, to foster One-Health responsive actions.

**Methods:** A cross-sectional analytical study was conducted in Mwanza city from January to August 2024 involving patients attending Bugando Medical Centre (clinical samples), domestic animals (rectal and cloaca samples) and environmental premises samples (wastewater

and River Mirongo water). Culture and antimicrobial susceptibility testing were done, and all phenotypically ColR-GBN were subjected to multiplex polymerase chain reaction for eight mobile colistin resistance genes (*mcr-1* to *mcr-9*).

**Results:** A total of 290 CarbR-GNB isolates were identified across three interfaces. *Acinetobacter baumannii* and *Pseudomonas aeruginosa* were predominant in patients, whereas *Escherichia coli* was predominant across three interfaces. The proportion of ColR among CarbR-GNB was 25.8% (75/290); with 24.9%, 33.3%, 50.0%, and 12.5% in patients, livestock, poultry and environmental premises, respectively. The ColR was significantly higher in poultry (OR: 95%CI=7.0(1.2-48.8), p-value=0.01). Multiplex PCR-based typeability of *mcr* genes was 14.7% (11/75).

**Conclusion:** A quarter of CarbR-GNB isolates in the three interfaces in Mwanza, Tanzania, expressed ColR co-existence with very low *mcr*-genes typing by the multiplex PCR.

**Recommendation:** The findings underscore an urgent need to strengthen One-Health AMR surveillance systems and, are also calling for more robust molecular typing methods.

## 104 Incremental prediction of inflammatory biomarkers in COVID-19 patients' outcomes at Bugando Medical Centre, Mwanza, Tanzania

**Authors:** Geoffrey M Lwakatare, Bahati M.K. Wajanga, Albert Muniko, Ally M. Akrabi, Baraka Revocatus, John Daffy, Pastory L. Mondea,

Shahzmah Suleman, Fabian A. Massaga, Abel Makubi, Jeremiah Seni

**Background:** Coronavirus disease 2019 (COVID-19) is a raging pandemic that has affected millions of people worldwide. Inflammatory markers are crucial for patients' monitoring and prognostication. However, previous studies at Bugando Medical Centre (BMC) in Tanzania and other low-and middle-income countries have sparsely assessed the combination of inflammatory markers in predicting outcomes to optimise existing management algorithms, underscoring a pressing need to fill this research gap.

**Objective:** To determine the incremental prediction of inflammatory biomarkers and their relationship with outcomes among patients with COVID-19 pneumonia admitted at BMC.

**Methods:** A retrospective cohort study was conducted at BMC from February to April 2023 involving 210 patients who were admitted and confirmed to have COVID-19 pneumonia by RT-PCR from March 2021 to May 2022. Patients' data and inflammatory markers (Neutrophil: Leucocyte (N: L) ratio, D-dimer, C-reactive protein (CRP), and Serum ferritin measured at admission were assessed and associated with patients' outcomes using receiver-operating curves (ROC) with area under the curve (AUC).

**Results:** The mean age was 59 (SD  $\pm$ 12.42) years, males (54.3%), the median hospital stay (IQR) was 9 [6-15] days, and the overall mortality was 37.1%. Incremental prediction of COVID-19 severity for three markers (CRP, D-dimer and N:: L ratio) was 0.8999, and 0.9146 for all four

markers. The mortality forecasts were 0.7992 and 0.8013 for three and four markers, respectively. Inflammatory markers had a low ability to predict the length of hospitalisation.

**Conclusion:** The inflammatory markers during admission can predict COVID-19 pneumonia severity and mortality.

**Recommendation:** The use of one or two markers at admission (preferably CRP and D-dimer), and three markers (CRP, D-dimer, and N: L ratio) is recommended in resource-constrained and non-resource-constrained settings' management algorithms, respectively to maximise predictive potential for severity and mortality.

## 105 Artificial Intelligence and Social Media Data as an Alternative Source of Insights During Pandemics

**Authors:** Deogratias Mzurikwao, Asa Kalonga, Peter Nyanda

**Background:** Social media is a major source of health information, with platforms like Twitter showing early signs of outbreaks. This study analysed 20,421 tweets from Kinondoni, Tanzania, during COVID-19, using AI to classify them with 93% accuracy. The results correlate with official data, showing social media's potential for real-time surveillance, public awareness assessment, and detecting misinformation during health emergencies.

**Objective:** To utilise AI-driven analysis of Twitter data to evaluate public awareness,

misinformation, and engagement during the COVID-19 outbreak in Tanzania.

**Methods:** This study analysed over 20,000 English-language tweets from Kinondoni district between April 21 and 24, 2020. The data was pre-processed to remove non-English content and anonymised for privacy. A subset of 10,000 tweets was manually labelled into four categories: COVID-related, non-COVID, educated, and non-educated. A deep learning model was then trained on this labelled dataset to classify the remaining tweets, achieving 93% accuracy in identifying themes and detecting misinformation

**Results:** The analysis revealed that over 18% of tweets from Kinondoni district during April 21–24, 2020, were COVID-related, correlating strongly with official case reports. The AI model accurately classified tweets into COVID and non-COVID categories with 93% accuracy. Sentiment analysis showed that 12.4% of COVID-related tweets contained misinformation or reflected poor public understanding. COVID-related topics dominated discussions, with high engagement through likes and retweets, indicating significant public concern and the potential of social media for real-time epidemic tracking.

**Conclusion:** This study demonstrates that social media, particularly Twitter, can serve as a real-time tool for monitoring public health awareness and misinformation during pandemics. The AI model's high accuracy supports its use in automated surveillance. Findings highlight the potential of integrating social media analytics into public health systems to enhance early detection, response, and public education efforts.

**Recommendation:** We recommend integrating AI-powered social media analytics into national health surveillance systems to enhance real-time monitoring of public sentiment and misinformation. Expanding analysis to local languages and multiple platforms can improve inclusivity. Capacity building in AI and data science within public health institutions is essential to leverage social media as a tool for early detection and targeted health interventions.

## 106 Prevalence of Urogenital Schistosomiasis and Haematuria among Adults in Rural Maswa District, Simiyu, Tanzania

**Authors:** Alex J. Mujuni, Joram Buza, David S. Munisi

**Background:** Urogenital Schistosomiasis (UGS) continues to be a significant public health concern in many rural communities worldwide, where more than 251.4 million people require preventive chemotherapy as they live in endemic areas for UGS. UGS is prevalent in these areas due to limited access to clean water and adequate sanitation. In these areas, adults are vulnerable as agricultural, fishing, domestic and recreational activities often put them at risk of getting

**Objective:** The study aimed to assess the prevalence of UGS among adults in rural Maswa district, Tanzania

**Methods:** A community-based cross-sectional study was carried out in Maswa district. 355 participants from three wards of Ipililo, Badi and Jijja participated in this study. Urine samples were collected from participants for Schistosoma

haematobium diagnosis microscopically using the urine filtration technique. Urine reagent strips were used to detect blood in urine to estimate haematuria. Questionnaires were administered to collect data on demographic characteristics, socioeconomic status and clinical features associated with UGS.

**Results:** Among 355 study participants, the overall prevalence of UGS, macro hematuria and micro hematuria were 10(2.8%) (95% CI: 1.1 - 4.8), 7(2.0%) (95%CI: 0.6-3.7), 20(5.6%) (95%CI: 3.1-8.2), respectively. Participants below the age of 34 and those with primary education were the most infected, 6(3.5%) and 7(2.9%), respectively. Married participants showed decreased risk of infection 0.254(95%CI: 0.066-0.997),  $P=0.046$ . Participants who reported experiencing blood in urine were more likely to have UGS infection upon running a multivariate analysis, 41.994(95%CI: 7.423-237.55).

**Conclusion:** UGS are still prevalent among adults in Maswa district, and haematuria is a clinical feature shown by most participants with UGS. Participants who experience blood in urine in an endemic area have higher chances of UGS infection. UGS remain a challenge in this community due to a lack of preventive chemotherapy among adults, proper water and sanitation in the study area.

**Recommendation:** We recommend the improvement of proper water and sanitation systems like introducing piped water supply in the study areas, this will reduce individual contact with infested water. We also recommend the preventive chemotherapy programs to involve

adults too who live in the area, so they cannot act as reservoir of infection to other groups at risk

## 107 KAP among Community Pharmaceutical Personnel Towards Antimicrobial Stewardship in Ilala District, Dar Es Salaam, Tanzania.

**Authors:** Adam J. Mohammed, Professor Doreen Mloka

**Background:** The growing problem of Antimicrobial Resistance (AMR) is a significant global health threat. The inappropriate use of antimicrobials is a controllable factor contributing to this resistance. Since antimicrobials are widely used in community settings, community pharmaceutical personnel are crucial in promoting responsible antimicrobial use.

**Objective:** To explore the level of Knowledge, Attitudes, and Practices (KAP) towards antimicrobial stewardship (AMS) among community pharmaceutical personnel in Ilala Municipality, Dar es Salaam.

**Methods:** The descriptive cross-sectional study was conducted between January to April 2024. Quantitative data were collected using a self-administered and pre-tested questionnaire adapted from previous studies. A simple random sampling technique was used to sample 270 community pharmacies out of 447. The sample size was calculated from standard cross-sectional population formula. Descriptive statistical methods were used to analyze the data.

**Results:** A total of 270 community pharmaceutical personnel participated, each representing one community pharmacy. Most community pharmaceutical personnel agreed (n=249, 92.2%) that poor use of antibiotics leads to AMR and showed a high level of knowledge (n=179, 66.7%) regarding AMS. Furthermore, a large portion of community pharmaceutical personnel reported a positive attitude towards AMS (n=174, 64.7%) and a poor practice (n=197, 73%) regarding AMS.

**Conclusion:** This study highlighted that the knowledge of community pharmaceutical personnel toward AMS is good in some aspects, and their attitude regarding AMS of the majority is positive. Unfortunately, the practices regarding AMS were found to be poor.

**Recommendation:** Community pharmaceutical personnel to be provided with Continuous Professional Development (CPD) training on behavioral change towards implementing AMS programs that will equip them with proper practices regarding AMS. Educational curriculum to incorporate AMS as a learning course.

## 108 Prevalence of Asymptomatic Malaria and Soil Transmitted Helminths among Pregnant Women in Lindi District, Tanzania

**Authors:** Mariam M. Manengelo, Dr. Deokary J. Matiya, Dr. Winifrida Kidima, Alex Mujuni

**Background:** Malaria and Soil-Transmitted Helminths (STHs) infections remain critical global health challenges, disproportionately affecting

vulnerable populations, especially in resource-limited settings. Malaria and STHs in pregnant women are associated with complications like severe anaemia, preterm birth, stillbirth, and low birth weight. Despite these complications, there is still limited information regarding the infection status of pregnant women with malaria-STHs in high transmission areas, including Lindi, Tanzania.

**Objective:** To assess the prevalence of asymptomatic malaria and STHs infections and their association with anaemia among pregnant women in Lindi district.

**Methods:** A cross-sectional study was conducted among pregnant women attending antenatal care (ANC) in Lindi district. Blood samples were collected for malaria diagnosis (using rapid test (mRDT) and microscopy) and anaemia. Faecal samples were collected for STHs diagnosis using formol ether concentration technique. A questionnaire assessed demographics and knowledge of malaria and STHs. Descriptive statistics summarised the data. Chi-square test was used to determine associations between malaria, STHs and anaemia with other variables. Logistic regression was used to determine correlates of anaemia.

**Results:** A total of 355 pregnant women participated, with a malaria prevalence of 19.1% and 8.4% by malaria rapid diagnosis test and microscopy, respectively. The overall malaria parasite density of 511.23 Pf /  $\mu$ l. STH prevalence was 3.6%, with hookworm infection more prevalent (2.6%) among pregnant women compared to *T. trichiura* (0.5%) and *A.*

lumbricoides (0.5%). The overall prevalence of anaemia was 60.6%; with 65%, 31% and 4% of women exhibiting moderate, mild and severe anaemia, respectively.

**Conclusion:** This study has shown that malaria and STHs infections coexist in only a very small proportion of pregnant women. The high prevalence of anaemia observed is likely to be due to other unexplored reasons. Substantial asymptomatic malaria prevalence underscores the importance of routine malaria prophylaxis in this susceptible group.

**Recommendation:** Health education to pregnant women should emphasise the causes, effects, prevention, and risk factors associated with anaemia. Pregnant women should be encouraged to attend the ANC early for malaria and STH prophylaxis.

## 109 Antimicrobial Resistance Surveillance of Methicillin-Resistant *Staphylococcus aureus* at Maweni Regional Referral Hospital, Tanzania

**Authors:** Hassan Mbaraka Ruanda, Kalonja Makenzi Mabura

**Background:** Methicillin-resistant *Staphylococcus aureus* (MRSA) poses a global threat due to its role in both community and healthcare-associated infections. The rise of multidrug resistance complicates treatment and increases morbidity. Despite global awareness, localised antimicrobial resistance (AMR) data remain scarce in peripheral regions like Kigoma, Tanzania. This study addresses a critical gap by characterising resistance profiles of MRSA and

MSSA isolates from Maweni Regional Referral Hospital to inform clinical practice and policy.

**Objective:** To evaluate and compare antibiotic resistance patterns between MRSA and MSSA isolates to improve treatment outcomes and infection control.

**Methods:** A laboratory-based cross-sectional surveillance was conducted using 426 clinical *S. aureus* isolates. Identification and susceptibility testing were performed using the Kirby-Bauer disc diffusion method. Cefoxitin disc was used as a surrogate marker to classify MRSA. Thirteen antibiotics were tested, and results were interpreted according to CLSI guidelines. Data were managed using WHONET software to develop a local antibiogram and assess resistance distribution across both MRSA and MSSA categories.

**Results:** Out of 426 *S. aureus* isolates, 141 (33.1%) were MRSA-positive based on Cefoxitin resistance. Among these, 128/132 (97.0%) were resistant to Penicillin G, 280/331 (84.6%) to Erythromycin, and 152/192 (79.2%) to Trimethoprim/Sulfamethoxazole. Moderate resistance was found to Ciprofloxacin (131/283, 46.3%), Clindamycin (142/309, 46.0%), and Gentamicin (82/225, 36.4%). MSSA isolates demonstrated significantly higher susceptibility, especially to Nitrofurantoin (110/120, 91.7%) and Chloramphenicol (161/203, 79.3%).

**Conclusion:** MRSA prevalence at 33.1% reflects a considerable burden of multidrug resistance, particularly to first-line antibiotics. However, agents like Nitrofurantoin and Chloramphenicol exhibit strong efficacy and potential for empirical

use. Bridging the local AMR data gap enhances clinical decision-making and supports targeted interventions in antimicrobial stewardship and infection prevention in resource-limited hospital settings.

**Recommendation:** Implement continuous AMR surveillance and routine use of antibiograms for evidence-based prescribing. Strengthen antibiotic stewardship programs and introduce educational desks within clinical departments to enhance prescriber awareness. Promote Nitrofurantoin and Chloramphenicol where susceptibility is documented. Reinforce IPC measures to reduce MRSA transmission. Future studies should expand surveillance to include molecular characterization and regional comparative analysis to guide national AMR policies.

## 110 Multifaceted Role of WASH Interventions in Waterborne Diseases Reduction in Sub-Saharan Africa: A PRISMA Model

**Authors:** Charles Mnyone, Emilliana Assenga, Benta Matunga

**Background:** Waterborne diseases pose a persistent threat to public health and sustainable development in Sub-Saharan Africa (SSA) necessitating the restructuring of health systems informed by evidence and creative solutions.

**Objective:** The study aimed at assessing multifaceted role of WASH interventions in reducing waterborne diseases in Sub-Saharan Africa.

**Methods:** PRISMA model used to integrate findings from 8 studies about how water, sanitation, and hygiene programs work in different contexts across SSA region. The study explored at complexities often overlooked in WASH assessments, including neglected drivers of disease transmission.

**Results:** Study found that WASH interventions reduce waterborne diseases, but their effectiveness is highly context dependent. There is variability in outcomes across intervention types and settings (there is no one size fits all solution) so requiring tailored approaches. Successful WASH outcomes depend on effective implementation and sustained behaviors change. Key challenges include infrastructure deficits and vulnerabilities during emergencies. Neglected drivers beyond infrastructure (environmental, socioeconomic, and health systems) significantly influence WASH public health outcomes. Cholera elimination necessitated multi-sectoral action and enhanced surveillance.

**Conclusion:** The study concludes that effective waterborne disease reduction through WASH interventions requires sensitive and context-tailored approaches that consider diverse settings and intervention types. Successful outcomes hinge on robust implementation and sustained behavior change. Addressing infrastructure deficits, emergency vulnerabilities, and neglected drivers beyond the infrastructure is crucial. Cholera elimination necessitates multi-sectoral collaboration and enhanced surveillance within strengthened health systems.

**Recommendation:** Advocates should champion context-specific WASH strategies integrated with broader development efforts and innovative solutions to strengthening health care systems in the local communities. Policies should prioritize addressing both immediate diseases drivers and underlying systemic vulnerabilities. Further research should focus on identifying and addressing neglected drivers and optimizing multi-sectoral approaches of waterborne diseases elimination and resilient health systems.

## 111 Point Prevalence Survey of Antimicrobial Use in Dar es Salaam Hospitals

**Authors:** Hafidhi Hussein Ntissi, Ignas Alphonse Marealle, Raphael Zozimus Sangeda

**Background:** Antimicrobial resistance is a global public health concern that threatens the effectiveness of current treatment strategies for infectious diseases. One of the key drivers of antimicrobial resistance is the inappropriate and excessive use of antimicrobial agents. To effectively address the issue of antimicrobial resistance, there is a need to determine the prevalence and pattern of antimicrobial use among tertiary hospitals in Dar es Salaam, which include MOI, JKCI, and MNH.

**Objective:** This study aims to determine the point prevalence survey and antimicrobial use among tertiary hospitals in Dar es Salaam.

**Methods:** A hospital-based cross-sectional study was conducted at MNH, MOI, and JKCI using WHO's standardized point prevalence survey

methodology. All inpatients were included. Antimicrobial use will be classified per the WHO AWaRe criteria. Data was analyzed in SPSS (v25+), with categorical variables expressed as proportions (95% CIs). Univariate and multivariate logistic regression (ORs with 95% CIs) were used to identify predictors of antibiotic use, with statistical significance set at  $\alpha=0.05$ .

**Results:** A total of 716 patients from all three hospitals (JKCI, MNH, and MOI) were studied. Among them, 478 (66.8%) were prescribed antibiotics. Many of the prescribed antibiotics fell in the "Watch" category of the AWaRe classification. Ceftriaxone and Metronidazole were the most prescribed antibiotics, accounting for 46% of all the prescribed antibiotics during the study period.

**Conclusion:** The study has established that most antibiotic prescriptions do not follow the established guidelines. This, in turn, leads to irrational antibiotic prescriptions and, therefore, increases the burden of antimicrobial resistance in these hospitals and community settings.

**Recommendation:** Antibiotic prescriptions must follow the guidelines, including the current standard treatment guidelines and hospital formularies formulated based on antimicrobial susceptibility testing and results. Strengthening antimicrobial stewardship programs in these hospitals should be of paramount importance and should involve various health professionals who will work together to fight the challenge of antimicrobial resistance.

## 112 Preferences and Concerns for long-acting injectable HIV PrEP among female barmaids in Dar es Salaam

**Authors:** Winfrida Akyoo, Idda Mosha, Hannah Goymann, Rose Mpembeni, Doreen Kamori, Joy Chebet, Guy Harling, Till Bärnighausen, Albrecht Jahn

**Background:** Oral HIV pre-exposure prophylaxis (PrEP) has been introduced globally, but women in sub-Saharan Africa frequently experience challenges in uptake and adherence. Female barmaids are at HIV due to transactional sex. However, uptake and adherence to oral PrEP pills is poor. Long-acting injectable (LAI) PrEP has the potential to improve prevention by improving adherence.

**Objective:** We explored preferences and concerns about LAI PrEP use among female barmaids in Ubungo municipality, Dar es Salaam.

**Methods:** We conducted in-depth interviews with 17 purposefully selected female barmaids. Interviews were conducted using a guide with semi-structured questions with probes on PrEP preference [non-users], preference for LAI, reasons and concerns about using LAI PrEP for HIV prevention. We adopted an inductive approach for analysing data.

**Results:** LAI PrEP was preferred for its discretion, prolonged prevention and less fatigue. Most interviewees indicated a three-month injection preference; some preferred monthly injection, while others were flexible. The healthcare facility was mostly preferred for

convenience for managing complications, privacy and reduced stigma. Community spots were preferred for convenience in schedules and friendly services from providers. Concerns about LAI PrEP being in a trial phase, causing cancer, side effects and risky sexual behaviour were reported by a few interviewees.

**Conclusion:** Most of the interviewees showed strong interest and fewer concerns about LAI PrEP, highlighting more convenience and discretion in using LAI. Interviewees preferred a three-month dose injection but were flexible about what would be prescribed. The healthcare facility was mostly preferred for LAI. Our findings suggest that LAI PrEP can overcome the challenges of adherence observed in oral PrEP pills.

**Recommendation:** Since LAI PrEP was approved by WHO in 2022, it is important for the government to introduce LAI PrEP for a more tailored HIV prevention approach for barmaids and other women at HIV risk in Tanzania. The Ministry of Health should work with international partners to facilitate the availability of LAI PrEP to widen the scope of biomedical HIV prevention strategies.

## 113 Investigating Sociodemographic and Clinical Determinants: Vaginal Infections Among Non-Pregnant Women at Katavi Regional Hospital, Tanzania

**Background:** Vaginal infections, notably bacterial vaginosis and vulvovaginal candidiasis, pose a significant public health challenge in resource-constrained settings such as Tanzania.

Limited diagnostic capabilities, compounded by socioeconomic disparities and cultural perceptions, contribute to a high burden of infection. Few studies integrate microbiological data with detailed sociodemographic factors. A comprehensive understanding of these complex interactions is essential to improve diagnostic accuracy and inform targeted, cost-effective interventions to enhance women's reproductive health outcomes.

**Objective:** To estimate vaginal infection prevalence and identify key sociodemographic and clinical determinants among non-pregnant women attending Katavi Regional Referral Hospital.

**Methods:** A cross-sectional study was conducted from January 2024 to April 2025 among 210 non-pregnant women aged 18 and above at Katavi Regional Referral Hospital. Participants underwent clinical evaluations with speculum examinations and high vaginal swab collection. Laboratory analyses included Gram staining with Nugent scoring, the whiff test, and microscopic assessments. Sociodemographic data were extracted from medical records. Descriptive statistics, chi-square tests, and logistic regression analyses determined associations and independent predictors.

**Results:** Among 210 participants, vaginal infections were identified in 92% (n=193). Bacterial vaginosis was detected in 40% (n=84, 95% CI: 33.4–46.6,  $p < 0.05$ ), vulvovaginal candidiasis in 31.9% (n=67, 95% CI: 25.6–38.2,  $p < 0.05$ ), and mixed infections in 20% (n=42, 95% CI: 14.6–25.4,  $p = 0.022$ ). Symptomatic

presentations including foul odor and itching were significantly associated with vaginal infections ( $p$ -value=0.007). Multivariate analysis revealed lower education (aOR: 3.15,  $p = 0.041$ ) and rural residency (aOR: 2.80,  $p = 0.054$ ) as independent predictors of vaginal infections. These robust findings emphasize urgent need for expanded screening and targeted interventions.

**Conclusion:** The study illustrates an alarmingly high prevalence of vaginal infections among non-pregnant women in Tanzania. Findings reveal that both clinical symptoms and sociodemographic disparities, particularly lower education and rural residency, significantly impact infection risk. This work underscores the importance of integrating cost-effective diagnostics with public health strategies to improve women's reproductive health outcomes in resource-limited settings and drive sustainable change.

**Recommendation:** Enhanced public health initiatives are recommended to address the high prevalence of vaginal infections. Focus should be placed on expanding access to cost-effective diagnostics, improving health literacy, and offering targeted interventions in rural communities. Policymakers and healthcare providers must collaborate to implement routine screening, combine antimicrobial therapies where needed, and design programs that empower women to manage their reproductive health.

## 114 Prevalence of urinary tract infections, associated factors, and antimicrobial susceptibility patterns of the uropathogens isolated

**Authors:** Julieth Kaaya, Deus Buma, Hamu Mlyuka, Samwel Rweyemamu, Albert Ntukula, Raphael Sangeda, Ritah Mutagonda.

**Background:** Urinary tract infections (UTIs) are among the most common infectious diseases globally, with an estimated 150 million cases annually. Sodium-glucose transporter 2 inhibitors (SGLT2 inhibitors) have emerged as essential therapy for heart failure patients. Despite their cardiovascular benefits, evidence suggests an increased risk of UTIs associated with SGLT2 inhibitor use.

**Objective:** To investigate the prevalence of UTI, associated factors, and evaluate the antimicrobial susceptibility patterns of the isolated micro-organisms.

**Methods:** From March to June 2024, a cross-sectional study was conducted among heart failure patients on SGLT2 inhibitors at JKCI. Data were collected using structured questionnaires and case report forms, and laboratory investigations included urine culture and antimicrobial susceptibility testing using the Kirby-Bauer disk diffusion method according to CLSI guidelines.

**Results:** Out of 141 participants, the prevalence of UTI was 15.6%. The predominant uropathogen isolated was *Escherichia coli* (50%), followed by *Klebsiella pneumoniae* (13.6%) and *Pseudomonas aeruginosa* (9.1%). High

resistance was observed against Ampicillin (100%), while susceptibility was high to Nitrofurantoin (84.6%) and Meropenem (100%).

**Conclusion:** This study highlights the importance of monitoring UTIs among HF patients on SGLT2 inhibitors, suggesting the need for targeted management and empiric therapy informed by local resistance patterns.

**Recommendation:** Regular vigilant monitoring and tailored preventive strategies for UTIs, especially in high-risk patients at baseline and follow-up clinics, should be mandatory. Whenever possible, a culture confirmatory test should be implemented after a positive urinalysis to avoid misuse of antibiotics that create resistance. Further studies with a different design are recommended to confirm these findings and provide a more comprehensive insight.

## 115 Bacteriological profile and antibiotic susceptibility patterns of bacteremia among hospitalized patient at the CHUK

**Author:** Fillette Mbabazizimana and Gilbert S. Umuhoza, Elie Tuyizere

**Background:** Bacteraemia is a serious medical condition and remains a global health problem associated with high mortality and morbidity. The emergence of antibiotic-resistant bacteria has made the management of bacteraemia infections even more difficult. Early recognition and prompt treatment with antibiotics are essential for improving outcomes and preventing the development of drug resistance.

**Objective:** To isolate bacteria and determine their antibiotic resistance patterns in patients at the University Teaching Hospital of Kigali.

**Methods:** A retrospective study was conducted by reviewing blood culture results from January 2021 to January 2022. A total of 1,229 patients suspected of bacteraemia were included. Blood cultures were processed, and bacterial isolates were identified. Antibiotic susceptibility testing was performed according to standard laboratory protocols.

**Results:** Out of 1,229 blood cultures analyzed, 221 (18.0%) were positive. Among isolates, 135 (61.1%) were Gram-negative, and 86 (38.9%) were Gram-positive bacteria. The most frequently isolated pathogens were *Staphylococcus aureus* (35.3%), *Klebsiella pneumoniae* (21.7%) and *Escherichia coli* (12.7%). Gram-negative bacteria exhibited high resistance to ceftazidime (92.3%), amoxicillin-clavulanic acid (88.4%), and trimethoprim-sulfamethoxazole (78.7%), but remained sensitive to imipenem (87.2%) and amikacin (86.1%). Gram-positive bacteria showed 100% resistance to ampicillin, penicillin (90.1%) and erythromycin (60.3%), but sensitive to vancomycin-clavulanic acid (88.9%).

**Conclusion:** Bacteremia at CHUK is marked by a high burden of multidrug-resistant pathogens, posing serious treatment challenges. The significant resistance to commonly used antibiotics underscores the urgent need for robust antimicrobial stewardship and the development of alternative therapeutic strategies to mitigate resistance and improve clinical outcomes.

**Recommendation:** This study highlights the high prevalence of multidrug-resistant bacteria among bacteremia cases at CHUK. Strengthening antimicrobial stewardship programs and promoting the development of alternative treatment options are recommended to combat antimicrobial resistance.

## 116 Diagnostic challenges of HRP2-based RDTs due to *pfhrp2* and *pfhrp3* gene deletions in asymptomatic malaria

**Authors:** Ernest Mazigo, Hojong Jun, Wang-Jong Lee, Johnsy Mary Louis, Fadhila Fitriana, Jadidan Hada Syahada, Fauzi Muh, Wanjoo Chun, Won Sun Park, Se Jin Lee, Sunghun Na, Eun-Teak Han, Feng Lu, Winifrida Kidima, Jin-Hee Han, Alphaxard Manjurano.

**Background:** Histidine-rich protein 2 (HRP2)-based rapid diagnostic tests (RDTs) are critical for malaria diagnosis in Africa, particularly in resource-limited settings. However, the spread of *Plasmodium falciparum* parasites with *pfhrp2* and *pfhrp3* gene deletions compromises their effectiveness, raising concerns in affected areas. Additionally, asymptomatic *P. falciparum* infections contribute to silent transmission, posing a challenge to elimination efforts.

**Objective:** This study evaluated *pfhrp2/3* deletions' prevalence and assessed HRP2-RDTs and microscopy performance in asymptomatic malaria cases in Tanzania.

**Methods:** This was a cross-sectional survey study conducted between December 2022 and

July 2023 across 12 villages, eight in high-transmission and four in low-endemicity regions. A total of 3,489 participants were enrolled, and malaria diagnosis was performed using RDTs, LM, and quantitative PCR (qPCR).

**Results:** Using qPCR as the reference, HRP2-based RDTs showed significantly higher sensitivity (82.1%) and accuracy (90.3%) than light microscopy (57.6% and 87.5%, respectively). While LM had slightly higher specificity (94.3%) than RDTs (93.0%), the difference was not significant. RDTs demonstrated strong predictive values, both above 80%, supporting their use for detecting asymptomatic malaria. The multiplex qPCR detected single deletions of *pfhrp2* in (2.6%), *pfhrp3* deletions in (4.2%), and dual deletions in (2.6%) of isolates, mainly from high-transmission areas.

**Conclusion:** HRP2-based RDTs remain effective for detecting asymptomatic *P. falciparum* infections in Tanzania, demonstrating superior sensitivity and accuracy compared to light microscopy. However, the presence of *pfhrp2/3* gene deletions, particularly in high-transmission areas, underscores the need for ongoing surveillance and strategic diagnostic planning to ensure reliable malaria detection and support elimination efforts.

**Recommendation:** Integrated screening for asymptomatic *P. falciparum* infections using HRP2-based RDTs, alongside routine surveillance of *pfhrp2/3* deletions, should be prioritized in the National Malaria Control Programs (NMCP) to identify silent carriers and

ensure diagnostic accuracy. This combined approach will strengthen community-level malaria control efforts and support national elimination goals by addressing both hidden infections and emerging diagnostic challenges.

## 117 Chronic Osteomyelitis Due to Multidrug-Resistant *Serratia marcescens* Following an Open Tibial Fracture

**Authors:** Hassan Mbaraka Ruanda, Theresia Amos Poyongo, Dr. Emmanuel Igoro, Joram Adam Sungura

**Background:** Open fractures are highly vulnerable to infection, particularly in prolonged hospital settings with inconsistent follow-up. When such infections involve multidrug-resistant (MDR) organisms like *Serratia marcescens*, clinical management becomes increasingly.

**Objective:** To highlight gaps in antimicrobial and diagnostic stewardship in managing MDR infections in trauma care within resource-limited African settings.

**Methods:** A 23-year-old male sustained a Gustilo-Anderson type IIIB segmental tibia-fibula fracture following a motorcycle crash in October 2022. He underwent surgical debridement and external fixation, later converted to plate fixation. The patient received prolon.

**Results:** The *S. marcescens* isolate showed resistance to cefepime, cefotaxime, ceftriaxone, gentamicin, and chloramphenicol. Prolonged empirical treatment without microbiological guidance likely facilitated the emergence of resistance. Delayed diagnostic testing,

**Conclusion:** This case demonstrates the urgent need for integrated AMS and diagnostic stewardship in trauma care. Strengthening laboratory capacity, enforcing early culture-guided therapy, and investing in patient-centred care models are critical. Innovation and research must inform policy reforms aimed at reorganising health systems in Africa to combat AMR and ensure better outcomes for trauma-associated infections.

**Recommendation:** This case demonstrates the urgent need for integrated AMS and diagnostic stewardship in trauma care. Strengthening laboratory capacity, enforcing early culture-guided therapy, and investing in patient-centred care models are critical. Innovation and research must inform policy reforms aimed at reorganising health systems in Africa to combat AMR and ensure better outcomes for trauma-associated infections.

## 118 Assessment of the Community Malaria Surveillance System in Bukombe District, Tanzania (2024-2025)

**Authors:** Edna Baraka Kibango, Ally Hussein, Abdallah Lusasi, Onesmo Mwegoha, Billy Ngasala

**Background:** The 2020–2025 National Malaria Strategic Plan targets 85% of patients to be tested and treated within 24 hours; however, in 2022, only 50% were tested and 78% treated timely. In response, Tanzania introduced the community malaria surveillance system in 2022, later integrated into iCCM in 2024, to enhance early detection and timely treatment. This study

assessed the system's usefulness and performance in Bukombe District Council, Geita Region.

**Objective:** To evaluate the performance and usefulness of the community malaria surveillance system in Bukombe District, Geita region, from 2024 to 2025.

**Methods:** A cross-sectional evaluation was conducted using retrospective data from UCS and District Health Information System 2 (DHIS2) dashboards, along with monthly summaries. Semi-structured interviews were held with community health providers, facility staff, the district malaria focal person, and the national iCCM coordinator. Attributes assessed included simplicity, timeliness, acceptability, representativeness, flexibility, stability, and data quality, each scored on a 3-point scale: 80% (score 3).

**Results:** The system was implemented in 36 of 57 (63.2%) high-burden councils, indicating moderate representativeness. Between December 2024 and February 2025, 365 cases were treated within 24 hours, and 28 severe cases were referred. Timeliness, acceptability, data quality, simplicity, and flexibility all scored high. Stability was low (55.6%) due to reduced implementation after donor support ended. Stakeholders confirmed its usefulness and flexibility. However, the lack of UCS-DHIS2 linkage led to double reporting at both community and facility levels.

**Conclusion:** Overall, the community malaria surveillance system is useful and has good performance, characterized by its simplicity,

timeliness, acceptability, and flexibility. The surveillance system has generated valuable monthly reports for resource planning and service expansion and enabled the integration of pneumonia and acute watery diarrhea services for under-fives; however, the system's stability and representativeness were identified as areas of moderate performance.

**Recommendation:** The Ministry of Health through the National Malaria Control Program (NMCP) should allocate funding to sustain the system and scale it up across all councils to achieve universal malaria service coverage. Deploying at least two community providers per service point is recommended to ensure continuity. Additionally, integrating UCS with DHIS2 will improve data efficiency and eliminate double reporting.

## 119 COVID-19 Vaccination Advocacy among Tanzania Rural Communities: Lessons for Future Pandemics

**Authors:** Godwin Pancras, Baraka Morris, Shitindo Mercury, Renatha Joseph, Emmy Metta, Nathanael Sirili, David Nderitu

**Background:** Vaccines as a public good, require an inclusive approach to end vaccine-preventable diseases. Ensuring universal access to vaccination information is crucial, particularly in rural areas where geographic and socio-economic barriers persist. The Coronavirus disease 2019 (COVID-19) pandemic highlighted these disparities, emphasizing the need for

targeted advocacy strategies to address future pandemics.

**Objective:** To examine information advocacy strategies used during the COVID-19 vaccination in rural areas and the implications.

**Methods:** The study employed a sequential mixed-methods design. The qualitative phase involved community health workers (CHWs), local leaders, healthcare workers (HCWs), and influential figures, while the quantitative phase focused on heads of households. All residing in the Geita region, Tanzania. Purposive and multistage sampling techniques were used to select individuals during the qualitative and quantitative phases respectively. Qualitative and quantitative data was analyzed thematically and descriptively, respectively.

**Results:** Since we used a mixed-methods approach, the presentation of both qualitative and quantitative findings is on a theme-by-theme basis (or weaving approach). Given the mixed-methods approach, findings are presented thematically, integrating qualitative and quantitative data using a weaving approach. The findings suggest that COVID-19 vaccination advocacy in Tanzania rural communities' hinges on three key elements: strategic outreach points, optimal timing and the nature of the information communicated.

**Conclusion:** The findings of our study suggest that future pandemic preparedness efforts must integrate community-specific outreach points, optimal timing, and tailored messaging to ensure access to vaccination information and combat vaccine hesitancy in rural populations.

**Recommendation:** Further studies are needed to examine the advocacy strategies in different settings and populations.

## 120 Knowledge, attitude, and practices of indigenous citizens toward Antimicrobial Resistance (AMR) control measures

**Authors:** Regina Joseph, Raphael Z. Sangeda, and Angwara D. Kiwara

**Background:** Antimicrobial resistance is a silent pandemic, resulting in global mobility and mortality while significantly impacting health, social, and economic aspects. Death due to AMR is estimated to be 1.3 million annually. However, the knowledge, attitude, and practice (KAP) of the community concerning AMR remain uncertain

**Objective:** To assess the association between knowledge, attitudes, and Practices among indigenous citizens towards controlling measures to AMR

**Methods:** This quantitative research strategy was conducted across regions in Tanzania: Kagera, Dar es Salaam and Dodoma. The philosophy under this study was positivism, and a deductive approach was conducted from February to October 2024. A total number of 488 participants were randomly selected from their working stations, homes and community gatherings. The data were gathered assisted by structured, closed-ended questionnaires and then analysed using the Statistical Analysis System (SAS)

**Results:** The study found that antibiotic consumption practices were significantly

associated with gender, altitude, and knowledge. Males exhibited better practices compared to females (AOR = 1.365,  $p = 0.0276$ ). Positive attitudes significantly enhanced good practices (AOR = 2.896,  $p < 0.0001$ ), while adequate knowledge improved engagement in proper antibiotic use (AOR = 2.216,  $p = 0.0012$ ). However, social, demographic, and economic factors showed no significant association with antibiotic consumption behaviours.

**Conclusion:** Gender, attitude and knowledge were identified as key factors associated with antibiotic consumption

**Recommendation:** Strengthening community awareness and education while considering gender equity will enhance rational use of antibiotics

## 121 Improving Tuberculosis Diagnostics: Comparing Xpert MTB/RIF, Sputum Smear and Culture for Tuberculosis Detection in Tanzania

**Authors:** Sabina Mugusi, Jacob Lema, Peter Ponsian, Doreen Kamori, Happiness Kimambo, Paul Masanja, Avitus Anthony, Mwemezi Ngemera, Amos Kahwa

**Background:** Tuberculosis (TB) remains a significant health burden in Tanzania, where resource limitations hinder access to rapid diagnostics like Xpert MTB/RIF. Many facilities continue to rely on smear microscopy, despite its low accuracy. This study was conducted to assess other methods to optimize TB detection and improve patient outcomes

**Objective:** To compare the diagnostic performance of Xpert MTB/RIF, smear microscopy, and culture in detecting pulmonary TB in Tanzania.

**Methods:** This cross-sectional study enrolled 200 adults with confirmed TB by Xpert MTB/RIF across five clinics in Dar es Salaam. Additional sputum samples were tested via Ziehl-Neelsen smear microscopy and culture on Löwenstein-Jensen medium at the Central Tuberculosis Reference Laboratory. Diagnostic performance metrics—sensitivity, specificity, predictive values, and ROC analysis—were computed using culture as the gold standard. Sociodemographic and clinical data were also collected and analyzed using Stata software.

**Results:** Of the 200 participants (median age 35; 74.5% male), 67% were culture positive. Smear microscopy demonstrated 86.6% sensitivity and 40.7% specificity against culture. Notably, 43% of smear-negative samples were culture-positive, underscoring missed diagnoses by smear alone. ROC analysis for smear microscopy yielded an AUC of 0.636. Among Xpert MTB/RIF-positive cases, 69% were also culture-positive. These results highlight moderate accuracy for smear microscopy and suggest the complementary value of Xpert MTB/RIF and culture in TB diagnosis.

**Conclusion:** Smear microscopy, though widely accessible, lacks specificity and underperforms as a stand-alone diagnostic. Xpert MTB/RIF improves detection but may yield false positives. Culture remains essential for definitive TB diagnosis despite practical limitations. A

combined diagnostic approach leveraging each method's strengths is crucial for effective TB detection in Tanzania's resource-constrained settings.

**Recommendation:** Adopt a tiered diagnostic algorithm integrating Xpert MTB/RIF with smear microscopy and culture, especially in peripheral health facilities. Improve cartridge supply chains and machine maintenance to enhance Xpert test availability. Expand training on interpreting combined test results and promote contact tracing among smear-negative, and culture-positive cases to strengthen TB control strategies in Tanzania's high-burden regions.

## 122 The role of Artificial Intelligence as a community screening tool for Pulmonary Tuberculosis in Tanzania

**Authors:** Deogratias Mzurikwao, Twaha Kabika, Asa Kalonga, Lulu Sakafu, Asmin Issa, Simeon Mayala, Mercy Kalleku, Oluwarotimi Samuel, Sabina Mugusi

**Background:** Tanzania remains among the highest TB-burden countries, with diagnostic delays contributing to disease transmission and mortality. To address limited access to radiologists and reduce dependency on costly confirmatory testing, the government introduced CAD4TB, an artificial intelligence (AI) powered diagnostic tool for analyzing digital chest X-rays. Despite its potential, the system lacked a validated threshold score for Tanzania, and its comparative efficiency against human readers remained unassessed in real-world screening settings.

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**Objective:** To assess CAD4TB's diagnostic accuracy for pulmonary TB, compare its performance with human readers, and propose a country-specific threshold.

**Methods:** A retrospective study analyzed 11,923 records from three mobile screening vans equipped with digital X-rays, CAD4TB version 6, and GeneXpert systems. Radiographers performed initial readings; suspected cases were verified with GeneXpert. Data were cleaned, anonymised, and analyzed to assess CAD4TB's correlation with GeneXpert. Threshold scores of 50 and 30 were compared. Human vs. CAD4TB diagnostic performance was evaluated using GeneXpert as the confirmatory reference standard.

**Results:** Of 818 cases flagged by radiographers, only 15 were confirmed TB-positive by GeneXpert (6.7%). CAD4TB demonstrated 99% correlation with GeneXpert, significantly outperforming human readers. A threshold of 30 detected 91.5% of GeneXpert-confirmed cases, outperforming the default 50. Many patients bypassed CAD4TB, proceeding directly to GeneXpert, increasing unnecessary costs. The study also revealed data entry errors and improper imaging practices, indicating a need for improved training and protocol adherence in mobile van operations.

**Conclusion:** CAD4TB showed strong diagnostic alignment with GeneXpert and outperformed human radiographic interpretation, validating its utility in decentralised TB screening. The study recommends adopting a CAD4TB threshold score of 30 in mobile van settings to enhance

sensitivity and reduce unnecessary confirmatory tests. Proper integration and adherence to AI protocols can improve TB case detection in resource-limited settings like Tanzania.

**Recommendation:** To improve TB screening, a CAD4TB threshold of 30 should be adopted in mobile units for better sensitivity. Radiographers require targeted training on AI usage and imaging protocols. Standardised data recording is essential to ensure consistency. Additionally, CAD4TB's clinical use should be separately evaluated, and investment in data infrastructure is needed to support national AI implementation and scalability.

## 123 Antibiotic Susceptibility Patterns of Soil-Dwelling Bacteria

**Authors:** Sabina Hidat, Nelson Masota, Doreen Mloka, Rogers Mwakalukwa

**Background:** Antimicrobial resistance poses a significant threat to global health, necessitating the search for novel antibiotics, among other options. Soil harbours diverse bacterial species, with varying antibiotic production potential and resistance profiles. Resistant soil-derived bacteria can transfer antibiotic-resistant genes to human pathogenic bacteria. Assessing antibiotic susceptibility of such bacteria can contribute to the identification of safe and promising antibiotic-producing strains.

**Objective:** We aimed to determine antibiotic susceptibility pattern of soil-derived bacteria isolated from soils with high organic matter content and mid-pH

**Methods:** Soil samples were collected from a nature forest reserve in Coastal region, Tanzania. To attain enhanced cultivability, various bacterial strains within the soil samples were cultivated via the combination of isolation chip (iChip) and standard agar plates. Isolated colonies were tested for their antibiotic susceptibility using disc diffusion assays as prescribed by the European Committee for Antimicrobial Susceptibility Testing (EUCAST). A total of six most used antibiotics in clinical

**Results:** A total of 14 distinct soil bacterial isolates were obtained from 4 soil samples. All isolates were susceptible to meropenem and gentamicin. The majority (>85.7%) were susceptible to ceftriaxone and ciprofloxacin. Least levels of susceptibility were consistently observed against vancomycin and amoxicillin and clavulanic acid.

**Conclusion:** These findings indicate the presence of varying levels of susceptibility among bacterial isolates derived from a conserved ecosystem. Based on the less likelihood of possessing acquired resistance, the observed resistance patterns are most likely intrinsic in nature. Given reasonable susceptibility to most of the commonly used antibiotics, the isolates are generally safe for further exploration of their antibiotic-producing potential.

**Recommendation:** Initial screening for antibiotic susceptibility of soil-derived bacteria is essential in providing insights regarding the overall safety level of the potential antibiotic-producing candidates. Further, non-susceptibility to antibiotic(s) can serve as a dereplication

approach to avoid prioritisation of isolates producing compounds with higher possibilities for cross-resistance with the respective agent.

## 124 Assessment of the Urban Malaria Surveillance and Response System in Dar es Salaam

**Authors:** Khalifa Munisi, Davis Amani, Sijenunu Aaron, Pai Chambongo, Ford Chisongela, Ally Adinan, James Msami, Rogath Kishimba

**Background:** While malaria prevalence is decreasing in Tanzania, urban areas like Dar es Salaam remain at risk due to rapid urbanization. In response, the National Malaria Control Programme (NMCP) introduced the Urban Malaria Surveillance and Response (UmSR) system in 2024. UmSR is a digital platform developed using Kobo Collect to enable real-time malaria case reporting, classification, investigation, and response

**Objective:** This assessment aimed to evaluate the usefulness and performance of the UmSR system in Dar es Salaam

**Methods:** A cross-sectional study was conducted from September 2024 to February 2025 in Dar es Salaam, assessing ten health facilities from two randomly selected councils. Structured questionnaires were administered to ten healthcare workers, and key informant interviews were held with NMCP staff and malaria focal persons. Malaria case records and threshold reviews assessed data quality and epidemic detection. System acceptability, simplicity, timeliness, data quality, representativeness, stability, sensitivity, and flexibility

**Results:** UmSR detected a total of 2,460 malaria cases. Out of 478 sub-wards, 28 (6%) reached the epidemic thresholds, of these only 32% received timely response interventions. All 100 reviewed cases were timely notified, and completeness was 86%. The system demonstrated strong representativeness of cases reported in all public health facilities. Out of 10 respondents, 90% and 80% affirmed stability and flexibility of the system, respectively.

**Conclusion:** UmSR detected a total of 2,460 malaria cases. Out of 478 sub-wards, 28 (6%) reached the epidemic thresholds; of these, only 32% received timely response interventions. All 100 reviewed cases were timely notified, and completeness was 86%. The system demonstrated strong representativeness of cases reported in all public health facilities. Out of 10 respondents, 90% and 80%. The UmSR system is valuable for urban malaria surveillance, with strong case detection, timely reporting, and high user acceptability. However, non-response to some outbreaks and underreporting undermines effectiveness.

**Recommendation:** The Ministry of Health should expand the implementation of UmSR to private health facilities. Regional and council teams should respond promptly to detected malaria epidemics

## 125 Assessment of the IPC Surveillance System in DHIS-2 Among Selected Healthcare Facilities in Dodoma Region

**Authors:** Melkizedeki Abdulahi, Ruth Ngowi, Dinah Gasarasi, Eliudi Eliakimu, and Joseph Hokororo, Azma Simba

**Background:** Healthcare-associated infections (HAIs) affect one in ten patients globally, particularly in high-risk settings in low- and middle-income countries. WHO recommends effective infection prevention and control (IPC) surveillance to reduce HAIs and antimicrobial resistance. Since the integration of IPC surveillance into the District Health Information Software 2 (DHIS-2) in November 2021, Tanzania has not conducted a formal evaluation of the system to assess its effectiveness and efficiency.

**Objective:** The objective of this study is to assess the IPC surveillance system in DHIS-2 among selected healthcare fac

**Methods:** We conducted a descriptive cross-sectional evaluation of the IPC surveillance system from July to December 2024 in three randomly selected health facilities in Dodoma region (Dodoma Regional Hospital, UDOM Hospital and Chamwino District Hospital). We included 8 participants who are performing supportive and supervision activities across the Dodoma region, 6 IPC focal persons from health facilities and 2 participants from the national level from the Department of Health Quality Assurance (HQA).

**Results:** The system achieved an overall performance score of 92.7%. We calculated the average mean scores of the system attributes, whereas 8 out of 8 participants responded that the system can be easily integrated with another

system (simplicity,100%), was reliable (stability,100%), and captured place, person, and time (representativeness, 100%). However, 7 of 8 participants were willing to use the system (acceptability, 87.5%), and flexibility, 87.5%). Of the 6 reports reviewed, 5 showed incompleteness (data quality, 83.3%) and reporting rate (timeliness,83.3%).

**Conclusion:** With an average score of 92.7%, the system performed exceptionally well overall, achieving 100% success in representativeness, simplicity, and stability. Additionally, the system performed well in terms of timeliness, acceptability, flexibility, and data quality (83.3%–87.5%). Despite the good score in many attributes, much effort is needed during data entry, as many facilities do not fill out all the forms.

**Recommendation:** Together with other key stakeholders, the Ministry of Health should keep training healthcare workers about the implementation and monitoring of the IPC guidelines and standard operating procedures (SOPs). Regional and Council Health Management Teams (R/CHMTs) should carry out supportive supervision and monitoring regularly to improve data quality.

## 126 Assessment of the HMIS routine surveillance system for Insecticide-Treated Net (ITN) distribution to infants

**Authors:** Beatrice Maina, Mucho Mizinduko, Frederick Haraka, Vida Mmbaga, Charles Dismas

**Background:** The Health Management Information System (HMIS) monitors the regular distribution of insecticide-treated nets (ITNs) among infants. Infants are provided ITNs during their first measles-rubella (MR1) vaccination at nine months of age, to maintain high ITN coverage within this vulnerable population. However, the effectiveness of the HMIS in capturing and reporting ITN distribution data remains uncertain. This study assessed the system's effectiveness and pinpointed areas for improvement

**Objective:** To evaluate the performance of the HMIS routine surveillance system on ITNs given to infants during their first MR vaccine

**Methods:** A descriptive cross-sectional study was conducted from January to December 2024 to evaluate the HMIS surveillance system's usefulness and performance based on the CDC 2021 guidelines. Data were collected from five health facilities in Dodoma through HMIS tools and monthly reports. Structured questionnaires were administered to ten healthcare workers, and key informant interviews were held with one NMCP staff member and the Regional Malaria Focal Person

**Results:** The HMIS system was useful for monitoring ITN distribution and guiding decisions. It was simple and accepted; 90% of respondents entered data in under 15 minutes, and all seven trained staff used it. Paper form completeness was 100%, and 95% of reports were timely. 15% of records had inconsistencies, and 3.3% of electronic forms were missing in DHIS2. The system was sensitive (91.85%), representative

(90.09%), stable, and well distributed. ITN coverage dropped from 85.4% (2024) to 64.8% (2025) after separating ITN&MR1 forms.

**Conclusion:** The HMIS system was useful and showed strong performance in simplicity, acceptability, timeliness, representativeness, stability, and sensitivity. Despite these strengths, data inconsistencies and missing electronic forms revealed gaps in data quality. The significant drop in ITN coverage after separating ITN and MR1 forms suggests poor system adaptability or limited user knowledge, warranting targeted training and system improvements

**Recommendation:** The HMIS surveillance system for ITN distribution is useful in maintaining high coverage of ITNs among infants, but it still has some challenges. To address data inconsistencies, regular data quality assessments and providing timely feedback are recommended to improve the accuracy and reliability of ITN distribution data, ultimately supporting malaria prevention efforts in Tanzania. A formal system evaluation is proposed

## 127 Assessment of the Pharmacy Module for Pre-Exposure Prophylaxis (PrEP) as an HIV Prevention Surveillance System

**Authors:** Enock A. Mwambalasa, Gideon P. kwesigabo, Nsiande Lema, Loveness Urio, Boniface Mlay

**Background:** Assessing surveillance systems is vital to ensure they meet their goals. This evaluation focused on the Pharmacy Module's

performance in monitoring and reporting Pre-Exposure Prophylaxis (PrEP) data for HIV prevention, as well as to determine if the system effectively captures key information to support continuous PrEP availability and quality service delivery for high-risk groups such as female sex workers, men who have sex with men, and adolescent girls and young

**Objective:** To determine whether the Pharmacy module focusing on the Pre-Exposure prophylaxis monitoring and reporting system meets its purpose and objectives

**Methods:** A secondary data review was conducted from January to December 2024 using data from the National AIDS, STIs, and Hepatitis Control Program (NASHCoP). The review focused on monthly data across national, regional hospital, and council levels to assess PrEP tracking and service delivery improvements. Data sources included hardcopy CTC2 registers, quarterly facility reports, and patient forms.

**Results:** From January to December 2024, 243 clients eligible for PrEP were enrolled, with consistent data across all sources. PrEP prescription data entry took 1–10 minutes per client. Among healthcare workers, 68% (17/25) received formal training, and 32% (8/25) were trained on the job. The system was flexible, as updates included PrEP tracking since 2021 and extended refill durations (monthly to 3–6 months). Overall, 84% of HCWs could complete forms, enter data, and generate reports.

**Conclusion:** The Pharmacy Module for tracking PrEP drugs in HIV prevention is useful, acceptable, and flexible. It facilitates follow-up

through mobile calls for missed appointments and is user-friendly, even for minimally trained staff. However, it lacks a system to monitor PrEP adherence in the community, increasing the risk of drug misuse and resistance. Enhancing adherence tracking is recommended to improve program.

**Recommendation:** "MoH (NASCoP) should train and give capacity building to Community Health Workers (CHWs) for close follow-up of PrEP users in the community for adherence and proper use of these antiretroviral drugs to avoid resistance. Due to implementing changes in policies, staff like Data managers and data clerks should be employed by the government for consistency and smooth running.

## 128 Assessment of the Malaria Case Notification (Shokishoki) Surveillance System in Ten Health Facilities in Zanzibar

**Authors:** Authors: Muzzna Ujudi Mchavu, Rogath Kishimba, Candida Moshiro, Mohammed Kitwasi

**Background:** Malaria continues to pose a significant public health burden, especially in tropical and subtropical regions of Tanzania. In Zanzibar, the Malaria Elimination Program (ZAMEP) utilizes the Coconut Surveillance System. To support real-time tracking of malaria cases, it comprises Malaria Case Notification (Shokishoki-MCN) and Malaria Case Investigation (MCI). This assessment focused on

the Shokishoki-MCN systems in monitoring, detecting, and responding to malaria cases across ten health facilities in five districts

**Objective:** To evaluate the Shokishoki surveillance system's effectiveness in health facilities for malaria monitoring, detection, and response

**Methods:** The assessment followed WHO's Malaria Surveillance Toolkit, CDC's MMWR guidelines, and Zanzibar's Malaria Strategic Plan (2018–2023). Purposive sampling was used to target ZAMEP 2 staff and 20 healthcare workers across ten facilities in five districts. Data were collected through structured questionnaires, review of demographic and clinical data from the Malaria Case Registers (MCR), and analysis of surveillance system databases to assess the data quality, usefulness, completeness, flexibility, timeliness, stability and sensitivity.

**Results:** From January to December 2024, the system recorded 9,337 confirmed malaria cases, highlighting a peak in January. The system was simple and user-friendly, with eight HCWs reporting form completion in under five minutes. It is flexible since it allows for the addition of new intervention indicators, integrated with DHIS2, and received 100% acceptability from all participants. Data quality was strong, showing 97% accuracy in MCR registers at ten health facilities, though completeness varied, with Kendwa, Mpendae, and Makunduchi achieving 95%.

**Conclusion:** Despite achieving 97% data validity and DHIS2 integration and demonstrating broad representativeness across age groups and

locations, challenges included incomplete data, a reliance on donor funding (60%), and the inability to capture negative cases.

**Recommendation:** This assessment indicates potential for improved data completeness and timeliness, as well as enhancements to negative case reporting.

## 129 Active Case Search and Mortality data Review of Marburg virus Disease Outbreak in Biharamulo District, Kagera Region, 2025

**Authors:** Bahati Libenanga, Enoch Mwambalasa, Emmanuel Constantine, Muzna Ujudi

Mchavu, Monga Nyalla, Solomon Werema, Danstan Ngenzi, Emmanuel Mwakapasa, Loveness Urio, Ally Hussein, Devotha Leonard, Nsiande Lema, Atuganile Musyani, Lusungu Ngailo, Vida Mmbaga

**Background:** On January 20, 2025, the Tanzanian Ministry of Health declared a Marburg Virus Disease (MVD) outbreak in Biharamulo District, Kagera Region, after confirming two cases. MVD is a highly fatal viral hemorrhagic fever with the potential for nosocomial and cross-border transmission, particularly concerning in border regions like Kagera, which neighbors Rwanda, Uganda, and Burundi. This marked Tanzania's second MVD outbreak, following one in Bukoba in 2023

**Objective:** To assess the extent and characteristics of the outbreak through active case search and retrospective mortality review in 13 health facilities

**Methods:** Between March 3 and 10, 2025, an active case search was conducted in 13 facilities, alongside a retrospective mortality review in four. Data sources included 21 hospital registers, 4,297 patient files, and 4 mortuary logs. Kobo Toolbox entered patients' information, including signs and symptoms. Data cleaning was done in Excel, and analysis in Stata produced descriptive statistics. Geospatial mapping of alerts and deaths was conducted in QGIS.

**Results:** No new MVD cases were found beyond the initial 10 (2 confirmed, 8 probable), confirming containment by January 28, 2025. Of the 39 alerts reported, 76.9% involved children under five, and 53.8% were males presenting with VHF-like symptoms. Alerts were clustered in Biharamulo, specifically in Rukaragata, Lusahunga, May Day, M23KJ Health Centers, and Kitwechembogo village, but none met the MVD case definition. Among 244 deaths reviewed, 18% exhibited VHF-like symptoms, 68% were attributed to malaria or pneumonia, and 14%.

**Conclusion:** The outbreak was successfully contained by January 28, 2025. However, the clustering of VHF-like symptoms in high-risk areas and the lack of diagnostic confirmation highlight gaps in lab capacity and surveillance. Strengthening diagnostic infrastructure, surveillance, and targeted interventions in bat-human interaction zones, along with continued training and rapid response readiness, is critical for future outbreak preparedness in Tanzania.

**Recommendation:** Enhancing the GoTHoMIS for efficient patient data retrieval, ensuring

updated HMIS tools like MTUHA 2025, and conducting regular mortality data reviews for evidence-based decisions. Cross-border collaboration with Rwanda, Uganda, and Burundi will establish joint surveillance and rapid response protocols. RHMT and DHMT will sustain active case searches, supportive supervision, and community interventions in high-risk areas, using digital tools for risk

## 130 Assessment of the Afya Msafiri (Yellow fever) Surveillance System at Julius Nyerere and Kilimanjaro International Airport

**Authors:** Emmanuel Kimonge, Elibariki Mwakapeje, Theresia Ambrose, Angela Samwel, Saumu Nungu, Athanas Lucas

**Background:** Yellow fever is a serious viral hemorrhagic disease endemic to tropical and subtropical regions of South America and Africa, particularly where vaccination coverage is low. It accounts for over 2,000 infections and 3,000 deaths annually worldwide, with Africa bearing 90% of the burden. In response, Tanzania introduced the Afya Msafiri Surveillance System in 1950 to monitor international travellers' health and vaccination status at Julius Nyerere International Airport (JNIA) and Kilimanjaro.

**Objective:** To assess the performance of the Afya Msafiri (Yellow Fever) Surveillance System for international travellers between January 2024 and January.

**Methods:** A cross-sectional study was conducted at Julius Nyerere International Airport (JNIA) and Kilimanjaro International Airport (KIA) between

January 2024 and January 2025. These sites were chosen due to their high volume of travellers. The evaluation followed the CDC's MMWR guidelines for assessing public health surveillance systems. Data collection involved structured interviews with 30 health officers, use of observational checklists, and review of 50 traveller forms extracted from system records.

**Results:** Of the 30 health personnel interviewed at Julius Nyerere International Airport (JNIA) and Kilimanjaro International Airport (KIA), 28 (93%) participated. The system was found to be useful, effectively collecting, recording, and analyzing required information from travellers arriving from yellow fever endemic regions. Simplicity was rated at 87%, based on the clarity of the case definition and ease of identifying yellow fever cases. Acceptability was 90% of staff willing and able to use the system. Data quality was strong as 90%

**Conclusion:** The Afya Msafiri Surveillance System at JNIA and KIA is effective, demonstrating simplicity, flexibility, high data quality, and timeliness in preventing yellow fever importation. However, limited staffing poses a threat to its long-term stability.

**Recommendation:** Strengthening human resources is crucial to ensure continuous, high-performance monitoring and timely response at points of entry.

## 131 Assessment of IDSR Surveillance System Using Cholera Case Study in Tanzania 2024

**Authors:** Emmanuel Costantine, Vida Mmbaga, Khadija I. Malima, Danstan Ngenzi, Loveness Urio, Ally Hussein, Devotha Leonard, Nsiande Lema

**Background:** Globally, an estimated 4 million cholera cases occur each year, with approximately 143,000 reported annually in sub-Saharan Africa. Since 1998, Tanzania has implemented the Integrated Disease Surveillance and Response (IDSR) system to improve outbreak detection and response. However, the system's ability to pick cases during cholera surveillance outbreaks has not been thoroughly assessed. Persistent reporting delays during outbreaks contribute to the continued occurrence of cholera cases.

**Objective:** To assess the performance of the IDSR system based on its usefulness and surveillance attributes in monitoring cholera in Tanzania

**Methods:** A cross-sectional assessment on five selected health facilities within Itilima District that reported most of the Cholera cases in the Simiyu region. CDC's framework for evaluating public health surveillance systems guided the analysis, focusing on nine system attributes (Simplicity, flexibility, data quality, acceptability, representativeness, sensitivity, positive predictive value, stability). Data were analysed in Microsoft Excel.

**Results:** The IDSR system monitored cholera trends and detected 2023-2024 outbreaks. Performance showed excellent timeliness (95%), flexibility (100%), high acceptability (98%), and

operational simplicity (83%), new case definitions, and <10 minutes form completion. However, critical weaknesses emerged: poor data quality with only 26% HMIS-IDSR consistency and 63% completeness, plus moderate stability (67%). Priority improvements are needed for data validation protocols and system reliability while maintaining strong operational performance.

**Conclusion:** Strong operational foundations don't guarantee good performance of the surveillance system, but data quality remains paramount. Despite excellent timeliness and user acceptance, poor data consistency (26%) undermines decision-making. Lesson: Systematic data validation protocols are essential alongside operational efficiency for good performance of disease surveillance systems

**Recommendation:** Implement automated HMIS-IDSR validation checks and monthly data quality audits to improve 26% consistency. to adhere to real-time completeness monitoring to address 63% gap. Strengthen system infrastructure for better stability (67%) of the surveillance system.

## 132 Evaluation of Tanzania's Influenza Sentinel Surveillance System performance, January to December 2024

**Authors:** Monga Nyalla, Gloria Sakwari, Suleiman Chombo, Ally K Hussein, Angela Samwel

**Background:** Influenza remains a significant global public health concern, particularly affecting high-risk populations through severe illness and

increased mortality. Tanzania's National Influenza Sentinel Surveillance System (NISS), established in 2008, plays a critical role in tracking influenza trends, detecting outbreaks, and informing public health responses

**Objective:** To assess the system's performance from January to December 2024, its effectiveness in achieving its objectives, and identify areas for improvement

**Methods:** Evaluation was conducted at the Ministry of Health (MoH) Epidemiology Section and Dodoma Regional Referral Hospital (DRRH), one of 19 designated sentinel sites. A mixed-methods approach was used, following CDC surveillance system evaluation guidelines. Data collection included document reviews and key informant interviews. Microsoft Excel was used for data analysis. The assessment focused on eight system attributes: simplicity, flexibility, data quality, acceptability, predictive value positive (PVP), representativeness, timeliness, and stability

**Results:** The system was simple and flexible. Among the 11 staff interviewed, 73% had received training, and 89% completed forms in under 10 minutes. Timeliness was high, with all 5,120 laboratory results returned within one week. Of the 30 reviewed forms, 81.1% were fully completed, indicating good data quality. However, the PVP was low (9.7%), suggesting many false positives. Geographical coverage was moderate, with sentinel sites in 61.3% of the regions. System stability was a concern due to total reliance on donor funding

**Conclusion:** The NISS is effective in monitoring influenza and supporting public health actions. However, improvements are needed in PVP, regional coverage, and financial sustainability.

**Recommendation:** It is recommended to enhance the system's case definition accuracy, upscale sample collection, expand sentinel site coverage, and establish long-term domestic funding mechanisms.

## 133 Distribution and Utilization of Field Epidemiology and Laboratory Training Program graduates in Tanzania

**Authors:** Edna Baraka Kibango, Joseph James Mtemi, Melkizedeki Abdulahi, Enock Mwambalasa, Beatrice Njeri Maina, Juliana Amma Mahawe, Jofrey Michael Mtewele, Stephen Simbeye, Leopardo Alvalius Ngetwa, Najma Haji Khamis, Khalifa Kassim Munisi, Donatus Phedson Mwambete, Bahati Libenanga, Jonhson Neophitus Megabe, Jonathan Mashauri, Nyemo Mapuga, Hellen Honest Ndanu, Eliaingiringa Moshi, Maria Felix Mushi, Dorothy Macmillan Moshy, Robert Willibert Baluya, Nicholas Mwaiseje Mbonile, Hashimu Athumani Simba, Adela John Kisanga, Muzzna Ujudi Mchavu, Emmanuel Mubezi Kimonge, Flavian Jacob Rweyungura, Fatma Suleiman Abraham, Abubakary Rashidi, Nura Mnaro, Neema Lucas, Emmanuel Constantine, Emmanuel Mnanka, Monga Samweli Nyalla, Yusuph Hamis Uzuilla, Nsiande Lema, Ally Hussein, Devotha Leonard, Loveness Urrio,

**Background:** The Tanzania Field Epidemiology and Laboratory Training Program (TFELTP) equips health professionals with epidemiological skills to strengthen disease surveillance and enhance outbreak response. As of January 2025, the program has trained a total of 43 cohorts. However, there is limited data on how these graduates are distributed and utilised within the public health system.

**Objective:** To assess the geographical and sectoral distribution of TFELTP graduates and to determine utilisation and factors influencing it.

**Methods:** A cross-sectional study was conducted over seven days among TFELTP graduates. Data were collected via structured telephone interviews capturing demographics, employer type, professional background, facility level, and training level. Utilisation was self-assessed by participants based on whether they regularly applied the epidemiological skills and knowledge acquired during FELTP training, such as surveillance, outbreak investigation, data analysis, and public health response in their current roles and multivariable logistic regression was employed.

**Results:** Out of 1035 eligible graduates, 838 (80.9%) participated, comprising 193 advanced, 106 intermediates, and 539 front-line graduates. Graduates were distributed across all 31 regions, with Dar es Salaam and Dodoma hosting the largest number of graduates. Overall, 73 graduates (8.7%, 95% CI 7.0% to 10.8%) did not utilise their FELTP-acquired skills, with non-utilisation highest among laboratory (20.2%) and livestock officers (15.4%) ( $p < 0.001$ ). Key

perceived barriers to utilisation included limited resources, poor infrastructure, lack of management support, and misallocation of roles.

**Conclusion:** The distribution and utilisation of FELTP-trained graduates across sectors shows the potential to strengthen public health response. However, the under-utilisation of laboratory and livestock officers who are essential for disease surveillance and outbreak detection highlights the need for strategic placement of graduates. Additionally, targeted efforts by the Ministry of Health, the President's Office Regional Authority, the Local Government, and stakeholders.

**Recommendation:** This study recommends Ministry of Health improve resource allocation, establish supportive policies, and ensure strategic placement of these graduates to maximize the graduates' impact and strengthen Tanzania's public health system

## 134 Evaluation of the Antimicrobial Resistance Surveillance System, June-December 2023

**Authors:** Adela kisanga, Loveness Urjo

**Background:** Antimicrobial resistance (AMR) poses a growing global health challenge, leading to increased illness, death, and healthcare costs. In response, Tanzania established a national AMR surveillance system in 2019, guided by the Global Antimicrobial Resistance Surveillance System (GLASS). Coordinated by the National Public Health Laboratory (NPHL), the system collects laboratory-based data from 9 sentinel

sites nationwide to inform public health action and support antimicrobial stewardship

**Objective:** To assess the performance of the AMR surveillance system, focusing on its usefulness and core attributes (Simplicity, flexibility, Acceptability, representativeness)

**Methods:** A descriptive cross-sectional evaluation was conducted from June to December 2023. Stakeholders included national-level coordinators and facility-level personnel (2 from Temeke RRH and 5 from MNH) in Dar es Salaam. Data were collected through interviewer guides using CDC's MMWR surveillance evaluation framework. Data were sourced from registers and WHONET

**Results:** Simplicity and flexibility were rated at 100%, with all staff trained and actively using WHONET. Data completeness averaged 87.1%, though challenges included a 30.4% rate of duplicate entries and low completeness of admission dates (35.8%). Acceptability stood at 64.3%, impacted by duplicative data entry. The system was representative across regions and age groups, but only 55.5% of sentinel sites submitted data on time. Despite funding variability, the system remained stable due to the Ministry of Health and partner support

**Conclusion:** Tanzania's AMR surveillance system is effective and well-structured. To enhance performance and sustainability, efforts should focus on improving data quality, streamlining data systems, and easing staff workload

**Recommendation:** To improve AMR surveillance efficiency and acceptance,

WHONET should be integrated with facility systems to reduce duplication for healthcare workers. MOH should ensure sustainable funding and conduct regular refresher training to enhance data quality

## 135 Assessment of drug resistance tuberculosis surveillance system from January 2023 to December 2023

**Authors:** Jonathan Mashauri<sup>1</sup>, Dr Upendo Kibwana, Dr Peter Mbelele<sup>1</sup>, Nsiande Lema, Baraka Justine.

**Background:** Tanzania's Drug-Resistant Tuberculosis (DR TB) surveillance system is essential for monitoring disease trends, detecting outbreaks, and informing treatment strategies. Although RR/MDR-TB notifications increased from 197 in 2015 to 337 in 2023 following the scale-up of WHO-recommended rapid diagnostics from 66 to 341 facilities, challenges persist in case detection and diagnostic accuracy. We assessed the usefulness and the key system's key attributes.

**Objective:** Evaluation of the drug-resistant tuberculosis surveillance system from January 2023 to December 2023.

**Methods:** A retrospective cross-sectional study was conducted from January to December 2023 in Dodoma Municipal Council. Seven healthcare workers from two health centres, selected through convenience sampling, participated in the assessment. Additionally, TB program records were reviewed to assess system performance indicators. Data analysis was performed using Microsoft Excel 2021, following

the CDC's MMWR guidelines as the evaluation standard.

**Results:** All seven healthcare workers received formal training on the system. Among them, 85.7% were able to access the system and perform key tasks such as timely data entry, proper record editing, and adherence to standard procedures. The system demonstrated flexibility with 100% success in editing entries, allowing healthcare workers to update and correct data accurately.

**Conclusion:** The DR TB surveillance system is functional and widely adopted but limited by low sensitivity and the absence of a screening tool. Improvements should focus on enhancing case detection, introducing a screening test, and increasing healthcare worker satisfaction through targeted training and system enhancements.

**Recommendation:** Broader evaluations and ongoing monitoring are recommended for sustained performance improvement.

## 136 Assessment of Dengue Fever Surveillance System in Dar es Salaam, January 2023 to December 2024

**Authors:** Johnson Neophitus Megabe, Upendo Kibwana, Goodluck Mwanga, Salome Kihampa, Maria Kardos, Nsiande Andrew Lema

**Background:** Dengue fever is a mosquito-borne viral illness caused by four serotypes (DENV 1–4), with DENV-2 being the most prevalent in tropical and subtropical regions worldwide. It poses a serious public health threat. Tanzania has faced multiple outbreaks, with ongoing local transmission confirmed in 2019. In response, a

national dengue surveillance system was launched in 2021 across 11 sentinel sites in Dar es Salaam to monitor and manage the disease.

**Objective:** This study assessed the performance, usefulness, and key attributes of the Dengue Surveillance System in Dar es Salaam, 2023–2024.

**Methods:** A descriptive cross-sectional study was conducted in two sentinel sites in Dar es Salaam using the CDC's updated Guidelines for Evaluating Public Health Surveillance Systems (MMWR). Data were obtained from registers and the DISA Lab system. Analysis was performed using Excel, Word, and PowerPoint.

**Results:** A total of 757 records were reviewed. Of the 14 health workers, 95% were trained and 100% found the system easy to use. Overall data completeness was 98.7%. The system showed high flexibility with 80% of staff trained and adapted to the new Rapid Diagnostic Test (IgG/IgM + NS1). Acceptability was high, with 80% of healthcare workers trained in data entry, and 91% of reports were submitted on time. The system had a high PPV of 99%, strong stability.

**Conclusion:** From January 2023 to December 2024, the Dengue Surveillance System in Dar es Salaam proved to be effective and reliable. It demonstrated high data quality, adaptability, strong user acceptance, high predictive accuracy, and robust stability. The system effectively supports the monitoring and control of dengue in the region.

**Recommendation:** NPHL should develop and maintain official documentation to standardize Dengue Fever Surveillance System procedures.

MoH should improve funding stability by diversifying sources.

## 137 Assessment of the Antimicrobial Resistance Surveillance System at Benjamin Mkapa Hospital, Tanzania

**Authors:** Donatus Phedson Mwambete, Eligius Lyamuya, Lilian Nkinda, Loveness Urio, Jacob Lusekelo

**Background:** Antimicrobial resistance (AMR) is a global health threat, causing over 1 million deaths annually. In Tanzania, 2019 estimates attributed 12,500 direct deaths to AMR, with an additional 54,000 associated deaths. Resistance to key antibiotics like ciprofloxacin and third-generation cephalosporins has risen significantly. Tanzania monitors AMR through 10 sentinel sites, including Benjamin Mkapa Hospital (BMH), which contributes data to the World Health Organisation Global Antimicrobial Resistance and Use Surveillance System (WHO-GLASS).

**Objective:** To assess Tanzania's AMR surveillance system and its attributes in BMH from January 2023 to December 2024

**Methods:** A cross-sectional evaluation assessment was conducted at BMH from March 10–14, 2024. The assessment followed the CDC's Updated Guidelines for Evaluating Public Health Surveillance Systems (MMWR). Data were retrospectively collected from laboratory registers, the GLASS system, and healthcare worker interviews. Key system attributes assessed included usefulness, simplicity,

flexibility, data quality, representativeness, timeliness, and stability.

**Results:** Between January and December 2024, 3,503 clinical samples were processed, yielding 1,935 bacterial isolates. Of these, 7.7% (148) showed no resistance, while 92.4% (1,787) exhibited resistance. High-priority WHO-GLASS resistant pathogens included 17.0% carbapenem-resistant Enterobacteriaceae (CRE), 17.2% confirmed ESBL producers, and 0.3% Streptococcus beta-haemolytic cephalosporin III non-susceptible isolates. Additional resistances included 31.1% amikacin-resistant Enterobacteriaceae, 27.5% possible ESBL producers, 4.6% vancomycin-resistant enterococci, 2.7% MRSA, and one isolate of trimethoprim-resistant Stenotrophomonas. Data completeness was 100% for key variables.

**Conclusion:** The AMR surveillance system at BMH performs well and provides vital data for empirical treatment guidance and national AMR strategy formulation.

**Recommendations:** It is recommended to integrate genomic surveillance, link the Laboratory Information System with WHO-NET to enable streamlined data transfer, and incorporate clinical outcome data to better assess AMR-associated mortality

## 138 Determinants of CD4 recovery among adults on second-line art in Tanzania: insights from a national cohort

**Authors:** Glory M Temu, Joan Rugemalila, Revocatus L Baraka, Samuel Masasi, Tosi M

*Mwakyandile, Rajabu H Mnkungwe, Philip Sasi, Werner M Maokola, Sabina F Mugusi.*

**Background:** Second-line antiretroviral therapy (ART) is crucial for people living with HIV (PLHIV) experiencing first-line treatment failure, yet immune recovery remains poorly understood in Tanzania. Despite high ART coverage, 40% of adults on second-line therapy have persistently low CD4 counts, increasing morbidity and mortality. This study addresses these gaps by identifying recovery determinants, informing clinical strategies, and optimizing treatment outcomes for sustainable HIV management in resource-limited settings.

**Objective:** To quantify CD4 changes among adults on second-line ART in Tanzania over six months and identify key immune recovery determinants

**Methods:** Retrospective cross-sectional study that analyzed data from Tanzania's CTC3 database, including adults ( $\geq 18$  years) who switched to second-line ART between 2018 to 2022. Key variables included CD4 recovery defined as a  $\geq 50\%$  increase in cell count six months post-switch, virologic suppression, co-infections, ART duration, facility type, sex, and regions.

**Results:** Complete data from 14,042 participants were used; 33.53% achieved CD4 recovery six months after switching regimens. That varied significantly ( $p < 0.001$ ) for facility type and ownership and ( $p = 0.001$ ) for WHO clinical stage and geographic zone. Factors associated with good immune recovery include marital status, facility type and WHO clinical stage ( $p < 0.05$ ). Non-

recovery was highest in faith-based facilities (80.9%) and the Western Zone (71.2%). ART duration, viral load at second-line switch, age and sex showed no significant effects.

**Conclusion:** CD4 recovery among Tanzanian adults on second-line ART remains inadequate, with two-thirds failing to achieve immune restoration. Recovery disparities by facility type and geographic zone underscore systemic inequities in care quality and access. The lack of association with clinical predictors suggests that structural factors, rather than patient-level characteristics, may play a greater role, demanding targeted health-system interventions to improve outcomes.

**Recommendation:** Targeted health system interventions are urgently needed to address facility- and region-specific disparities in CD4 recovery. Strengthening dispensary capacity, standardising ART monitoring protocols, and enhancing adherence support can improve outcomes. Policy efforts should reallocate resources to high-burden zones. Future research must focus on long-term immune recovery patterns and evaluate second-line ART optimisation strategies tailored to resource-constrained environments.

## 139 Six Years-Trends in Antibiotic Use among Cardiovascular Heart Disease Inpatients at the Jakaya Kikwete Cardiac Institute

**Authors:** *Jackob Aron Ndayomwami, Judith Ambele Mwamelo, Hamis Abdalla Kaniki, James Mwaktomo, Naizihijwa Majani, Reuben Kato*

Mutagaywa, Peter Kisenge, Mohamed Janabi, Raphael Z. Sangeda

**Background:** Antibiotic use among cardiovascular inpatients is increasingly recognized as a critical concern, particularly in low- and middle-income countries (LMICs), where antimicrobial resistance (AMR) threatens patient outcomes and public health. In settings like Tanzania, data-driven antimicrobial stewardship (AMS) interventions are vital to guide rational use and policy formulation.

**Objective:** To analyze trends in antibiotic use among cardiovascular inpatients at the Jakaya Kikwete Cardiac Institute

**Methods:** We conducted a retrospective longitudinal analysis of 250,591 prescriptions from 11,656 cardiovascular inpatients. Of these patients, 6,612 (56.7%) received at least one systemic antibiotic. Antibiotic use was quantified in Defined Daily Doses per 100 bed-days (DDD/100 bed-days). Data were analysed using Microsoft Excel, SPSS, and time-series modelling with ARIMA.

**Results:** Total antibiotic use across the six years was 29.88 DDD per 100 bed-days. Injections accounted for over 55% of antibiotic use. At the generic level, meropenem, amoxicillin, and ceftriaxone were the top three agents, with the top 11 drugs comprising over 90% of total antibiotic use. WHO AWaRe classification showed Reserve antibiotics accounted for 46.4% of use, indicating frequent reliance on last-line agents. Forecasting using ARIMA (1,1,0) suggested that the increasing trend in antibiotic use is likely to continue through 2026.

**Conclusion:** The substantial use of broad-spectrum and Reserve antibiotics among cardiovascular inpatients underscores the need for strengthened AMS practices at JKCI. Priorities should include intravenous-to-oral switch protocols, regular drug utilisation audits (e.g., DU50), and tighter control of Reserve antibiotic prescribing to mitigate AMR risks.

**Recommendation:** Regular surveillance of antibiotics at the cardiovascular hospitals can inform policy on rational use of antibiotics and prevention of AMR through effective AMS strategies.

## Subtheme: Maternal, Newborn, Child and Adolescent Health

### 140 From Cradle to Confidence: Using Youth-Led Dialogues to Improve Maternal and Adolescent Health

**Authors:** Geoffrey Kimotho

**Background:** In many informal settlements, young girls and pregnant women face serious challenges accessing health services. Myths, shame and lack of information stop them from seeking help early. Many young people are left out of health conversations, yet they are the most affected. There was a need to bridge the gap between health providers and the youth.

**Objective:** To increase knowledge and access to maternal and adolescent health services through

creative, youth-led dialogues and community outreach.

**Methods:** We used a peer-to-peer model, where trained adolescents led weekly dialogues with pregnant teens, young mothers, and healthcare workers. The sessions were held in safe community spaces using spoken word, role plays, and storytelling. We collected feedback through short surveys and interviews. 120 participants were involved over 3 months in two informal settlements.

**Results:** After the sessions, 85% of adolescent girls reported improved knowledge about prenatal care and contraception. Clinic visits among young mothers increased by 40%. Health workers also reported better communication with youth clients. Girls said they felt "seen, heard, and safe" for the first time.

**Conclusion:** Youth-led, creative health education can change the way communities view maternal and adolescent health.

**Recommendation:** Scale up youth-led dialogues and integrate creative health education to foster youth-health worker collaboration, engage boys and men in programs, and support safe spaces to improve maternal and adolescent health outcomes.

## 141 Sexual and Reproductive Health Service Use of Unmarried Adolescents in Morogoro, Tanzania

**Authors:** Baraka M. Morris<sup>1</sup>, Suleiman Chombo, Connie Ulrich, Deodatus CV. Kakoko

**Background:** Adolescents in Tanzania are a socially, economically, and sexually active group that significantly influences public health trends, particularly in sexual and reproductive health. Despite health facilities that offer adolescent-friendly sexual and reproductive health services (SRHS), their use is low, especially among unmarried adolescents. This potentially exposes them to risky sexual practices, unwanted pregnancies, unsafe abortion, and sexually transmitted illnesses (STIs, including HIV).

**Objective:** This paper explores the use of SRHSs by unmarried adolescents in Tanzania and the factors associated with it.

**Methods:** This study employed a cross-sectional quantitative household survey to collect data from 312 unmarried adolescents aged 15 -19 years in the selected streets and villages located in Morogoro Municipal and Mvomero District of the Morogoro region, Tanzania.

**Results:** Of the 312 unmarried adolescents who participated, 17.9% reported having ever visited a health facility for SRH services. Unmarried adolescents who had ever worked for pay were 1.98 times more likely to use SRHSs than those who had not (RR=1.98, p=.025). Moreover, those who had been in sexual relationships were 2.27 times more likely to use SRHSs than those who had not (RR=2.27, p=.007).

**Conclusion:** Despite government efforts to improve access to SRHSs, their utilisation among adolescents remains disappointingly low. This study found that working for pay and having been in a sexual relationship are associated with the use of SRHS among unmarried adolescents.

Recommendation: Services offered should address the relational (social) and economic factors influencing this group to enhance utilisation.

## 142 Males' perceptions of involvement in antenatal care at Kisarawe District, Pwani Region, Tanzania

**Authors:** Agnes Henjewele, Andrea Pembe, Amani Kikula

**Background:** Male involvement in antenatal care (ANC) significantly influences maternal and child health. It has been shown to improve the utilization of maternal care services and reduce maternal and child morbidity and mortality. Despite this, male involvement in ANC has been low in most developing countries. Less is known about males' perceptions of their involvement in ANC.

**Objective:** This study explored males' perceptions of their involvement in antenatal care in Kisarawe district council in the Pwani region of Tanzania.

**Methods:** An exploratory qualitative study was conducted at the Kisarawe District Council. Seventeen purposively sampled men aged 18 years and above, whose partners were in the third trimester of pregnancy or who had children under 2 years old, were included. In-depth interviews were conducted to explore the men's perceptions of their involvement in the ANC. The interviews were audio recorded, transcribed, and manually analyzed using thematic analysis inspired by Braun and Clarke.

**Results:** Following the analysis, three main themes emerged regarding male involvement in ANC in Kisarawe district: men's roles during pregnancy, factors facilitating involvement, and barriers to ANC involvement. Men supported their partners by helping with household chores, attending ANC visits, and offering financial support. However, their involvement was shaped by personal attitudes, cultural beliefs that pregnancy is a woman's responsibility, and health system limitations. These factors either encouraged or hindered active involvement, reflecting a complex interplay of individual, societal, and systemic.

**Conclusion:** This study explores male involvement in antenatal care, showing men support through finances, clinic visits, and household chores. However, sociocultural norms, fear of HIV testing, and poor health prioritization limit their role. Health system barriers like long waits and a lack of male-friendly services also hinder involvement. Positive attitudes toward health providers and perceived ANC benefits help promote involvement.

**Recommendation:** To enhance male involvement in ANC, policies should target youth through school and university curricula. Health facilities must become male-friendly with designated spaces and flexible hours. Health providers should encourage men's active participation. Collaboration with community leaders and outreach campaigns can address sociocultural barriers. Further research involving all stakeholders is needed to understand broader community perceptions.

## 143 External Validation and Implementation of a Novel mHealth Application for Acute Diarrhea Management Across Lifespan

**Authors:** *Fatimah Dhalla, Mwemezi Salvatory, Raban Muhoza, Sarah Somji, Karim Manji*

**Background:** Diarrheal diseases remain one of the leading causes of death worldwide. Proper rehydration is a crucial step in treating acute diarrhoea. Recent prospective studies have revealed significant limitations in the World Health Organization's algorithms for treating diarrhoea. We previously derived and validated two new clinical diagnostic models for dehydration severity and integrated these models into an mHealth application. Preliminary findings suggest that these models outperform existing IMCI/IMAI algorithms in accuracy and reliability.

**Objective:** We aimed to externally validate the performance and utility of our mHealth application and identify implementation barriers and facilitators.

**Methods:** This prospective observational study employs a mixed methods approach. The qualitative component involves conducting 10 focus group discussions (FGDs) with five cadres of health care providers, as well as 5 - 10 in-depth interviews (IDIs) with stakeholders, including but not limited to clinic directors, emergency department directors, and employees of the WHO. The quantitative component includes the enrollment of 2016 people presenting with acute diarrhoea at emergency or outpatient departments.

**Results:** As of May 2025, data collection is ongoing, with five FGDs and one IDI completed. Based on the FGDs and IDI conducted to date, several key insights emerged. The application was positively received, with all providers reporting that it was useful and timesaving, given the understaffing at many health facilities. The algorithm's validity in calculating fluid deficits and guiding treatment decisions was affirmed. The application was also found to be useful for all providers.

**Conclusion:** Preliminary results indicate that the application and algorithm are well received by healthcare providers, who find them useful and timesaving, especially in understaffed settings.

**Recommendation:** This abstract presents a validated diagnostic model incorporated into an mHealth application that would address this gap if used by frontline providers in the management of patients with acute diarrhoea.

## 144 Experiences of Care among Women Who Undergo Caesarean Deliveries at Muhimbili National Hospital, Tanzania

**Authors:** *Sunday Londezya, Furaha August, Zainab Hassan, Victor Chikwala*

**Background:** Caesarean deliveries can have negative physical and emotional effects, leading some women to refuse medically necessary repeat caesarean delivery. Guidelines recommend professional support and effective communication to improve women's experiences. Since most research has focused mainly on the

experience of pain, understanding experiences of other factors is imperative for improving care.

**Objective:** To explore the care experiences of women who underwent caesarean deliveries at Muhimbili National Hospital.

**Methods:** A descriptive phenomenological design was used to explore the experiences of women who underwent caesarean deliveries at Muhimbili National Hospital. Thirteen participants who met the inclusion criteria were purposively sampled and gave informed consent. Data were collected over three weeks through in-depth interviews until saturation was reached. Data analysis was done thematically in six steps as inspired by Braun and Clarke's.

**Results:** This study found that women who underwent caesarean deliveries at Muhimbili National Hospital had positive experiences in areas of pain management, physical support, and privacy, while negative experiences involved limited involvement in decision-making, lack of emotional support, and poor communication. These findings are reflected in three main themes: challenges faced, support from healthcare providers, and experiences of respectful care.

**Conclusion:** This study demonstrates that the experience of care by women undergoing caesarean deliveries at Muhimbili National Hospital is mixed, encompassing both positive and negative aspects. Strengthening support, communication, and involvement in decision-making through staff training, patient feedback systems, and policy reforms is essential for improving the care experience.

**Recommendation:** To improve women's experience, counselling should begin from antenatal, continuous training for healthcare providers on communication skills, establishing strong patient feedback systems, and revising policies to ensure a holistic, patient-centred approach with standardised protocols for respectful care, effective communication, and comprehensive pain management.

## 145 Prevalence of depression and associated factors among pregnant women with pre-eclampsia admitted at Muhimbili Hospital

**Authors:** *Immanuel Angumbwike, Amani Kikula, Fatemazahra Amiji*

**Background:** Antenatal depression is more common in pregnant women with hypertensive disorders, affecting 17% in developed and up to 65% in low- and middle-income countries. Despite its high global and local prevalence, antenatal depression screening is not part of routine care in Tanzania, and its extent remains unclear. This study aimed to assess the prevalence and associated factors of depression among pregnant women with preeclampsia at Muhimbili National Hospital.

**Objective:** To determine the prevalence of depression and associated factors among pregnant women diagnosed with preeclampsia at Muhimbili National Hospital.

**Methods:** A hospital-based analytical cross-sectional study was conducted on 564 pregnant women admitted with the diagnosis of pre-eclampsia from 28 weeks of gestation at

Muhimbili National Hospital from October 2024 to February 2025. The Edinburgh postnatal depression scale was used to assess depressive symptoms, and participants were selected via convenience sampling. Data were analyzed using descriptive statistics and logistic regression.

**Results:** Antenatal depression was found in 35.1% of women with preeclampsia. Emotional violence nearly doubled the risk [AOR = 1.9], low social support increased it sixfold [AOR = 6.4], and having only primary education raised the risk nearly four times [AOR = 3.8]. However, marital status, sexual violence, age, and unplanned pregnancy showed no significant association with depression.

**Conclusion:** The prevalence of antenatal depression is high; one in three pregnant women with preeclampsia admitted at Muhimbili National Hospital had depression. Emotional violence, low social support, and a low level of education were the risk factors. Most women are likely to seek health care services during pregnancy; hence, the antenatal period offers a great opportunity to screen and treat depression.

**Recommendation:** Screening for depression in high-risk pregnant women, like those with preeclampsia, provision of necessary mental health services, and integration of mental health services in antenatal care are recommended.

**146** Perspectives towards reproductive health concerns among adolescents undergoing

**chemotherapy and radiotherapy treatment at Muhimbili National**

**Authors:** Irene Ngowi, Hamza Lilenga, Beatrice Mwilike, Lulu Chirande

**Background:** Cancer treatment is bounded with periods of both early and late side effects. Reproductive health concerns among adolescents goes in parallel with the long-term effects of exposure to systemic therapies and radiation therapies. Adolescent cancer patients face unique needs and significant challenges, including concerns related to their potential reproductive health during chemotherapy and radiation therapy. These impacts are still profound and mostly overlooked.

**Objective:** To explore perspectives towards reproductive health concerns among adolescents undergoing chemotherapy and radiotherapy treatment at Muhimbili National Hospital, Dar-es-salaam.

**Methods:** A hospital-based qualitative study at the MNH paediatric oncology unit involved adolescents aged 15-19 attending the clinic. Excluding critically ill or unconscious patients, data were collected through in-depth Swahili interviews using semi-structured open-ended questions. Interviews were audio-recorded, transcribed verbatim, and analysed using deductive and inductive content analysis. Ethical clearance was obtained from the Research and Ethical Committee of Muhimbili University of Health and Allied Sciences.

**Results:** The primary concerns identified were, Uncertainty about the impact of treatment on reproductive organs (gonadal toxicity). Concerns

about delayed or altered puberty. The desire to find a healthy life partner to avoid future health risks. Lastly, the Need for early recovery to continue education.

**Conclusion:** Adolescents face several reproductive concerns from cancer treatments, often unaddressed in initial care. Findings highlight the need for enhanced counselling, support systems, and integration of reproductive health education into oncology care. Addressing these concerns can improve treatment adherence and quality of life, emphasizing the importance of patient-centred care in adolescent oncology. Adopting a more holistic approach to care.

**Recommendation:** The role of Multidisciplinary teams, including psychologists and reproductive health experts, should be available to address emotional distress, identity issues related to puberty, and concerns about future relationships and parenthood. Also, culturally appropriate age-specific reproductive health education should be embedded in the oncology paediatric services to address their concerns about their future parenthood and relationships.

## 147 Magnitude of intrauterine foetal death characteristic factors, management and obstetric outcomes at Temeke Referral Hospital

**Authors:** Dr. Festido Francis Mwaisumo, Dr. Fadhlun M. Alwy Al-Beity

**Background:** Intrauterine fetal death (IUFD) is a major global public health issue with significant clinical, emotional, social and economic impacts.

It affects 2.6 million pregnancies annually, with a higher burden in developing countries due to limited healthcare access, infections, and nutritional deficiencies. IUFD is linked to maternal, foetal and placental factors, though many cases remain unexplained. Management follows guidelines in diagnosis, delivery planning, complication management and emotional support. Vaginal delivery is usually preferred.

**Objective:** To determine the prevalence, describe the characteristics, assess the management, and evaluate obstetric outcomes of women with IUFD at Temeke Referral Hospital

**Methods:** A retrospective descriptive cross-sectional study was conducted using medical records from 2021 to 2023. Registration numbers from antenatal and labour ward books were used to retrieve files of women with IUFD that occurred before labour onset; those with IUFD after labour began were excluded. Data were extracted using a pretested tool from doctors' notes, antenatal cards and partographs. Data analysis was performed using SPSS version 25.

**Results:** Out of 13350 deliveries, 308 were IUFDs, giving a prevalence of 2.6%. Most affected women (76.3%) were aged 20 -34 years. Anaemia (31.2%) was the most common pregestational condition, and pre-eclampsia (44.2%) was the leading antenatal clinical condition. A full blood picture was done in 89.3%, and real-time ultrasound confirmed 60.9% of diagnoses. Labor was induced in 69.9% and augmented in 13.4%. Only 0.7% received post-delivery counselling. Complications occurred in

21.8%, mainly postpartum haemorrhage (68.7%), and maternal near miss was 11.9%.

**Conclusion:** Improving IUFD management in Tanzania requires evidence-based local guidelines for diagnosis, management and emotional support. Strengthening antenatal services, particularly for early screening and treatment of maternal conditions like anemia, pre-eclampsia, and infection, is important. Improving diagnostic activity, training health care providers, improving documentation, and advocating for policy integration into national maternal programs are essential steps.

**Recommendation:** Develop and implement evidence-based local guidelines to assist healthcare providers in diagnosis, management and supporting women with IUFD, advocating to the Ministry of Health for integration into maternal health programs. Improve diagnostic capacity, ensure essential investigations and train providers through workshops. Conduct multicentre prospective studies on long term maternal outcomes, psychological impact, and barriers to optimise IUFD care.

## 148 Depression among clients with HIV on integrated ART and MAT in Dar es Salaam, Tanzania

**Authors:** Helena Mwaipopo, Joyce Samwel, Dorothy Mushi, Mucho Mizinduko, Nuruel Kitomari, Iddi Nkya

**Background:** The biopsychosocial interaction of HIV and mental health conditions among People who use Drugs (PWUDs) and their implications

for their clinical and psychosocial outcomes necessitate the need for assessment.

**Objective:** To determine the prevalence and factors associated with depression among PWUDs with HIV on integrated MAT and ART (IMAT) care.

**Methods:** We interviewed 145 People with HIV who Use Drugs (PHIV WUDs) on Integrated medication-assisted treatment and ART aged 18 and above at Muhimbili National Hospital, Temeke and Mwananyamala Regional Referral Hospital. Using patient health questions for depression. Bivariate and multivariate analysis was conducted to assess factors independently associated with depression.

**Results:** Depression prevalence among PHIV WUDs was 16.5%. Those with a family history of mental illness had over seven times higher odds of depression (AOR = 7.32; 95% CI: 1.66–32.19;  $p = 0.008$ ). Missing the last three CTC appointments also increased depression risk (AOR = 6.13; 95% CI: 1.47–25.45;  $p = 0.013$ ). Conversely, high social support reduced the likelihood of depression by 93% (AOR = 0.07; 95% CI: 0.01–0.47;  $p = 0.007$ ).

**Conclusion:** These findings suggest that depression among PHIV WUDs remains a substantial concern and is influenced by both psychosocial risk factors and behavioral patterns.

**Recommendation:** This study informs the need for the integration of routine depression screening into HIV and MAT services. It also highlights the need to strengthen social support to reduce the depression burden. Also, research with

expanded sample size and geographic scope should be done to enhance generalizability and inform broader mental health integration in HIV care.

## 149 Clinical Characteristics and Predictors of In-Hospital Mortality Among Chronic Kidney Disease Patients at MNH

**Authors:** Thom Pius, Joan Rugemalila, Jacquilline Shoo, Daniel Msilanga

**Background:** Chronic kidney disease (CKD) is an increasing global health challenge, particularly in sub-Saharan Africa (SSA), where it disproportionately affects younger populations. In Tanzania, limited access to renal replacement therapy (RRT), delayed diagnosis, and financial barriers contribute to late presentation and poor outcomes. Despite the growing burden, data on in-hospital outcomes and mortality predictors among CKD patients in this setting remain scarce, hindering the development of targeted interventions.

**Objective:** To assess the Clinical Characteristics and identify Predictors of In-hospital Mortality Among CKD Patients Admitted at Muhimbili National Hospital.

**Methods:** We conducted a hospital-based prospective cohort study of CKD patients admitted to MNH between September 2024 and January 2025. Patients were followed for up to a maximum of 30 days. Data were collected via structured questionnaires from patients and medical record review. Descriptive statistics summarized patient characteristics, and Cox

regression analysis identified predictors of in-hospital mortality. Ethical approval was obtained from MUHAS, and informed consent was secured from all participants.

**Results:** A total of 207 patients were enrolled (mean age 55.5 years; 56.0% male). In-hospital mortality was 17.4%, with severe hyperkalemia (55.6%) as the most common immediate cause of death. Independent in-hospital mortality predictors included: BUN >20 mmol/L (aHR: 3.67; 95% CI: 1.27–10.67;  $p = 0.017$ ), HDU admission (aHR: 5.25; 95% CI: 1.18–15.19;  $p = 0.002$ ), infection at admission (aHR: 1.54; 95% CI: 1.07–2.23;  $p = 0.021$ ) and conservative kidney management (aHR: 7.55; 95% CI: 3.13–18.17;  $p = 0.001$ ).

**Conclusion:** In-hospital mortality among CKD patients at MNH was high, with severe hyperkalemia as the leading immediate cause of death. Elevated BUN, HDU admission, infection at presentation, and conservative management were independent predictors of mortality. These findings highlight the burden and clinical severity of CKD in hospitalized patients within a resource-limited tertiary care setting

**Recommendation:** The study recommends improving early CKD detection, training primary care providers for timely referral, expanding dialysis access through subsidies or insurance, strengthening infection management, and improving HDU capacity to manage critically ill patients. These strategies aim to address key factors contributing to in-hospital mortality and improve outcomes for CKD patients in resource-limited settings.

## 150 Magnitude, sonographic patterns and predictors of non-alcoholic fatty liver disease among adult patients with T2DM

**Authors:** Dr Zubeir Zubeir, Dr Zuhura Nkrumbih, Dr Salama Asaa

**Background:** Non-alcoholic fatty liver disease (NAFLD) is a common liver condition characterised by fat accumulation in individuals with minimal or no alcohol intake. It is highly prevalent, particularly among patients with type 2 diabetes (T2DM). Diagnosis often relies on liver enzyme levels, which can miss cases. However, liver biopsy is the gold standard, its invasiveness limits use. Ultrasonography is preferred for its non-invasive and practical advantages.

**Objective:** To determine the magnitude, sonographic patterns and predictors of non-alcoholic fatty liver disease among adult patients with T2DM.

**Methods:** Ethical approval and informed consent were obtained. A cross-sectional hospital-based study was conducted from March to August 2024 among 318 consenting T2DM adults at MNH Mloganzila outpatient clinic. A structured questionnaire collected sociodemographic, clinical, sonographic, and laboratory data. Data were analysed with SPSS v20; descriptive statistics were generated. Appropriate statistical tests as used with a significance set at  $p < 0.05$ .

**Results:** The median age of participants was 62 years (IQR: 54.0–68.0), and the prevalence of NAFLD was 18.9%, with females being more

affected. The most common pattern was diffuse fatty accumulation (96.7%). Predictors of NAFLD included large waist circumference [aOR 8.78, 95% CI (0.81–9.40),  $p < 0.001$ ], high total cholesterol [aOR 1.47, 95% CI (0.04–4.07),  $p < 0.001$ ], and increased HbA1c [aOR 3.2, 95% CI (0.13–7.46),  $p = 0.011$ ].

**Conclusion:** NAFLD was relatively common in the study population, with a higher prevalence among females. The most frequent sonographic pattern was diffuse fatty accumulation. Significant predictors included large waist circumference, high total cholesterol, and elevated HbA1c. These findings emphasize the need to manage metabolic risk factors to help prevent NAFLD in T2DM patients.

**Recommendation:** Incorporate routine ultrasound screening for NAFLD in diabetes management protocols, particularly for patients with obesity, dyslipidaemia, and poor glycemic control. Strengthen interventions targeting glycaemic control, lipid profile and weight management to reduce the burden of NAFLD in this population.

## 151 Mental Distress and Associated Factors among Healthcare Workers at Kilwa Road Hospital, Dar es Salaam

**Authors:** Hilary Haule, Dorothy Mushi, Isaac Lema

**Background:** Healthcare workers (HCWs) face high stress. Understanding the prevalence of mental distress and its contributing factors is crucial for support and intervention strategies.

**Objective:** To assess the prevalence of mental distress and its associated factors among HCWs at Kilwa Road Police Hospital.

**Methods:** A hospital-based cross-sectional study was conducted at Kilwa Road Police Regional Referral Hospital in Dar es Salaam, Tanzania. A total of 241 HCWs were screened for mental distress using the World Health Organisation self-reporting questionnaire 20, assessing symptoms over the past 30 days. Participants scoring six or higher were considered to have mental distress.

**Results:** Among the 241 participants enrolled in the study, 131 (54.4%) were female, and 110 (45.6%) were male, with ages ranging from 20 to 59 years. In the past 30 days, more than half of the participants ( $n = 131$ ; 56.4%) reported experiencing mental distress, including 82 females (62.6%) and 54 males (49.1%). Healthcare workers who resided in government housing and those who reported job dissatisfaction were significantly more likely to experience mental distress, with adjusted odds ratios.

**Conclusion:** A significant proportion of healthcare workers at Kilwa Road Police Regional Referral Hospital experience mental distress.

**Recommendation:** There is an urgent need to implement interventions aimed at improving the detection of mental distress among HCWs. Special attention should be given to healthcare workers residing in government housing and those reporting job dissatisfaction.

## 152 Outcomes and Predictors of Mortality in End-Stage Kidney Disease Patients Receiving Conservative Kidney Management

**Authors:** *Ali Azim, Jonathan Mngumi, Jaqueline Shoo, Daniel Msilanga*

**Background:** Chronic kidney disease (CKD) poses a growing burden in sub-Saharan Africa, including Tanzania, where access to renal replacement therapy (RRT) is severely limited due to resource constraints. Consequently, many patients with end-stage kidney disease (ESKD) rely on conservative kidney management (CKM) as the only available treatment pathway. Despite its widespread use, outcomes and risk factors for mortality under CKM remain understudied in low-resource settings.

**Objective:** To assess short-term outcomes and identify predictors of three-month mortality among ESKD patients receiving CKM at Muhimbili National Hospital (MNH).

**Methods:** We conducted a prospective cohort study from October to December 2024 involving adults ( $\geq 18$  years) with CKD stage 5 who opted for CKM at MNH. All patients were followed for 90 days. Survival analysis was performed using Kaplan–Meier estimates, and predictors of mortality were evaluated using multivariate Cox regression. Ethical approval was obtained from the MUHAS Research and Publications Committee (Ref: MUHAS-REC-08-2024-2415).

**Results:** A total of 172 ESKD patients on CKM were enrolled (median age: 60 years). The 90-day mortality rate was 24.3%. Independent

predictors of mortality included absence of monthly income (aHR: 3.68;  $p = 0.031$ ), dyspnea at presentation (aHR: 2.59;  $p = 0.020$ ), history of malignancy (aHR: 4.71;  $p = 0.002$ ), and hyperkalaemia (aHR: 2.34;  $p = 0.030$ ).

**Conclusion:** Nearly one in four ESKD patients on CKM died within 90 days. Socioeconomic and clinical vulnerabilities were significant predictors of mortality. These findings underline the urgent need for improved early risk stratification and supportive care measures in CKM programs, especially in low-resource settings.

**Recommendation:** National CKM guidelines should be developed to provide structured care for ESKD patients. Efforts must be made to improve access to essential medications, palliative support, nutritional care, and electrolyte monitoring. Future studies should explore longer-term outcomes and interventional strategies.

## 153 Effect of three nutrition interventions on body composition, microbiome and proteome in moderately wasted children

**Authors:** Mwemezi Salvatory, Fredrick A. Maleko, Neema Samweli Mafie, Rose Mbagala, Mohamed B. Kheri, Cecilia Msemwa, Saidah Bakari, Christopher Sudfeld, Christopher Duggan, Rodrick Kisenge, Karim Manji

**Background:** Malnutrition caused nearly half of the 5.3 million under-five deaths in 2018. Of 50 million wasted children, 33 million were moderately wasted mainly in South Asia (20 million) and Africa (10 million). Moderate wasting

raises risks of death, morbidity and severe wasting, yet lacks consistent management guidelines. The hypothesised mechanisms are related to early microbiome changes in the gut and environmental enteropathy.

**Objective:** To examine how nutritional supplements (LAF, MDSF and RUSF) affect microbiome, proteome, body composition and recovery in wasted children.

**Methods:** NUTRIMAM trial is a multi-country, randomised study assessing the effectiveness of three supplements (LAF, RUSF and MDSF) in ill, moderately wasted children aged 6-24 months. It tracks 1,272 participants per country over 12 weeks, with a second 12-week phase for recovered children. The nested NMSS sub-study follows 338 children to assess microbiome, plasma proteome and body composition changes, with a healthy reference cohort of 60 children providing biological and developmental comparisons.

**Results:** All participants have completed the initial 12-week follow-up phase, while some remain in the second 12-week phase. Sample collection and data analysis are ongoing. Saliva, blood and stool samples are being collected from 338 co-enrolled participants at multiple time points over 24 weeks. Additionally, the healthy reference cohort of 60 children has provided similar samples at baseline and during follow-up visits up to 15 months.

**Conclusion:** The study is advancing steadily with initial follow-up completed and ongoing sample collection and analysis. Findings will enhance understanding of how nutritional supplements

influence gut microbiome, plasma proteome and body composition in moderately wasted children. This evidence is expected to inform more effective strategies for managing moderate wasting and improving recovery outcomes in vulnerable paediatric populations.

**Recommendation:** To improve health outcomes for moderately wasted children, consistent management guidelines should be developed. Nutritional interventions must consider impacts on microbiome, proteome and lean mass changes. Long-term follow-up is essential to assess sustained recovery. Data from a healthy reference cohort can provide reference points, and multi-country collaboration should be encouraged to ensure broader applicability and stronger evidence for global nutrition policies.

## 154 Nutrition status, dietary practices and associated factors among pregnant women attending antenatal clinic at Mbagala Hospital

**Authors:** Dr Phillipa Pius Gone, Dr Fadhlun Al-beity, Dr. Vincent Tarimo

**Background:** Dietary practices during pregnancy play a vital role in maternal and fetal health. These practices are closely linked to maternal undernutrition during pregnancy, which contributes to complications such as maternal anemia and malnutrition, intrauterine growth restriction, preterm delivery, premature rupture of membranes (PROM), low birth weight and poor neonatal outcomes.

**Objective:** The objective of this study was to assess the proportion of poor dietary practices and undernutrition and their associated factors among women attending ANC at Mbagala Hospital.

**Methods:** A cross-sectional study was conducted from August to November 2024 among 611 pregnant women at Mbagala Rangi Tatu Hospital. Convenience sampling and structured questionnaires were used. Dietary practices and nutrition status were assessed using MDD-W and MUAC, respectively. Data were analyzed with SPSS v25. Chi-square tests and binary logistic regression identified predictors with VIF used for multicollinearity. AORs with 95% CIs determined significant associations.

**Results:** Poor dietary practices were highly prevalent (83%) and 28.8% of pregnant women were undernourished. Most lacked balanced diets (91.8%) and snack intake (69.1%). Poor dietary practice strongly predicted undernutrition (AOR = 9.85). Other factors included limited ANC visits, lack of nutrition education, and pregnancy symptoms like nausea and vomiting. Housewives and private employees were more likely to be undernourished. Protective factors included smaller households and women involved in food purchasing.

**Conclusion:** The study found that undernutrition (malnutrition) among pregnant women at Mbagala Rangi Tatu Hospital was mainly caused by poor dietary practices, limited nutrition education during ANC, and pregnancy-related symptoms. Housewives were more affected, possibly due to financial dependency and limited

control over food choices. Despite high ANC attendance, the quality of nutritional support provided remains inadequate.

**Recommendation:** Strengthen nutrition education during ANC, focusing on dietary diversity and pregnancy symptom management. Empower housewives through income opportunities and food decision-making. Train health workers on effective nutrition counselling. Improve the quality of ANC nutrition education provision, not just attendance. Further research should explore barriers to nutrition education and develop locally appropriate tools for assessing maternal nutrition status at ANC.

## 155 Long-Term Neurodevelopment and School Readiness Outcomes Following Basic Newborn Interventions in Bangladesh, Nepal, and Tanzania

**Authors:** *Mustafa Miraji Ban, Manji K, Bane M, Bakari M, Amadeus O, Baraka J, Salim N*

**Background:** In low- and middle-income countries (LMICs), 10–15% of newborns require basic life-saving interventions such as resuscitation, kangaroo mother care (KMC), and infection treatment. While these measures have improved survival, data on their long-term neurodevelopmental and educational outcomes remain limited.

**Objective:** To evaluate the impact of basic newborn interventions on functional development, cognitive ability, school readiness and quality of life.

**Methods:** Cohort study of EN-BIRTH study framework, enrolling 1,445 children (715 exposed to basic newborn interventions and 730 unexposed matched controls) across Bangladesh, Nepal, and Tanzania. Standardized tools included the Wechsler Preschool and Primary Scale of Intelligence (WPPSI), Measuring Early Learning Quality and Outcomes (MELQO), the Child Functioning Module (CFM), the Pediatric Evaluation of Disability Inventory–Computer Adaptive Test (PEDI-CAT), and Pediatric Quality of Life Inventory (PedsQL).

**Results:** Children exposed to basic newborn interventions had a significantly increased risk of functional difficulty (adjusted risk ratio = 4.82; 95% CI: 2.61–8.92). IQ scores were 2.22 points lower ( $p < 0.001$ ), and MELQO school readiness scores were 6.06 points lower compared to unexposed peers, with marked deficits in literacy, numeracy, and executive function. Dual sensory impairments were notably common in Nepal and Tanzania. Children with functional difficulties reported lower PEDI-CAT and PedsQL scores, especially in Tanzania.

**Conclusion:** Basic newborn interventions, though essential for survival, are associated with elevated risk of developmental delays and reduced school readiness at age five. This underscores the critical need for early detection, longitudinal follow-up, and educational support tailored to at-risk children in LMICs.

**Recommendation:** Findings call for investment in educational support tailored to at-risk children in LMICs.

## 156 The role of trusted adults in HIV testing, adolescent and parent/guardian perspectives: A mixed-methods study

**Authors:** Rachel Mtei, Alyssa Martinez, Isaac Lema, Arisa Shichijo Kiyomoto, David Gitagno, Anna Minja, Eric Van Praag, Joseph R. Egger, Sylvia Kaaya, Joy Noel Baumgartner

**Background:** Young adolescents in Tanzania have less timely access to HIV prevention, care, and treatment services than older adolescents and adults, largely due to age-related health system barriers. "Trusted adults" can play a critical, protective role in the lives of adolescents and are a key source of information and support for health service use.

**Objective:** This study describes adolescent and parent/guardian perspectives about the role of trusted adults in adolescents' access to HIV testing.

**Methods:** Data are from a school-cluster RCT with adolescents in Standard Seven, testing an 'adolescent wellness visit' inclusive of health screenings and education. Data include 1095 adolescent baseline surveys (mean age 13 years, range 11-17) and semi-structured interviews with parents/guardians (n=42) and adolescents (n=40). All data sources had questions about the role of trusted adults in HIV testing and counselling (HTC). Descriptive statistics and team-based thematic qualitative analysis were conducted.

**Results:** 73% of adolescents (72% girls, 75% boys) had a trusted adult to assist their HTC

access if needed; 82% listed mothers, 55% fathers, and 33% other female relatives. Adolescents without a trusted adult were more likely to have a higher HIV perceived risk, lower self-efficacy, or live in rural areas. Qualitative findings revealed that most adolescents preferred attending HTC with an adult; 15/40 preferred to attend alone for confidentiality. Parents/guardians (24/42) preferred escorting for HTC, particularly to provide emotional support.

**Conclusion:** Trusted adults can support adolescents' HIV testing uptake; most adolescents were willing to involve their parents or other adult caregivers as confidants when parents were unavailable or when adolescents were uncomfortable talking to their parents. Facilitating adolescents' self-efficacy and positive adolescent-adult relationships, particularly with fathers, may increase trust, HIV, and reproductive health outcomes.

**Recommendation:** To facilitate adolescent-trusted-adult relationships within reproductive and child health clinics, parents need to be trained more on parent-adolescent communication skills to be able to be seen as trusted adults

## 157 Caregiver attitudes towards HIV testing and contraceptive services for adolescents in Tanzania

**Authors:** David Gitagno, Katalia Alexander, Rachel Mtei, Anna Minja, Isaac Lema, Joseph R. Egger, Eric Van Praag, Sylvia Kaaya, Joy Noel Baumgartner

**Background:** Adolescents are disproportionately vulnerable to unintended pregnancies and delayed HIV treatment in low-resource settings. Tanzanian policies support adolescent access to contraception and HIV testing and counseling (HTC) without parental consent if needed; however, parent/guardian disapproval could lead to unmet service needs.

**Objective:** This qualitative study explores factors that influence caregivers' attitudes towards adolescents accessing these services independently.

**Methods:** VITAA is a cluster RCT testing a school-clinic partnership to provide health check-ups in Tanzania. Semi-structured interviews (n=42) were conducted with a purposeful sample of parents/guardians (74% women) of VITAA participants. The extended theory of planned behavior for parent-for-child health behaviors informed thematic analysis.

**Results:** Most parents/guardians expressed hesitancy about adolescents accessing services independently. Contraception concerns included community norms about adolescents being too young for sex and fears that access to contraception decreases parents' behavioral control over adolescents. Conversely, many caregivers endorsed positive attitudes towards HTC; concerns were often related to worries about adolescents receiving positive test results alone.

**Conclusion:** Parent/guardian attitudes shape adolescents' health-seeking behaviors and Tanzanian parents and guardians are hesitant about adolescents' independent service use for

diverse reasons, including its relationship with sexual debut. Notably, many caregivers viewed HIV testing as a positive experience for their child yet wanted a trusted adult present, highlighting the important role of trusted adults in improving adolescent health service use.

**Recommendation:** Programs providing escorted HTC services could be a way to garner parent/guardian approval of adolescent testing while allowing adolescents to test autonomously from their caregivers. Tailored communication interventions could also encourage caregivers' support for adolescent service access to meet community goals for healthy adolescents.

## 158 Socio-Demographic Correlates of Booking Antenatal Care in First Trimester among pregnant women in Tanzania Insights

**Authors:** Pankras Luoga, Gladys Reuben Mahiti, Suleiman Chombo

**Background:** In Tanzania, only 34% of pregnant women attend antenatal care (ANC) during the first trimester, thereby missing the opportunity for early health assessments and guidance from healthcare providers. However, few studies have examined the socio-demographic correlates of this issue among Tanzanian pregnant women.

**Objective:** To determine the socio-demographic correlates of early ANC booking among pregnant women in Tanzania.

**Methods:** This study analyzed secondary data involving a weighted sample of 4,243 pregnant women aged 15-49 years from the 2022 Demographic and Health Survey (TDHS). The dependent variable, "ANC visits in the first trimester of pregnancy," defined as the binary outcome variable. The independent variables included maternal factors and household factors. The analysis adopted a multivariable weighted modified Poisson regression (MPR) model.

**Results:** The multivariable modified Poisson regression indicated that one year in age of a mother at first birth results in a 2% increase in prevalence of a mother seeking ANC during the first trimester ( $p$ -value=0.007), women with secondary education or higher had 28%, ( $p$ -value=0.008), those from rich households had 28% ( $p$ -value=0.007), those with less than 24 months preceding birth interval had 24% ( $p$ -value=0.012); had higher prevalence of attending ANC during the first trimester compared to their counterparts.

**Conclusion:** ANC visits in the first trimester were significantly associated with education level, wealth index, household size, preceding birth interval, and age at first birth.

**Recommendation:** Programs aiming at increasing early ANC booking should prioritize activities that improve women's livelihoods, particularly targeting those in lower socioeconomic and educational groups.

## 159 The Association between H. Pylori Infection and

### Preeclampsia among pregnant women at Muhimbili National Hospital

**Authors:** Halima J. Mbwambo, Sabria Rashid, Furaha August

**Background:** Preeclampsia (PE) is a major cause of maternal and perinatal morbidity and mortality, particularly in low-resource settings. Emerging evidence suggests a possible link between *Helicobacter pylori* infection and the development of preeclampsia, but no such studies have been conducted in mainland Tanzania.

**Objective:** To explore the association between pre-eclampsia and *Helicobacter pylori* infection among pregnant women at Muhimbili National Hospital.

**Methods:** A hospital-based case-control study was conducted at MNH between September and November 2024. A total of 220 pregnant women (111 with PE and 109 normotensive controls), all  $\geq 20$  weeks' gestation, were enrolled. Data were collected via structured questionnaires, physical examination, laboratory tests, and obstetric Doppler ultrasound. *H. pylori* infection was diagnosed using a stool antigen test. Statistical analyses included chi-square, t-tests, and non-parametric tests using SPSS version 25.

**Results:** *H. pylori* infection was significantly more prevalent in preeclamptic women than in normotensive controls (68.6% vs. 31.4%,  $p = 0.019$ ). Among preeclamptic women, those infected had higher systolic ( $p = 0.011$ ) and diastolic blood pressure ( $p = 0.010$ ), elevated serum creatinine ( $p < 0.001$ ), and more severe intrauterine growth restriction ( $p = 0.002$ ). They

also had lower platelet counts ( $p = 0.038$ ) and higher serum urea ( $p = 0.048$ ). Differences in Doppler findings were not statistically significant ( $p = 0.069$ ).

**Conclusion:** *H. pylori* infection is significantly associated with preeclampsia and with worsened maternal and fetal outcomes in affected women. These findings support consideration of *H. pylori* as a modifiable risk factor in hypertensive pregnancy disorders.

**Recommendation:** Based on these findings, routine *H. pylori* screening using stool antigen tests should be considered in antenatal care for high-risk pregnancies to reduce the burden of preeclampsia. Integrating *H. pylori* eradication strategies into maternal health programs could offer a cost-effective way of improving maternal and fetal outcomes. Further multicenter studies are recommended to confirm the causality.

## 160 Empowering adolescents with puberty knowledge: Perspectives from adolescents and their caregivers in Tanzania

**Authors:** *Sylvia Kaaya, Anna Minja, Tito Ernest, Alyssa Martinez, Isaac Lema, Elizabeth Kalalu, Hilda Kigola, Isack Mapambano, Eric van Praag, Joy Noel, Baumgartner*

**Background:** Puberty education prepares adolescents for the associated physical, emotional, and social changes. Receiving information about puberty and reproductive health prior to sexual debut can improve future health outcomes. There is currently no standardized puberty education in Tanzania;

thus, many adolescents do not receive adequate or timely information

**Objective:** Perspectives of adolescents and caregivers on puberty education. Exploring acceptability of TACAIDS-endorsed puberty books an educational tool in schools

**Methods:** Data are from a school-cluster RCT with adolescents in Standard Seven that is testing an adolescent wellness visit (AWV). Adolescent surveys ( $n=1095$ ) across 20 schools were completed at baseline. Semi-structured interviews ( $n=42$ ) were conducted with caregivers of adolescents (31 women, 11 men). Descriptive statistics and qualitative content and thematic analyses were used.

**Results:** Among 1028 adolescents (534 girls, 526 boys) that received a puberty book, 958 (93%) confirmed reading it, 380 (40%) discussed topics with others, 341 (36%) asked someone questions about it, and 287 (30%) shared the book with someone else. Around half of the caregivers confirmed ownership of the TACAIDS-endorsed book (22/42). Qualitative interviews revealed almost all caregivers (41/42) were supportive of non-familial adults (i.e., teachers, clinicians) discussing puberty with their adolescents.

**Conclusion:** Adolescents and caregivers showed clear interest in puberty education. Puberty education can help prepare and empower adolescents to navigate this vulnerable transition period. Puberty books are rare in Tanzania and can act as an educational tool to help inform adolescents and facilitate what may

be uncomfortable conversations with parents/caregivers and non-familial adults.

**Recommendation:** The puberty books in this study may help to fill a gap, as most caregivers did not report having community resources, other than school and clinic staff, to assist with puberty education. Strong positive feedback emphasized the high acceptability and demand among adolescents and caregivers for the books.

## 161 Perceptions and facilitators of Local herbs use during labor among post-delivery women at Mkuranga hospital

**Authors:** *Mariam Semakombe, Peter Wangwe, Zainab Hassan, Gladys Mahiti*

**Background:** The use of local herbs appears to be prevalent among pregnant women during labor. The reason as to why women in labor continue using the herbs despite the reported several adverse effects to the mother and her newborn baby remains quite unknown.

**Objective:** To explore perceptions and facilitators of local herb use during labor among post-delivery women at Mkuranga district hospital.

**Methods:** A phenomenological, exploratory, qualitative study was conducted at Mkuranga District Hospital, where consenting post-delivery women were selected using a maximum variation purposive sampling technique. Thirteen (13) in-depth interviews were conducted in the Swahili language among users and non-users of local herbs. All interviews were audio recorded and transcribed verbatim. NVivo 12 software was

used to group codes from which themes were identified by Braun and Clarke's thematic analysis

**Results:** Four (4) primary themes were identified. These were: Social-cultural drivers for Local herbs use; easy accessibility and perceived safety of local herbs; perceived labor-related outcomes of local herbs use, and herbal practices and comparative perceptions with conventional medicine.

**Conclusion:** The myth that pregnant women are prone to harm by bad people, leading to delivery complications, is popular and leads to widespread use of local herbs during labor. Family members and the community also play a crucial role in influencing continued use.

**Recommendation:** Open dialogue among healthcare providers and the community is essential for harmonizing this use. Further research on the pharmacology of these herbs is needed to determine if they are safe and have a uterotonic effect.

## 162 Experiences of School Feeding Committees and Teachers on the Implementation of National School Feeding Guideline

**Authors:** *John Mboya, Pankras Luoga, Gladys Reuben Mahiti*

**Background:** Globally, inadequate food intake and unbalanced diets are recognized as key contributors to malnutrition. The situation is particularly pronounced among children, with school-going children both in boarding and day schools being the most affected segment of the

population. Little is known about the experiences of the National School Feeding Guideline implementers (NSFG).

**Objective:** To explore the experience of the school feeding committees and teachers on the implementation of the NSFG.

**Methods:** A qualitative phenomenological study design was conducted in 6 primary schools. A purposive sampling technique was employed. In-depth interviews were conducted with six teachers, six heads of schools, and six members of the school feeding committees. Participant observation method was also conducted to collect data. Thematic analysis was used to analyse data.

**Results:** Limited awareness of the guideline among teachers and members of the school feeding committees, with two sub-themes: inadequate training and introduction to the guideline, and insufficient motivation regarding the guideline among the study participants, leading to teachers and school feeding committee members being unaware of the NSFG. Insufficient support and resources were noted, including financial constraints and inadequate infrastructure and equipment required for the implementation of the guideline.

**Conclusion:** Implementation of the NSFG encounters several challenges, including limited awareness of the guideline among implementers and limited resources required in the implementation of the guideline.

**Recommendation:** Therefore, the government and other stakeholders should increase funding, offering focused training to committee members

and teachers to increase their awareness of the implementation of the guideline. This will enhance the sustainability the school food programs and improve students' academic performance and their general well-being.

## 163 **Cardiometabolic and Vascular Health in HIV-Positive Pregnant Women on ART in Mthatha, South Africa**

**Authors:** *Edna N Matjuda, Charles Businge, Nonstikelelo Gubu-Ntaba, Constance R Rusike, Benedicta Nkeh-Chungag*

**Background:** The global burden of HIV remains significant for women of reproductive age. While antiretroviral therapy (ART) is critical for managing HIV, its long-term effects on cardiometabolic health in pregnant women are underexplored, especially in regions like Mthatha, South Africa.

**Objective:** This study aimed to compare the cardiometabolic profiles of HIV-positive pregnant women on ART with HIV-negative pregnant women in Mthatha.

**Methods:** A pilot case-control study enrolled pregnant women at 11–16 weeks of gestation (HIV-positive women on ART and HIV-negative controls). Cardiometabolic parameters: body mass index (BMI), blood pressure, lipid profiles, glucose metabolism, renal function, endothelial function, oxidative stress, and inflammatory markers were assessed. Vascular measurements included: flow-mediated slowing (FMS), carotid-femoral pulse wave velocity (cfPWV), and ankle-brachial index (ABI), were

assessed. Statistical comparisons between groups were considered significant at  $p \leq 0.05$ .

**Results:** The study included 20 HIV-positive and 53 HIV-negative pregnant women. Obesity affected 45% of HIV-positive cases compared to 43% of controls ( $p > 0.05$ ). Prehypertension was more prevalent ( $p \leq 0.05$ ) in the HIV-positive group (15%), which also had elevated LDL-C and asymmetric dimethyl arginine ( $p \leq 0.05$ ), with endothelial dysfunction in 5.55% of cases. Conversely, TNF $\alpha$  levels were higher ( $p \leq 0.05$ ) in the HIV-negative group. In HIV-positive women, cfPWV correlated positively ( $p \leq 0.05$ ) with WHR.

**Conclusion:** Both groups showed cardiometabolic risks, reflecting pregnancy-related and baseline factors. HIV-positive women on ART exhibited specific vascular endothelial dysfunction, suggesting a link with ART use.

**Recommendation:** A close follow-up of pregnant women on ARTs is recommended to prevent hypoperfusion of the foetus.

## 164 Hyperglycemia in pregnancy: A sensitivity analysis study of two recommended screening tests in Tanzania

**Authors:** *Amani Kikula, Kaushik Ramaiya, Nathanael Sirili, Matilda Mkonyi, Rukia Msumi, John Macha, Andrea B. Pembe, José L. Peñalvo, Lenka Beňová*

**Background:** Screening for hyperglycaemia in pregnancy (HIP) offers a window of opportunity for the prevention of cardio-metabolic complications during pregnancy and over the life-

course. In Tanzania, two different screening algorithms to identify women with HIP are recommended, with no clear understanding of which performs better.

**Objective:** To determine the prevalence of hyperglycemia in pregnancy (HIP) among antenatal care (ANC) attendees and the accuracy of HIP screening

**Methods:** A cross-sectional design involving 970 ANC-clinic attendees in two district-hospitals was conducted between June and October 2024. Socio-demographic, obstetric, and anthropometric parameters were obtained from participants. A checklist-screening-test (CST) for gestational-diabetes-mellitus (GDM), defined by Tanzanian standard-treatment-guideline, was used. We tested for glycosuria and two-hour-75-gram-oral-glucose-tolerance-test (OGTT). We conducted descriptive statistics and sensitivity analysis to determine the prevalence of HIP and assess the screening performance of the CST, glycosuria against the OGTT.

**Results:** The prevalence of HIP was 10% (7.9% GDM and 2.1% diabetes in pregnancy). Glycosuria test missed all women with GDM and could identify only 20% with diabetes in pregnancy. The CST had a sensitivity and specificity of 72.2% and 32.4%, respectively, while the glycosuria test had 4.1% and 97.1%. The area under the receiver operator characteristic curve for both the CST 0.523 (0.48-0.57,95%CI) and glycosuria test 0.506 (0.49-0.53,95%CI) was low, indicating their poor discriminatory performance for HIP.

**Conclusion:** One in every ten women had HIP. The CST is a better first-step screening test than the glycosuria test based on sensitivity.

**Recommendation:** We recommend further studies to be done to inform the revision of the GDM screening tests to have one with an optimally acceptable discriminatory potential during screening for further diagnostic confirmation of hyperglycemia in pregnancy in Tanzania.

## 165 Assessment of the Tanzania Cervical Cancer Prevention and Control Surveillance System

**Authors:** Jofrey Mtewele, Jane Mlimbila, Ally Hussein, Caroline Mrema

**Background:** Cervical cancer is the fourth most common cancer in women worldwide and a major public health challenge, especially in low- and middle-income countries like Tanzania. It remains a leading cause of cancer deaths among Tanzanian women, with an age-standardized mortality rate of 42.7 per 100,000. In 2011, the Ministry of Health introduced the Cervical Cancer Prevention and Control Surveillance System to improve early detection and treatment

**Objective:** This study aimed to evaluate the test accuracy of first-void urine compared to health provider-collected cervical swabs in detecting high-risk.

**Methods:** A descriptive cross-sectional study using purposive sampling involved eight clinicians from two health facilities. Data were collected via a semi-structured questionnaire and review of DHIS2 and MTUHA Register Book No.

19. System attributes were assessed using CDC guidelines, covering simplicity, stability, timeliness, flexibility, acceptability, representativeness, and data quality. Each attribute was rated as poor (67%) based on the proportion of positive responses to set criteria.

**Results:** The overall composite performance score was 71.4%, indicating the system is performing well. The system demonstrated good performance in simplicity, stability, timeliness, and flexibility, each scoring 100%. Ninety-seven percent (n=98) of individuals who tested positive received the same-day treatment. Only 25% (n=8) of clinicians had received formal training. Average performance was observed in acceptability and representativeness, both at 50%. Data quality scored 0%, with only 20% (n=10) of entries fully completed and inconsistencies noted between facility reports and DHIS2.

**Conclusion:** The general performance was good. However, the poor data quality of the system may undermine its effectiveness by supplying unreliable information to decision-makers. Ensuring high-quality data is vital for enhancing surveillance and guiding public health interventions.

**Recommendation:** We recommend that the Ministry of Health, Regional and Council Health Management Teams (R/CHMTs) and other stakeholders conduct regular supportive supervision to enhance system data quality. As well as to conduct other research to investigate the underlying factors contributing to the observed discrepancies in system data quality.

## Subtheme: Oral, Eye, ENT Health and Care

### 166 Accuracy and reliability of Keynote for tracing and analyzing cephalometric radiographs

**Authors:** Ali K. Hamad, Ferdinand M. Machibya, Matilda M. Mlangwa, David N. Ngassapa

**Background:** Cephalometric analysis is often done using computer-assisted methods, with manual landmark identification shown to be as accurate as traditional tracing. While software like Quick Ceph® is effective, its high-cost limits accessibility. Keynote, a free Apple software, may offer a cost-effective alternative. This study aimed to evaluate the accuracy and reliability of Keynote for cephalometric tracing compared to Quick Ceph®, to guide clinicians in selecting appropriate analysis tools.

**Objective:** This study aimed to evaluate the accuracy and reliability of Keynote for cephalometric tracing

**Methods:** This cross-sectional study analyzed 49 digital cephalograms (24 females, 25 males) obtained from the Dental Radiology unit of MUHAS. The cephalograms were imported into both Quick Ceph® and Keynote for analysis. Measurements included 10 angular and 6 linear variables. Intra- and inter-examiner reliability was assessed, and paired t-tests, Bland-Altman plots, and linear regression were used to analyze the data.

**Results:** A total of 49 cephalograms were analyzed, showing high intra-examiner reliability for both Quick Ceph® and Keynote software, particularly in angular measurements. Most mean values from Quick Ceph® were higher. Significant differences existed in most parameters, with some linear variables showing systematic bias. Despite this, all values remained within clinically acceptable limits. Bland-Altman plots and ICC confirmed strong agreement in angular data, supporting Keynote as a reliable alternative for cephalometric analysis.

**Conclusion:** The study revealed inconsistencies between Quick Ceph® and Keynote, mainly in linear measurements and systematic bias, leading to the rejection of the null hypothesis. However, Keynote produced clinically reliable results. As all differences remained within acceptable limits, both software tools showed sufficient agreement and can be used interchangeably for cephalometric analysis.

**Recommendation:** Future studies are recommended to assess additional reliability assessments using multiple investigators. This would help ensure that the results are not influenced by individual bias and provide a more robust evaluation of the methods.

### 167 Pattern of Midface Fractures among Patients with Traumatic Brain Injury in Tertiary Hospitals in Dar es Salaam

**Authors:** Fowedlung Ngufor Agafina, David K. Deoglas, Karpal S. Sohal, Sira S. Owibingire

**Background:** Midfacial bones are susceptible to fracture due to their location. The impact on them can either cause midface fracture (MFF) or be transmitted to the cranium causing traumatic brain injuries (TBI). The association between TBI and MFF has been reported to be high ranging from 45.5 to 86%. The severity of MFF can raise suspicion on degree of TBI.

**Objective:** To determine the pattern of midface fractures among patients with TBI in tertiary hospitals in Dar es Salaam, Tanzania.

**Methods:** This prospective cross-sectional hospital-based study was conducted in the two tertiary hospitals in Dar es Salaam: the Muhimbili National Hospital (MNH) and Muhimbili Orthopaedic Institute (MOI). The study included all patients with TBI who presented during the study period. The clinical findings and radiographic investigations were recorded in special clinical forms. Data analysis was done using SPSS version 27. Chi-square and logistic regressions were used as appropriate.

**Results:** This study included 183 patients with TBI, of whom 124 (67.8%) had MFF, with the majority in the 30-40 years age group. Males were more (89.6%) affected than females. RTA was the most common etiology of injury, 126 (68.9%). ZMC were the most encountered MFF 119 (65%). Most patients had mild TBI (n=124, 67.8%) and contusions (52, 28.4%). Severe TBI and intracranial hematoma were associated with Le Fort II, Le Fort III, and nasal fractures (p<0.05). Le Fort II and palatal had 3.8 and 7.8 folds in the occurrence of intracranial hematoma.

**Conclusion:** There was a significant proportion of MFF among patients with TBI. Severe TBI and intracranial hematoma were associated with Le Fort II, Le Fort III, nasal, orbital blowout and palatal fractures. MFF should be taken seriously, as they tend to occur at a higher frequency in patients with TBI and contribute to its severity.

**Recommendation:** The high proportion of midface fractures among patients with TBI warrants that midface fractures should be looked for in patients with TBI. Therefore, specialized institutions should enhance protocols and encourage multidisciplinary management among neurosurgeons and maxillofacial surgeons to increase the quality of care.

## 168 Health-related quality of life in children post-cochlear implantation at Muhimbili National Hospital

**Author:** Magreth A. Mushi

**Background:** Hearing loss is a major contributor to disability worldwide. Cochlear implants (CI) are used to replace the non-functioning auditory sensory organ. Studies show significant improvement in various aspects of bilaterally deafened children's lives after cochlear implant use. Through the CI program at Muhimbili National Hospital, cochlear implants have become a successful treatment option for deaf children in Tanzania.

**Objective:** Assess health-related quality of life in children post-cochlear implantation at Muhimbili National Hospital and to associate it with demographic variables.

**Methods:** A hospital-based cross-sectional study included parents of children with CI at Muhimbili National Hospital. They filled out an adapted CI-specific "Children with Cochlear Implants: Parental Perspectives" questionnaire and indicated their responses on a 5-point Likert scale; scores of more than three were considered favorable. Descriptive statistics were done. For associations among variables, Spearman's rank correlation was used for continuous variables, and tests for mean comparison were done for categorical variables.

**Results:** Fifty-six study participants were included in this study, representing children with an age range of 3-12.4 years. There was an equal male-to-female ratio, and the mean duration of CI use was 3.49 (SD=1.96) years. High scores of health-related quality of life of children with CI were reported, with general function scoring highest and effects of CI surgery scoring lowest among the sub-domains. Age, duration of CI use, and unilateral CI had significant positive associations with communication and general function sub-subdomains.

**Conclusion:** Cochlear implants not only provide the much-needed aural rehabilitation for better spoken language development and communication but also improve psychosocial well-being of deaf children. Older children and those with longer CI use had improved communication, engagement, and awareness in their surroundings. These findings guide service optimisation by the local CI team.

**Recommendation:** Comparison studies between children's and parental responses on

quality-of-life post CI surgery are needed for well-rounded conclusions. Interval assessment of the quality of life of children with CIs will inform physicians and public health stakeholders on what to expect after years of CI use, thus showing the need for continued government support for this intervention and local capacity building.

## 169 Outcomes of Paediatric cataract surgery in selected tertiary eye units in Tanzania

**Authors:** Sayyada Sachedina, Celina Mhina, Suzan Mosenene, Milka Mafwiri, Heavenlight Masuki, Nelson Swai, Flavian Shengeza

**Background:** Pediatric cataract involves lens opacification in children and is a preventable cause of childhood blindness, accounting for 22% of visual impairment in Africa. Surgical outcomes depend on factors such as etiology, and complications which significantly impact a child's vision and development. Identifying these predictors is crucial to prevent irreversible vision loss and improve quality of life.

**Objective:** Determining visual outcome, refractive status after cataract surgery and the factors associated with poor visual outcome among operated pediatric patients

**Methods:** A longitudinal observational study was conducted at three tertiary eye units from May 2024 to March 2025 by consecutive sampling. Interviewer administered questionnaire was used and analyzed by Stata version 17.0 where descriptive statistics, chi-square tests and prevalence ratios were presented. Modified

Poisson regression was used for univariate and multivariate analysis.

**Results:** 126 patients completed follow-up, where 42% of eyes had poor vision post-surgery. However, overall visual acuity improved significantly after surgery. Substantial proportion of patients had hyperopia (40%) and myopic shift (41%) of eyes. One eye developed posterior capsule opacification and three eyes had intraocular lens decentration. Predictors of poor vision included lag time >3months, duration to the facility > 3hours, non-traumatic cataract, nuclear morphology and horizontal cornea diameter.

**Conclusion:** Cataract surgery significantly improves vision but 42% of operated eyes still have poor outcome.

**Recommendation:** Early intervention is required by reducing lag time via community awareness, long-term follow-up to monitor myopic shift and risk of glaucoma, amblyopia management by prioritizing patching, refractive correction and surgical precision by optimizing biometry.

## 170 Cost-Effective Delivery of Silver Diamine Fluoride for Early Childhood Caries Prevention in Tanzania: A Decision-Model

**Authors:** *Kasusu Nyamuryekung'e, Baraka Nzobo, John Graves*

**Background:** Early childhood caries (ECC) affects 43% of Tanzanian five-year-olds, yet 88% receive no treatment. Once or twice-yearly silver diamine fluoride (SDF) is efficacious for

prevention, but its most efficient delivery route under forthcoming Universal Health Coverage (UHC) is unknown.

**Objective:** Identify the national strategy that delivers SDF to children under six at lowest cost and provide evidence for its inclusion.

**Methods:** A decision-tree cost-effectiveness model compared three scenarios over one prevention cycle: (i) status quo (no organized SDF), (ii) delivery by the existing oral-health professionals (OHPs) and (iii) task-shifting SDF application to reproductive-and-child-health (RCH) nurses. Inputs drew on published SDF efficacy studies, salary scales, training budgets and programme records. Outcomes were programme cost (2024 US\$), ECC cases averted and incremental cost-effectiveness ratio (ICER). Deterministic sensitivity analyses examined parameter uncertainty and willingness-to-pay.

**Results:** Relative to status quo, the OHP strategy averted 1.71 million ECC cases with the lowest ICER (US\$ 24.7 per case). The RCH option extended geographical reach and averted the most cases overall but, owing to high training costs, produced a higher ICER of US\$ 107.2. Across plausible ranges the OHP model remained cost-effective until the WTP threshold fell below US\$ 30, or SDF effectiveness declined sharply. Key uncertainty drivers were SDF efficacy, nurse-training costs and uptake.

**Conclusion:** Twice-yearly SDF applied by the existing oral-health workforce is the most efficient use of preventive oral-health funds; task-shifting becomes attractive only if training costs fall or mandated coverage rises.

**Recommendation:** The Ministry of Health should embed biannual OHP-delivered SDF in the Basic Benefit Package, pilot outreach or mobile clinics to extend rural coverage, commission an implementation study to gather Tanzanian cost-effectiveness data, and establish robust supervision and supply-chain systems to safeguard fidelity and ensure sustainable nationwide SDF delivery.

**171 Pneumatization patterns of sphenoid sinus and arrangement of adjacent neurovascular structures: A computed tomography study**

**Authors:** Mwanahija Omari, Lilian Salingwa, Edwin Liyombo

**Background:** The increasing incidence of chronic paranasal sinus diseases has led to a rise in endoscopic sinus surgeries, which demand a detailed understanding of sphenoid sinus anatomy and its relationship to vital neurovascular structures like the internal carotid artery and optic nerve, as these pose a risk of iatrogenic injury that may result in severe complications such as hemorrhage or permanent blindness.

**Objective:** To determine the clinically significant association between pneumatization types of the sphenoid sinus and protrusion/dehiscence of adjacent neurovascular structures

**Methods:** A retrospective cross-sectional study was conducted at Muhimbili National Hospital, analyzing 250 paranasal sinus CT images of patients aged 18 years and above over a two-year period. Data were collected using a

structured checklist to document sphenoid sinus pneumatization patterns and neurovascular structure arrangements and were analyzed using Chi square test with a significance level set at  $p < 0.05$ .

**Results:** The study involved 135 men and 115 women with a mean age of  $42.1 \pm 12.5$  years. Postsellar pneumatization was most common (48.4%), followed by sellar (42%), presellar (9.2%), and conchal (0.4%). Extended pneumatization was most frequently seen in the greater wing of the sphenoid (52.4%) and least in anterior clinoid process. Protrusion of the optic nerve and internal carotid artery was more common than their dehiscence with significant associations found between pneumatization type and neurovascular protrusions ( $p < 0.001$ )

**Conclusion:** The sphenoid sinus exhibits variant patterns of pneumatization, and these have a significant impact on the protrusion/dehiscence of adjacent vital neurovascular structures.

**Recommendation:** Given the high incidence of anatomical variations in the sphenoid sinus, preoperative CT scans are recommended for all patients undergoing endoscopic sinus surgery to identify risky variations and prevent serious complications such as uncontrolled hemorrhage or blindness from iatrogenic injury.

**Subtheme: Social determinants of health (one health)**

**172 Assessment of Adverse Events Following Covid-19 Vaccination**

### and Associated Factors Among Healthcare Workers in Tanzania

**Authors:** Gitta Fedrick, Dr. Alphonse Ignace Marealle, Mr. Wigilya Padil Mikomangwa

**Background:** COVID-19 vaccines were introduced as emergency measures with limited safety data. Healthcare workers, prioritized for early vaccination, reported varying adverse events. Given the high frequency among Tanzanian healthcare workers, further studies are needed to establish baseline prevalence, severity, influencing factors, and safety measures for continued vaccine use in high-risk settings. This finding will help understand the prevalence of AEFI of COVID-19 vaccines and identify any potential safety signals early.

**Objective:** To assess the prevalence of COVID-19 vaccination adverse events following immunisation and associated factors among healthcare workers in Tanzania.

**Methods:** A cross-sectional study was conducted across the country using online platforms. The study recruited a minimum of 1179 Healthcare Workers who took the COVID-19 vaccines. Data was collected using a structured questionnaire. Data was analysed using SPSS v27 with descriptive analysis for participants' characteristics, and type of adverse events following immunisation. Modified Poisson regression was used to determine factors associated with Adverse Events Following Immunisation at a 5% level of significance.

**Results:** A total of 1,179 healthcare workers participated, with a median age of 34 years; 51.2% were male. COVID-19 vaccination

coverage was 75.7%, mainly Johnson & Johnson (66.7%). AEFIs were reported by 63.4%, with 90.4% being short-term. Increased AEFI risk was associated with alcohol use ( $p < 0.001$ ), allergy history ( $p < 0.05$ ), long-term medication ( $p < 0.01$ ), prior vaccination ( $p < 0.05$ ), COVID-19 infection ( $p = <0.01$ ), and mixed vaccine brands ( $p < 0.001$ ), while comorbidities ( $p = 0.042$ ) protective.

**Conclusion:** The study found a high prevalence of mostly short-term adverse events following COVID-19 vaccination among healthcare workers. Risk factors included alcohol use, allergies, long-term medication, prior vaccination, previous infection, and mixed vaccine brands. In contrast, comorbidities and single-dose vaccination were protective. Findings highlight the need for targeted screening and monitoring to improve vaccine safety.

**Recommendation:** To prevent AEFI, enhance pre-vaccination screening for allergies, chronic illnesses, prior vaccine-related infections, and alcohol abuse. Strengthen post-vaccination monitoring during the first week with clear referral systems.

## 173 Evaluating the Impact of Community Dialogue Sessions on Antimicrobial Resistance Awareness and Practices

**Author:** Musabyimana Emmanuel

**Background:** The most alarming public health threat in the world is still antimicrobial resistance (AMR)(Gajic et al., 2022). Worldwide drug-resistant infections contribute to around 700,000

deaths annually, which is expected to increase to 10 million by 2050. Most studies conducted have been focused on different strategies to combat antimicrobial resistance. However, there is a gap in how community dialogue sessions might be helpful to combat the burden of AMR.

**Objective:** To assess the impact of community dialogue sessions on improving awareness and changing practices related to antimicrobial resistance among populations

**Methods:** A quasi-experimental study will be conducted in selected rural and urban sectors. A certain number of participants will be enrolled. Community dialogue sessions will then be conducted over three months. Post-intervention surveys will be administered to assess changes. Quantitative data will be analyzed using SPSS, with paired t-tests and ANOVA used to evaluate within- and between-group differences.

**Results:** It is anticipated that community dialogue sessions will significantly improve AMR-related knowledge and promote responsible antibiotic use in both rural and urban settings. However, the degree of change may vary due to contextual factors such as education level, access to healthcare and baseline awareness.

**Conclusion:** Community-based interventions such as dialogue sessions can effectively enhance public understanding and behavior regarding AMR. Scaling up such initiatives, tailored to rural and urban contexts. And, we all know that a lot of measures have been implemented but still we are facing the challenges of AMR, this shown that it is better to eliminate it from the root.

**Recommendation:** I can recommend that "The national health system may adopt this strategy to fight against AMR, and it not be expensive". Further studies should explore long-term sustainability and integration with local health systems.

## Subtheme: Traditional and Alternative medicine, Drug Discovery and Vaccine Development

### 174 Application of tissue culture in ex-situ conservation of critically endangered *Aloe boscawenii* in Tanzania

**Authors:** *Siri A. Abihudi*

**Background:** *Aloe Boscawenii* is a rare and critically endangered species. The reasons for the rapid decrease in its population remain unknown, and there is no documentation of its cultivation. The species is adversely affected by seed dormancy and the growing number of salt ponds near the Mkinga district coastline. Therefore, the present situation demands immediate action to increase its population in the in-situ and ex-situ environment, thereby preventing the species.

**Objective:** This study aims to develop an in vitro propagation protocol for *A. boscawenii* that will promote its conservation.

**Methods:** The culture medium was created by modifying the Murashige and Skoog (MS) protocol. Explants were sterilized using NaOCl and Hg (NO?). Rooting used NAA and IBA

concentrations, whereas acclimatization utilized diverse soil combinations. Subsequently, the plantlets were sustained in a greenhouse before their relocation to the botanical garden and distributed to different government institutions.

**Results:** The ideal sterilisation concentration for NaOCl was 6%, resulting in 85% uncontaminated cultured plants, whereas 0.1% Hg (NO?) reduced contamination by 98% but inhibited proliferation in 50% of the samples. Shoot tips (70%), meristems (65%), and taproots (60%) demonstrated the highest success rates among the explants, but seeds with a 50% germination rate failed to multiply. The combination of 2 mg/L NAA and 1 mg/L IBA produced the maximum rooting success rate of 90%, accompanied by robust and elongated root systems.

**Conclusion:** This study successfully established an in vitro propagation protocol for *A. boscaawenii*, showing its potential for conservation and large-scale propagation.

**Recommendation:** In situ conservation of *A. boscaawenii* can be done through cutting on a small scale and through tissue culture on a large scale. For other Aloe species with little FGP, techniques such as propagation through cuttings and in vitro culture can be applied.

## 175 Optimisation of surface sterilisation protocol for in vitro initiation of African Star Grass (*Hypoxis Schimperii*)

**Authors:** Silvia C. Mganga, Robert M. Gesimba, Benard K. Karanja

**Background:** *Hypoxis schimperii* (African star grass) is a slender, herbaceous perennial of the Hypoxidaceae family, producing grass-like leaves from a corm. Valued for its medicinal properties, its micropropagation is often hindered by microbial contamination during tissue culture initiation. Developing an effective surface sterilisation protocol is crucial to minimise contamination, improve explant survival, and ensure successful culture establishment for conservation and large-scale propagation of this important species.

**Objective:** Determine the effect of varying concentrations and exposure durations of Sodium hypochlorite (NaOCl) on the sterilisation efficiency of *Hypoxis schimperii*

**Methods:** The experiment was carried out using a completely randomised design. Corm explants were collected from Njombe, Tanzania, and subjected to sterilisation using NaOCl at concentrations of 1%, 2%, 3%, and 4%, with exposure times of 10 and 15 minutes. Following sterilisation, the explants were incubated under controlled conditions in a growth chamber set at  $28 \pm 2^\circ\text{C}$ , with a 16-hour photoperiod and light intensity of 2000–2500 lux, for fifteen days

**Results:** Results showed that contamination and survival rates varied significantly across treatments. The highest contamination rate (93.3%) was observed with 1% NaOCl for 10 minutes, while the lowest contamination (46.7%) occurred with 4% NaOCl for 15 minutes. This treatment also recorded the highest survival rate (53.3%), indicating it as the most effective protocol among those tested.

**Conclusion:** The study showed that sterilizing *Hypoxis schimperi* corm explants with 4% NaOCl for 15 minutes provides an optimal balance between microbial decontamination and explant viability. This optimized protocol offers a reliable foundation for initiating micropropagation of *Hypoxis schimperi*, supporting its conservation and potential for large-scale propagation in medicinal plant biotechnology programs.

**Recommendation:** Further research should aim to improve the current protocol, particularly the use of sodium hypochlorite. Refinement of the 4% active chlorine treatment in terms of concentration, exposure time, and supplementary sterilising agents could lead to higher decontamination rates. Additionally, exploring alternative, cost-effective sterilants.

## 176 Isolation Chips and Velvet Transfer as a High-Throughput Approach for Primary Screening for Soil Antibiotic-Producing Bacteria

**Authors:** Joan Masatu, Sabina Hidat, Nelson Masota, Rogers Mwakalukwa, Joseph Sempombe, and Doreen Mloka.

**Background:** Isolation Chips (iChips) have revolutionised the cultivation of previously unculturable soil and aquatic bacteria, increasing cultivability up to 50-fold compared to standard techniques. This has allowed the exploration of previously unculturable bacteria for their various potentials. Velvet transfer, a replica plating technique, creates exact copies of bacterial colonies from master plates. Combining the two methods was hypothesized to yield a rapid and

less labour-intensive approach to ascertain antibiotic-producing soil-derived bacteria.

**Objective:** To assess iChips and velvet transfer as a combined high-throughput screening method for antibiotic-producing soil-dwelling bacteria.

**Methods:** Twelve soil samples were collected from three seawater-logged areas in Dar-es-Salaam. Bacterial cells were dislodged ultrasonically and counted by Neubauer chamber. iChip centerpieces were loaded with molten LB agar-soil supernatant mixture. Loaded iChips were incubated within the original soil samples for 14 days at 25 degrees Celsius. Isolated bacterial colonies were domesticated into Petri plates. Colonies were replicated using velvet cloth and screened through agar overlay for antibiotic activity.

**Results:** Each iChip yielded an average of 80 colonies, showing 2–4 distinct morphologies. Four replica plates were generated per master plate, maintaining colony characteristics and spatial orientation. Replicas enabled direct, efficient, high-throughput screening, identifying colonies producing compounds active against *Staphylococcus aureus* and *Escherichia coli*.

**Conclusion:** This is the first report combining iChips with velvet transfer to screen environmental bacteria for antibiotic production. The method ensures rapid identification of antibiotic-producing colonies while preserving master plates, minimising labour, and avoiding missed candidates. This approach represents a practical enhancement for antibiotic discovery platforms targeting environmental microbiota.

**Recommendation:** The combined use of iChips and velvet transfer offers an efficient, high-throughput method for isolating and screening soil bacteria for antibiotic production. Future research should expand its application to diverse environments and include molecular characterisation to unlock the full potential of environmental microbiota in drug discovery.

## 177 Evaluation of the Hypoglycemic Potential of root bark and Stem Bark Extracts of *Osyris lanceolata*

**Authors:** Lutugera L Kihwili, Kihenga Sende, Olipa Ngassapa, Rogers Mwakalukwa

**Background:** Diabetes is rapidly increasing in low- and middle-income countries (LMICs), where treatment costs create a major economic burden. Limited healthcare access often results in poor disease management, leading to serious complications like amputations, blindness, and heart disease. These challenges underscore the urgent need for affordable alternatives. This study investigates the hypoglycemic potential of *Osyris lanceolata* (African sandalwood), traditionally used as a promising alternative for diabetes management.

**Objective:** This study aimed at evaluating the hypoglycemic potential of *O. lanceolata* (African sandalwood), a plant used traditionally in managing diabetes.

**Methods:** The hypoglycemic activity of *O. lanceolata* stem bark and root bark extracts was evaluated using an oral glucose tolerance test (OGTT) in albino mice. Four groups (n=3) received stem bark extract, root bark extract

(1000 mg/kg), glibenclamide (10 mg/kg), or distilled water. Glucose (2 g/kg) was given 30 minutes later, and blood glucose was monitored for 3 hours. The most active extract underwent investigation using chromatographic techniques.

**Results:** The stem bark extract demonstrated the most potent hypoglycemic activity, significantly inhibiting the rise in blood glucose levels compared to the negative control ( $p < 0.05$ ). Based on this, the extract was subjected to silica gel open-column chromatography, using a gradient elution system (100% DCM  $\rightarrow$  100% MeOH), to isolate the bioactive constituents responsible for the observed activity. This process has led to the isolation of four compounds, and their structure will be elucidated by application of various spectroscopic techniques.

**Conclusion:** The stem bark extract of *Osyris lanceolata* demonstrates promising hypoglycemic activity.

**Recommendation:** Further studies are recommended to determine the hypoglycemic effects of the isolated compounds.

## 178 Screening for antibacterial agents from soil-dwelling bacteria in seawater-logged sites in Dar es Salaam

**Authors:** Joan Masatu, Nelson Masota, Rogers Mwakalukwa, Joseph Sempombe.

**Background:** Antibiotics are the cornerstone of modern medicine, playing a crucial role in combating bacterial infections. The lifespan of antibiotics is threatened by a decline in the

number and chemical novelty of antibacterial agents entering the pre-clinical and clinical development pipelines for antibiotics. Continued innovative efforts in the exploration of novel sources of effective antibiotics are therefore imperative.

**Objective:** To evaluate the antibacterial-producing potential of culturable soil-dwelling bacteria in seawater-logged areas in Dar es Salaam.

**Methods:** Soil samples from three seawater-logged sites in Dar-es-salaam were used to cultivate soil-dwelling bacteria using Isolation Chips (iChip). Isolated bacterial colonies from iChips were further incubated at 30 °C for 24 – 48 h. Grown colonies in each agar plate were replicated using the velvet transfer technique. Agar overlay and grid techniques were used for primary screening to ascertain strains producing antibiotics against *Staphylococcus aureus* (ATCC 29213) and *Escherichia coli* (ATCC 25922)

**Results:** From the 12 soil samples collected, 29 bacterial isolates (2-4 isolates/sample) were obtained. Isolated bacteria revealed various colony morphological features. Gram-staining revealed that all isolated bacteria were gram-positive rods (20) and cocci (9). Furthermore, colonies of 7 bacterial isolates exhibited moderate to strong antibacterial activity against *S. aureus*, whereby 2 were active against *E. Coli*. Further studies to establish taxonomical identities of isolated strains, as well as isolation and further chemical and biological characterization of respective antibacterial agents, is ongoing.

**Conclusion:** Isolation Chips have a high potential for enhancing the cultivability of diverse soil-dwelling bacteria. The observed antibacterial potentials from the cultivated isolates, targeting the geographically underexplored niches with innovative technologies, is a promising undertaking towards the discovery of novel antibiotics.

**Recommendation:** Collaborative multidisciplinary efforts leveraging technological advancements are crucial in realizing the full potential of underexplored geographical niches for their potential in offering new microbial sources of potentially novel antibiotics.

## 179 Antimicrobial, Antioxidant, and Phytochemical Profiles of *Phoenix reclinata* Jacq. leaf and root extracts

**Authors:** Bryceson Mkinga, Nelson Masota, Rogers Mwakalukwa, and Olipa Ngassapa

**Background:** Infectious diseases exert a heavy burden on the healthcare systems. In many African countries, among the top ten leading causes of mortality, six are infectious diseases, including tuberculosis and lower respiratory tract infections. Medicinal plants have long been used to manage infectious. *Phoenix reclinata* (Arecaceae) is traditionally used to manage chronic diarrhoea and fever. However, little is known regarding its antimicrobial and antioxidant activities, and phytochemical profile.

**Objective:** To determine the antioxidant and antimicrobial activities, as well as the phytochemical profile of *P. reclinata* leaf and root extracts.

**Methods:** Crude extracts were obtained following cold maceration in acetone and solvent evaporation in vacuo. The extract was screened for its antibacterial activity against *Staphylococcus aureus*, *Escherichia coli* and *Klebsiella pneumoniae* through disc diffusion. Followed by contact TLC bioautography to determine specific bioactive spot/fraction on a Thin-Layer Chromatography plate. The active extract was further explored for antioxidant activity using 2,2-diphenyl-1-picrylhydrazyl (DPPH)- based assays. Further, phytochemical screening was performed following standard procedures.

**Results:** The root crude extract exhibited activity against *S. aureus*, showing a Zone of Inhibition (Zoi) of 16 mm, whereas the leaf crude extract exhibited a Zoi of 11 mm. Upon bioautography, a total of 8 spots were observed, with the one at  $R_f = 0.52$  showing a Zoi of 6 mm. Moreover, the root extract has a half-maximal effective concentration (EC50) of 50 µg/mL with respect to reducing DPPH. phytochemicals such as tannins, saponins were determined to be present.

**Conclusion:** The root extract of *P. reclinata* possesses a stronger activity against *S. aureus* compared to leaves.

**Recommendation:** Further studies involving isolating bioactive compound(s) from the root extract and screening against other gram-positive bacteria are warranted.

**Subtheme: Cross-cutting Issues: Ethics and professionalism,**

## Artificial intelligence, Technology, and Occupational Health

**180** Healthcare professional students' skills in sexual health communication and history taking: Inter-reliability of standardised patients and faculty ratings in Dar es Salaam

**Authors:** Gift G. Lukumay, Stella Emmanuel Mushy, Lucy R. Mgopa<sup>1</sup>, Dickson Ally Mkoka, Agnes F. Massae, Dorkasi L. Mwakawanga, B. R. Simon Rosser, Nidhi Kohli, Corissa T. Rohloff, Michael W. Ross and Maria Trent

**Background:** Low- and middle-income countries face a disproportionate impact of sexual health problems compared to high-income countries. To address this situation proper interpersonal communication skills are essential for clinicians to gather necessary information during medical history-taking related to sexual health.

**Objective:** To evaluate the interrater reliability of ratings on sexual health-related interpersonal communication and medical history-taking between SPs.

**Methods:** We conducted a cross-sectional comparative study to evaluate the interrater reliability of ratings for sexual health-related interpersonal communication and medical history-taking. The data were collected from medical and nursing students at Muhimbili University of Health and Allied Sciences, who interviewed 12 Standardised Patients (SPs) presenting with sexual health issues. The video-recorded interviews rated by SPs were compared

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to those rated by 5 trained Health Care Professionals (HCP) faculty members.

**Results:** A total of 412 students (mean age 24) were enrolled in the study to conduct interviews with two SPs presenting with sexual health concerns. For interpersonal communication (IC), the overall median agreement between raters was slight ( $\kappa^2$  0.0095; PA 48.9%) while the overall median agreement for medical sexual history-taking was deemed fair ( $\kappa^2$  0.139; PA 75.02%).

**Conclusion:** The use of SPs for training and evaluating medical and nursing students in Tanzania is feasible only if they undergo proper training and have sufficient time for practice sessions, along with providing feedback to the students.

**Recommendation:** The medical and nursing universities in Tanzania and other low-resource settings should consider using SPs as part of health professional student education. When considering using SPs for educational research, alignment between SPs and faculty raters should be performed to ensure the accuracy of student assessments. Reliability checks between SPs and expert raters before initiating data collection are critical for control.

## 181 Does Financial Compensation Matter for Research Participation in Prevention Trials in Tanzania? Perspectives of Volunteers

**Author:** Raymond Athanas, Heavenlight A. Paulo, Gasto Frumence, Masunga K. Iseselo, Connie M. Ulrich

**Background:** Financial incentives are an important aspect of respect for people enrolled in clinical research yet continue to raise ethical questions. Respondents' characteristics, shaped by contextual and geographic factors, may influence perceptions of the ethical implications of financial compensation.

**Objective:** This study explored the relationship between respondents' characteristics and their ethical perspective on the role of financial compensation in prevention trials.

**Methods:** A cross-sectional survey of 537 participants from two Tanzanian prevention trials assessed sociodemographic factors and motivations for research participation. Data were collected via questionnaire and analyzed using descriptive statistics. Chi-square tests assessed associations between demographics and binary outcomes. Modified Poisson regression identified predictors of positive or negative perspectives. A p-value of <0.05 indicated statistical significance. Participants were drawn from PrEPVacc and a calcium supplementation trial in pregnancy.

**Results:** All participants were female, mostly aged 18–28 (82.5%), married or cohabiting (60.7%), and self-employed (55.9%). Key motivations included medical follow-up (96.8%), quality information (94.4%), disease control (92.2%), and a sense of duty (90.5%). Financial motivation was less common among married/cohabiting and less educated participants. Those with more research experience reported stronger non-financial motivations. Over one-third sought incentives (36.9%) or reimbursement (38.7%) for expenses.

Significant differences were observed based on relationship status, education, and prior research experience.

**Conclusion:** Financial compensation is an important motivator for participants with higher incomes, more dependents, and those who were self-employed. While compensation was widely viewed as beneficial, its perceived importance varied, with many participants prioritising altruism and trust in research oversight over monetary incentives.

**Recommendation:** Future research should explore the role of compensation among different socioeconomic groups. Compensation frameworks should be balanced and transparent, addressing participants' financial needs while upholding ethical standards and highlighting the non-financial benefits of research participation.

## 182 “It is More than Cash”: Research Personnel’s Perceptions on the Appropriate Forms of Incentives

**Authors:** *Raymond Athanas, Gasto Frumence, Rebecca J. DeBoer, Eligius Lyamuya, Tumaini Nyamuhanga, Edith Tarimo, Connie M. Ulrich*

**Background:** Clinical trials are increasingly conducted in low- and middle-income countries (LMICs) like Tanzania, but there is no consensus on ethically appropriate incentives for healthy volunteers. Ethical concerns persist about the form and level of incentives in resource-limited settings. In Tanzania, researchers are urged to follow ethical standards, yet little is known about which incentives are viewed as appropriate by

research personnel within their specific socio-economic context.

**Objective:** This study aimed to explore the forms of incentives that research personnel perceived as appropriate for research volunteers in Tanzania.

**Methods:** This was a qualitative descriptive design with a purposive sample of 36 research personnel from six different prevention trials in Dar es Salaam and Mbeya, Tanzania. A semi-structured interview guide was used. The interviews were recorded and transcribed verbatim, and thematic analysis was performed.

**Results:** Participants identified five potential forms of incentive, with monetary compensation being the most mentioned. However, opinions were divided—some favoured a one-size-fits-all amount, while others preferred a flexible approach that considers individual circumstances. Beyond monetary, participants suggested health insurance coverage as a meaningful form of incentive. Many also valued social recognitions and certificates of participation, which could enhance volunteers' participation credentials. Additionally, participants suggested the role of volunteers' engagement as a procedure for deciding on appropriate incentives.

**Conclusion:** Many participants favoured a combination of incentive forms tailored to Tanzania's socio-economic context, emphasising the importance of fair compensation for participants' time and effort in advancing scientific research. The findings highlight the need to minimise perceptions of deception, undue

influence, and exploitation, especially given the limited resources of participants.

**Recommendation:** Multiple forms of incentives should be employed for healthy volunteers in ethically appropriate ways. Additionally, a standardised, one-size-fits-all monetary incentive may be considered for similar regional trials and incorporated into the National Institute for Medical Research Tanzania (NIMR) incentive guidelines.

## 183 Psychological harms of HIV vaccine trial participation in Tanzania

**Authors:** Judith Shayo, Amani Anaeli, David Urassa, Adamu Addissie, Eligius Lyamuya, Connie Ulrich.

**Background:** Background Global health researchers are celebrating notable success in their efforts to develop preventive vaccines to curb the HIV/AIDS pandemic. HIV vaccine trial participants play a vital role, devoting their time, effort, and bodies to this effort. However, the conclusion of vaccine trials often shifts the spotlight from participants to the broader implications of the trial results, which leaves participants feeling neglected or abandoned. Little is documented regarding participants' psychological

**Objective:** Aim This study aimed to explore psychological harms reported by participants after participation in HIV vaccine trials in Tanzania.

**Methods:** This is part of a larger mixed-methods sequential-exploratory design that aims to explore the non-physical risks and benefits of HIV

vaccine trial participation and their effects on people's willingness to participate in similar trials. We interviewed 25 former participants and 11 researchers who conducted HIV vaccine trials from 2007 to 2015 in research centres in Dar es Salaam and Mbeya. With the aid of NVivo 14 software, we thematically analysed the data.

**Results:** Three themes emerged from the data: (1) Psychological uncertainty: psychological anguish associated with vaccine-induced seropositivity (VISP), heightened risky sexual behaviour, worries that the trial vaccine had infected them or would cause physical problems later. (2) Disengagement effects: feelings of abandonment and not knowing the trial results. (3) Dependence: inability to continue with needed long-term treatment after the trial closure and longing for the sustainability of benefits and more follow-ups were psychological harms reported by participants of completed HIV vaccine trials in Tanzania.

**Conclusion:** There is scanty literature on participants' experiences post-participation in HIV vaccine trials, which creates psychological uncertainties. Uncertainties such as not knowing the trial outcomes and constant fear of harm may impair participants' mental health. Participants develop dependence on the collateral benefits of the trial. Lack of proper trial closure may lead to ill attitude about research participation.

**Recommendation:** Our study findings highlight the need for appropriate end-of-trial programs to ensure safe transition and post-trial psychological well-being of people who participate in long-term HIV vaccine trials. We call for further research

that will employ more robust methods to establish the extent of post-trial uncertainties and their effect on participants' mental health.

## 184 Ethical and regulatory issues toward digital health in Africa: An integrative review

**Authors:** David Machaku, Felix Sukums, Renatha Joseph, Ibrahim Msangi, Renatha Kato, Obadia Bishoge, Shija Kuhumba

**Background:** Digital technologies are transforming healthcare and public health worldwide, with immense potential to improve well-being. In Sub-Saharan Africa, digital health innovation is growing, yet many countries lack comprehensive regulatory frameworks. This gap raises ethical concerns such as privacy breaches, data loss, biases, disparities in access, and harmful effects. An integrative review of ethical and regulatory concerns is needed to ensure responsible digital health adoption and high-quality healthcare delivery.

**Objective:** To explore ethical issues surrounding digital health technologies in Sub-Saharan Africa. To examine regulatory challenges and identify effective practices.

**Methods:** Using an integrative review approach, searches were conducted across four databases: PubMed, Scopus, African Journals Online, and Google Scholar. Articles were screened based on titles and abstracts, with 32 of 1,502 meeting eligibility criteria. These included qualitative, quantitative, mixed-methods, and literature reviews.

**Results:** Key ethical challenges identified were privacy and data security, equity and access, informed consent and autonomy, cultural sensitivity, and fairness. Regulatory challenges included poor infrastructure, lack of policy frameworks, financial constraints, and inadequate training. Solutions involved developing robust policies, promoting capacity building, enhancing infrastructure, and fostering community engagement.

**Conclusion:** While digital health technologies offer significant potential to transform healthcare in Africa, this review underscores critical ethical and regulatory challenges that hinder their effective and equitable implementation. Notably, there is a scarcity of empirical studies examining the perspectives of key stakeholders, including healthcare providers, patients, policymakers, and technology developers, on the ethical implications of DHTs.

**Recommendation:** This review underscores the need for comprehensive policies and responsible implementation to ensure ethical, effective digital health adoption, ultimately improving regional healthcare delivery.

## 185 Funding Trends and Gender Disparities in Tanzanian Biomedical Research: Insights from The World RePORT

**Authors:** Raphael Z. Sangeda, Siana Nkya, Upendo Masamu, Rehema Chande-Mallya, Magdalena Lyimo, Bruno Mmbando, Nahya Salim

**Background:** Research funding is crucial for advancing scientific knowledge and innovation. Understanding patterns and trends in research funding, including potential gender disparities, can provide valuable insights for policymakers, funding agencies, and researchers.

**Objective:** This study aimed to analyse the distribution of research funding in Tanzania, identify major contributors, and uncover trends over the past.

**Methods:** Data from the National Institutes of Health (NIH) funding database and World Report were utilised. Data cleaning and preprocessing ensured consistency and accuracy, with funding amounts converted to common currency (USD) for analysis. Statistical and trend analyses were performed to identify key patterns, focusing on funding distribution by research organisation, funding organisation, fiscal year, type of record, and PI gender.

**Results:** The total funding amount analysed was \$218,409,329, distributed across 438 unique projects. Collaborations accounted for 374 projects, with \$158,121,528.6, while direct funding comprised 64 projects worth USD 60,287,799.96. The European and Developing Countries Clinical Trials Partnership contributed the most. The National Institute for Medical Research (Tanzania) received the highest amount of funding at \$95,453,357 (43.7%). In 2016, male PIs received \$1,160,947, while female PIs received \$0. However, by 2023, female PIs received \$5,517,171, surpassing the \$4,354,089 received by male PIs.

**Conclusion:** The study revealed a concentration of funding among a few major research institutions and a dominant funding organization. The observed increasing trend in research funding indicates sustained investment in Tanzanian research. Gender disparity analysis suggests the need for policies to ensure equitable funding distribution among male and female researchers.

**Recommendation:** These findings provide valuable insights for strategic planning and policymaking to ensure a balanced and effective distribution of research funding in Tanzania.

## 186 Assessment of the Heart Rate Variability During Activities of Daily Living

**Authors:** *Sylvanus Alfred Ntirumolekwa*

**Background:** Heart Rate Variability (HRV) is a measure of how the time between heartbeats changes. It helps us understand how the body responds to stress and physical activity. While HRV is often studied in controlled environments, there is less research on how it changes during Activities of Daily Living (ADLs).

**Objective:** To characterise human body performance in terms of heart rate variability and accelerometry during Activities of Daily Living.

**Methods:** Twelve healthy participants (ages 18-45) were monitored using wearable ECG and accelerometers while performing selected ADLs: walking, walking while carrying a load (4kg weight), climbing stairs, descending stairs, sweeping, and stacking shelves. ECG data were analysed to extract time-domain, frequency-

domain and non-linear HRV parameters. Accelerometers were used to classify activities and quantify movement intensity. Statistical analysis assessed differences in HRV across three trials.

**Results:** ADLs such as stair climbing and walking while carrying a load demonstrated a significant decrease in parasympathetic activity and increased sympathetic dominance (elevated LF/HF ratio,  $p < 0.05$ ). The overall LF/HF ratio mean value was  $1.59 \pm 0.27$ . Lower-intensity tasks, such as sweeping and walking, demonstrated trends with slightly similar HRV values across all three trials. Accelerometric data accurately distinguished activity types, showing that the maximum body acceleration was achieved during the descending stage ( $0.572 \pm 0.067$  units).

**Conclusion:** HRV varies significantly with activity type, reflecting real-time autonomic variation during ADLs. The combination of ECG and accelerometric data offers a promising approach for physiological monitoring, showing characterized cardiac 'stress' of ADLs in healthy individuals during differing trails and environmental conditions.

**Recommendation:** Future biomedical systems should integrate this information to enhance early detection of stress, fatigue, and cardiovascular risks in everyday clinical settings. In addition, this approach could help to create better health-tracking tools, especially for people who want to monitor their heart health when performing ADLs.

## 187 Five years of Transforming Human Genetics Landscape in Tanzania: Milestones, Challenges, and Aspirations of Tanzania-Human-Genetics-Organisation

**Authors:** Siana Nkya, Aneth David, Grantina Modern, Karim Manji, Julie Makani, Mary Mayige, Mohamed Zahir, Samson Kilaza.

**Background:** The status of human genetics advancements in low and middle-income countries (LMICs) is characterised by notable progress coupled with significant challenges. Over recent years, LMICs have witnessed an increasing recognition of the importance of human genetics in public health, leading to the establishment of various research institutions and genetic societies aimed at advancing knowledge in this field.

**Objective:** Summarizing THGO's achievements and influence while emphasizing its dedication to enhancing health outcomes in Tanzania by advancing genetics.

**Methods:** This report reflects on strategic frameworks and initiatives across five key technical areas: research, training, advocacy, diagnostics, and therapeutics. It is based on documented outcomes and partnerships developed since 2017 when Tanzania Human Genetics Organisation (THGO/TSHG) was established and inaugurated in 2019 and is operating under the Africa Society of Human Genetics (AfSHG).

**Results:** THGO has implemented research strategies, capacity building, public engagement

programs, and clinical genetics services. Milestones include stakeholder engagement, framework development, rare disease registry initiation, and national advocacy for policy integration.

**Conclusion:** THGO has significantly advanced the field of human genetics in Tanzania over the past five years, striving to enhance genomics research, diagnostics, advocacy, training, and therapeutics. Looking at/towards the future, THGO is dedicated to investing in genomics for precision medicine, paving the way for customised therapies to address both communicable and non-communicable diseases.

**Recommendation:** To sustain and grow THGO's influence, we propose increasing funding for genomics research, incorporating genetics into national health systems, and strengthening government partnerships for policy implementation. Developing regional and international partnerships, expanding healthcare professional training programs, and leveraging digital tools and artificial intelligence will also improve data management, diagnoses, and equitable access to genetic medicine across Tanzania.

## 188 Safety climate and occupational injuries in iron and steel industries in Tanzania

**Authors:** Saumu Shabani, Bente Elisabeth Moen, Teferi Abagaz, Simon Henry Mamuya

**Background:** The iron and steel industries globally have a high prevalence of occupational

injuries. The high prevalence needs to be reduced, and we need more knowledge about the working conditions in this industry. The safety climate assists in understanding the safety status in the workplace. To the best of our knowledge, no previous studies have been conducted on safety climate associated with occupational injuries in the iron and steel industries.

**Objective:** To assess the level of safety climate and its association with the occurrence of occupational injuries.

**Methods:** A cross-sectional study was conducted in four iron and steel industries in Tanzania. Workers from the production lines and managers/supervisors participated in the study. The data were collected by interviews using the Swahili version of the Nordic Safety Climate Questionnaire (NOSACQ-50) and the modified International Labor Organisation (ILO) manual on methods for occupational injuries. Mann–Whitney tests and multivariate logistic regression analyses were used.

**Results:** Results showed that the managers/supervisors scored higher in management safety empowerment, management safety justice, workers' safety priority and risk non-acceptance, and workers' trust in the efficacy of safety systems than workers. Most workers who had been injured at work scored low in the five dimensions of safety climate. The low scores on the management safety priority and ability, and the low scores on management safety justice were significant predictors of occupational injuries in the iron and steel industry.

**Conclusion:** Most workers with low scores on safety climates had experienced occupational injuries. Management safety climate is the predictor of occupational injuries.

**Recommendation:** To reduce occupational injuries, management is required to prioritise health and safety over production for long-term benefit.

## 189 Development and Validation of a Portable Glucose Monitor-Based Method for Analysis of Sugars in Infant Formulas

**Authors:** *Isaya Kapembwa, Nelson E. Masota, Paul Malaba, Raphael Shedafa, Vicky Manyanga, Joseph Sempombe, and Eliangiringa Kaale*

**Background:** Infant formulas are a crucial source of nutrients in infants. However, their excessive sugar composition may lead to poor health outcomes. Current methods for analysing such sugars are limited by high costs, time-consuming procedures, limited portability, and methodological complexities, thereby hindering routine analyses. Portable Glucose Monitors (PGMs) have a long-standing utility in quantifying glucose in blood samples, offering an intriguing possibility for their use in other matrices.

**Objective:** We aimed to develop and validate a Method employing a PGM for the quantification of glucose-containing sugars in infant formulas.

**Methods:** Working concentrations, application volume, pH levels, and hydrolysis conditions were explored and optimised through a combination of literature review and trial and

error. The method was validated for robustness, precision, accuracy, and linearity following the ICH Q2 (R1) guidelines.

**Results:** The working glucose concentration range of 0.35 – 6 mg/mL, an application volume of 10  $\mu$ L, pH range of 6.8 – 7.8 were found to be optimal. The method was robust to small deviations in application volumes and pH of the working solution. The %RSD for repeatability (1.07) and intermediate precision (1.47) were within the acceptable limits ( $\leq 2$ ). The method was linear, with an  $R^2$  value of 0.9963, and an accuracy of 98–100%, at 80, 100, and 120%, conforming to the  $100 \pm 2\%$  specifications.

**Conclusion:** The method offers a reliable, simple, rapid, portable, and less labor-intensive approach for the quantification of glucose-containing sugars in infant baby formulas and related products.

**Recommendation:** Regulatory authorities and quality control laboratories may consider its adaptation to serve as a highly convenient approach for routine and risk-based screening activities and surveillance in remote areas and points of entry.

## 190 Graduate Employability and Quality of Programs: An exploratory qualitative study to share experiences

**Authors:** *Obadia Nyongole, Nathanael Sirili, Magreth Thadei Mwakilasa, Pius Temba, Lilian Mselle, Larry Akoko, Furaha August, George Kiwango, Hussein Mohamed, Doreen Kamori,*

Lorna Carneiro, Doreen Mloka, Eliangiringa Kaale, Erasto Mbugi, Emmanuel Balandya, Appolinary Kamuhabwa, Deodatus Kakoko

**Background:** Highly skilled and competent human resources are needed for quality healthcare services. However, there is a growing concern about unemployment among health professionals in Sub-Saharan Africa. Employers in many developing countries have reported that graduates often lack in-demand, employable skills.

**Objective:** We aimed to examine the experiences of graduates and employers regarding the perceived required attributes for the employability of graduates.

**Methods:** We used a convergent mixed-methods approach, which was conducted from December 2022 to February 2023. In-depth interviews were conducted across nine regions in Tanzania, including zonal and regional hospitals. Participants were purposefully selected MUHAS alumni who graduated in 2017 or later, and their immediate supervisors. Data analysis employed the framework method for content analysis, involving transcription, familiarisation, coding and indexing.

**Results:** A total of 282 in-depth interviews were conducted, comprising 238 alumni and 44 supervisors/employers. The employability of graduates depended on the attributes of the alumni, which were considered positively by the employers. Five themes that emerged from the qualitative interviews were: Employability, knowledge, skills, attitude, and working within the system and context of health care.

**Conclusion:** The employability of graduates depends on the attributes they possess, which employers considered positively. Both employers and alumni hold high expectations for the attributes of MUHAS graduates. The study suggests that graduate tracking is important for quality improvement, along with regular evaluation of competencies demanded by the labour market.

**Recommendation:** The findings support a multidimensional view of employability, including knowledge, skills, personal characteristics, and social experience. The perceived facilitators and barriers to employability should be considered positively during curriculum revision.

## 191 Machine Learning Model for Cardiovascular Disease Prediction Using Demographic and Clinical Data

**Authors:** Asifiwe Makawa, Mussa Ally, Elingarami Sauli and Pedro Pallangyo

**Background:** Cardiovascular diseases (CVDs) remain the leading cause of global mortality, accounting for 32% of deaths annually. Early prediction using demographic and clinical data significantly improved outcomes. However, traditional risk scores often lack precision. This study uses machine learning (ML) to improve the accuracy of CVD predictions by combining clinical and demographic information, filling the gaps in current screening tools that mostly depend on the symptoms presented by a patient.

**Objective:** To develop an interpretable ML model for early and accurate CVD prediction using demographic and clinical variables.

**Methods:** Multiple ML algorithms were trained on a dataset of 960 records extracted from the JKCI patient database, using 18 features. Age, gender, pulse, HDL, LDL, triglycerides, diastolic, systolic blood pressure, BMI, HbA1c, SpO2, electrolyte levels, liver and kidney function tests were used. Data preprocessing included handling missing values, normalisation, and feature selection. Model performance was assessed for interpretability via AUC-ROC, precision-recall, and SHAP values. Cross-validation and external datasets ensured robustness.

**Results:** The Random Forest model achieved the highest performance (AUC:0.94, precision: 0.85, recall: 0.90), outperforming four ML algorithms (logistic regression AUC: 0.91, Support Vector Machine AUC: 0.939, K-Nearest Neighbors AUC: 0.939, and X-Gradient Boost AUC: 0.937). Selected key predictors after computing feature performance included (age: 19%, LDL: 14%, systolic BP: 13%, HbA1c: 9%, and BMI: 7%). SHAP analysis revealed nonlinear interactions critical for risk stratification. The model maintained robustness in external validation (AUC: 0.92), demonstrating generalizability.

**Conclusion:** Our ML model provides a highly accurate and interpretable tool for CVD prediction, outperforming conventional methods. Identifying high-risk patients earlier, it enables targeted interventions. The integration of demographic and clinical data enhances predictive decisions, offering a scalable and

robust solution for clinical deployment in hospitals.

**Recommendation:** Future research should prioritise integrating nutrition patterns and dietary intake with clinical data, as these are critical yet underutilised predictors at the individual level. A hybrid AI recommender system could synergise real-time dietary habits with traditional biomarkers to personalise CVD risk assessments. This approach would enable precision prevention and strategies, bridging gaps in lifestyle-based interventions and clinical care.