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Tanzania Medical Journal is proud to be collaborating with the Organizing committee of the MUHAS Scientific Conference in publishing the conference abstracts accepted for oral presentation at the 7th MUHAS Scientific Conference that was held on 27th - 28th June 2019, Dar es salaam Tanzania. This conference had a theme: **“Health Research and Innovation for Economic Sustainable Development”**. The abstracts are listed in clusters as they were presented during the conference, and whenever appropriated first authors affiliation is also listed. The scientific committee for this conference was responsible for peer review of the abstracts.

CONTENT	PAGE
Profile and Outcome of Adult Patients with Upper Gastrointestinal Bleeding Presenting to an urban emergency department of a tertiary Hospital	5
Magnitude and Risk factors for Resistant Hypertension among patients attending Amana Hospital	6
Efficacy and Safety of Combination Therapy of Praziquantel and Dihydroartemisinin Piperazine for Treatment of Intestinal Schistosomias	11
Prevalence and risk factors of acute kidney injury in polytrauma patients at Muhimbili Orthopedic Institute	15
Trends in production and consumption of Sugar Sweetened Beverages in Tanzania; A systematic review	16
Subclinical Thyroid Dysfunction Among Hypertensive Patient Attending Muhas Academic Medical Centre and Jakaya Kikwete Cardiac Institute	19
Association of Road Infrastructure Characteristics and Motorcycle Injuries Hotspots	23
Mature cystic teratoma of the Lung: An exceptional disease	24
Loss to follow-up patterns among sickle cell patients registered at Muhimbili Sickle Cell Cohort	25
Effective Management of CKD-MBD among End Stage Renal Disease Patients on Maintenance Haemodialysis at MNH	25
Hypertensive disorders of pregnancy are associated with an inflammatory state: evidence from hematological findings and cytokine levels	27
Assessment of provider-initiated HIV testing and counselling uptake among patients attending outpatient department in Dar-es-Salaam	30
Risky sexual behaviour among fisherfolks in islands camps of Lake Victoria	31
Body Mass Index, Proteinuria, And Lymphocytes Count in Predicting Treatment Responses Among Newly Antiretroviral Initiated	37
Tuberculosis of The Testis, Mimicking A Testicular Tumor	39
Combating the persistent cholera epidemic in complex nomadic society of Northern Tanzania: The impact of enhanced targeted micro scale interventions – Ngorongoro District, October 2018	41
Quality of Malaria Case Management under Different Transmission Settings - Tanzania Mainland, 2019	42
Investigation of Anthrax Outbreak in Human- Songwe Region Tanzania, 2019	42
Evaluation of The Integrated Disease Surveillance and Response: Case Of Bloody Diarrhea in Nanyumbu DC And Kilwa DC	43
Novel fusicoccane diterpenoid with ant plasmodial activity from the whole plant of Hypoestes verticillaris	45
Traditional Medicine Usage During Labour and Its Association with Pregnancy Outcome Among Women Delivered at MMH, Zanzibar	45
Fatal Tuberculosis coincidentally uncovered at autopsy: Case series and literature review	46
The feasibility and effectiveness of evriMED for enhancing adherence to treatment among TB patients in Kilimanjaro, Tanzania	47

Detection of Plasmodium falciparum by microscopy, LAMP, and PCR on day 3 after artemether-lumefantrine treatment in Bagamoyo District	48
Occupational Health Hazards Among Nurses at Muhimbili National Hospital	49
Respiratory Symptoms and Associated Factors Among Commercial Motorcyclists in Ubungu Municipality, Dar es Salaam, Tanzania	51
Respiratory Symptoms and Lung Function Among Workers in Grain Milling Industries in Dar es Salaam, Tanzania	51
Dust Exposure and Related Health Effects Among Workers in Gypsum Industries in Pwani Region, Tanzania	52
Methicillin Resistant Staphylococcus aureus (MRSA) nasal colonization among slaughterhouse workers and associated risk factors in Dar es Salaam Tanzania	53
Background:	53
Sharp injuries and blood splash management among health care workers in Kibaha Tanzania	54
Occupational noise exposure and hearing loss: A study of Knowledge, Attitude and Practice among Tanzanian iron and steel workers	55
Chronic respiratory symptoms and cross shift lung function of workers among an integrated textile factory	55
Occupational noise exposure and hearing loss: A study of Knowledge, Attitude and Practice among Tanzanian iron and steel workers	56
Work-related ocular symptoms among hairdressers in Kinondoni municipal, Dar Es Salaam, Tanzania	57
Use of Mobile-Enabled Digital Learning Platform for in- Service Health Training	58
Re-purposing a Mobile-Operator Product to Strengthen Referrals Management and Clinical Consultations	59
Using GIS and spatial analysis to determine health service deliveries gaps: Case of population density Vs Availability of service	59
Feasibility of using V-DOT to improve adherence to TB medication, A pilot study among TB patients in Kilimanjaro, Tanzania	60
Experience on the Development of Tanzania Health Sector Enterprise Architecture	61
Public Private Partnership in training of doctors after the 1990s health sector reforms in Tanzania	62
Factors associated with data completeness on electronic Hospital Information system at MNH	63
Does the health system respect immigrants' right to health? Access of immigrants to healthcare services in Spain	64
Improving HIV viral suppression through Better Your Health—a nutrition support solution	65
Baseline evaluation of bioinformatics capacity in Tanzania	66
Influence of Information and Communication Technologies to Malaria Control in Tanzania	67
Investigating the tools and techniques for clinical decision support (CDS) in Tanzania	67
Bioethics experience in Tanzania	68

Knowledge and practice on birth preparedness and complication readiness among pregnant women in Biharamulo District	69
Low-birth weight Infant Feeding Exploration (LIFE! Project)	70
Understanding reasons for the use and non-use of natural contraceptives among young unmarried sexually active men in Moshi, Tanzania	71
The Role of Ultrasound Assessment of Severe Dehydration in Children with diarrhea and vomiting	72
Completeness of Treatment Charts for patients with selected obstetric conditions admitted at Muhimbili National Hospital	73
Applying Research Intelligence to gauge Biomedical Research for Sustainable Development	73
Exploring the impact of leadership development among health workers on cervical cancer prevention screening performance	74
Impact of Malocclusions on quality of life of primary school children in Dar es Salaam	75
Evaluation of parasites and fecal coliform removal by waste stabilization ponds from wastewater in Tanzania	76
Preliminary Results from a Pilot Intervention of Entrepreneurship, Beekeeping, and Health	77
Factors associated with access to basic households' water, sanitation and hygiene in Ngorongoro cholera epidemic Villages-Arusha, 2019	77
Do Tanzanian hospitals need Hospital Ethics Committees (HECs)?	78
Isolation of a new cytotoxic compound, 3-((Z)-heptadec-15-enyl) benzene -3-ol, from root extracts of <i>Rhus natalensis</i>	79
Profile and Outcome of Adult Patients with Upper Gastrointestinal Bleeding Presenting to an urban emergency department of a tertiary Hospital	5
Magnitude and Risk factors for Resistant Hypertension among patients attending Amana Hospital	6
Efficacy and Safety of Combination Therapy of Praziquantel and Dihydroartemisinin Piperazine for Treatment of Intestinal Schistosomias	11
Prevalence and risk factors of acute kidney injury in polytrauma patients at Muhimbili Orthopedic Institute	15
Trends in production and consumption of Sugar Sweetened Beverages in Tanzania; A systematic review	16
Subclinical Thyroid Dysfunction Among Hypertensive Patient Attending Muhas Academic Medical Centre and Jakaya Kikwete Cardiac Institute	19

Abstracts on Non-Communicable Diseases and Injury

Total of 31 abstract were accepted for presentation, and they are presented below in order of presentation:

Profile and Outcome of Adult Patients with Upper Gastrointestinal Bleeding Presenting to an urban emergency department of a tertiary Hospital

Author: Shaffin Rajan

Background: Upper Gastrointestinal Bleeding (UGIB) is a common Emergency Department (ED) presentation with high morbidity and mortality. The ED physicians are challenged with the responsibility of appropriately risk stratifying individual patients basing on their need for urgent interventions. There is a paucity of data on the profile and outcome of patients who present in an emergency situation, especially within the limited resource settings.

Objectives: We aimed to determine the profile and outcome of adult patients who present to the emergency department with UGIB.

Methods: This was a cross-sectional study, whose data were collected prospectively over a period of six months at the Emergency Departments in MNH and MUHAS Academic Medical Centre. All Adult patients presenting with non-traumatic UGIB were included in the study. Patient demographic data, clinical presentation, severity and ED management provided were recorded. We used Clinical Rockall score to assess disease severity. Any association to the primary outcomes was determined using appropriate statistical analysis.

Results: We screened 31987 patients and included 123 (0.38%) patients with UGIB. Overall the median age was 42 years (IQR 32.0-63.5 years), and 87 (70.7%) were male. Hematemesis with melena was the most frequently encountered ED presentation (31.7%). PUD was the most frequently reported comorbidity (40.2%). A median Clinical Rockall score of 3 was observed with most patients ranging between scores of 3-4 (51.2%). Mortality occurred in 23 (18.7%). Age >40 years was a significant predictor of mortality (OR=7.00, p=0.004). Receiving UGI endoscopy significantly reduced the risk of mortality (OR= 0.273, p=0.047).

Conclusion: UGIB carries a high mortality rate among patients presenting to EMD of tertiary hospital in Tanzania, and age above 40 years, and endoscopic evaluation at any point during the hospital are independent predictor of mortality.

Recommendation: Larger studies should be conducted to look at other possible factors affecting prognosis in UGIB patient, including those factors that seemed not to have a statistical significance but were limited by the small sample size.

Magnitude and Risk factors for Resistant Hypertension among patients attending Amana Hospital

Authors: Stanley Binagi, Eden Maro

Background: Failure to achieve control of blood pressure has been linked to adverse cardiovascular and renal outcomes. Prevalence of resistant hypertension in Africa is estimated to be 12.1%, but evidence suggests that it may be much higher.

Objective: To determine the prevalence, risk factors and the complications associated with resistant hypertension in our setting.

Methods: We carried out a cross sectional study at Amana Regional Referral hospital, from August to November 2018, involving 181 adults who were attending the hypertension clinic at the hospital and had been on treatment for at least one month. A standard structured questionnaire, anthropometric measurements and laboratory investigations were collected. Resistant hypertension was defined as office blood pressure above 140/90 mmHg despite being on three or more anti-hypertensives, one being a diuretic. All logistic regression analyses were done to assess the association for resistant hypertension. P-value of <0.05 was considered statistically significant.

Results: The mean age of participants was 60±11 and 75.7% of all participants were females. The prevalence of resistant hypertension was 48.6%. Factors significantly associated with increased risk of resistant hypertension were poor adherence to medications, previous history of hyperlipidaemias, use of NSAIDS, and uncontrolled diabetes. Among participants with resistant hypertension, 21.6% had a history of stroke, 27.3% presented with LVH and 79.5% presented with CKD.

Conclusion: The prevalence of resistant hypertension among patients at Amana hospital is high and independently associated with poor adherence to medications, family history of hypertension, use of NSAIDS and uncontrolled diabetes.

Recommendation: To reduce the burden of resistant hypertension, we recommend early referral, good adherence, avoiding the use of NSAIDS and use of additional medications such as chlorthalidone and spironolactone.

Pattern of Arrhythmias Among Cardiac Patients Admitted at Jakaya Kikwete Cardiac Institute in Dar es Salaam

Authors: Nakigunda Kiroga, Reuben Mutagaywa

Background: Arrhythmia is one among the cardiovascular diseases that has great impact on morbidity and mortality worldwide. The Arrhythmia can result in inefficient pumping of blood and may damage the lungs, brain and other organs. Both metabolic and non-metabolic factors predispose one to developing arrhythmias. If left untreated can lead to hospitalization, stroke, heart failure and even death. Limited information is available regarding arrhythmias; therefore, this study comes in to mirror the burden of arrhythmias in as well as adding into the body of knowledge on arrhythmias at Jakaya Kikwete Cardiac Institute.

Objective: To determine the pattern of arrhythmias among cardiac patients admitted at Jakaya Kikwete Cardiac Institute in Dar es Salaam.

Methodology: A hospital based cross sectional study was done from October to December, 2018. Patients that were admitted within the three months at Jakaya Kikwete Cardiac Institute were recruited into the study. A standard data extraction tool was used to collect both demographic data and ECG findings with other associated comorbidities. Data collected from the patients' files was entered and analyzed with SPSS software for logistic analyses to assess for predictors of arrhythmias. Continuous variables were compared with the use of Students' t-test and Chi-square test was used to determine association between categorical variables and establish the significance level <0.05 .

Results: Overall, the prevalence of arrhythmias was 49.8% among the study population, with tachyarrhythmias being the most prevalent (26.4%). In the logistic regression analysis, the model involving 26 factors, only few factors were found to be independently associated with development of arrhythmias namely hypertension, diabetes mellitus and heart failure. Among these, heart failure was found to be the strongest predictor (ADJ. OR 2.4, 95% CI 1.3-4.4, P-value <0.001).

Conclusion: Arrhythmias are considerably common among patients with cardiac diseases and these were more associated with Heart failure, Diabetes and Hypertension.

Recommendations: Prompt electrocardiographic interpretation and timely management of these patients is essential in order to prevent further morbidity, complications and mortality. Well-designed studies such as multi-centred cohort study should be done with the use of Holter monitoring in high-risk patients, concentrating on specific types of arrhythmias and their prognostic implications.

Patterns of Ocular Diseases Diagnosed by Ultrasound at Muhimbili National Hospital

Authors: Ivan Rukundo, Zuhura Nkrumbih, Florence Lwakatare

Background: Ultrasound enhances the diagnostic information in cases of obscure anatomic location or hazy media like cataract, vitreous hemorrhage, retinoblastoma, endophthalmitis, retinal detachment and many more others where the primary slit-lamp and funduscopy examinations are limited and/or insufficient.

Objective: To determine the patterns of ocular diseases diagnosed by ultrasound at MNH.

Methodology: This was a hospital based cross-sectional descriptive study conducted at MNH in Radiology department. 70 patients were enrolled through convenience sampling method. Data were recorded on prepared questionnaires and findings of the study were analyzed and described and presented in tables, charts, measures of central tendencies and texts. Statistical significance was tested using chi square test of correlation where p value <0.05 was considered significant.

Results: 70 patients from which 84 eyes were scanned using ultrasound. Their median age and range were 19 years and 75.9 (0.1-76) respectively. Majority of the study participants were in the 1st decade 35.7%. Most patients in this study presented with reduced vision 70%. A big number of participants 90% presented with opaque media. Vitreous haemorrhage and cataract were the most diagnosed conditions on ultrasound constituting of 22.6% and 22.5% respectively. Retinoblastomas were clinically diagnosed and confirmed on ultrasound in 72.7% of cases with strong significance ($p < 0.0001$).

Conclusion: Vitreous haemorrhage and Retinal detachment were the most diagnosed ocular conditions using ultrasound in general contributing to almost two-thirds of the diagnoses made by ultrasound. Ultrasound was able to characterize local regional extension across compartments such as retinoblastoma extension into the intra conal fat.

Recommendation: The role of ocular ultrasound as an adjunct imaging tool in the evaluation and diagnosis of oculo-orbital disease should be emphasised in MNH to improve patient diagnostic and treatment outcomes. Radiologists, radiology residents and sonographers should enhance their efforts and skills in ocular ultrasound in order to meet the diagnostic need of ultrasound in managing ocular diseases.

Risk perception, risk behaviour and previous history of road traffic injury

Authors: George Kiwango, Filbert Francis, Marie Hasselberg, Candida Moshiro

Background: Road traffic injuries are a major cause of global morbidity and mortality disproportionately affecting low- and middle-income countries. Motorcycle drivers are particularly vulnerable because they are exposed to traffic risk with limited protection, and are overrepresented in road traffic injuries in Tanzania. Perceived risk to an injury and of experiencing adverse outcomes will determine whether people take action to change their behaviour or reduce injuries.

Objective: To explore the driving behaviours and risk perceptions of commercial motorcycle drivers and determine their association with previous history of road traffic injuries.

Materials and methodology: A cross sectional study was conducted with 384 commercial motorcycle drivers between 8th December 2018 and 24th March 2019 in Dar es Salaam, Tanzania. A random sample of participants was drawn from 127 registered parking stages for commercial motorcycles drivers. Drivers aged 18 years and above completed a questionnaire that include measures of risk perception and risk driving behaviour Logistic regression and factor analysis were used in the analysis. Factors analysis was used to reduce items and generate variable for summarizing the data for risk perception and risky driving behaviour.

Results: In total, 384 drivers participated, of whom 199 (54.97%) had experienced an injury in the past two years, and 109 (58.2) required hospital care. Of all participants only 182 (48%) reported always wearing a helmet despite 346(92.9%) perceiving not wearing a helmet to be risky. Risk of reporting previous history of injury was seven times higher in drivers with high scores of risk behaviour compared to drivers with a low score (OR = 7.83 CI 2.75 – 22. 28). High scores for risk perception (poor perception of road safety) were also

associated with history of previous injury in univariate analysis, however significance was not sustained after adjusting for driving experience.

Conclusion: Overrepresentation of motorcycle drivers is a significant public health issue. Risk driving behaviour is strongly linked to previous history of an injury and it may override the importance of risk perception. Interventions targeting the change in behaviour are warranted.

Clinical-Epidemiology and Outcomes of Adult Patients Presenting with Traumatic Brain Injury at urban emergency department of tertiary hospital

Author: Asha lyullu

Background: Traumatic brain injury is the most important single injury contributing to traumatic morbidity and mortality. World Health Organization (WHO) estimates that Traumatic Brain Injury (TBI) will surpass many diseases as the major cause of mortality and disability by the year 2020.

Objective: This was a prospective cohort study of patients with Traumatic Brain (TBI) presented to Emergency Department of Muhimbili National Hospital between September 2018 to February 2019. Patients were enrolled in a trauma registry and followed up throughout the course of treatment. Data on demographics, clinical presentation, management and outcomes was collected and analysed by SPSS.

Results: A total of 363 (7.3%) patients with Traumatic Brain Injury (TBI) were enrolled, out of 2641 trauma patients, 87.4% of them were males and an overall median age of 30 years (Interquartile range of 25-39 years). Road Traffic Injury 259(71.3%) was the main mechanism of injury. Majority of the patients 249(68.6%) sustained mild traumatic brain injury, and a total of 219 (69.3%) had a good recovery while 67 (21.2%) had moderate to severe disabilities. The overall in hospital mortality rate was 30 (9.5%). Independent factors significant associated with mortality were: Hypotension SBP<90mmHg, hypoxia SPO2<95% tachycardia >110bpm and severity of TBI (all P value < 0.05).

Conclusion: TBI is common and a major public health problem affecting more of the productivity age group. Road traffic accidents remain to be the main mechanism of injury.

Recommendation: Public educations of road safety are an important entity for prevention of trauma related morbidity and mortality

Profile of Trauma Related Deaths among Road Traffic Injured Patients Presenting to the Emergency Depart. of an Urban Tertiary Hospital

Authors: Dereck A. Kaale, Hendry R. Sawe

Background: Road traffic injuries carries a high mortality rate worldwide and, over 90% of these deaths occur in low and middle-income countries. Trauma related deaths in low and middle-income countries are related to lack of proper pre-hospital and emergency care, infrastructures, trained human resources, adequate equipment and lack of data.

Objective: We aimed to describe the profile of trauma related deaths among road traffic injured patients presenting to the Emergency Medicine Department of Muhimbili National Hospital Dar es salaam Tanzania.

Methodology: This was a retrospective study of all patients involved in road traffic accident presenting at EMD-MNH from July 2015 to July 2018. The data was retrieved from the EMDs trauma registry and we enrolled all patients involved in road traffic accident and those who died within 90 days after they sustained injury. A standardized case report form was used to record demographics, presenting clinical characteristics, management and outcomes. Descriptive data was entered in online data Capture Software (RED Cap) and analysed by Statistical Package for Social Science.

Results: Total of 17855 trauma patients were attended and out of these 43.7% were RTI. Overall, 2% of RTI patients died within 90 days post injury. 84.3% of all trauma related deaths were head and neck injuries. Despite this, only 4.65% of all head and neck injuries had neck collars. Total of 117 (76.5%) of all RTI patients with trauma related deaths were transferred to Muhimbili Orthopaedics Institute. Factors associated with mortality were age, ISS>15 and GCS <12.

Conclusions: Road traffic injuries constitute a significant proportion of trauma patients presenting to EMD-MNH. Age and injury severity predicted the fatal outcomes in most RTIs related deaths.

Recommendations: Future studies should focus building fatal injury surveillance capacities to inform on deaths that occur at the scene.

Magnitude of road traffic injuries and factors associated with mortality, Ilala District Council, Tanzania

Authors: Angela Samwel, Gibson James, Ahmed Abade, Hamis Kimaro Shaban, Rogath Kishimba, Candida Moshiri

Background: Road traffic accidents related injuries and death threatens the well-being of people worldwide with higher burden in developing countries. Accurate information of the problem is important for informed decision making but is limited by incompleteness of existing data sources. Capture recapture method provides the ability to maximize the use more than one data source thus having more reliable estimates.

Objective: We aimed at estimating magnitude of road traffic injuries and deaths and determining factors associated with mortality.

Methods: We estimated the number of road traffic injuries and deaths from police and health facility data from January through June 2016 in Ilala District Council, Dar es Salaam, Tanzania. We identified individuals found in both data sets using probabilistic and manual methods. Chao's lower bound formula was used to compute the number of road traffic injuries and deaths. We then determined factors associated with mortality using multivariable logistic regression.

Result: We reviewed a total of 2,532 victims; 1,398 and 1134 from hospital and police data respectively. We estimated a total of 4,997 road traffic injuries and deaths (95% CI= 4515, 5480) corresponding to 652 per 100,000 injuries and deaths annually. Males (aOR 13.5, 95% CI =1.6-110.2) and night-time accident victims (aOR 3.7, 95% CI= 1.4-9.5) had higher odds of death from road traffic accidents. Victims aged ≥ 40 were less likely to die from these accidents (aOR 0.2, 95% CI=0.04-0.9).

Conclusion: The magnitude of road traffic injury and deaths is substantially higher than that found using either sources individually.

Recommendations: Effort is needed to address ever growing burden of road traffic injuries and much focus should be among males and crashes during night hours to address deaths.

Efficacy and Safety of Combination Therapy of Praziquantel and Dihydroartemisinin Piperazine for Treatment of Intestinal Schistosomias

Authors: Rajabu Mnkugwe, Omary Minzi, Safari Kinung'hi, Appolinary Kamuhabwa, Eleni Aklillu

Background: Praziquantel alone has failed to control schistosomiasis. The inability of praziquantel to act on worms is one of the setbacks in the control of the disease.

Objective: The objective of this work was to assess the efficacy of combining praziquantel and Dihydroartemisinin piperazine.

Methods: A total of 639 *S. mansoni* infected children were randomized to receive either praziquantel (n=341) or praziquantel plus Dihydroartemisinin-piperazine (n=298). Stool samples were analyzed using Kato Katz and double read using microscopy. Efficacy was assessed by cure and egg reduction rates at 3 and 8 weeks. Adverse events were assessed within four hours of drugs administration.

Results: At 3 weeks, cure rates were 88.3% and 81.2% for combination therapy and praziquantel, respectively (p 0.05). Overall, 30.8% of the participants experienced mild and transient adverse events.

Conclusion: Combination therapy is safe, well tolerable, and more efficacious compared to praziquantel in treating intestinal schistosomiasis.

Recommendations: The combination can be considered for use in areas with high transmission of the disease.

Safety and efficacy of single low-dose primaquine based on cytochrome P450 2D6 activity

Authors: Richard O. Mwaiswelo, Billy Ngasala, Andreas Mårtensson

Background: Primaquine (PQ) is a prodrug whose metabolism depends on a highly polymorphic cytochrome P450 (CYP) 2D6 isoenzyme. Polymorphism in a gene encoding for CYP2D6 leads to either null (CYP2D6*4 and CYP2D6*5), reduced (CYP2D6*17 and CYP*29), or increased enzyme activity (CYP2D6*2). However, it is not clear whether the polymorphism affects the safety and efficacy of PQ for blocking transmission of *Plasmodium falciparum* mature gametocytes in individuals with uncomplicated malaria.

Objective: To assess safety and efficacy of PQ for blocking transmission of *Plasmodium falciparum* mature gametocytes based on CYP450 2D6 status.

Methods: Enrolled 155 malaria patients aged 1 to 10 years will be treated with artemether-lumefantrine plus 0.25 mg/kg single-dose PQ, then followed-up for 28 days to assess clinical and laboratory outcomes. Primaquine will be administered together with the first dose of artemether-lumefantrine. Safety will be assessed using Primaquine Roll Out Monitoring Pharmacovigilance Tool (PROMPT). Gametocytes will be assessed by molecular methods and mosquito membrane feeding on day 7 after treatment initiation.

Results: All outcomes evaluated will be compared in patients with CYP2D6 reduced/null versus normal/increased activity. Primary end-point will be mean maximal fall in haemoglobin from enrolment to day 28. Secondary outcomes will include: percentage of participants with haemoglobin <5 g/dL during follow-up; incidence of serious adverse events by sign/symptom and laboratory parameters; proportion of gametocytes carriage by molecular method; and proportion of patients who are infectious to mosquitoes on day 7.

Conclusion: The findings will provide the much-needed information on the safety and efficacy of 0.25 mg/kg single-dose PQ for clearance and transmission-blocking of *P. falciparum* gametocytes in individuals with reduced/null compared to those with normal/increased CYP450 2D6 isoenzyme activity prior to the implementation of the PQ policy, particularly in sub-Saharan Africa.

Pregnancy and CYP3A5 genotype affect day 7 plasma Lumefantrine concentrations

Authors: Ritah F Mutagonda, Omary OMS Minzi, Siriel N Massawe, Muhammad Asghar, Anna Färnert, Appolinary AR Kamuhabwa, Eleni Aklillu

Background: Pregnancy and pharmacogenetic variation alters drug disposition and treatment outcome. Variation on day 7 Lumefantrine (LF) plasma concentrations in pregnant women treated with artemether-lumefantrine (ALu) has been reported by many authors. However, effects of drug metabolizing enzymes and ATP-binding cassette B1 (ABCB1) transporters on the variation of day 7 LF concentrations and malaria treatment outcome in pregnant and non-pregnant women are not well characterized.

Objective: The objective of this study was to investigate the effect of pregnancy and pharmacogenetic variation on day 7 LF plasma concentration and therapeutic responses in malaria-infected women.

Methods: A total of 277 (205 pregnant and 72 non-pregnant) women with uncomplicated Plasmodium falciparum malaria were enrolled at Mkuranga, Kisarawe, Utete hospitals; and Mohoro and Kibiti health centers in the Coast Region of Tanzania between May 2014 and December 2017. Patients were treated ALu, and followed up to day 28 to monitor clinical and parasitological response using parasite microscopy, screening and genotyping by qPCR and nested PCR. CYP3A4, CYP3A5 and ABCB1 genotyping were done. Day 7 plasma LF concentration and the PCR-corrected adequate clinical and parasitological response (ACPR) at day 28 as the primary outcome were determined.

Results: The mean log day 7 plasma LF concentrations were significantly lower in pregnant women than non-pregnant women (geometric mean ratio = 1.40, 95% CI = 1.120 to 1.745, $p = 0.003$). A univariate followed by multivariate analysis showed that being pregnant, low body weight and CYP3A5*1/*1 genotype was significantly associated with low day 7 LF concentration ($p < 0.01$). PCR-corrected ACPR was 93 % (95 % CI = 89.4 - 96.6) in pregnant women and 95.7 % (95 % CI = 90.7–100) in non-pregnant women. Day 7 LF concentration was significantly associated with the treatment outcome, whereby patients with lower concentration had a high risk of treatment failure (median 667 vs. 178.1 ng/mL, $P < 0.001$).

Conclusion: The study reports effect of pregnancy, low body weight and CYP3A5*1 allele as significant predictors of low day 7 LF plasma exposure. In turn, lower day 7 LF concentration is associated with a higher risk of recrudescence (treatment failure).

Recommendations: We recommend further studies to look into ALu dosage adjustment in pregnant women so that the minimum required day 7 LF plasma concentration can be maintained to avoid sub-therapeutic malaria parasite exposure which could lead to parasite resistance and treatment failure.

Malaria Treatment Outcome in Relation to day 7 Lumefantrine Plasma Concentration among Tanzanian Children below five years treated by Generic innovator product

Authors: Manase Kilonzi, Omary Minzi, Ritah Mutagonda, Vito Baraka Philip Sasi, Appolinary Kamuhabwa, Eleni Aklillu

Background: Artemether lumefantrine (ALU) is currently used for treatment of uncomplicated malaria in Tanzania and Day 7 plasma lumefantrine concentration is a determinant of malaria treatment outcomes. Reports indicate that children < 5 years' experience lower lumefantrine concentration and is affected by several factors including adherence when ALU is taken unsupervised, age, fever on admission, baseline parasitaemia, bodyweight, and concurrent admission with other medicine.

Objective: This study assessed malaria treatment outcomes using Artefan as generic and innovator antimalarial Coartem in relation to day 7 lumefantrine plasma concentration among Tanzanian children < 5 years.

Methodology: This study was part of an equivalence prospective study that aimed to determine the effectiveness of anti-malarial generic Artefan in comparison with innovator's product Coartem. Patients aged 6 to 59 months with uncomplicated malaria were recruited

and randomized to either receive Artefan or Coartem. Participants were required to revisit clinic five times as follow up to monitor treatment outcome. On each visit, thick and thin blood smears, dried blood spot, haemoglobin concentrations and auxiliary temperature were documented. On day 7, venous blood was collected using EDTA tube and centrifuged to obtain plasma for day 7 lumefantrine.

Results: Venous blood was collected in 147 participants (76 on Artefan and 71 on Coartem). Majority of the participants were aged > 24 months. Most of the participants had a baseline temperature of $\geq 37.5^{\circ}\text{C}$. The overall PCR corrected cure rates were 98.6% for Artefan and 98.7% for Coartem. Only two recrudescence were detected (1 on Artefan and 1 Coartem) and the remaining recurrent parasitaemia were due to re-infection. The median (IQR) day 7 lumefantrine plasma concentration for Artefan and Coartem was 168.7 (68 – 285) ng/ml, $p=0.28$ and 184 (71 – 364.8) ng/ml, $p=0.24$ respectively. More than 50% of the participants had day 7 plasma concentration < 175 ng/ml. Cure and recurrent parasitaemia.

Conclusions: Both Artefan and Coartem equally cleared malaria parasites adequately in children regardless of the day 7 plasma lumefantrine concentrations. Therefore, either of the drug formulation can be used for treatment of uncomplicated malaria in children in Tanzania.

Profiles and Outcomes of Pediatric Patients with Altered Mental Status presenting to an urban emergency department of a tertiary Hospital

Authors: Noel J. Makundi, Hendry R. Sawe

Background: Tanzania Altered mental status (AMS) in children has many etiologies, most of which are emergent conditions needing prompt resuscitation and stabilization in the Emergency Department. There is paucity of data on the profile and etiologies of AMS to inform emergency care in our setting.

Objective: We aimed to determine the clinical profiles and outcomes of pediatric patients with AMS to Emergency Medicine department (EMD) of Muhimbili National Hospital (MNH) and MUHAS Academic Medical Centre.

Methods: This was a prospective cohort study of children aged one month to eighteen years presenting AMS EMD MNH and MAMC from June 2018 to December 2018. A case report form (CRF) was used to collect data demographics, clinical presentation, management and outcomes. Data was imported analyzed with SPSS. Descriptive data is presented in frequency and proportion.

Results: We screened 1273 children and enrolled, 320 (25.1%) who met inclusion criteria. Overall 198 (61.9%) were male, and the median age was 24 months (Interquartile range 0.67-5years) and 188 (58.8%) were referral from other health facilities. The top EMD diagnoses were Pneumonia 63(19.6%), Sepsis 37(11.5%), congenital heart disease 33 (10.3%), Malaria 24(7.5%) and Meningitis 19 (5.9%). Most common interventions ATEMED were intravenous fluids administration 90.6%, antibiotics 82.5%, oxygen therapy 54.4% and antimalarial 12.5%. From the EMD 8 (2.5%) were discharged home, 212(66.3%) were admitted to the general ward, 83(25.9%) were admitted to the ICU and 17(5.3%) were taken to theatre from the EMD.

Conclusion: Altered mental status is a common complaint amongst paediatric patients presenting to the EMD-MNH. This presentation is associated with significant morbidity and mortality as evidenced by very high admission rate and hospital mortality of 16%.

Concerns of pedestrians on pedestrian bridges in Dar es Salaam

Authors: Daudi Katopola, Fredirick Mashili, Henna Hasson, Marie Hasselberg

Background: Crossing urban roads in low resource urban setting is deadly. Injuries and deaths related to road traffic crashes often involve vulnerable road users mainly pedestrians and bicyclists. Abstract.

Objective: This study aims at exploring the concerns of pedestrians when crossing roads using pedestrian bridges in Dar es Salaam.

Methods: Twenty-four qualitative interviews were conducted in six pedestrian bridges within Dar es Salaam. Participants were purposively chosen in the study sites. Two researchers positioned in strategic positions with less noise and unnecessary interruptions during the interviews. Each interview was conducted privately at the respondent's convenience. The interviews range from 13 to 36 minutes. All interviews were conducted in Swahili and recorded using digital devices, transcribed verbatim then translated into English.

Results: Content analysis was used to organize pedestrians' concerns on pedestrian bridges in line to personal experiences of using or not using the bridges. With the help of a computer assisted qualitative data analysis (MAXQDA) software all interviews were coded looking for manifest and the latent content of the text. Then, codes that share a commonality were grouped into categories. Lastly, a higher level of abstraction will be achieved by creating themes. Themes will represent the underlying meaning between categories.

Conclusion: Involvement of various groups of road users is key when constructing road infrastructures including pedestrian bridges (preliminary and in progress).

Recommendations: Measures need to be taken to include concerns/opinions of special groups of pedestrians when developing/revising road safety policies (preliminary and in progress).

Prevalence and risk factors of acute kidney injury in polytrauma patients at Muhimbili Orthopedic Institute

Authors: Mohamed Muhamed Hussein, Kitugi Samwel Nungu, Paschal Ruggajo, Karima Khalid

Background: Significant morbidity and mortality is caused by trauma that not only causes local injury but also multi-organ dysfunction. Acute kidney injury is one of the most common causes and contributors to the high morbidity and mortality. Prevalence of acute kidney

injury in trauma patients is as high as 40.3%. There is no local literature published on the magnitude and risk factors of acute kidney injury among poly-trauma patients.

Objective: To assess the prevalence, severity and risk factors associated with acute kidney injury in polytrauma patients at Muhimbili Orthopedic Institute.

Methods: A cross-sectional study was done among all adults with poly-trauma who presented at the emergency department at MOI. The New injury severity score (NISS) screening tool was used to identify poly-trauma patients. The KDIGO criteria were used to identify patient with Acute Kidney Injury. Descriptive statistics were then obtained followed by hypothesis testing between variables. Logistic regression models were used to determine factors associated with acute kidney injury.

Results: More than half (56.4%) of the patients were between 26-40 years and 92.3% of them were males. Almost 2/5th (38.4%) of the poly-trauma patients had acute kidney injury – half of these had stage 1 AKI, 33.3% had stage 2 AKI and the remaining 16.7% had stage 3 AKI. Patients who were more than 45 years or those who had systemic inflammatory response syndrome had significantly higher risk of AKI.

Conclusion: Acute kidney injury amongst poly-trauma patients is quite high and alarming and the cause is multifactorial 1 / 2 Submission including patient factors, injury factors and treatment factors and high index of suspicion is needed to prevent, diagnose and treat adequately.

Recommendations: Poly-trauma patients should routinely have a baseline kidney function test done upon admission which should then be followed up according to the risk of the individual patient.

Trends in production and consumption of Sugar Sweetened Beverages in Tanzania; A systematic review

Authors: Linda S. Paulo, Alan Dangour, Laura Cornelsen, Angwara D. Kiwara

Background: Evidence linking sugar-sweetened beverages with increased risk of obesity and NCDs such as Diabetes and cardiovascular diseases has been mounting in recent years especially in developed nations. In line with this, production and consumption of SSB are steadily rising in developing countries. Tanzania is experiencing a rising prevalence of Obesity and other NCDs however, the link between consumption of SSB and the growing epidemic of NCDs remains understudied.

Objectives: To estimate the population per capita consumption of SSB for all age groups from 1997 to 2017 as reported in the dietary reports and publications.

Methodology: This study involved a systematic review of relevant published peer-reviewed articles and reports that estimate per capita consumption of SSB in Tanzania from 1997 to 2017. To locate published articles five databases were searched including PubMed, Medline, Scopus, Global Health and Embase. Data analysis was done using a narrative synthesis.

Results: A total of 9 studies were included in the qualitative synthesis of the systematic review. The prevalence of reported daily consumption of SSB was 11.3% in adolescents (1study) and 13% in adults (1study). Per capita consumption of SSB was estimated to range between 1- 4 servings per week (1study). There is some evidence of an increasing trend in the reported weekly consumption from 40% in 1999 to 53.7% in 2010. However, there was not enough data to support the analysis of trends in other categories or per capita consumption of SSB.

Conclusion: Evidence from the systematic review shows a need for further research to assess the consumption of SSB among different populations, age groups and geographical locations in Tanzania.

Recommendations: There is a necessity for change in the SSB retail environment around secondary schools in Dar-es-Salaam. These changes could be achieved through the promotion of healthier foods and drinks options, reformulation of SSB to reduce sugar content, taxation of SSB and mandatory provision of school meals. These measures should be accompanied by proper labeling of sugar and caloric contents of soft drinks.

Prevalence and Profile of Anaemia in Elderly Patients in Dar es Salaam, Tanzania: A Hospital-based Study

Authors: Clara Chamba, William Mawalla

Background: Anaemia is a highly prevalent condition worldwide and more so in particular groups of people, one such group being those aged 60 years and above. Anaemia in this elderly population results in an increase in morbidity and mortality and compounds the effects caused by other comorbid conditions in this age group. There is limited information available on the prevalence of anaemia in the elderly in Tanzania and its associated factors.

Objective: To determine the prevalence, clinical features, nutritional types and factors associated with anaemia in patients aged 60 years and above.

Methods: The study was a descriptive hospital based, cross-sectional study, involving 156 patients aged 60 years and above that were admitted at Muhimbili National Hospital between December 2015 and February 2016. A structured questionnaire was used to get information on the socio- demographic characteristics, anthropometric measurements, symptoms and signs of anaemia, presence of co morbid conditions, general information on their nutritional habits as well as drinking and smoking habits. Blood samples were drawn for a complete blood count, peripheral smear, serum cobalamin, serum ferritin and serum folate assays.

Results: A total of 156 elderly hospitalised patients were enrolled. Prevalence of anaemia was 79.5%, with moderate anaemia having the highest frequency of 48.4%, followed by severe anaemia at 28.2% and mild anaemia at 23.4%. Fatigue was the most common symptom suggestive of anaemia occurring with a frequency of 58.1%. No symptoms suggestive of anaemia were reported in 27% of the anemic participants and among those

participants who were reported to have severe anaemia, 14% had no symptoms suggestive of anaemia. Pallor was present in 72% of anemic participants. Anaemia was found to be associated with a high blood pressure and skipping meals [OR=4.98(1.86 – 13.37), $p = 0.001$ and OR=3.55(1.16 – 110.82), $p = 0.026$].

Conclusion: The prevalence of anaemia in the elderly is high with a significant proportion presenting with no symptoms suggestive of anaemia. Clinicians should therefore consider screening all elderly people diagnosed to have hypertension or those who are admitted to hospital for anaemia. With a significant proportion of anaemia in the elderly being attributed to nutritional deficiency anaemia, programs that promote health education to the elderly population and their caregivers on adequate meal habits and dietary requirements need to be provided.

Recommendations: Larger epidemiological studies need to be done on anaemia in the elderly to ascertain causes of anaemia and verify the results from this study.

Prevalence of Fatty Liver Disease and Associated Factors Among Outpatients Attending Internal Medicine at Muhas Academic Medical Centre

Author: Nontobeko Simelane, Ewaldo Komba, Ferdinand Mugusi, Pedro Pallangyo

Background: Fatty liver disease has become an important cause of chronic liver disease and an alarming public health problem. Several studies around the globe have revealed the prevalence of fatty liver disease to range between 10% and 63.5%. In recent times, fatty liver disease has gained global prominence because of its associated increased risk of end-stage liver disease, liver failure and hepatocellular carcinoma. In general, patients with fatty liver disease have increased all-cause mortality and liver-related mortality compared to the general population thus its prevention, diagnosis, and management is crucial in any given population.

Objective: To determine the prevalence of fatty liver disease associated factors and awareness among outpatients attending internal medicine clinics at Muhas Academic Medical Center.

Methods: A cross-sectional study conducted from June 2018 to November 2018 at Muhas Academic Medical Center – Dar es Salaam, Tanzania. Consenting patients attending internal medicine clinics were interviewed, examined and investigated. Socio-demographic information, clinical, laboratory, and assessment of awareness about fatty liver disease parameters were gathered during the interviews. Fatty liver disease was identified with ultrasound imaging. Continuous variables were compared with the use of student's t-test and categorical data with the use of chi-squared test. To assess for associated factors, we performed logistic regression analyses, $p < 0.05$ was used to denote significance.

Results: A total of 432 outpatients were enrolled. The prevalence of fatty liver disease was 13.9%. An overwhelming majority of the subjects stated that their physicians did not have a discussion about fatty liver disease. Independent associated factors of fatty liver disease

were the male gender, having diabetes mellitus, waist circumference >99M/80F, high total cholesterol >220mg/dl, high triglycerides >170mg/dl, and low HDL < 40mg/dl.

Conclusion: Fatty liver disease is not uncommon in Tanzanian population. A significant number of people among the general community have never had a discussion about fatty liver disease with their physician. Factors that were associated with fatty liver disease in this current setting were similar to the ones reported in several other settings around the globe.

Recommendations: Several strategies to improve health education are vital. Early diagnosis and timely management of fatty liver disease will certainly improve the quality of life and its expectancy at large.

Subclinical Thyroid Dysfunction Among Hypertensive Patient Attending Muhas Academic Medical Centre and Jakaya Kikwete Cardiac Institute

Authors: Rimal Bramania, Paschal Ruggajo, Pilly Chillo

Background: Subclinical thyroid dysfunction means deranged serum thyroid stimulating hormone levels with normal serum free thyroxine and free triiodothyronine in an individual without symptoms of overt thyroid dysfunction. It includes subclinical hypothyroidism and subclinical hyperthyroidism. Subclinical thyroid dysfunction is associated with significant mortality related to coronary heart disease. Prevalence of subclinical thyroid dysfunction among hypertensive patients remains unknown in Tanzania.

Objective: To determine the prevalence of subclinical thyroid dysfunction among hypertensive patients

Methods: We conducted a hospital-based descriptive cross-sectional study that involved 440 hypertensive patients aged 18 years or more. Coronary artery disease was defined as the presence of cardiac symptoms such as acute chest, epigastric, neck, jaw or arm pain or discomfort or pressure accompanied with electrocardiographic findings as per Minnesota code. A structured questionnaire was used to collect data. Blood samples were taken for thyroid and lipid profile. Multivariate logistic analysis was performed to determine independent predictors of subclinical thyroid dysfunction. P value <0.05 was considered statistically significant.

Results: Prevalence of subclinical hypothyroidism was 4.1% and subclinical hyperthyroidism was 2.9%. Coronary artery disease was significantly more common among hypertensive patients with subclinical hyperthyroidism [Odds Ratio 3.6, Confidence Interval (1.15–11.4), $p < 0.028$]. Cigarette smokers were at significantly higher risk of having both subclinical hypothyroidism and subclinical hyperthyroidism [4.4(1.48–13.05), $p < 0.008$ and 5(1.46–17), $p < 0.01$] respectively. In multivariate analysis coronary artery disease was independently associated with subclinical hyperthyroidism [3.6(1.07–12.4), $p < 0.04$].

Conclusion: Subclinical thyroid dysfunction is prevalent among hypertensive patients in Dar es Salaam. Both clinical phenotypes (subclinical hypothyroidism and subclinical

hyperthyroidism) are independent risk factors for coronary artery disease and were found to be significantly associated with cigarette smoking.

Recommendations: We recommend that patients with hypertension should be screened for thyroid dysfunction and strongly encouraged to quit/not start cigarette smoking.

Anaemia Among End Stage Renal Disease Patients on Haemodialysis Attending at Muhimbili Dialysis Unit: Clinical Audit

Authors: Ladius Rudovick, Paschal Ruggajo

Background: Anaemia is the most common complication among chronic kidney disease (CKD) patients. The prevalence of anemia increases as the kidney function worsens and it is associated with increased morbidity and mortality. The prevalence of anemia among ESRD patients on haemodialysis ranges from 60 to 90%. Monitoring and proper management of anemia is very important as it is cost effective and is associated with good outcomes and improved quality of life. The Kidney Disease Improving Global outcomes (KDIGO) recommend the close monitoring and the proper management of anaemia in patients with chronic kidney disease.

Objective: To audit the monitoring of the management of anaemia among end stage renal disease patients on hemodialysis attending at muhimbili dialysis unit.

Methods: This was a cross-sectional clinical audit which included patients who attended at dialysis unit at Muhimbili National Hospital in 1st January 2018 to 30th April 2018. The records were obtained from the MNH JEEVA system, MNH patient files from medical record department and from Dialysis register book from the dialysis unit. Patients were identified through Jeeva system with assistance from the medical recorder. After excluding patients with acute kidney injury and those who died after the first session and those whose vital information were missing, 83 patients were obtained and audited by using a structured questionnaire. Data entry and analysis was done using Statistical Package for Social Sciences (SPSS) version 20.0. Continuous data were grouped and together with discrete data were presented as percentages using frequency distribution tables.

Results: Eighty-three patents with ESRD their records were audited. Around 47.6% of the patients involved in the study were aged between 46 to 65years, 63.9% were males. Majority had DM and HTN, both accounting for about 70%. All 83 (100%) patients checked FBP prior initiation of haemodialysis, about 90% of patients had anaemia of those 53.0% had Hb level between 8 to 10gm/dl and 43.4% had Hb level of 5 to 7gm/dl. 89.2% of patients checked their Hb level at least twice in three months. Forty-seven (56.6%) patients checked FBP at 3 months post haemodialysis initiation and 46.8% patients had Hb level of 5 to 7gm/dl. Eleven (13.3%) checked iron studies at least once in the period of three months. Proportion of patients checked FBP at 3 months and who checked iron studies were all below audit standards.

Conclusion and recommendations: Despite of low number (25%) of patients on haemodialysis to present with microcytic (MCV<80) type of anaemia, still the investigating

and managing iron deficiency is important so as to have quick response to the patient with renal anaemia those who are either on or not ESA therapy.

Stroke in Young Adults Admitted at Muhas Academic Medical Centre in Tanzania: A Comparison with Older Adults

Authors: Sarah Matuja, Khuzeima Khanbhai, Patricia Munseri

Background: Stroke in young adults has devastating outcomes linked to the presence of unique risk factors inherent to genetics and the environment. There is a gap in knowledge on the magnitude, risk factors and short-term outcomes following a stroke in young.

Objectives: To determine the magnitude of first ever stroke, describe stroke sub-types, risk factors and outcomes in young ≤ 45 years compared to older adults >45 years.

Methods: This cross-sectional study recruited participants admitted at MAMC with a clinical diagnosis of stroke and followed them for outcomes using the Modified Rankin Scale. Stroke severity was assessed using the National Institute of Health Stroke Scale. Stroke sub-types was classified according to brain imaging. Stroke prevalence and risk factors in young were compared to the old. Kaplan-Meier analysis was used to estimate survival.

Results: The study recruited 369 stroke patients (123 young vs 246 old), the overall stroke prevalence was 26.3%, while in the young and old was 25.4% (95% CI 21.5% - 29.3%) and 26.8% (95% CI 23.9% - 29.6%) respectively. Factors associated with stroke in young compared to the old were: new hypertension 26.8% vs 9.3% $p < 0.001$, HIV infection 11.4% vs 4.9% $p = 0.021$, illicit drugs 4.1% vs 0.8% $p = 0.044$, hormonal contraception 48.5% vs 9.4% $p < 0.001$, mitral stenosis 3.3% vs 0% $p = 0.012$, raised low density lipoproteins 27.7% vs 16.4% $p = 0.024$, sickle cell 9.7% vs 4.2% $p = 0.047$ and thrombocytosis 16.9% vs 5.6% $p = 0.007$. Thirty-day fatality rate was 49.1% in young adults.

Conclusion: The high burden of stroke in young is coupled with high 30-day fatality rates. Young strokes have special risk factors that should be screened and monitored so as to prevent subsequent development of stroke.

Recommendation: There is an urgent need of integrating preventive strategies to combat stroke in young adults.

Immunoglobulin G responses against Falciparum Malaria Antigens in children with Homozygous Sickle Cell Trait and normal Hemoglobin in Dar es Salaam

Author: George Msema Bwire, Mtebe Majigo, Robert Makalla, Lillian Nkinda, Akili Mawazo, Mucho Mizinduko, Julie Makani

Background: High Immunoglobulin G (IgG) response to *Plasmodium falciparum* antigens is associated with partial malaria protection in sickle hemoglobin (HbS) children. However, most studies focus on children with heterozygous sickle cell trait (HbAS). Our study

assessed IgG responses against *Plasmodium falciparum* antigens in children with homozygous sickle cell trait (HbSS) compared to those with normal hemoglobin (HbAA).

Methods: A cross sectional study conducted between April and July 2018 in Dar es Salaam tertiary hospitals. Parents consented for their children to give about 5ml of venous blood. IgG concentration from the blood plasma of 220 children (110 HbAA vs. 110 HbSS) was determined using indirect Enzyme Linked Immunosorbent Assay (ELISA). Then IgG medians were compared between the groups with prism 5 software (GraphPad) using Mann Whitney U test. Age differences, hemoglobin levels and body weight between groups were analyzed using independent sample t test. Multiple linear regressions controlled for cofounding variables such as body weight, age and hemoglobin level using statistical SPSS version 23. P value < 0.05 was considered statistically significant.

Results: The median IgG concentration to PfEBA-175, Pfg27, yPfs28C antigens were HbSS; 20.7ng/ml (IQR; 18.1 - 25.6) vs. HbAA; 2.3ng/ml (IQR; 1.21 - 3.04), HbSS; 2.76ng/ml (IQR: 2.08 - 5.69) vs. HbAA; 1.36 ng/ml (IQR: 1.28 - 1.76), and HbSS; 26592ng/ml (IQR: 10817 - 41462) vs. HbAA; 14164ng/ml (IQR; 3069 - 24302) respectively (p < 0.0001 for all IgG). In both groups; age, body weight and hemoglobin level had no impact on the levels of IgG responses to *Plasmodium falciparum* antigens except for HbAA group that showed a significant increase in IgG against Pfg27 by 0.004ng/ml with 1 g/dl increase in Hb level (p = 0.028).

Conclusions: There are higher levels of specific *Plasmodium Falciparum* IgG responses in children with homozygous sickle cell trait than those with normal hemoglobin.

Antidiabetic and Hypolipidaemic Potentials of Ethanol Fruit Pulp Extract of *Persea americana* (avocado pear) in Rats

Authors: Idiong O. Unoh, Obeyemi O. Samuel, Grednet T, Kureh, Koofreh G. Davies

Background: Development of new therapies capable of improving glycaemia and lipid profiles for diabetes management without side effects, reduction in efficacy and toxicity has been of great scientific interest. *P. americana* seed has been reported to have diverse applications in ethno-medicine, ranging from treatment for diarrhea, dysentery, toothache, intestinal parasites, skin treatment and beautification. However, there is dearth of information regarding its use in treatment of diabetes and hypolipidemic effect following its use for other purposes.

Objectives: To investigate the antidiabetic and hypolipidaemic potentials of *P. americana* ethanol fruit pulp extract.

Methods: Phytochemical screening for classes of secondary plant metabolites was done using standard methods. 250 and 500mg/kg of *P. americana* ethanol fruit pulp extracts were administered to alloxan- induced diabetic rats orally twice daily for 3 weeks. Twenty-five male albino rats (160-200g) used for this experiment were obtained from the University Animal house and kept in standard rat cages, fed with pelletized commercial feed and tap water ad libitum followed by 1 week of habituation before the commencement of the

research. Glycemic levels were checked every 3 days and serum lipid profile assay was carried out at the end of the treatment period.

Results: Phytochemical screening of the extract revealed presence of various classes of phytochemicals such as saponins, tannins, alkaloids and steroids. Both doses of the extract significantly reduced blood glucose levels when compared to the control group. The higher dose (500mg/kg) significantly decreased total cholesterol, triglycerides and low-density lipoproteins compared with the control. There was also a marginal increase in HDL-Cholesterol.

Conclusion: Administration of *P. americana* ethanol fruit pulp extract produced significant reduction of blood glucose levels and lipid related dysfunction in alloxan-induced diabetic rats. *P. americana* ethanol fruit pulp extract reduces hyperglycaemia and hyperlipidaemia associated with type I diabetes mellitus. There is a need for pharmacological investigations to determine the chemical compositions of *P.americana* ethanol fruit extract and their mechanisms of action in the management of diabetes.

Association of Road Infrastructure Characteristics and Motorcycle Injuries Hotspots

Authors: Filbert Francis, Candida Moshiro, Hans Yange Berg, Marie Hasselberg

Background: Motorcycle injuries are a serious public health problem contributing to the rising burden of road traffic injuries. They account to about 25% of all road traffic fatalities. Road traffic injury is random and a rare event distributed over space and time. Nevertheless, the occurrences of one incident do not influence the occurrences of other events. The modifiable environmental factors interplay a role in the probability of motorcycle injuries is independent; however, road injuries are concentrated in some locations in road networks.

Objectives: To investigate relationships between road infrastructure variables within motorcycle injuries hotspots, and to identify clusters sharing similar characteristics.

Methodology: A cross-sectional survey with road infrastructure variables within locations identified as motorcycle injuries hotspots using the police data for the period of the year 2015 to 2016 was used. Kernel density estimation method with weighted severity index was used to determine the hotspots. The Multiple Correspondence Analysis was used to reduce categorical variables and Hierarchical Clustering analysis was performed on the first two dimensions with high eigenvalues from Multiple Correspondence Analysis.

Results: A total of 46 hotspots with three clusters were identified- The majority of the hotspots were located on the trunk roads. The first cluster was characterized by collector roads with straight, with and smoothing surface, and with paved shoulders, the second cluster was characterized by both trunk and collector roads with moderate traffic density, and cluster three was characterized by trunk roads with two-way traffic divided and mix in the residential and commercial buildings. Most of the crashes in cluster one (48.6%) occurred during the day compared to overage incidences (48.2%). The third cluster had more injuries between Friday and Sunday (45.0%) compared to other clusters.

Conclusion: The findings of the study revealed that the environmental scan is an important factor when developing safety countermeasures of motorcycling the motorcycles injuries exhibits diverse features at different accidents locations. Thus, the different interventions should be considered based on environmental characteristics of the surroundings environment.

Recommendations: To broaden the understanding of the interplay of environmental factors on the road crashes.

Mature cystic teratoma of the Lung: An exceptional disease

Authors: Francis Zerd, Edda A Vuhahula

Background: Teratomas are tumours composed of tissues derived from more than one germ cell line. Intrathoracic teratomas are usually seen in the mediastinum; they rarely occur in the lung as intrapulmonary teratomas. The criteria for pulmonary origin are the exclusion of a gonadal site or other extragonadal primary sites and the exclusive origin of the tumour from the lung. Lung teratomas, for reasons unknown, commonly involve the upper lobe.

Objective: To describe clinicopathological teratoma mimicking a lung mass querying aspergilloma after failure of three complete doses of anti TB in an adult female.

Methods: A retrospective review of a 32-years-old woman presenting with a history of long-standing cough for over 13 years accompanied by episodes of hemoptysis and left sided chest pain. She had no history of weight loss. She has been treated with anti TB three times with no improvement. The case was obtained from the Pathology archives at the Muhimbili National Hospital, Dar es Salaam, Tanzania. Age, gender, the clinical presentation was recorded.

Results: CT scan showed left sided upper heterogeneous mass with areas of calcification. Wedge lung resection was done and sent for histopathology. A surgically opened specimen 7x8x6cm was received, areas of cysts and calcifications noted grossly, and microscopy revealed a tumor with mature tissue from all the 3 germ cell layers. Histopathological diagnosis was confirmed by gross examination and hematoxylin and eosin sections with characteristics of mature cystic teratoma seen.

Conclusion: Intrapulmonary teratoma is an exceedingly rare tumor. The diagnosis should rely on theradiologic imaging, which demonstrates calcification, cavitations, and peripheral translucent areas and confirmed by histopathology.

Loss to follow-up patterns among sickle cell patients registered at Muhimbili Sickle Cell Cohort

Authors: Upendo Masamu, Daniel Kandonga, Siana Nkya, Julie Makani, Raphael Z. Sangeda,

Background: Management of patient's clinical attendance is one of the crucial means that is used to improve clinical adherence to care and treatment among patients. Loss to follow (LTFU) still remains one of the major problems facing most clinical cohort studies and often leads to biased results. Attention to patients who are at high risk of loss to follow-up is critical to improving overall treatment outcomes.

Objective: To describe loss to follow up patterns among sickle cell patients who are registered at Muhimbili Sickle Cohort.

Methodology: Survival analysis was conducted to determine loss to follow up patterns among sickle cell patients who were registered at Muhimbili Sickle Cell Cohort between the years 2004-2015. Any patient who did not attend clinic more than 270 days was classified as a lost to follow up. R studio and Microsoft Excel software were used for analysis. Survival analysis techniques, both non-parametric methods (Kaplan-Meier estimator and Log-rank test) and semi-parametric method (Cox's proportional hazard model), was applied.

Results: Out of 5476 registered patients, 3350 (61.17%) were actively attending clinics. From inactive group, individuals who were LTF were 32.14%. Based on the results, patients who were between 5 to 17 years were more likely to be LTF than the rest with hazard ratio of 2.65 times than those who were above 18 years. Furthermore, patients who experience painfully episodes, systolic blood pressure above average (109.90), with no fever and are not well are less likely to be lost to follow-up than their counter part.

Conclusion: More than half of the cohort suffered the problem of loss to follow-up in the Sickle cell cohort. Factors such as young age were negatively associated with LTF while higher systolic pressure was associated with less likelihood of LTF patients.

Recommendation: It is therefore necessary to set up interventions to minimize its negative impact of LTF. Such interventions may include, training to health care workers and advocacy to patients.

Effective Management of CKD-MBD among End Stage Renal Disease Patients on Maintenance Haemodialysis at MNH

Authors: Makwabe Egina, Maro Eden

Background: Chronic Kidney Disease – Mineral Bone Disorder (CKD-MBD) is a systemic disorder which includes abnormal bone chemistry, vascular or soft tissue calcification, and abnormal bone formation. Many of the parameters of CKD-MBD have been associated with an increased mortality risk in renal patients. Serum phosphate, within the abnormal laboratory range, is associated with an increased mortality in CKD patients. Haemodialysis

patients may have improvement of cardiovascular outcomes with tight control of secondary hyperparathyroidism, by whichever therapeutic means. Kidney Disease Improving Global Outcome (KDIGO) guidelines recommends monitoring for serum levels of cal.

Objective: To audit on effective management of mineral bone disease among ESRD patients who are on maintenance haemodialysis at MNH.

Methods: This was a cross-sectional clinical audit which included all new patients who started maintenance haemodialysis at Muhimbili National Hospital from 1st January 2018 to 30th June 2018. Patients were obtained from the record book available at the dialysis unit at MNH. Data entry and analysis was done using Statistical Package for Social Sciences (SPSS) version 20.0.

Results: In this clinical audit 99 new patients who started haemodialysis during audit period were included. Minority of patients 34% of the patients had their serum phosphorus checked in the last 3 months. The proportion of patients whose serum phosphorus were checked was progressively decreasing from 66% at the start of HD to 34% at 3 months. The same trend was also seen in serum calcium level. Only 41 out of 99 patients (41.4%) had their serum calcium level check at three months. Monitoring for serum PTH were completely not done to all patients who were included in this audit

Conclusion: This clinical audit found that there is generally poor monitoring of mineral bone disease among end stage renal disease patients on maintenance haemodialysis when compared to both this audit set standards and the KDIGO standards.

Recommendation: This performance observed in this clinical audit call the health care providers on setting up SOPs according to the guidelines available on mineral bone disease and doing serial audits aiming at improvement of services and quality of life to patients who are on maintenance haemodialysis at Muhimbili National Hospital.

Epileptic spasms at Muhimbili National Hospital

Author: Joseph M Mwalongo

Background: Epileptic spasm being one of the paediatric neurological conditions is often missed by many unexperienced health care workers in paediatric unit in different parts of the country. It has its onset in early childhood with perinatal insults especially hypoxia being the culprit. The study revealed most patients managed with high dose corticosteroid had better response. In order to reduce the incidence of epileptic spasms, improvement in maternal, natal and post-natal care will play a great role.

Objectives: To describe the clinical presentation, management and outcome of patients with Epileptic Spasms attending Muhimbili National Hospital (MNH), Dar Es Salaam Tanzania.

Methods: A retrospective cross-sectional study of all patients diagnosed with epileptic spasms was conducted at MNH. The study included all patients seen in the pediatric wards and outpatient clinics from July 2016 to October 2018. The data were collected using a structured questionnaire specifically designed for this study. The data were collected from patient files and electronic database of the hospital.

Results: A total of 40 patients diagnosed with epileptic spasms were retrieved with M: F of 3:2 aged between 1 month to 5 years. In this study, 17 (42.5%) patients had a documented history of perinatal insult. The median age of onset of spasms was 5 months (IQR 1-12 months). Twenty-six (65%) had developmental delay before the onset of spasms and half of them developmental milestones returned to normal after treatment. In 14(80%) out of 17 patients whom EEG findings were retrieved had abnormal EEG findings. At the time of presentation at MNH, 35(85%) of patients were on different anticonvulsants. Twenty-nine (73%) received prednisolone with a median time of spasms subsiding of 1month in about 90% of patients.

Conclusion: The median age of onset of epileptic spasms at MNH is 5 months with most common cause being perinatal insult in more than 40%. Most of patients showed a good response to a high dose Prednisolone.

Recommendations: Improvement in antenatal, natal and post-natal care are highly recommended to reduce the incidence of epileptic spasms. In order to improve early diagnosis, management and outcome of epileptic spasms patients, development of epileptic spasms screening tools for any paediatric patients with neurological symptoms for early diagnosis and training to paediatric practitioners in different hospitals in Tanzania to build capacity for early identifications and management of epileptic spasms or refer to higher facility if possible.

Hypertensive disorders of pregnancy are associated with an inflammatory state: evidence from hematological findings and cytokine levels

Authors: Yohana Silas Mtali, Magdalena Amani Lyimo, Lucio Luzzatto, Siriel Nanzia Massawe.

Background: Studies have reported abnormalities of blood cell counts and of cytokine profiles in women with hypertensive disorders of pregnancy (HDP). Although their cause-effect relationships to HDP are not yet clear, detecting and monitoring these alterations can be of use for disease prognosis and management.

Objectives: This study aimed to determine hematological, coagulation and cytokine profiles in hypertensive as compared to normotensive pregnancy and to identify correlations between these profiles.

Methodology: A hospital-based comparative cross-sectional study conducted from September 2017 to February 2018. There were two groups: the comparison group consisted of 77 normotensive pregnant women attending the antenatal clinic of Muhimbili National Hospital (MNH); the index group consisted of 76 hypertensive pregnant women admitted to the maternity block of the same hospital. All parameters were compared between the index group and the comparison group. We analyzed the data using Student's independent t-test when the data were normally distributed; and the Mann-Whitney U-test when the data were not normally distributed, Dunn's and Spearman correlation tests were used.

Results: Hemoglobin levels and platelet counts were slightly lower, but significantly ($P < 0.01$ and $P < 0.001$ respectively), in women with HDP compared to normotensive (N) women. The

red cell distribution width (RDW) was slightly but significantly higher in HDP than in N. Neutrophil counts and Interleukin 6 (IL-6) levels were significantly ($P < 0.001$) higher in HDP than in N; and within HDP IL-6 levels increased with increasing severity of HDP. A novel remarkable finding was that eosinophil counts, normal in N, were lower and lower with increasing severity of HDP, to the point that they were nearly absent in women with eclampsia.

Conclusion: There are significant changes in hematological, cytokine and coagulation parameters in pregnant women with hypertensive disorders compared to normotensive pregnant women. The picture that emerges is that of an inflammatory state associated with hypertensive disorders of pregnancy.

Recommendations: Since aspirin is a powerful anti-inflammatory agent, its beneficial effect in this condition fits well with our results, supporting the notion that HDP is an inflammatory state. We believe that low dose aspirin should be standard of care in high-risk pregnancies and as soon as HDP is diagnosed.

Prevalence of Hypertension and Associated Inflammatory Markers among HIV patients in Tanzania

Authors: Peter Memiah, Lilian Nkinda, Mtebe Majigo

Background: HIV infected adult with Hypertension have an increased risk of cardiovascular events and death. Chronic inflammation is implicated with the on-set of hypertensions but the underlying mechanism is not very clear. There still remains a dearth of data regarding the association between chronic inflammation and Hypertension (HTN) in sub-Saharan Africa (SSA).

Objective: Therefore, we assessed inflammatory markers on a cohort of HIV+ individuals and its associations with HTN in Tanzania.

Methods: A cross-sectional study was conducted in Dar es salam Tanzania from March to May 2018. A total of 407 HIV+ patients on 1st line ART were recruited. The World Health Organization STEP-wise approach for non-communicable disease surveillance was used to collect data. Anthropometric measurements were collected. Hypertension was defined as blood pressure $\geq 140/90$ mmHg. Enzyme-linked immunosorbent assay was used to test for inflammatory markers (C-Reactive Protein, interleukin-6, interleukin-18, soluble Tumor necrosis Receptor I and II). Bivariate and multi-variate analysis was conducted to examine association between the markers and HTN.

Results: The prevalence of Hypertension was 63.5% ($n=258$). Old age (>55 years) (OR: 6.5), overweight (OR: 2.6), obesity (OR: 2.31,) elevated waist circumference (OR 1.62 and history of alcohol consumption (OR:1.49) were significantly associated with hypertension. At multivariate level using the age-adjusted model, C-Reactive Protein (OR: 2.05) and Interleukin-6 (OR: 1.87) showed significant association with HTN. In the age-sex- alcohol adjusted models only being overweight (OR:2.7) was significantly associated with HTN.

Conclusion: Our study shows that High CRP, IL-6 and Traditional cardiovascular risk factors are important contributors to the prevalence of HTN.

Recommendations: This data support routine screening of hypertension among the HIV population and integrated management into the HIV care and treatment.

Nutritional-education among Ugandan mothers improves maternal depression symptoms and child development: follow-up of a RCT

Authors: Prudence Atukunda, Grace K.M. Muhoozi, Ane C. Westerberg, Per O. Iversen

Background: Optimal nutrition improves child development, and impaired development is associated with maternal depression symptoms, in particular in low resource settings. Whether this can be improved with maternal education in such settings, is unknown.

Objective: To examine depression symptoms among mothers in rural Uganda and the association of these symptoms to child development.

Methodology: This is a follow-up of an open cluster-randomized trial where the intervention was education comprising complementary feeding, stimulation and hygiene. We assessed 77 intervention mothers and 78 controls using Beck Depression Inventory-II (BDI-II) and Center for Epidemiologic Studies Depression Scale (CES-D) scores. Child development was assessed with Bayley Scales of Infant and Toddler Development-III (BSIDIII) composite scores for cognitive, language and motor development.

Result: Compared to controls, the intervention reduced depression symptoms' scores with mean (95% CI) differences: -8.26 (-11.49 to -1.13, $p=0.0001$) and -6.54; (-8.69 to -2.99, $p=0.004$) for BDI II at 20-24 and 36 months; similarly, with CES-D. There was a negative association of BDI-II scores and BSID-III cognitive and language scores at 20-24 ($p=0.01$; 0.008) and 36 months ($p=0.017$; 0.001); similarly, with CES-D. BSID-III motor scores were associated with depression scores at 36 months for both BDI-II and CES-D ($p=0.043$; 0.028).

Conclusion: The education reduced maternal depression symptoms. Moreover, the depression symptoms were inversely associated with child cognitive and language development outcomes.

Recommendations: The reported positive effects from this intervention would call for further studies of similar interventions in other low-income rural settings before consideration of a larger scale-up in the sub-Saharan region and elsewhere.

Knowledge and awareness on Non-communicable diseases among secondary school students

Authors: Elias K, Massawe L, Nuru Khadija, Chillo O

Background: Non-communicable diseases (NCDs) have become the worldwide threat. Over 70% deaths globally are attributable to NCDs. The leading NCDs are cardiovascular diseases, diabetes, chronic respiratory diseases and cancer. Several life style related factors

predispose people to NCDs, particularly cigarette smoking, alcohol, physical inactivity and poor dietary habits.

Aim: The aim of the study is to assess the level of knowledge and awareness on NCDs and their preventive measures.

Methodology: Participants were selected randomly from six secondary schools two in each districts of Kinondoni, Ubungu and Karagwe. Students were asked questions by researchers using a tested questionnaire and their response were filled as appropriate. Researchers asked questions to students, assessing the knowledge, awareness of non-communicable diseases and level of awareness concerning preventive measures against NCDs. Data were collected and analysed by a computer SPSS software version 23 and finally summarized in form of tables and charts.

Results: Majority of students (90%) had low knowledge of NCDs and their prevention measures. The year of study (form III or form IV) and stream (science, arts and commerce) did not show any difference in the student knowledge on NCDs. Stress (41%) and obesity (40%) were mostly mentioned as a risk factor for hypertension while regular exercise (38%) as a preventive measure for NCDs.

Conclusion: Most students are unaware of risk factors and their prevention measures of NCDs. This poses a significant health risk to the secondary students in developing NCDs in the future. More efforts are needed to increase general knowledge and awareness of the disease in secondary schools.

Abstracts on Communicable Diseases

Total of 23 abstract were accepted for presentation, and they are presented below in order of presentation:

Assessment of provider-initiated HIV testing and counselling uptake among patients attending outpatient department in Dar-es-Salaam

Authors: Imani A. Mwelang'ombe, Kisali Pallangyo

Background: UNAIDS and the international community has resolved to eliminate new HIV Infections by 2030. To that interim goals of 90-90-90 have been set to be attained by 2020. The government of Tanzania through Ministry of Health Community Development Gender, Elderly and Children has adopted Provider Initiated Testing and Counselling (PITC) to every client attending healthcare facility regardless of the medical reason.

Objectives: To assess PITC uptake among patient attending OPD in Dar es Salaam Regional Hospitals.

Methods: Hospital based cross-sectional study was conducted in three Regional hospitals which were Mwananyamala, Amana and Temeke. A structured interviewer-administered questioner was used to collect data. Multiple logistic regression was used to determine association between HIV test acceptance and PITC service. Adjusted odds ratio and 95% CI were reported for interpretation of the findings. A p-value ≤ 0.05 was considered statistically significant.

Results: Out of 375 patients mean age 38 years attending OPD clinics were recruited in the study. Among them 181/375(48.3%) received PITC service, 128(70.7%) accepted HIV test after PITC, 85.6% had adequate knowledge on PITC and 87.6% showed a positive attitude towards PITC service. OPD patients with formal education were less likely to accept HIV [AOR and (95%CI) = 0.59 (0.36-0.95)]. Those employed were less likely to accept HIV test after PITC service [AOR and (95%CI) = 0.58 (0.35-0.95)]. Heard about PITC before data collection were 2.5 times more likely to accept HIV test [AOR and (95%CI) = 2.5 (1.15-5.59)].

Conclusion: There is high acceptability of PITC service by OPD clients, though the PITC service provision still low.

Recommendations: Further research should be carried to assess the provider's factors on PITC.

Risky sexual behaviour among fisherfolks in islands camps of Lake Victoria

Authors: Namanya Basinda, Anthony Kapesa, Teddy Ngallaba, Robert Kitambo, Focus Mawe, Sospatro E Ngallaba

Background: Prevalence of HIV infection among fishermen has been reported to be 4–14 times higher than that of the general population. Therefore, understanding of the social and environmental barriers for the uptake of HIV preventive services is pivotal especially in this key population group to inform targeted interventions to promote service uptake and facilitate realization of the 90-90-90 global and national HIV control targets.

Objectives: To examine the social and environmental aspects shaping the uptake of the HIV preventive measures among fishermen in the Islands of Lake Victoria.

Methods: The study was conducted in 3 purposely selected fishermen landing sites in Buchosa District (Mwanza region) and 3 in Muleba District (Kagera region). A total of 10 focus group discussions and 18 in depths interviews were conducted among sexually active individuals including both HIV infected and uninfected individuals. Content analysis was used to analyse data.

Results: The study participants reported that some women engaged into commercial sex at night to earn extra money apart from the other income generating activities they perform during the day. Sometimes the use of condom is withheld depending with the amount of payment offered. The availability of cheap guest houses, female sex workers, alcohol use and idling were mentioned as facilitators to sexual practices and the transmission of the infection. Access to HIV treatment and care services was noted as limited and most health

facilities are located in the mainland where people will require both marine and road transport to reach.

Conclusion: Multiple risk sexual behaviors, limited access and use of HIV preventive measure are common among fishermen in the Islands Camps of Lake Victoria. There is a need for HIV control programs to device mechanisms of addressing the risk practices and improve access to HIV preventive services.

Human Immunodeficiency and Hepatitis B viral infections among patients with sickle cell disease in Dar-es-Salaam

Authors: Irene Makundi, Grace Shayo, Lucio Luzzatto

Background: Sickle cell disease causes a significant morbidity and mortality burden in Tanzania. Due to chronic anemia, Sickle Cell Disease patients often have a need for multiple and emergency blood transfusions which put SCD patients at high risk of contracting HIV, HBV and other transfusion-transmissible infections. In Tanzania, current prevalence on HIV, Hepatitis B or their co-infection and risk factors among adult Sickle Cell Disease patients is unknown.

Objectives: To determine the Prevalence of HIV and HBV infections and to describe associated factors among Sickle Cell Disease patients.

Methods: A hospital based descriptive cross-sectional study was conducted among 325 Sickle Cell Disease patients aged ≥ 16 years attending SCD clinics in Dar-es-salaam. HIV and HBV viral infection was diagnosed by SD Bioline HIV-1/2 3.0 (Standard Diagnostics, Inc, Republic of Korea) and Onsite HBsAg rapid test by CTK Biotech, Inc, San Diego, USA respectively. All HBV positive samples were confirmed by ELISA. SPSS version 20.0 was used for data entry and analysis. P values < 0.05 was considered statistically significant.

Results: Out of 325 study participants, 185(56.7%) were female. The mean age (\pm SD) was 23.04 (\pm 7.45) years. The majority (91.1%) of the study participants had history of previous admission, the main reason for admission was painful crisis which accounted for 166/296(56.1%). A previous history of blood transfusion was found in 74% of the study participants. A total of 61(18.8%) subjects were using hydroxyurea. Mean Hemoglobin level (\pm SD) for the study subjects was 7.4(\pm 1.58) g/dl. The overall prevalence of HIV and Hepatitis B was 1.8% and 1.2% respectively. No HIV/HBV co-infection was found.

Conclusion: Prevalence of HIV and that of Hepatitis B viral infection is much lower in Sickle Cell Disease patients in Dar es Salaam than the national prevalence of the two infections in the general population.

Recommendations: HIV and HBV screening should be considered during baseline work-up for SCD patients in order to provide early management measures.

Medical eligibility, contraceptive choices and use among women living with HIV at Temeke Hospital, Dar es Salaam

Author: Kamilya Aly Omar

Background: Family planning has an important role to prevent unplanned pregnancy and prevent mother to child transmission of HIV. In Sub-Saharan Africa, more than 90% of pediatrics' AID's is through Mother to Child Transmission. Currently, however, there is no study done in Tanzania linking the family planning method used by women living with HIV with their own preferences and Medical eligibility. Understanding, contraceptive choices and use among women living with HIV according to MEC have an overall implication in the health of the mother and infants.

Objective: To determine medical eligibility, contraceptive choice and use among women living with HIV between the age of 15-49 years.

Methods: This was a cross-sectional study conducted on women seeking ARV treatment, age 15-49 years from October to November. Data were collected using a pre-tested questionnaire entered in Epi info version 3.5.1 and analyzed using SPSS version 23. Descriptive statistics were presented as frequencies, proportion and mean.

Results: A total of 365 women living with HIV were interviewed. Their mean age was 34 years (SD±8). The prevalence of contraceptive use was 75.3% with male Condom (41.1%), injection (17.5%), the implant (16.2%) being the most commonly used. Among 275 who were using contraceptive methods, 247 (89.8%) of them used contraceptive methods which were their first choice, while 28 (10.2%) did not use the methods that were their first choice. MEC category for women who used the methods of their first choice was (99.2 %) for category 1 or 2 and (0.8%) for category 3 or 4. Among the 28 women who were not on their first choice, (96.4%) were in category 1 or 2 and (3.6%) were in category 3 or 4.

Conclusion: The study has shown a high prevalence of contraceptive use and adherence to MEC among women living with HIV. However, few participants were not given their first-choice methods of contraception by providers due to the main reason for the unavailability of drugs and unspecified reasons by providers. In addition, the most preferred contraceptive methods were a condom, followed by injection and implant. However, uses of dual methods were low.

Recommendations: More efforts are needed to promote the use of dual methods and long-acting contraceptive methods especially for those who don't need any more children. This is a Hospital based study so it can't represent the general population, additional research is needed in the different center about MEC and contraceptive use among women living with HIV, to know the gaps and put emphasis during counseling, so women can use safety contraceptives methods of their choices according to MEC.

A qualitative study on the voluntariness of counselling and testing for HIV amongst antenatal clinic attendees: Do women have a choice?

Authors: Haruna T, Assenga E, Shayo J

Background: Mother-to-child transmission (MTCT) of the Human Immunodeficiency –Virus (HIV) is a serious public health problem, contributing up to 90% of childhood HIV infections. In Tanzania, the prevention-of-mother-to-child-transmission (PMTCT) feature of the HIV programme was rolled out in 2000. The components of PMTCT include counselling and HIV testing directed at antenatal clinic attendees. It is through the process of Provider Initiated Counseling and Testing (PITC) that counseling is offered participant confidentiality and voluntariness are upheld and valid consent obtained.

Objectives: The objective of the study was to explore antenatal clinic attendees' experiences of the concept of voluntariness vis- a- vis the implementation of prior counselling and subsequent testing for HIV.

Methods: In-depth interviews were conducted with 17 antenatal clinic attendees and 6 nursing officers working at the Muhimbili National Hospital (MNH) antenatal clinic. The study data were analyzed using qualitative content analysis.

Results: Antenatal clinic attendees' accounts suggested that counselling and testing for HIV during pregnancy was voluntary and that knowledge of their HIV status led them to access appropriate treatment for both mother and her newborn baby. They reported feeling no pressure from nursing officers and gave verbal consent to undergo the HIV test. However, some antenatal clinic attendees reported pressure from their partners to test for HIV. Healthcare providers were thus faced with a dilemma of disclosure/ nondisclosure when dealing with discordant couples.

Conclusion: Antenatal clinic attendees at MNH undertook the PITC for HIV voluntarily. This was enhanced by their prior knowledge of HIV, the need to prevent mother- to- child transmission of HIV, and the effectiveness of the voluntary policy implemented by nursing officers.

Recommendations: Nursing officers should continue to follow current guidelines and encourage antenatal clinic attendees who are undecided Stakeholders should review the ethical aspects of disclosure guidelines pertaining to discordant couples so as to better facilitate and support the healthcare providers' work in this sensitive area of clinical practice.

Assessment of knowledge, practices and attitudes of mothers against communicable diseases in Ukerewe District Mwanza, Tanzania

Authors: Amina Hamisi Mjili, Namanya Basinda

Background: Communicable diseases are most frequently observed among mothers in the communities and are associated with key health behaviors, outcomes and increased burdens on health care systems. They have potential for spread and are therefore a threat to the local and international community. Poor disease surveillance in Tanzania is one of the major factors responsible for the rising of mortality and morbidity due to communicable diseases.

Objective: Determine the knowledge, practices and attitudes of mothers against communicable diseases.

Methods: This was a cross sectional analytical study. A total of 400 participants who were mothers with children under 5 years of age were recruited through random sampling and questionnaires were pre tested and used. Qualitative and quantitative data was analyzed using SPSS version 20. Qualitative was summarized categorically by plotting frequency tables. Quantitative data was summarized numerically using mean, median and mode.

Results: Majority of the participants had only attained primary level education around 286 (71.1%) which contributed to the lack of knowledge about communicable diseases. Also due to crop cultivation being the main economic activity (60.9%) it contributed to the big spread for communicable diseases. However, the attitude and practices of mothers against communicable diseases as majority would seek medical help for treatment of communicable diseases about 319 (79.4%).

Conclusion: Generally, most of the respondents had insufficient knowledge of modes of transmission, symptoms and preventive measures of communicable diseases. However, majority would seek medical help for treatment of communicable diseases which attributed to early intervention and diagnosis of communicable diseases. As a result, it helped in decreased the overall morbidity and mortality with communicable diseases.

Recommendations: The government should implement policies regarding providing of information that will aid in prevention of communicable disease, condom supply, clean water sources and dispensing drugs, thus no one can have medication without doctor's prescription as it could lead to overdose, mistreatment of infection and resistance of microorganisms against antibiotics.

Loss to Follow Up and Associated Factors among Women Enrolled in PMTCT Program in Mbeya Region, Tanzania, 2017

Authors: Mwakapasa E, Ahmed Abade, Elia J. Mbagi

Background: More than half of people living with HIV in Sub-Saharan Africa are women. Approximately 1.4 million become pregnant each year; and most of the children born to these mothers acquire HIV through vertical transmission. Loss to follow up stands as a major problem to effective Prevention of Mother to Child Transmission (PMTCT) services in Tanzania. Therefore, we looked at factors associated with loss to follow up among women enrolled in PMTCT program at health facilities in Mbeya region, Tanzania.

Methods: We conducted retrospective cohort study with a nested case control analysis for associated factors. Women enrolled in PMTCT program between 1st October, 2016 and 31st March, 2017 in selected health facilities in Mbeya region were eligible for the study. We extracted information from 627 patients' files using data extraction tool whereby cases and controls were identified. Interviewer administered questionnaire was used to interview 123 cases and 246 controls. Data were entered, cleaned and analyzed using Epi Info 3.5.4 data analysis software.

Results: The rate of loss to follow up was 3.613 per 100 person-months of follow up (95% CI: 3.0-4.3). Among women who were lost to follow up, half [52.8% (42.8-61.1)] were lost between 1 to 3 months with median follow up time (IQR) of 3(1-5) months. Loss to follow up was associated with age less than 25 years [AOR 2.4 (1.3-4.2)] and not having a treatment supporter at home [AOR 1.98(1.24-3.17)]. Women who lived 1km to 3kms, and more than 3 kms away from clinic had lower odds of loss to follow up [AOR 0.49 (0.28-0.84)] and [AOR 0.17 (0.09-0.32)] respectively.

Conclusion: Loss to follow up occurs early after enrollment and more substantial for young women. Presence of treatment supporter and distance to the facility plays an important role in retention to care.

Prevalence of Albuminuria Among Patients with Hepatitis B Attending Muhimbili National Hospital

Authors: Seraphine Mrosso, Grace Shayo, Ewaldo Komba

Background: Extra hepatic manifestation of hepatitis B viral infection accounting up to 20% in both acute and chronic hepatitis B. This study measured microalbuminuria as an indicator of glomerular damage in patients with hepatitis B virus (HBV) infections with prospects of early intervention and prevention from developing end stage renal disease.

Objectives: To determine prevalence of albuminuria among patients with hepatitis B infection.

Methods: A cross-sectional study was done from August to December 2018 on patients with hepatitis B viral infection at Muhimbili National Hospital. The urine albumin and creatinine measurements were done using CYBOW 12MAC strips. Albumin creatinine ratio (ACR) was then calculated. ACR <2mg/mmol for male and <2.8mg/mmol for female were defined as normal albuminuria, ACR ≥2.5-29.9mg/mmol for male and ≥3.5-29.9mg/mmol for female were defined as microalbuminuria and ACR ≥30mg/mmol for both male and female were defined as macroalbuminuria. A questionnaire was used to collect and record socio-demographic, clinical data and co-morbidities. Data was analyzed using SPSS version 23.0.

Results: A total of 400 patients were analyzed. Males constituted 70% (280) of the study population. Majority of co-morbidities were hypertension 29 (7.2%), renal disease 16 (4%), diabetes mellitus 16 (4%) and hepatitis B virus/Human-Immunodeficiency co-infection were 7(1.8%). Mean estimated glomerular filtration rate (eGFR) was 121.4 34.6 ml/1.73m². Prevalence of albuminuria was 49 (12.25%). None of the investigated factors was significantly associated with albuminuria.

Conclusion: Albuminuria is common however it is not clear what factors are associated with albuminuria in this population of patients.

Recommendation: Microalbuminuria is a sign of preclinical renal damage its early detection will prevent end stage renal disease.

Body Mass Index, Proteinuria, And Lymphocytes Count in Predicting Treatment Responses Among Newly Antiretroviral Initiated

Author: Lazaro Jassely, Patricia Munseri

Background: The Tanzania National AIDS Control Programme is implementing the test and treat guideline. Monitoring for HIV treatment response using cheaply available parameters is of paramount importance.

Objective: To determine if body mass index, proteinuria and total lymphocytes counts can be used to predict immunological and virological response in HIV infected individuals following ART initiation.

Methods: ART naïve patients initiating on ART at three Care and Treatment Centers in Temeke region were recruited. At enrolment information collected included: demographic characteristics, WHO HIV clinical stage, weight, height, total lymphocyte counts, CD4, urine protein and. At third and sixth month of ART treatment each participant had repeat all measurements, with addition viral load quantification at six months. Data was summarized as means and proportions. Comparison of categorical variables between groups was performed using Chi-square tests or Fisher exact t-test.

Results: A total of 220 participants, 66.8% were female. At three- and six-months follow-up, sustained weight gains 76 (89.4%) were viral suppressed compared to sustained loss 7 (31.8%), loss gain 9 (64.3%) or gain loss 2 (66.7%) $p < 0.001$. Lymphopenia at baseline, an increase to normal at six months was associated with an increase in CD4 compared to remained with lymphopenia 50 (96.2%) vs. 17 (54%) $p < 0.001$. At baseline 50% had proteinuria. Participants without proteinuria at baseline to six months 79 (89.8%) were likely to have viral suppressed compared to participants with proteinuria at baseline or three months 77 (85.6%), with persistent proteinuria 8 (30.8%) proteinuria at six months only 5 (45.5%) $p < 0.001$.

Conclusions: Body mass index, total lymphocyte count and proteinuria can predict ART responses and could be used to monitor ART response when CD4 or viral load monitoring is unavailable.

Recommendations: Screening for proteinuria could be an added test for monitoring treatment response in the HIV treatment guidelines.

Antiretroviral Treatment Adherence and Outcomes among HIV-positive children attending HIV Clinics in Dar es Salaam, Tanzania

Authors: Fatima M. Musa, Evelyne Assenga

Introduction: The HIV epidemic continues to have a devastating effect globally and greatly among Sub-Saharan African countries including Tanzania. The upscaling of the Anti-retroviral therapy (ART) access has seen more children-initiated treatments earlier, upon diagnosis. In order to achieve the 90-90-90 goal of sustainable viral suppression, great effort

needs to be made on ensuring treatment adherence. There is paucity data on ART adherence and factors associated with non-adherence among especially in Tanzania.

Objective: To determine the ART adherence profile and biological outcomes of HIV positive children (1-14 years) attending the selected HIV care and treatment clinics in Dar es Salaam.

Methods: A cross sectional study was conducted in three selected HIV care and treatment clinics in Dare es Salaam from July to November 2018. 333 HIV infected children 1-14 years on treatment for at least six months were enrolled. A structured questionnaire was used for data collection. Four-day self-report, one-month self-recall and missed clinic appointments were used to assess adherence. CD4 count and viral load results were obtained. Anthropometric measurements were done. Chi-square test and Odds ratio were used to demonstrate associations. Logistic regression was performed to assess significance.

Results: Overall good adherence was 60% when subjected to all three measures. Significant factors associated with poor adherence were found to be caregivers aged less than 25 years [OR= 3.398, 95%CI- (1.433-8.058), p=0.006], and children with an inter-current illness [OR= 11.528, 95% CI-(2.496-53.255), p=0.002]. Beliefs on ART effectiveness [OR-0.189, 95%CI-(0.065-0.552), p=0.002 and less advanced clinical stages [OR-0.515, 95%CI-(0.294-0.900) p=0.020] were less likely to predict poor adherence. Poor adherence was significantly associated with immunological [OR-3.009, 95%CI-(1.238-7.314) p=0.011] and virological failure [OR-0.093, 95%CI-(0.053-0.160) p<0.001] but did not influence nutritional status [OR-1.488, 95%CI-(0.842-2.630) p=0.170].

Conclusion and recommendations: In urban setting of Dar es Salaam, ART adherence among children aged 1-14 years was found to be relatively low, under scoring the urgency of strengthening adherence initiatives in clinics especially those targeting younger caregivers. Encouraging and educating caregivers on the importance of their children's' compliance to ARTs during illness and advanced HIV stage is significant for prevent progression to AIDS and ultimately achieve 90-90-90 target.

HIV Diagnosis in The Presence of Vaccine-Induced Sero Reactivity

Authors: Frank Msafiri, Alice Manjate, Sarah Lindroth, Nelson Tembe, Raquel Matavele, Victoria Cumbane, Ilesh Jani, Said Aboud, Eligius Lyamuya, Sören Andersson, Charlotta Nilsson

Background: Participants in HIV vaccine trials are at risk of being misclassified as HIV-infected since routine diagnostic tests may fail to distinguish vaccine-induced antibodies from those elicited by infection.

Objective: We assessed the performance of HIV testing algorithms in Mozambique and Tanzania to accurately differentiate vaccine-induced sero-reactivity (VISR) from true HIV infection.

Methods: Serum/plasma samples were collected four weeks after the final vaccination from healthy Swedish, Mozambican and Tanzanian vaccine participants in phase I/IIa HIV vaccine trials evaluating an HIV-DNA-prime HIV-MVA/Env protein-boost strategy. HIV infection was ruled out using HIV RNA PCR. HIV testing algorithms of Tanzania (sequential testing, SD Bioline HIV1/2 for screening and Uni-Gold™ HIV-1/2 for confirmation) and Mozambique (sequential testing, Alere Determine™ HIV-1/2 for screening, Uni-Gold™ HIV-1/2 for confirmation) were used to evaluate VISR. VISR was also determined using Enzygnost HIV Integral 4 ELISA and HIV western blot testing. Antibody titers to subtype C gp140 were assessed using an in-house ELISA.

Results: VISR was 93% (128/137) by Enzygnost HIV Integral 4 ELISA, and 66% (91/137) by Western blot assay (WHO interpretation). The proportion of vaccine recipients falsely labeled as HIV positive by the Mozambican algorithm was half of that by the Tanzanian algorithm, 36/137 (26%) and 74/137 (54%), respectively, $p < 0.0001$. The magnitude of antibody responses to HIV-1 envelope protein gp140 was significantly higher in vaccine recipients with VISR than in those without VISR. Using the Mozambican strategy, median anti-Env titers were eight times higher in vaccinees with VISR (12800 versus 1600) than in participants without VISR, $p < 0.0001$. Similarly, using the Tanzanian algorithm, median anti-Env titers were ten times higher (8100 versus 800) in participants with VISR than in those without VISR, $p < 0.0001$.

Conclusion: HIV diagnostic algorithms currently used in sub-Saharan Africa will misclassify a significant proportion of HIV vaccine recipients, but substantially fewer than the Enzygnost HIV Integral 4 ELISA and HIV western blot. Sequential Determine™ HIV-1/2 and Uni-Gold™ HIV-1/2 testing was significantly more accurate in differentiating VISR from true HIV infection than sequential SD Bioline HIV1/2 and Uni-Gold™ HIV-1/2 testing.

Tuberculosis of The Testis, Mimicking A Testicular Tumor

Authors: Francis Zerd, Edda Vuhahula

Background: Male genital TB can present as a testicular mass that is difficult to differentiate from malignancy. Isolated testicular TB is extremely rare. In most cases, it clinically mimics other testicular lesions, such as testicular tumor, infarction, or even testicular torsion. Middle-aged males, especially of 20–40 years of age are most commonly affected, and presents with painful or painless scrotal swelling with or without discharging sinus and may lead to infertility. In elderly group, diagnostic dilemma develops between testicular malignancy and testicular TB, as the first one is more common than the latter. Here, we report a very rare case of left sided isolated TB.

Objectives: Clinicopathological description of a genitourinary tuberculosis mimicking a testicular tumor.

Methods: A retrospective review was conducted on a 23 years old male with a history of left testicular pain and swelling for 4 months. The case was obtained from the Pathology archives at the Muhimbili National Hospital, Dar es Salaam, Tanzania. Age, gender, the clinical presentation was recorded. Histopathological diagnosis was confirmed by gross

examination and hematoxylin and eosin (H&E) sections, showing characteristics of granulomatous caseating inflammation highly suggestive of TB.

Results: Ultrasonography showed a left testicular mass; the provision diagnosis was left testicular tumour. Radical orchiectomy was done and sample sent for histopathology. It was a mass of 11x5x3.5cm, cut section that showed distorted testicular architecture, chronic caseating granulomatous inflammation consistent with TB was seen microscopically.

Conclusion: Although it is a very rare disease, the clinician should consider tuberculosis of the testis as a possible differential of a scrotal mass. This will increase the possibility of early diagnosis, as well as proper and early management.

Recommendations: Tuberculosis should be considered in cases of scrotal mass especially for young patients.

C - reactive protein and interleukin - 6 levels among human immunodeficiency virus - infected patients with dysglycemia in Tanzania

Authors: Lilian Nkinda, Kirtika Patel, Benson Njuguna, Jean Pierre Ngangali, Peter Memiah, George Bwire, Mtebe V Majigo, Mucho Mizinduko, Sonak Pastakia, Eligius Lyamuya

Background: Ongoing chronic inflammation among People living with HIV (PLHIV) is correlated with the increased risk of dysglycemia. However, the availability of data on inflammation and dysglycemia within this group in sub-saharan Africa (SSA) is limited. Extrapolating findings from high income countries to SSA is hampered by ethnic and social-economic difference.

Objective: Therefore, we assessed the levels of C-reactive protein (CRP) and Interleukin 6 (IL-6) on a cohort of PLHIV and its associations with dysglycemia in Tanzania

Methodology: A cross-sectional study was conducted at the Infectious Disease Clinic (IDC) in Tanzania from March to May 2018. Purposive sampling was used to identify participants who had an undetectable viral load, were on 1st line anti-retroviral therapy (ART) and had an overnight fast. The WHO stepwise approach for non-communicable disease (NCD) surveillance was used to collect data. Associations were explored using the Chi square test and binary logistic regression was performed to estimate the odds ratios. A p-value less than 0.05 was considered statistically significant.

Results: A total of 240 participants were enrolled. Forty-two percent were overweight/obese (>25kg/m²), 89% had a high waist to height ratio. The median ART duration was 8(5-10) years. The prevalence of dysglycemia among our cohort of PLHIV was 32%. High CRP was associated with 2.05 increased odds of having dysglycemia OR 2.05 (1.15-3.65) (p = 0.01). Taking stavudine was associated with 1.99 odds of having dysglycemia OR 1.99 (1.04-3.82) (p= 0.03). We did not find a significant association between IL-6 and dysglycemia.

Conclusion: High CRP and taking stavudine were significantly associated with dysglycemia among PLHIV with undetectable viral load. These findings highlight the need to integrate

routine screening of dysglycemia among the HIV population. More rigorous studies are required to establish causality of hyperglycemia among PLHIV.

Recommendation: These findings highlight the need to integrate routine screening of dysglycemia among the HIV population. More rigorous studies are required to establish causality of hyperglycemia among PLHIV

Combating the persistent cholera epidemic in complex nomadic society of Northern Tanzania: The impact of enhanced targeted micro scale interventions – Ngorongoro District, October 2018

Authors: Ambakisye Mhiche, Neema Nagu, Remidius Kakuru, Senga Sembuche, Ally Nyanga, Khalid Massa, Ahmed Abade

Background: Since August 2015 Tanzania has experienced several waves of cholera outbreak affecting all 26 regions. Despite several interventions by the Ministry of Health, Ngorongoro district in Arusha region had persistently reported cholera cases since April 2018. Periodic massive migration of people and livestock for search of pasture, open defecation, poor hygiene practices and inadequate access to safe and clean water has hampered control effort in the area. We identified high risk areas and designed most effective intervention to interrupt cholera transmission in nomadic Maasai community.

Methods: We updated cholera line-list using registers available at different cholera treatment centers and carried out analysis to identify high risk area/hotspots. We distributed water treatment product and carried out environmental decontamination in all affected households within hotspot. We identified water sources and ascertain levels of contamination. Rapid need assessment of water and identification of partners to supply clean and safe water was done. We conducted focused discussion with society elders (Lwagwanans) on cholera intervention to foster sustainability.

Results: As of October 2018, a total of 1544 cholera cases had been line listed. The most affected villages were Nasiporiong, Esere, Kesile and Ngoile with mean incidence of 5.4/1000pop/month, 4.9/1000pop/month, 3.9/1000 pop/month and 3.4/1000 pop/month respectively. The highest incidence (5.1/1000) was noted in September 2018. A total of 15000 water treatment tablets were distributed to 375 households. Approximately 11,000 liters of clean and safe water was supplied each week to affected hotspot. Community based cholera committee was formulated to sustained the intervention. Hence cholera incidence progressively decreased to zero after two weeks' period.

Conclusion: Cases significantly decreased after intervention. Creating sustainable and targeted community directed micro-scale interventions are paramount in cholera control. Field Epidemiology and Training Program trainees have practically demonstrated to be useful resources in translating that into actions even in complex and challenging nomadic society.

Quality of Malaria Case Management under Different Transmission Settings - Tanzania Mainland, 2019

Authors: Ally Kassim Hussein, Rogath Saika Kishimba, Frank Chacky, Donath Tarimo

Background: Tanzania is currently under an epidemiological transition of malaria transmission with parts of the country having < 1% and > 10% malaria prevalence. Inadequate testing and non-adherence to test results are common in areas with > 10% malaria prevalence. Areas with < 1% prevalence are in pre-elimination phase; accordingly require high testing rate and appropriate treatment of fever cases. There is paucity of information on the quality of malaria case management in pre-elimination settings. This study examined the influence of endemicity on the quality of malaria case management.

Methods: An analytical cross sectional study was conducted amongst 1713 Health Facilities (HF) from all 26 regions of Tanzania Mainland. Secondary data was used in the analysis; this was collected following introduction of an assessment tool for HF readiness and performance of malaria case management by the National Malaria Control Programme. Using standard readiness indicators, mean scores from facilities in the different transmission settings were compared by a student t-test. Simple and multiple linear regression analysis were performed to determine the association between HF performance and endemicity. Potential confounders including location, ownership, level of care and season when HF was assessed were also examined. A posthoc power analysis was conducted.

Results: HFs located in mesoendemic settings fared better than those in hypoendemic settings in terms of the overall quality of services, readiness, availability of malaria reference materials & information system tools and client satisfaction. HFs in rural areas were also found to perform better. Power achieved was 95.7%.

Conclusion: There exist differences in the quality of case management of malaria by endemicity. HFs located in hypoendemic settings performed poorly compared to those in mesoendemic settings. The findings have major implications for areas aiming at eliminating malaria. Further studies are required to establish the factors associated with poor quality of malaria case management in hypoendemic settings.

Investigation of Anthrax Outbreak in Human- Songwe Region Tanzania, 2019

Authors: Temu Robert Sia, Henry Donart Kissinga, Rogath Kishimba, Jubilate Bernard

Background: Anthrax is primarily a disease of herbivores caused by the bacterium *Bacillus anthracis*. On 5 January 2019, Regional authorities at Songwe reported 52 suspected human cases (4 deaths) presented with ulcers on different part of the body, inflamed and edematous part of the skin affecting Nzoka village while 16 cows died.

Objective: We investigated to confirm the outbreak, describe cases, and institute control and prevention measures.

Methods: We identified suspected cases through a visit to Nzoka Dispensary where cases were reported from 24 December 2018 – 07 January 2019. A case was any resident of Nzoka village with skin lesion, black eschar accompanied by oedema, history of eating and/or contact with sick/dead cattle. We interviewed seven suspected cases at their homes using a structured questionnaire to assess risk factors for illness. Seven human blood samples were collected from suspected human cases and tested by real-time qPCR for anthrax. Data were analyzed using Ms Excel.

Results: Of 81 suspected cases who were line listed (3 confirmed positive for anthrax), 4 died (Case fatality rate (cutaneous): 4.9%). The median age was 25 years (range 1-75). Age above 25 years contributed 49.3% while females were most affected (Attack rate: 0.4%). Chipanda and Nzoka had an attack rate of 0.3% and 0.2% respectively. Majority (49, 61%) were managed by penicillin G injection. Seven cases interviewed had history of consuming and/or handled diseased/dead cattle. The peak of outbreak was noted on 5th January 2019, with a decline thereafter. As of 16 Jan 2019, 1451 1 / 2 Submission out of 221,219 domestic animals were vaccinated.

Conclusion: The outbreak at Nzoka village was confirmed to be caused by anthrax.

Recommendations: We recommended active case-finding by community health workers, provision of health education to the community, animal vaccination against anthrax, improving regular communication between animal and human health to control zoonotic diseases.

Evaluation of The Integrated Disease Surveillance and Response: Case Of Bloody Diarrhea in Nanyumbu DC And Kilwa DC

Authors: Esther D. Tesh, JannethMghamba, Ahmed Abade, Loveness Urio, Senga Sembuche, George Cosmas, Rogath Kishimba

Background: In Tanzania IDSR system was established in 2001 and the renew of the guideline in 2011 added bloody diarrhea as an epidemic prone and started to be reported electronically in 2014 from the health facility to national level directly passing through District IDSR focal person. The aim of this evaluation is to assess the performance of the system if it meets its objectives towards detection of bloody diarrhea cases.

Methods: Nanyumbu and Kilwa DCs were chosen conveniently for this evaluation. Three health facilities with high number of bloody diarrhea cases were selected. Interview guided questionnaires and checklist were constructed and used for conducting assessment on the performance of the system basing on attributes of the system and awareness of bloody diarrhea standard case definition and diagnosis criteria. Three participants from each health facility who were willing to participate in this study were enrolled for the interview.

Results: Out of 17 health care workers sixteen of them accounted for 94% were aware of the bloody diarrhea standard case definition. At districts level especially in Nanyumbu and Kilwa the data were not useful as no analysis was done neither feedback was provided on

stakeholder's meetings. Among the interviewed health worker 64.7% declared the system to be simple. Also, the system termed to be representative as it covered all the 26 regions. The system is not stable as 76.5% complained on the network especially during reporting time. On the contrary, system was acceptable and flexible. However, consistency, timeliness, accuracy, correctness, predictive value positive and sensitivity were not measure due to lack of data and were difficult to retrieve from the DHIS2.

Conclusion: The IDSR system in Nanyumbu and Kilwa district is not performing so well, as there is a very big challenge on using electronic IDSR system due to unstable network and difficultness in retrieving the information. Standard Case Definition is as well not clear to some of the HCWs on capturing the bloody diarrhea cases. Also lack of data analysis in the facilities and feedback reports delays the system to meet its objectives. Regular review meetings, data analysis and use, and capacity building of healthcare workers on case definitions should be offered.

Geographic Mapping of Cholera Hotspots in Tanzania: A tool for identifying priority areas for Intervention

Authors: Jane Mcharo, Janneth Mghamba, Rogath Kishimba, Loveness Urio, Senga Sembuche, Ali Nyanga, George Cosmas, Ahmed Abade

Background: Despite better understanding of cholera, cholera outbreaks continue to be an important public health problem in sub-Saharan Africa. In the past 10 years Tanzania has experienced several waves of cholera outbreak affecting all the 26 regions. This necessitated the development of a road map to eliminate cholera by 2030. For this ambitious goal to be realized there is need to identify high risk areas/ hotspot. We identified cholera hotspots that guided the development of a roadmap for elimination of cholera in this part of Africa.

Methods: Weekly cholera case counts by district were obtained from integrated disease surveillance and response weekly ending reports (IDWE) for the period from January 2010 through June 2018. Annual population estimates by district were extrapolated from 2012 Census estimates and 2016 and 2017 projections from the Tanzania National Bureau of Statistics. Three ranking criteria including mean annual incidence, maximum annual incidence and stability were employed and converted into scores in order to capture multiple facets of disease burden.

Results: In Tanzania, 29053 cases with 380 deaths (CFR 1.3) of cholera were reported during 2010 and 2017. The mean annual incidence ranged from 0-0.70 cases/1000/yr, while the maximum annual incidence ranged from 0-4.7 cases/1000/yr across the affected districts. Stability ranged 0-1.65 cases/1000. Of the 184 districts in Tanzania 45 districts were identified as priority/hotspot areas based on the three criteria. Approximately 29% of the population of Tanzania live in these districts.

Conclusion: The study identified cholera hotspots in the Tanzania and estimated the population at risk in the hotspot districts. The study also calculated annual incidence of cholera in the affected district and identified areas of priority for cholera intervention.

Selecting the right areas within the hotspots for targeting interventions followed by impact assessments of the interventions could eliminate cholera in these areas of Tanzania.

Novel fusicoccane diterpenoid with ant plasmodial activity from the whole plant of *Hypoestes verticillaris*

Authors: Ruth Omolel, Manine Moshi, Mathias Heydenreich, Hamisi Malebo, Jeremia Gathirwa, Alice O Chieng, Leonida Omosa, Jacob Midiwo

Background: Anti-malaria drug resistance has emerged as the major challenge facing malaria control in the endemic zones leading to the spread of malaria to new zones and re-emergence of the disease in areas where it has been previously controlled. *Hypoestes verticillaris* has been used traditionally to treat malaria and another ailment without knowledge of efficacy, safety and active principles.

Objectives: To isolate ant plasmodial compounds from *Hypoestes verticillaris*
Methods: The plant was identified by a botanist from the University of Nairobi. The solvent extraction was done using CH₂Cl₂: MeOH (1:1). Isolation was done using column chromatography and isolation monitored using thin layer chromatography. The chemical structures were determined using various spectroscopic techniques. UV-Vis, IR, 1D, 2D and MS. The isolated compounds were tested for activity against CQ susceptible (D6) and resistant (W2) *Plasmodium falciparum* parasite strains.

Results: Four new compounds were isolated from *Hypoestes verticillaris*: Two lignans 2,6-dimethoxysavinin, 2, 6-dimethoxy-(7E)-7, 8-dehydroheliobuphtalmin, and two fusicoccane diterpenoids. 11 (12)-epoxyhypoestenone and 3(11)-epoxyhypoestenone showed a good ant plasmodial activity against both strains with an IC₅₀ value of 3.55 µM against W2 strain and 3.60 µM against D6 strain.

Conclusion: The results indicate that *Hypoestes verticillaris* contain compounds with ant plasmodial activity. This provides proof for use of this plant in antimalarial therapy.

Recommendations: The antiviral, antifungal and anticancer activity should be done for the isolated compounds.

Traditional Medicine Usage During Labour and Its Association with Pregnancy Outcome Among Women Delivered at MMH, Zanzibar

Author: Sabra Masoud

Background: Use of traditional medicine (TM) during labour is a known practice worldwide. It is done for variable reasons like facilitating labour and delivery, easy labour, reducing labour pain, preventing operative deliveries and preventing retained placenta. Zanzibar is among countries that have a high number of maternal and neonatal morbidity and mortality,

and TM use during labour is among the mentioned cause. Understanding the magnitude of TM usage during labour and its association with pregnancy outcomes will help to overcome the burden of morbidity and mortality to the mothers and their babies.

Objectives: Proportion of women who used TM during labour and its association with pregnancy outcomes among women delivered at MMH- ZANZIBAR.

Methods: A hospital-based cross-sectional study was conducted among 831 women who delivered at Mnazi Mmoja Hospital (MMH), Zanzibar. A questionnaire was used to collect data from each study participant and an observational checklist to extract information from partograph and file notes. Bivariate logistic regression analysis was used to see the significance of the association between TM use and pregnancy outcomes. Odds ratios at 95 % CI were computed to measure the strength of the association between the pregnancy outcomes and TM use. A p-value <0.05 was considered a statistically significant in multivariate analysis.

Results: Among 808 women studied, forty-one percent (41.0%) of women delivered at MMH reported to use traditional medicine during labour. The commonest TM used were "kombe" (39.3%) and blessed water (31.1%). TM use during labour were significantly associated with meconium stained liquor (AOR: 1.9, 95% CI:(1.4-3.6) and adverse neonatal outcomes (AOR: 2.5, 95% CI:(1.6-3.8). However, the study showed no association between the use of TM during labour with adverse maternal outcomes.

Conclusion: Traditional medicine (TM) were commonly used during labour at MMH. The use of TM during labour was associated with adverse pregnancy outcomes such as meconium stained liquor and adverse neonatal outcome.

Recommendation: More health education should be offered to pregnant women and society at large on the effects of some traditional medicine during labour.

Fatal Tuberculosis coincidentally uncovered at autopsy: Case series and literature review

Authors: Asteria H Kimambo, Salvatory M Mlaga, Jovina Nkya, Amos Mwakigonja, Emaeli Moshi, Edda Vuhahula

Background: In 2018, the WHO estimated 10million TB new cases global, however only 6.4million were diagnosed. The incidence of TB in Tanzania as reported in 2017 was 269/100,000, nevertheless the diagnosed cases were only 154/100,000. Therefore, about 115/100,000 were missed. Few studies have shown possibility of diagnosing substantial number of TB at autopsy, that could not be detected before death. Hence the need of autopsy in cases with unknown diagnosis before death. We report 4 cases of TB that were incidentally detected at autopsy as secondary cause of death.

Objectives: To establish the true cause and mode of death.

Methodology: Thorough autopsy was performed, two medical-legal cases and two clinical autopsies. Clinical information was retrieved from patients file and clinical notes.

Results: The deceased were all females, with age range of 18 - 41 year. Presented to their clinicians with variable symptoms such as hemoptysis, difficulty in breathing. No associated fever or weight loss were recorded. Three cases were seronegative for HIV. CXR of one case showed opacities. Despite receiving care, all cases died without diagnosis. External autopsy showed moderate pallor, copious mucous/blood secretions per nostrils and severe peripheral cyanosis. The internal findings showed multiple tuberculoma in the lungs and brain. Histology also showed granulomatous TB with confirmed Ziehl-Neelsen stain. The immediate cause of death in all cases was respiratory failure and underlying cause of severe Miliary TB.

Conclusion: The incidental diagnosis of TB at autopsy, indicates the uncovered burden of TB in the country and signifies the importance of thorough autopsy to all cases with unknown diagnosis.

Recommendations: Improvement of autopsy policies and early TB screening.

The feasibility and effectiveness of evriMED for enhancing adherence to treatment among TB patients in Kilimanjaro, Tanzania

Authors: Pima M. Francis, Ngowi KM, Mtesha BM, Hadija Semvua, Stella Mpagama, de-Boer Marion S

Background: Adherence to TB treatment is challenging because of many factors. When inadequate, treatment may fail leading to multi drug resistant tuberculosis (MDRTB). A promising way to intervene is Real Time Medication Monitoring (RTMM). A recently developed RTMM device, evriMED improved adherence in China and India. However, in Tanzania, there may be challenges in implementing evriMED due to stigmatization, appearance of the box, network and power access, accuracy and cost effectiveness which have implication for treatment outcomes.

Objective: To determine the feasibility and effectiveness of using evriMED for reminder cues and tailored feedback on adherence to anti-tuberculosis and treatment outcome among TB patients in Kilimanjaro.

Methods: Pragmatic cluster randomized trial; Clusters will be randomized in an intervention arm where evriMED will be implemented and patients will take medication and receive tailored feedback or in the control arm where standard practice DOTs will be followed. We will use the 'Stages of-change' model for giving tailored feedback, which assumes that a person has to go through: pre-contemplation, contemplation, preparation, action and evaluation to change behavior.

Results: The anticipated results for this study are good feasibility and acceptability, improved adherence and treatment outcome, Adherence and treatment outcome will be measured individually by pharmacy refill counts, self-reported adherence and sputum smear conversion. Outcomes will be compared between the arms. At the end, we will conduct

qualitative interviews with patients, treatment supporters and healthcare staff to investigate experience, accuracy and acceptance of evriMED.

Conclusion: There are several factors that may hamper the effectiveness of evriMED such as network challenges and acceptability. Our study will look at these factors.

Recommendations: If evriMED shows good acceptability and effectiveness and accuracy, we will scale up and make it standard of care for TB patients.

Detection of *Plasmodium falciparum* by microscopy, LAMP, and PCR on day 3 after artemether-lumefantrine treatment in Bagamoyo District

Authors: Lwidiko E. Mhamilawa, Berit Aydin-Schmidt, Bruno P. Mmbando, Billy Ngasala, Ulrika Morris

Background: *Plasmodium falciparum* microscopy-determined positivity rates exceeding 10% on day 3 after initiation of artemisinin-based combination therapy (ACT) is an important determinant of artemisinin resistance. However, microscopy does not detect low-density parasitemia (< 50 parasites/ μ L), contrary to molecular tools such as loop mediated isothermal amplification (LAMP) and polymerase chain reaction (PCR).

Objectives: The aim of this study was to evaluate LAMP, as a field friendly molecular surveillance tool, in comparison with microscopy and PCR for *P. falciparum* detection on day 3 after ACT.

Methodology: We compared microscopy, LAMP and PCR for detection of *P. falciparum* on day 3 after ACT in 256 patients with uncomplicated malaria in Bagamoyo District, Tanzania. Blood from finger prick was collected on: extraction tube, Giemsa stained blood slides and filter paper. Malaria LAMP (Eiken Chemical, Japan) for detection of parasite DNA was compared with expert microscopy and 18S quantitative PCR (qPCR). Blood samples for LAMP were prepared using the Boil and Spin-Method, and results were interpreted by visually observing the fluorescent assay under UV Light.

Results: Day 3 positivity rates were 0%, 84.8%, and 84.4%, for microscopy, LAMP and PCR respectively. The sensitivity and specificity of LAMP against PCR was 100% (95% CI, 96.1–100) and 77.4% (95% CI, 58.9–90.4) when qPCR-determined parasite densities were > 2 parasites/ μ L.

Conclusion: LAMP had comparable accuracy to PCR, and could potentially represent a field-friendly tool for molecular surveillance of artemisinin resistance.

Recommendations: However, what day 3 *P. falciparum* positivity by molecular diagnostic tools represents needs to be further elucidated.

Abstracts on Occupational Health

Total of 12 abstract were accepted for presentation, and they are presented below in order of presentation:

Occupational Health Hazards Among Nurses at Muhimbili National Hospital

Authors: Mamuya SHD, Reuben S

Background: Nurses encounter many unique hazards that can potentially affect their health in the workplace settings. Working environment, responsibilities, and duties of nurses put them in the frontline of numerous occupational hazards. These hazards could be broadly divided into the following categories: biological, chemical and physical hazards, ergonomic hazards, psychosocial hazard. Nurses have been identified as a neglected group with regard to the monitoring of occupational health status and little is known on the proportion of nurses exposed to occupational health hazards in the hospital settings.

Objective: The aim of the study was to assess Occupational health hazards among nurses in Muhimbili National Hospital.

Methods: A cross sectional study was conducted from June to July 2016 at Muhimbili National hospital involving 384 nurses from various departments. questionnaire closed and Open ended was used to collect data. Data was entered and analysed by SPSS version 15. Analysis for predictors was performed using univariate and multivariate logistic regression where p- value of < 0.05 was considered statistically significant.

Results: On average 70.85% of the nurses were exposed to at least one of the occupational health hazards. Exposure to psychological hazards was the highest (100%) followed by ergonomic hazard (97.1%), physical hazards (73.7%), violence 50% and biological hazards (39.8%), while the lowest was chemical hazard (39. 3%).In Multivariate analysis, system for recording and notifying hazards, department and provision of hepatitis B were independent predictors of occupational hazards.

Conclusion and recommendations: Despite high levels of awareness about occupational health hazards among nurses at the hospital, there were high proportion who experienced occupational health hazard. Efforts should be directed towards developing and implementing effective control measures so as to protect the nurses' health.

Respiratory health among hand pickers in primary coffee-processing factories of Ethiopia

Authors: Samson Wakuma Abaya, MagneBråtveit, WakgariDeressa, AberaKumie, Bente E. Moen

Background: Hand pickers are exposed to dust that might cause different respiratory health problems. In Ethiopia there are two types of hand pickers related to work places which

makes a difference in the extent of dust exposure; hand pickers with table and hand pickers without table.

Objective: To assess chronic respiratory symptoms and lung function among hand pickers cleaning coffee beans. In addition, to compare these variables among workers performing hand picking sitting at tables and sitting on the ground, and to compare their dust levels.

Methods: A total of 374 hand pickers exposed to coffee dust and 175 controls participated in this study. The symptoms were assessed using a standardized questionnaire. Personal total dust exposure and lung-function tests were performed.

Results: Hand pickers experienced a higher dust exposure, displayed a higher prevalence ratio for cough (PR=3.0, 95% CI: 1.4-6.2) and work-related shortness of breath (PR=2.5 95% CI: 1.1-5.6) and had a lower the mean forced expiratory flow between 25% and 75% of the FVC (FEF₂₅₋₇₅) compared with controls. Hand pickers without tables had a significantly higher prevalence ratio of cough with sputum (PR = 3.9, 95% CI: 1.6–9.5) and lower Forced Vital Capacity, Forced Expiratory Volume in one second and FEF₂₅₋₇₅ compared with hand pickers with tables.

Conclusions: Hand pickers show a range of adverse symptoms and lung function impairments that warrant efforts to improve working conditions.

High prevalence of respiratory symptoms among particleboard factory workers in Ethiopia: a cross sectional study

Authors: Akeza Awealom Asgedom, Magne Bråtveit, Bente Elisabeth Moen

Background: Work in the wood industry is associated with respiratory health problems. The production of particleboards used for furniture making and construction is increasing in many countries.

Objective: The aim of the study was to assess the prevalence of respiratory symptoms and to measure lung function among Ethiopian particleboard workers.

Methods: Totally 147 workers, 74 from particleboard workers and 73 from controls participated in the study. Respiratory symptoms were collected using a standard questionnaire of American Thoracic Society (ATS). Lung function test was done using spirometry following American Thoracic Society recommendations.

Results: The arithmetic mean age of the respondents in the particleboard factory worker was 27.8 (SD= 6.6) years and the average service years was 3.9 (2.7) years. Controls had mean age of 24.7 (6.9) years and their average service year was 2.2 (2.1) years. The recorded respiratory symptoms were wheezing, cough, cough with symptom, phlegm, and shortness of breath. The prevalence in the particleboard factory worker and control group ranges from 24% - 45% and 2.7% - 15%, respectively. Lung function status was similar in the two groups.

Conclusions: Particleboard factory workers had higher prevalence of all recorded respiratory symptoms compared to controls. Lung function status was similar in the two groups. The employers are recommended to implement control measures to reduce the high prevalence of respiratory symptoms.

Respiratory Symptoms and Associated Factors Among Commercial Motorcyclists in Ubungo Municipality, Dar es Salaam, Tanzania

Authors: Saumu Shabani, Simon Mamuya.

Background: Commercial motorcycles have of recent arisen as a key method of rural and urban transport services. Motorcyclists are among the occupations, in which workers are highly exposed to ambient air pollutants and probably make them to susceptible in developing respiratory diseases.

Objective: To determine prevalence of respiratory symptoms and the associated factors among commercial motorcyclist in Ubungo municipality.

Methods: The study design was descriptive cross-sectional study conducted from March to July 2018. Multistage sampling technique was used to obtain sample of 200 commercial motorcyclists and 100 office attendants. A modified British medical research council questionnaire and personal sampling pump (SKC Sidekick pump) were used for data collection. Data were analyzed by using Statistical Package for Social Science software.

Results: Commercial motorcyclists had exposed to geometric mean concentration 1.60 mg/m³ of pollutants (SD=2.12) compared to office attendants with a mean concentration of 0.071 mg/m³ (SD=1.26) for eight hours which was less than TLV according to the ACGIH. The prevalence of respiratory symptoms were reported to be higher among commercial motorcyclists compared to office attendants for all symptoms and the differences were statistically significant at P-value <0.001, where morning cough (55.5% vs. 27%); cough last for three months yearly (26% vs 2%); phlegm (53.2% vs 15%), phlegm last for three months yearly (23% vs.0%) wheezing (29% vs 2%) and shortness of breath (47.7% vs. 16%). Work duration was the most predictor of cough, cough last for three months, phlegm and shortness of breath among commercial motorcyclists.

Conclusion and recommendation: Prevalence of the respiratory health symptoms was higher among commercial motorcyclists than the control. Commercial motorcyclist should use appropriate PPEs (mouth/nose masks) during their work.

Respiratory Symptoms and Lung Function Among Workers in Grain Milling Industries in Dar es Salaam, Tanzania

Authors: Anifa Ulanga, Simon H Mamuya

Background: Workers in grain milling industries are exposed to grain dust released during milling processes. Exposure to grain dust is associated to various respiratory symptoms

such as phlegm, breathlessness, cough and wheezing and also reduced lung function. There is limited information on the exposure levels, prevalence of respiratory symptoms and lung function among workers in grain milling industries in developing countries including Tanzania where the milling industries are less mechanized.

Objective: This study aimed at determining grain dust exposure levels and the prevalence of respiratory symptoms and Lung function among workers in milling industries in Dar es Salaam.

Methods: Descriptive cross-sectional study was used to collect information on Respiratory symptoms among 264 grain mill workers and 100 controls by using a Questionnaire. Lung function tests were done to 214 by using an easy one spirometer where FVC, FEV1 and FVC1/FEV parameters were recorded and used to interpret the results. Personal dust exposure was measured on 30 grain mill workers and 5 controls by using PVC filters of 8µm pore size on two-piece filter cassette mounted Sidekick Casella (SKC) pump. Bivariate analysis using Chi square and binary logistic regression was used to compare categorical variables, where as independent t test and ANOVA were used for continuous variables. Age and smoking habits were used as adjusting variables. P value of less than 0.05 was used as criteria for significant association.

Results: Grain workers were exposed to higher levels of total dust with GM 12.15 Mg/m³ (GSD 1.53) than the control GM mg/m³ (GSD). 66.7% of grain mill workers were exposed to dust concentrations above the OEL(10mg/m³). The Prevalence of respiratory symptoms was higher among grain mill workers, (51.1%, 41.3%, 33.7%, 17%and 9.8% for cough, phlegm, breathlessness, tightness and wheezing respectively than in controls (28%, 19%, 21%, 8% and 5% for cough, phlegm, breathlessness, tightness and wheezing respectively. 26 %grain mill workers had obstructive lung defect and 21% had restrictive lung defect. There was no significance difference in dust exposure concentration.

Conclusion and recommendation: Exposure to grain dust in a working environment causes the increase in work related respiratory symptoms and reduced lung function. This study recommends the use of control measures to decrease dust exposure level among mill workers.

Dust Exposure and Related Health Effects Among Workers in Gypsum Industries in Pwani Region, Tanzania

Authors: Zainab Kishede Msuya, Gloria Sakwari

Background: Gypsum industries produce building materials such as gypsum boards and gypsum powder. Gypsum ores are extracted from ground materials that may contain silica and other toxic materials (Oakes *et al.*, 1982). Despite its wide application worldwide, hydrated calcium sulfate (gypsum) is the hazardous chemical known to cause irritation to the eyes, skin, mucous membranes and upper respiratory tract in humans and may result to serious health problems among exposed individuals (NIOSH, 1995). Workers may be exposed to dust during processes involved in gypsum products manufacturing; through inhalation, ingestion, skin and eye contact which can potentially affect their respiratory.

Objective: This study aimed at describing occupational dust exposure levels and related health effects among workers in gypsum industries in Pwani.

Methods: Cross sectional study design was conducted. We interviewed a total of 89 workers; 52 in gypsum industry and 37 in drinking water industry for respiratory health symptoms and other health effects related to dust exposure by using modified BMRC questionnaire. Checklist was used to assess working environment and workers' practices. A total of 30 Personal total dust samples were collected by using SKC pumps. Data were analyzed by SPSS package in computer.

Results: The Geometric Mean of total dust among gypsum workers was 11.79(SD±5.06) mg/m³ significantly higher compared to food industry workers 0.24 (SD±2.46) mg/m³, P<0.05. Respiratory symptoms were higher among gypsum industry workers cough (65.4%), chest pain (51.9%), phlegm (32.7%), compared to their controls; cough (21.6%), chest pain (18.6%), phlegm (3.8%). Safety training on work among exposed workers protects them from respiratory symptoms (OR=0.091, 95% CI: 0.20-0.422).

Conclusion and Recommendation: The study concludes that prevalence of respiratory health symptoms and dust exposure levels were higher among exposed workers than in un-exposed. The dust concentrations among exposed workers exceeded the TLV for total dust of 10mg/m³. We recommend the implementation of effective dust control measures including occupational health and safety training to workers.

Methicillin Resistant *Staphylococcus aureus* (MRSA) nasal colonization among slaughterhouse workers and associated risk factors in Dar es Salaam Tanzania

Authors: Kawa Deogratius Kafuru, Jane Mlimbila, Simon Mamuya

Background: Meat is a source of nutrition to human health as it is a reach source of protein, mineral salts and vitamins, which are needed for human growth. The increasing meat demand in urban areas such as Dar-es-Salaam is attributed by increase in population growth. The misuse of antibiotics in livestock to reduce bacterial infections is one of the techniques employed by farmers to ensure increase in produces. This results in to some bacteria to develop antibiotic resistance, which may lead to emergence of new strains such as Methicillin Resistant *Staphylococcus aureus* (MRSA) which pose a threat to people, especially those working in contact with livestock. Together with environment of slaughterhouses, slaughterhouse workers are exposed to thousands of affected animals which are brought from different parts of Tanzania.

Objective: This study determined the prevalence of Methicillin Resistant *Staphylococcus aureus* (MRSA) nasal colonization among slaughterhouse workers and associated risk factors in Dar es Salaam region.

Methods: A cross-sectional study was conducted from June-July 2018 involving 258 slaughterhouse workers from 4 registered slaughterhouses in Dar-es-Salaam namely, Ukonga Mazizini ,Kimara, Vingunguti and Tegeta. Questionnaire was administered to

slaughter house workers and nasal swabs were collected and were analyzed for isolation and identification of *S. aureus* and isolates were tested for antimicrobial susceptibility using 10µg Oxacillin discs.

Results: The MRSA nasal colonization among slaughterhouse workers was found to be 39.2%. Factors found to have statistically significant association with prevalence of nasal colonization of MRSA were lack of training with OR=0.417 and $p=0.018$.

Conclusion and recommendation: The status in slaughterhouses in Dar es Salaam region are not in line with the recommendations of OSHA, 2003 and Tanzania Food and Drugs Act, 2003 and Food and Hygiene Regulations, 2006. The current situation of slaughterhouse facilities and practices of workers may exacerbate the magnitude of MRSA in the country through contaminated animal meat and contact with people in the general Public. Therefore, findings of this study could enable implementation of stringent and effective prevention and containment measures to reduce antibiotic resistance in the farm-to-plate continuum in Tanzania so as to minimize public health risks.

Sharp injuries and blood splash management among health care workers in Kibaha Tanzania

Author: David P Vuo

Background: Sharp injuries and blood splash increase potential risk to blood borne infections among health care workers. Under reporting of these incidences, under-estimates the magnitude of risk to infections. Workers at study health facilities are at high risk to sharps and blood splashes because of serving road accidents victims and other patients from different parts of Tanzania.

Objectives: This study aimed at determining factors that influence sharp injuries and blood splash management among health care workers in Kibaha town.

Materials and Methods: This was a cross-sectional study, designed for 219 health care workers in six health facilities at Kibaha Town. Questionnaires and checklists were used as data collection tools. Data processing and analysis were done using SPSS version 20 to get frequencies and proportions as well as association between dependent and independent variables. The statistical significance of association was tested by Chi-square test. Ethical clearance was requested from research ethical committee of MUHAS and permission to undertake this study was sought from the Pwani regional administrative secretary (RAS).

Results: Findings showed 69(31.5%) sharp injuries and 119(54.3%) blood splash among HCWs studied. Medical practitioners were mostly injured 15(40.5%) to sharp injuries and blood splash 26(70.3%). Out of 139 HCWs who were injured, 99(71.2%) reported to their supervisors. Professional level (OR = (1.469), 95%CI= (1.113-1.939), p -value= (0.007) was statistically significantly associated with sharp injuries.

Conclusion and recommendations: Prevalence of sharp injuries and blood splash are still high among HCWs studied. Blood splash was high 119(54.3%) than sharp injuries

69(31.5%). HCWs with high professional level (degree) were mostly injured with sharps 16(72.4%). Failure to report was noted among 40(28.8%) with reason of not knowing procedures 17(42.5%). Poor documentations were revealed. Health facility managements should make sure that injury records are properly maintained and all health care workers are encouraged to report occupational injuries.

Occupational noise exposure and hearing loss: A study of Knowledge, Attitude and Practice among Tanzanian iron and steel workers

Authors: Israel P. Nyarubeli, Alexander M. Tungu, Magne Bråtveit, Bente E. Moen

Objectives: Exposure to high noise at workplaces in many factories and related noise-induced hearing loss (NIHL) is a public health problem that has been increasing in developing countries. However, information about knowledge, attitude and practice (KAP) regarding occupational noise exposure, NIHL and use of hearing protection devices among working populations exposed to high noise levels is not well documented. Our aim was to assess KAP regarding occupational noise exposure, NIHL, audiometry and hearing protection devices among iron and steel factory workers in Tanzania exposed to a high level of noise.

Methods: A modified, validated, structured questionnaire was used to collect information from 253 male workers randomly selected from the production line of the four factories. The sum scores for each domain of KAP were computed. Scores above 75% were defined as good knowledge and positive attitude. For practice, scores of > 50% were defined as good. Independent samples t-test was used to analyze the association between KAP and the continuous variables whilst the chi-squared test was used to analyze the association between dichotomized KAP and categorical variables, i.e. age group, duration of work and educational level.

Results: Most of workers displayed poor knowledge and poor practice, but the majority (76%) displayed a positive attitude to NIHL and use of hearing protection devices. In addition, most of the workers (86%) had never been provided with hearing protection devices.

Conclusion: Given the high level of occupational noise exposure, formulation and implementation of hearing conservation program with prompt provision of hearing protection devices and training are suggested.

Chronic respiratory symptoms and cross shift lung function of workers among an integrated textile factory

Authors: Yifokire Tefera, Abera Kumie, Wakgari Deressa, Bente E. Moen, Magne Bråtveit

Background: Chronic respiratory symptoms and reduction in pulmonary function is a common health problem among textile workers in low- and middle-income countries. A high level of personal inhalable dust was measured among workers in this industry.

Aim: The objective of this study was to measure cross shift lung function and respiratory symptoms of workers in an integrated textile factory.

Methods: A comparative cross-sectional study design with a cross shift lung function measurement was performed in 306 cotton dust exposed workers from an integrated textile factory, and 156 control workers from a water bottling factory. Respiratory symptoms were assessed by using a standard questionnaire of the American Thoracic Society, while lung function was measured using a portable computer connected spirometer. Lung function of the workers was measured before and after work shift and cross shift change of the lung function parameters Forced Expiratory Volume in one second (Δ FEV1) and Forced Vital Capacity (Δ FVC) were calculated.

Results: The prevalence of respiratory symptoms was significantly higher among textile workers (54%) than in controls (28%). The symptoms of chronic cough, chest tightness and breathlessness were significantly higher among textile workers (23%, 33% and 37%, respectively) than in the control group (5%, 17% and 6%, respectively). Breathlessness was the most prevalent chronic respiratory symptom with highest adjusted odds ratio 9.4, 95% CI: 4.4- 20.3. A significant higher cross shift lung function reduction was measured among textile workers 123 ml for Δ FEV1 and 129 ml for Δ FVC. Whereas, the similar cross shifts changes in the control group were only 41 ml for Δ FEV1 and 46 ml for Δ FVC.

Conclusion: Generally, the prevalence of chronic respiratory symptoms and cross shift lung function reduction was higher among textile factory workers compared to controls. It is likely that the findings are related to exposure to textile dust; hence workers' respiratory protection program should be strengthened.

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Conclusion: Given the high level of occupational noise exposure, formulation and implementation of hearing conservation program with prompt provision of hearing protection devices and training are suggested.

Work-related ocular symptoms among hairdressers in Kinondoni municipal, Dar Es Salaam, Tanzania

Authors: Orlík Babra Tita, Simon Mamuya

Background: Hairdressers are frequently exposed to variety of health hazardous chemicals in their daily routine work. The effects of these chemicals are numerous among hairdressers including ocular diseases. Several studies have been done on hairdressers in Tanzania. However, there are limited studies assessing ocular diseases among hairdressers.

Objectives: This study intended to determine the prevalence of work-related ocular symptoms and associated factors among hairdressers in Kinondoni Municipal, Dar es Salaam.

Methods: A descriptive cross - sectional study was conducted among hairdressers in Kinondoni Municipality, Dar es Salaam. A total of 300 hairdressers were recruited in the study. A standardized questionnaire and observation checklist adopted from Ghanaian study was used to collect data on work related ocular symptoms from selected hairdressing salons. Salons were marked by the Global Positioning System (GPS). Data obtained was analyzed using Statistical Package for Social Sciences (SPSS) version 20.

Results: About 78.7% of hairdressers reported work-related ocular symptoms. The commonest work-related ocular symptoms were headache (87.3%) and itching (76.3%). Hairdressers who used to blow dry clients' hair were found to be 17 times more likely to acquire work-related ocular. Hairdressers who used hair bleach products on their clients were found to be 9 times more likely to acquire work-related ocular symptoms while hairdresser who used wave solution products on their clients were found to be 6 times more likely to acquire work-related ocular symptoms. Also, hairdressers who used to iron client's hair were found to be 2 times more likely to acquire work-related ocular symptoms.

Conclusion: A great number of hairdressers of Kinondoni Municipality had one or more forms of work-related ocular symptoms. Work-related ocular symptoms were highly influenced by lack of hazard awareness and lack of training of hairdressers on the use of chemicals.

Abstracts on Health Systems

Total of 26 abstract were accepted for presentation, and they are presented below in order of presentation:

Use of Mobile-Enabled Digital Learning Platform for in- Service Health Training

Authors: Zabron A, Amani M, Arnold M, Scholastica B, Jodi L, Rita N, Flora K, Dunstan B.

Background: South-East Asia and Africa together bore 54% of the total global burden of disease in 2004, although they account for only about 40% of the world's population. (WHO Global Burden of disease, 2004). Ninety-nine percent of all maternal deaths worldwide are in low- and middle-income countries, of which 50% occur in Sub-Saharan Africa. Maternal and child mortality have remained high in Tanzania (Shoo et al. 2017). Maternal mortality ratio, neonatal mortality rate, and perinatal mortality rate stand at 556 deaths per 100,000, 25 deaths per 1,000 and 39 deaths per 1,000 live births respectively (TDHS-MIS 2016).

Objectives: The looked on the internet accessibility at the health facilities in the region, health care workers' competence on the use of mobile devices and digital literacy among health care workers.

Methodology: The digital health project will be implemented in 7 Lake Zone regions Mwanza, Mara, Kagera, Shinyanga, Simiyu, Kigoma, Geita and Zanzibar with target of 1,800 facilities. The modules to be included has been identified focusing national indicators performance, these are Maternal, Newborn care, IMCI, Family Planning and Malaria. The implementation is undertaken jointly between TTCIH and JHPIEGO with support from MoHCDGEC.

Results: In Tanzania telecom services penetration is 78% with number of internet users about 41%, with the majority of those using their handsets to go online. In 2016 around 19 million internet users in Tanzania accessed the World Wide Web through their mobile phones, (TCRA report, 2016). Internet penetration in the nation of around 52 million people ticked up to 45 percent in 2017. From the digital learning and facility readiness assessment in Lake Zone there is availability of internet service providers at each health facility has access to at least one internet service provider. HCW were asked to indicate if they think Digital Learning would be beneficial for their work and over 70% in each district agreed to that.

Conclusion: There is need of blended learning approach to ensure health care workers acquire expected skills to improve health care services provision. During implementation will Train of Trainers within the respective districts these will act as mentors to course participants. The proposed platform is Mobile enabled so the health care workers will be provided with Tablets for access of courses, this ensures access when one is offline.

Recommendations: From the results above there is need of blended learning approach to ensure health care workers acquire expected skills to improve health care services provision.

Re-purposing a Mobile-Operator Product to Strengthen Referrals Management and Clinical Consultations

Authors: Arnold Thomas Masaro, Amani Minja, Scholastica Bahemana, Leonard Madinda, Felix Chango

Background: Management of referrals faces a multitude of challenges that have a resultant impact of reducing the effectiveness of deployed health systems. Along the same lines, the inability of healthcare workers to conduct clinical consultations has a detrimental effect on provision of healthcare. Telecommunication is one of the challenges that affect both of these areas severely. It is not surprising, therefore, that a possible solution is presented by developments that have taken place in the telecommunication industry. In a very short period, the proliferation of mobile phone networks has transformed communication in Tanzania. This has allowed the country to leapfrog.

Objectives: USAID Boresha Afya seeks to make use of appropriate technologies to close the communication gap amongst healthcare workers who are located in different health facilities.

Methodology: The USAID Boresha Afya Project has chosen to make use of the Closed User Group product to strengthen referrals management and clinical consultations amongst healthcare workers. In our conference paper, we demonstrate how USAID Boresha Afya went about selecting the appropriate solution provider, acquisition of equipment and working with Regional and Council Health Management Teams to implement CUG in Geita.

Results: CUG has been rolled out in Geita Region.

Conclusion: CUG has the potential to improve referral management and clinical consultation amongst health workers.

Recommendations: The level of impact must be measured empirically as well as qualitatively.

Using GIS and spatial analysis to determine health service deliveries gaps: Case of population density Vs Availability of service

Authors: Scholastica Bahemana, Yusuf Kulindwa, Dunstan Bishanga

Background: Access to health services has been a challenge for most remote areas. Tanzania through its health policy has set a target of having dispensaries in every village, health centres in every ward and hospitals in every district listed that all population should have a health facility within 5 km. Spatial analysis can be used to determine the challenges and gaps in accessing and delivering health services within populated areas. The geospatial maps created from layers of population density and available services in surrounding health facilities gave a clear picture of the unreached population that has no access to these services within the target 5km.

Objectives: Using spatial analysis to determine the challenges and gaps in accessing and delivering health services within populated areas identifying the distance as a factor for mothers not to visit facilities.

Methods: Using GPS, teams map the facilities that were wrongly locate to collect the information of each facility identified with the type of services provided. Water bodies layer, land use and available infrastructures shape files were obtained from the national bureau of statistics and International Livestock Research Institute (ILRI). Using ArcGIS software and QGIS tool, a 5-kilometer buffer from each facility was created analysing which population has access with BEmONC and CEmONC services within 5 kilometres. Overlaid layers clearly showed the gaps in service availability in highly populated areas which is crucial in determining the kind of program interventions.

Results: The maps clearly showed the high-density population that is not within five-kilometre buffer from the facility. With this visualization, it shows a good number of clients travel great distance to facilities to get the services. As analyzed from 2015 Domestic and Health Survey (DHS), it shows approximately 50% of pregnant mothers are less likely go to facilities for services due to distance above 5km from the facility, and this contributes to missing the opportunity to an early diagnosis which could be crucial in saving the life of the mother or child.

Conclusion: Through the use of spatial analysis, the results particularly the distance from the facility to the population around, the network of health facilities and range of services provided in those facilities have shown there are health services deliveries gaps.

Recommendations: Critical information is very useful when planning for interventions that would be appropriate in increasing access to quality RMNCH services by communities. Evidence based information should be taken as a tool during planning and decision making. This is linked with the use of digital tools, aiding the decision makers in making the right decision toward service improvements.

Feasibility of using V-DOT to improve adherence to TB medication, A pilot study among TB patients in Kilimanjaro, Tanzania

Authors: Pima MF, Ngowi KM, Mpagama S, Aarnouste R, Mtesha BA, Nieuwkerk P, Mmbaga BT, Sumari-de Boer M.

Background: Adherence to TB treatment is still a global challenge. Different mhealth interventions have been introduced to improve adherence by forming an alternative for Directly Observed Therapy (DOTs). In low resource setting such as Tanzania, a promising way for improved adherence is the use of Video based Direct Observed Therapy (V-DOT). Some studies have shown feasibility of using V-DOT in Kenya and Nigeria. However, there may be challenges in implementing V-DOT in Tanzania due to the technology being new, network and power access, accuracy and cost effectiveness which may have implication for treatment outcomes.

Objective: To determine feasibility of implementing Video-based Direct Observed Therapy (VDOT) to improve adherence among TB patients in Kilimanjaro region, Tanzania.

Methods: In this pilot study, we will investigate the feasibility of implementing V-DOT on adherence. We will randomly select three health facilities which provide TB care in Kilimanjaro. From the facilities, patients will randomly be selected and will record videos taking medication and send to central server through a mobile network. Feasibility and acceptability will be measured by patients' responses to questions on using VDOT during qualitative interviews.

Results: Endpoints are adherence to treatment, feasibility and acceptability. Adherence and outcome will be measured individually by pharmacy refill counts and self-reported adherence. Patients, treatment supporters and healthcare 1 / 2 Submission staff will be interviewed to assess experience, accuracy and acceptance of V-DOT.

Conclusion: Our results from the study will show the feasibility of implementing VDOT on adherence among TB patients in Kilimanjaro. We will compare the feasibility with other similar settings such as in African countries.

Recommendations: If the intervention shows significant effect on adherence to treatment with good feasibility and acceptability, we will plan to work with National Tuberculosis and Leprosy Program (NTLP) to scale up and integrate it into standard of care for TB patients.

Experience on the Development of Tanzania Health Sector Enterprise Architecture

Authors: Sultana Seiff, Silvanus Ilomo, Walter Ndesanjo, Oswald Luoga, Eden Mathew

Background: The Government of Tanzania through the MOHCDGEC continues to promote the use of Technology in transformation and attainment of UN Sustainable Development. Over the ten years, there is tremendous progress on the development and roll-out of different digital health systems. However, investments in health information systems need to be better aligned with health sector business goals, in order to minimize duplication and maximize results for the health sector. The Data Use Partnership (DUP) is a Tanzanian government-led initiative that is working to connect and harmonize data systems, including developing enterprise architecture for the health sector.

Objective: To develop Enterprise Architecture framework which will include governance, guidelines and standards for interoperability to guide planning, designing and implementation of digital health initiatives.

Methods: After the analysis of different frameworks, the TZHEA will be developed based on the Open Group Architecture Framework (TOGAF), which is a standard international framework for EA. TOGAF provides an approach for planning, design, and implementation of EA. The approach that will be used is a participatory approach whereby different stakeholders will be engaged on different levels. The TZHEA is developed with the client centric approach, looking how the technology will support citizens. Each of WHO building block will undergo through phases of Architecture Development Methodology cycle.

Results: The DUP initiative has built capacity of government officials in EA through a TOGAF training; six 1 / 2 Submission government officials have been certified to date. The team has also developed a request for architecture work which provides the vision, principles for architecture, deliverables, and governance structure for the project. The development of the TZHEA will involve government officials and other stakeholders at different phases of the project, who will play a critical role in the design and implementation of the TZHEA.

Conclusion: Tanzania Health Enterprise Architecture framework will guide digital health investments in the health sector by creating a common understanding among stakeholders. It will also establish a way forward for governance structures to facilitate interoperability, health information exchange, and monitor compliance and alignment with priorities in Tanzania's National Digital Health Strategy. With the increase investment on the system there should a guideline to ensure the investment align with the Health sector goals, vision and mission.

Public Private Partnership in training of doctors after the 1990s health sector reforms in Tanzania

Authors: Nathanael Sirili, Frumence Gasto, Angwara Kiwara, Mughwira Mwangi, Isabel Goicolea and Anna-Karin Hurtig

Background: Since the launch of the 1990s health sector reforms Tanzania like many other low- and middle-income countries, has emphasized public private partnership (PPP) in the training of the health workforce. PPP in training aims to contribute to addressing the critical shortage of health workforce in these countries.

Objective: To analyse the policy process and experienced outcomes of PPP for the training of doctors in Tanzania two decades after the 1990s health sector reforms.

Methodology: We reviewed documents to include; the Private Hospitals (Regulation Amendment) Act, 1991 The proposal for health sector reforms (1994), National Higher Education Policy (1999), The Universities Act (2005) and the National Public Private Partnership (PPP) Policy (2009). We adopted purpose and chain referral sampling were used to reach and interview 20 key-informants from training institutions and umbrella organizations that train and employ doctors in both the public and private sectors. We adopted a hybrid thematic approach to analyse the data while guided by the policy analysis framework by Gagnon and Labonté.

Results: Public Private Partnership in training has resulted to both intended and unintended outcomes. The intended outcomes include; Increased number of medical training institutions and number of annual graduates from less than 50 in 1990s to around 1000 by 2015, Supporting the training of medical students in private universities by the public health facilities and growth of collaboration among training institutions in public and private sectors. The unintended outcomes include; undermining of universities' autonomy and the massive

enrolment of medical students in under-equipped Universities unfavourably affect the quality of graduating doctors.

Conclusions: PPP has attained its objective in terms of increasing the number of doctors graduating in the country because of increased number of training institutions and thus students' enrolment. However, in the absence of harmonized training curricula and common exit exams, and the pressing critical shortage of faculty and training space in the training institutions; the increased number of training institutions and student's enrolment challenge the quality of the graduates from these training institutions.

Recommendation: Low- and middle-income countries should revise their strategies of addressing the health workforce crisis in their countries by ensuring that whatever measures put in place, the quality of training should not be compromised.

Factors associated with data completeness on electronic Hospital Information system at MNH

Authors: Sixmund Silvatory, Bruno Sunguya, Felix Sukums

Background: Electronic Hospital Information System is a computerized health record used to capture, store, access and share summary information for a patient between health care organization and providers. Since the inception of the Hospital Information System (HIS) in Tanzania, various studies on HIS have been conducted but factors associated with data completeness on clinical and demographic information in the HIS is largely unexplored.

Objectives: To assess the factors associated with data completeness in the electronic HIS at MNH and improve data capturing and subsequently enhance provision of quality of service.

Methodology: This explorative cross-sectional study was conducted in MNH covering the period of January to February 2017. Also, document review technique of patient folder was used to examine the magnitude of data completeness in the electronic HIS among clinicians, nurse and health records staff. Pearson chi square test and logistic and multiple logistic regression analyses were done to determine the odds ratio and adjusted odds ratio for different predictors of data completeness in the electronic HIS. The degree of association between variables was tested by using Pearson chi square test value of $p < 0.05$ at 95% confidence interval was statistically significant.

Results: About (90%) of clinical and demographic data of patients were incomplete in the electronic HIS at MNH. The overall results of data incompleteness were (28.6%) for medical records staff, (57.4%) for clinicians and leading by nurses by (81.7%). Attitude were found to be higher thirty-two (32) times (AOR=32.14, 95% CI =12.81-80.59), behaviour were five (5) times higher (AOR=5.47, 95% CI=2.40-12.43), inadequate training were fifteen (15) times (AOR=15.25, 95% CI=7.32-43.98) and usage in technology and communication were (4) times poor (AOR=3.86, 95% CI =1.55-9.62) towards data completeness in the electronic HIS.

Conclusion: The rate of the incompleteness of patients' information in the electronic HIS in the hospital is high due to poor emphasis by management on the usage of the electronic HIS in-capturing patients' information in the system. Therefore, MNH should organize and coordinate sensitization training to improve knowledge and skills on usage electronic HIS and hence address the problem of negative attitude and perception of data capturing in the electronic HIS revealed by the study.

Recommendations: MNH management and health insurance companies should formulate harmonized policy directing that all insurance information to be captured and printed out direct from the electronic HIS so as to avoid double filling of the same information from the electronic HIS. The MNH should effectively engage clinicians, nurses and medical records staff during the review process of electronic HIS and establish standards of information to be captured in the electronic HIS in-order increase awareness to the staff for effective usage.

Does the health system respect immigrants' right to health? Access of immigrants to healthcare services in Spain

Author: Iratxe Perez-Urdiales

Background: Access to healthcare is a key health determinant and is central in the performance of healthcare systems. Immigrants from low and middle-income countries, due to their lower social and living conditions in the host countries, experience several barriers in order to get healthcare at all levels of access. Moreover, immigrant women are more likely to present mental and reproductive health issues than their male counterparts, so to interact more with health professionals.

Objectives: In order to identify which are the barriers that influence the access of immigrants in our context, the aim is to analyse access to public healthcare services for immigrants in the Basque Country (Spain).

Methods: Qualitative content analysis was applied to 25 personal interviews with 14 immigrant women and 11 free clinic healthcare professionals.

Results: The findings showed the factors that compromise or enable an appropriate access to the public healthcare system: 1) immigrants' personal characteristics, which are very dependent on their origin; 2) attitude towards immigrants of healthcare and administrative staff; 3) characteristics and functioning of the healthcare system, and 4) legal requirements. Moreover, all barriers were also reinforced by the poor social consideration of immigrants. Meanwhile, immigrants have some facilitators that represent individual efforts to counteract the barriers presented at these levels.

Conclusion: Characteristics of the immigrants themselves, professionals at the health centres, the health system and legal access conditions influence the way immigrants access healthcare services. The predominant poor social consideration of immigrants enrooted in the society and its institutions influenced the willingness of health systems and staff to be

organized for considering the needs of a culturally, linguistically and socially diverse population.

Recommendations: Besides ensuring the entitlement to healthcare of vulnerable social populations, there is need to reinforce the importance of providing a culturally appropriate and rights-based attention to get non-discriminatory health systems.

Improving HIV viral suppression through Better Your Health—a nutrition support solution

Authors: Bruno F. Sunguya, Francis Mhimbira, Namala Mkopi, Mwombeki Fabian, Linda B. Mlunde

Background: Although significant milestones have been reached in the HIV response, lack of nutrition support for people living with HIV jeopardize the gains. . Tanzania like other high burden countries and the global community adopted the UNAIDS fast track targets--the 90-90-90 targets--. This call for the country to ensure that 90% of people living with HIV know their status, and 90% of those who are tested are put in treatment, while 90% of those on treatment attain the viral suppression. On the third 90--less than 50% of those who are on ART have attained viral suppression in general while.

Objective: To address HIV suppression through a nutritional support solution for PLHIV.

Methodology: Better Your Health, an innovative technology platform will be developed top complement other efforts in the HIV response. This machine learning powered online solution will utilize smart or featured phone to provide PLHIV with tailored nutrition care including dietary advice, feeding options, and other nutritional advice based on their clinical, geographical, and social economic status. BYH will use the WHO reference standards, WHO feeding and nutrition guidelines, food tables, and relevant national guidelines.

Results: The solution targets PLHIV providing an individualized nutritional assessment and offers a tailor-made nutritional advice. PLHIV will input required metrics such as height, weight, sex, age, residence, and feeding practices (time of feeding, type of food, and frequency of feeds). These data will be analyzed by our intelligent engine through algorithms of the solution which are based on national and international nutritional guidelines for PLHIV. A recommendation of the level of nutritional status appropriate for the individual will be provided by the solution. The application offers a dashboard of the health metrics for the user like weight gain, calories intakes and nutritional status progress.

Conclusion: BYH solution will take part in the efforts to reduce HIV load through nutrition support provided to the beneficiaries. It will also provide a utility for data mining to data users, like government and other development partners. This solution will generate data on the impact of nutrition on viral load suppression, development and performance of the health system integrated with nutritional support.

Recommendation: Better Your Health is a potential solution for HIV viral suppression.

Baseline evaluation of bioinformatics capacity in Tanzania

Authors: Raphael Z.Sangeda, Aneth D Mwakilili, Upendo Masamu, Deogracious Protas Massawe, Liberata Mwita, Siana Nkya, Sylvester Lyantagaye, Julie Makani

Background: Sub-Saharan countries are faced by inequalities in access to quality health despite the major disease burden in these countries. This extends to leveraging of the new technologies such as genomics and bioinformatics to resolve some major issues such as food insecurities, poverty and diseases. Despite the presence of new technologies in Tanzania, it is not clear what the current capacity is which will allow to identify areas for improvement of bioinformatics research and education.

Objective: To map bioinformatics research capacity in Tanzania in order to identify areas for improvement of bioinformatics research and education.

Methods: An online survey was sent to relevant institutions in Tanzania including research, education and commercial institutions through individual emails, mailing list in relevant groups such as Tanzania Genome Network and institutional mailing lists as well as through social media. The online survey was conducted using the REDCAP software and analysis was carried out using R studio.

Results: Out of 90 respondents, 84 were qualified for further analysis. Of these, males were 52 (57.8%). Age wise 48.9% of the respondents between 26 – 32 years. Most of respondents were from UDSM, SUA and MUHAS. On the research field of practice majority were working on molecular biology while those in genomics/bioinformatics were only 8%. On the expert level in the use of statistical packages, SPSS was the common tool used. Regarding the use of the bioinformatics tools, PubMed was the one commonly used by respondents. However, the extent use of bioinformatics tools for most users was once in a year.

Conclusion: There is a growing base of young bioinformaticians in various institutions in Tanzania with moderate skills on uses of tools and software.

Recommendation: The survey highlights the need for promoting training and further and application of bioinformatics in Agriculture, veterinary and medical fields.

Influence of Information and Communication Technologies to Malaria Control in Tanzania

Author: Restituta T. Mushi

Background: The term Information Communication Technology (ICT) includes any communication device or application. In malaria control, ICTs can ease communication, improve doctors' training, and increase access to information by individuals and groups that are historically unaware of malaria.

Objective: Successful malaria vector control depends on understanding causes, prevention, and treatment.

Methods: This paper examines the possibilities of using ICTs to abolish malaria in Tanzania. It also explores the coverage of the malaria subject related to Tanzania on various electronic databases and e-journals.

Results: The Tanzania's Ministry of Health, Community Development, Gender, Elderly and Children (MoHCDEC) must put forth more effort on ICT management and be more active in their approach of disseminating malaria information.

Conclusion: This paper concludes that Tanzania's Ministry of Health, Community Development, Gender, Elderly and Children (MoHCDEC) must put forth more effort on ICT management and be more active in their approach of disseminating malaria information.

Recommendations: More emphasis should be placed on ICTs that are readily available to the majority of people in the rural areas such as community radios and mobile phones. Training on the effective use of the ICTs is important so as to maximize their use in Malaria control.

Investigating the tools and techniques for clinical decision support (CDS) in Tanzania

Authors: Augustino Mwogosi, Felix Sukums

Background: The application of Health Information Systems (HIS) has been progressively transforming healthcare delivery in both developed and developing world. Tanzania is among the developing countries that use computerized Health Information Systems to support healthcare provisions. Such systems are designed for use at the point of care to support health practitioners in timely and informed clinical decision making. However, in Tanzania the system is used as a tool for aggregating and visualizing data to help managers and policy makers in supporting decision making, and not focusing on helping health practitioners at a facility.

Objectives: To explore the tools and techniques used for clinical decision support (CDS) in Tanzania.

Methods: A case study approach engaging qualitative data collection methods. The study was conducted in healthcare facilities in Tanzania. The target population involved various stakeholders of HIS from the selected healthcare facilities that included health practitioners. Key informants' interviews, artifact examination, observation and document reviews were used in collecting data for the study.

Results: The computerized HIS are not fully utilized to support clinical decision making particularly for health practitioners. Data collected by such systems are not used in improving clinical decision support. The computerized HIS are not incorporated with CDS tools to support clinical workflow practices. Health practitioners rely on clinical guidelines, medical knowledge and experience as tools and techniques for CDS in the clinical workflow.

The uses of such tools have shown to bring about several challenges such as few and outdated guidelines, delays and miss diagnosis.

Conclusion: The health facilities that use HISs in Tanzania do not have full featured and integrated systems to support improvement of clinical decision-making practices. This is in contrast with the developed world where CDS tools are incorporated in the electronic HIS. However, the use of computerized CDS tools has great potential to improve patient outcomes. With advancement of Information technology, such advanced techniques might be used to mine interesting patterns of healthcare data that are being continuously collected using HISs

Recommendations: This study showed that the use of data might help in supporting clinical decision-making practices. The study suggests the application of advanced tools and techniques in transforming data into clinical knowledge that might help improve clinical decision support at the facility level.

Bioethics experience in Tanzania

Authors: Renatha Joseph, Muhsin Aboud, Judith Shayo, Godwin Pancras, Raymond Athanas

Background: Expansion of research and collaborative activities in Tanzania necessitated development of bioethics and Institutional Review Boards (IRB). Various projects contributed to development of IRB and National Research Ethical Review Committee in 2002. Projects were established from successful grant applications from Fogarty International Center at the U.S. National Institutes of Health (NIH) which included: Dartmouth/Penn Research Ethics Training and Program Development for Tanzania (DPRET) and Dartmouth/MUHAS Research Ethics Training and Program Development for Tanzania (DMRET). Main collaborators were Dartmouth College, MUHAS and university of Pennsylvania.

Objective: To establish expertise in bioethics among research scientists, faculty, health care providers and other professionals at MUHAS and throughout Tanzania.

Methods: Several meetings were conducted among stake holders including Muhimbili University of Health and Allied Sciences, Dartmouth College and University of Pennsylvania develop a proposal and grants were applied and secured. Five faculties were trained in Bioethics at University of Pennsylvania. Prior to the five fellows few faculty member train in Research Ethics and established Research ethics review boards at institution and nation as well. Five fellows established the department of Bioethics and develop MBE curriculum under the leadership of head department of Behavioral sciences and Principle investigators for DPRET and DMRET.

Results: Workshop conducted under the department includes: sponsored by DMRET - IRB/REC: The Essentials of What Every Committee Needs to Know” 2014 –The Ethics of Clinical Practice and Research, 2014 –Ethical Issues Impacting HIV/AIDS Research and Care, 2015 -Ethics Teachers Training course, 2016 –Scientific Integrity in Research, 2017 -

Ethical, legal and social aspects of organ transplantation IRB training, 2018 -Informed consent seminar, 2018 -Animal care and use in research, 2019 Sponsored by SMERT, NIMR -Regional IRB training, 2019.

Conclusion: Success of Bioethics in Tanzania Health Research is regulate by the IRB/Nat-HREC –National Ethics Review Committee Bioethics courses are taught in Medical universities in Tanzania MUHAS MBE program has been in place for 4 years generating the pool of Bioethists National Bioethics Commission Challenges Lack of awareness from the public who are the consumers Unmet need to establish network of bioethicists in the country.

Recommendations: Establishment of Bioethics Society of Tanzania which will be the platform for discuss of important bioethical issues and debates Government involvement in students training on bioethics Bioethics teaching staff recruitment and retention Hospital ethics committees establishment which will help health care providers to deal with ethical dilemmas and reduce work place distress among health care staff.

Knowledge and practice on birth preparedness and complication readiness among pregnant women in Biharamulo District

Authors: Norman Jonas, Siriel Massawe

Background: Birth Preparedness and Complication Readiness (BPCR) is an essential element of the antenatal care package, it involves the process of planning for normal birth and being ready in case of emergency before, during or after delivery. BPCR promotes timely use of skilled maternal care especially during childbirth, based on the theory that preparing for childbirth reduces delays in seeking and receiving maternal care to prevent adverse pregnancy outcomes.

Objective: To assess the knowledge and practice on birth preparedness and complication readiness among pregnant women attending Antenatal Clinic at Biharamulo.

Methods: A clinic based cross sectional study was done involving 379 pregnant women at Antenatal clinics in Biharamulo District. Data was collected by a structured questionnaire and analyzed by SPSS version 16.0. Participants who were able to mention at least 3 obstetric danger signs where regarded to have adequate knowledge on obstetric danger signs. Participants who were able to mention at least 3 components on BPCR where regarded to have adequate knowledge on BPCR. And those who has already take at least 3 steps on PBCR was considered being well-prepared for birth and its complication.

Result: Mean age of participants was 23 years, and 75.46 of the respondents were married, 58.1% were unemployed. 51.71% has primary school education. 20% have 1 / 2 Submission adequate knowledge on obstetric danger signs, and vaginal bleeding was the most frequently mentioned danger sign (64.1%). 66.5% of pregnant women on this study were found to have an inadequate knowledge on BPCR. And only 29.8% of respondents were found to be well prepared for birth and its complication. of which a quarter (20.6%) of pregnant women identified skilled provider, 36.2% of respondents have saved money for

delivery and emergency if needed and 23.5% have already prepare a transport for delivery or emergency.

Conclusion: Findings from this study showed that majority of respondents have inadequate knowledge on basic components of BPCR including low level of knowledge on danger signs of pregnancy. Also, pregnant women attending ANC were inadequate prepared for delivery or for obstetric complication.

Recommendations: Awareness BPCR should be emphasized not only to the pregnant women but to their partners and community as well. Community health worker can be used as a reliable people for implementing BPCR to the community level through follow up visits to pregnant women's home.

Low-birth weight Infant Feeding Exploration (LIFE! Project)

Authors: Sarah Somji, Karim Manji, Rodrick Kisenge, Nahya Salim Masoud, Christopher Sudfeld, Christopher Duggan, Kristina Lugangira, Mohamed Bakari, Katherine Semerau

Background: There is a lack of data regarding breastfeeding among Low-Birth Weight (LBW) infants in Tanzania and many LMICs. Anecdotal estimates indicate that 3%-15% of LBW infants stop or have difficulty breastfeeding within the first six weeks of life. As a result, these LBW infants are nutritionally at risk each and could benefit from feeding intervention. Overall, this project will examine the LBW feeding gaps in Tanzania. This is a multi-site trial.

Objective: Overall aim is to understand the feeding patterns and options for LBW infants in Tanzania in order to design feeding interventions.

Methods: An observational mixed-methods design will be used to collect quantitative and qualitative data on LBW infant feeding practices. There will be five activities included in the work: 1. Facility Assessment - questionnaires will be administered at a health facility 2. In-Facility observation of infant feeding - recruitment and follow-up of mother baby pairs will be carried out while they are in-facility 3. Prospective cohort study -LBW baby will be followed up for up to 6 months after recruitment 4. Focus Group Discussions and In-depth Interviews - to get qualitative data from various stakeholders 5. Chart reviews - retrospectively to document routine care.

Result: The project data collection phase is on-going currently and therefore no results have been obtained yet. These 1 / 2 Submission integrated data will be able to produce quantitative data on infant feeding and growth along with qualitative data on what drives infant feeding decisions. We intend this data to inform the design of LBW feeding interventions.

Conclusion: The conclusion and lessons learnt from this data will inform the design for LBW feeding interventions. This will only be achieved once the data has been collected.

Recommendations: The conclusion and lessons learnt from this data will allow us to draw recommendations as well as draft a design for LBW feeding intervention. This will only be achieved once the data has been collected.

Understanding reasons for the use and non-use of natural contraceptives among young unmarried sexually active men in Moshi, Tanzania

Authors: Pima M Francis, Oshosen M Mwanga, Maro E, Ngowi KM, de-Boer Marion S

Background: Little is known about natural contraceptives method among young unmarried, sexually active men in Tanzania. The existing data focus on women, young girls and married couples' experience. To develop new contraceptives, more knowledge is needed on use and non-use of natural contraceptives.

Objective: To explore contraceptive use, experience, practices and preferences among young unmarried, sexually active men in Moshi, Tanzania.

Methods: We recruited young unmarried men in Moshi (age 18-30) from three different target groups: porters at Mount Kilimanjaro, drivers of local transport buses and university students. We conducted in-depth interviews using a topic list on contraceptives with the aid of the album with pictures of different contraceptives. We followed them for six months by sending short messages service (SMS) texts with questions about contraceptive use. If replies with non-use, we invited them for another in-depth interview to inquire non-use reasons.

Results: Main reasons for using calendar method as mentioned by most participants; absence of side effects, pleasure for sex, no associated cost, doesn't involve purchasing, simple to use and birth control. However, most respondents reported not knowing how to use it. Reasons for no-use of calendar method included; it is tricky, forgetfulness, not knowing how to use it, and restrictions on when to have sex. Reasons for using withdrawal; birth control, no side effects whereas non-use participants reported; it's difficult and sex is not enjoyable.

Conclusion: Reasons for use or non-use of natural contraceptives methods may be largely driven by the limited contraceptives information among young unmarried men in Moshi. Natural methods such as calendar and withdrawal are used among majority of young unmarried men in Moshi. Both methods have minimal side effects.

Recommendations: We recommend to carry a large study that will focus on education SMS on contraceptives in different population groups in the country.

The Role of Ultrasound Assessment of Severe Dehydration in Children with diarrhea and vomiting

Author: Hussein Karim Manji

Background: Bedside emergency ultrasound has been used by emergency physicians for over two decades for a variety of conditions and routinely employed for use in adults. It is only of recent that this tool is being embraced by pediatric emergency physicians and the information on its role in assessing intravascular volume status among children presenting with diarrhea and vomiting is limited.

Objectives: To review the current literature relating to emergency ultrasound in assessing severe dehydration in children with diarrhea and vomiting.

Methods: A review of literature was done with different studies on the role of ultrasound in critical care and specifically in assessing intravascular fluid status and dehydration status in children using different clinical and sonographic scales. The articles reviewed were used to draw conclusions applicable to our setting and stress on areas to improve on and how best to apply these to our set up.

Results: Bedside Ultrasonography has a major role in the diagnosis and initial assessment of severe dehydration in children presenting with diarrhea and vomiting and guides clinical management and can serve as a tool to monitor treatment response during resuscitation. Ultrasonography should not be employed as a single independent screening tool but should be used in conjunction with clinical assessment and grading as well as clinical gestalt in the management of these children - Ultrasonography includes establishing the IVC inspiratory collapsibility index (IVCCI) as well as the IVC/Ao diameter ratio.

Conclusion: IVC/Ao diameter ratio is the most accurate of the sonographic measurements, with the exception of patients given inhalational anesthetics or using positive pressure ventilation and can be relied on to assess intravascular volume status and assess degree of dehydration in children with vomiting and diarrhea. Interpersonal variability may exist hence stressing the importance of training more people in the art of bedside ultrasonography and its uses in the Emergency Department.

Recommendations: As the modality advances and becomes more available, it will be important for primary care pediatricians to understand its uses and limitations and to ensure that pediatric emergency physicians have access to the proper training, equipment, and experience. - Establishing these IVC parameters will enable future studies to better evaluate these measurements as tools for diagnosing hypovolemia or predicting fluid responsiveness.

Completeness of Treatment Charts for patients with selected obstetric conditions admitted at Muhimbili National Hospital

Author: Faraja Eliya Mwasambunga

Background: A treatment chart is a tool that serves as a means of communication between health care providers by giving information on medications that patients are receiving. Incomplete documentation of treatment charts may decrease the efficiency of care and increases the risk of medication errors and patient harm. There are limited studies in developing countries that assess documentation of treatment charts for obstetric care.

Objectives: To assess documentations on treatment charts for patients with selected obstetric conditions admitted at MNH.

Methods: A descriptive cross-section study was conducted using the files of the patients with five selected obstetric conditions admitted at MNH. A total of 434 treatment charts obtained from patient' files were analyzed using SPSS version 23. Statistical analysis was done to determine the proportion of completely documented treatment charts and to compare documentation of treatment chart with an increasing number of diseases and medications.

Results: The proportion of completely documented treatment charts for patients with selected obstetric conditions admitted at MNH was 12%. One of the most important components that was not documented in most treatment charts is drug hypersensitivity information (83.9%). Incomplete documentation of treatment charts was observed more in patients with many medications and selected obstetric conditions.

Conclusion: The proportion of completely documented treatment charts for patients with selected obstetric conditions admitted at MNH is low. Complete documentation of treatment charts should be regularly monitored so as to offer highest level of care for patients.

Applying Research Intelligence to gauge Biomedical Research for Sustainable Development

Authors: Khadija I. Yahya-Malima, Mohamed Omar Amir, Mohamed Sheikh, Amos M. Nungu

Background: Research and innovation for sustainable development is the current mantra, embraced by Tanzania as well. Biomedical research that addresses sustainable development should additionally, focus on research that generates return investment of the awarded research funds; be innovative enough to up with technologies that would; promote health, prevent diseases, revolutionize curative methods and be affordable and accessible for all; innovative enough to come up averted costs in health care, quantify saved lives of the workforce and also translate into financial gains by all credible means. Before we re-align ourselves to address that, we take stock on health research in any previous five years and translate how that adds to sustainable development.

Aim: To evaluate Tanzania research performance within five years 2011 to 2015 and provide credible evidence for strategizing research for sustainable development.

Methods: Apply research intelligence to analyze Tanzania research productivity and impact trends from 2011-2015 using the Elsevier analytical tool, SciVal.

Results: Tanzania research output in the period of 2011- 2015 shows biomedical research is the largest subject area, with 33.9% of its publication output within that year. Followed by agriculture (14.1%). Analysis by publication volume relative to Field-Weighted Citation Impact (FWCI) shows each subject area by global average, that pharmacology lead by

102%, medicine (68%), immunology and microbiology 35%. Tanzania collaborates with 187 countries globally and have co-authored 4,437 publications with United States as the top collaborating country.

Conclusions: This is evidence on the level of performance of medical research in the country for that period and disregarding other factors in other evaluation methodologies, it was expected that the scientific outputs of medical research should have improved societal health in the following years if all outputs were taken up in the health system or analyzed to show the cost of averted costs due to ill health.

Exploring the impact of leadership development among health workers on cervical cancer prevention screening performance

Authors: Isabella Shraiman, Oscar Ernest Rwabiyag, Aruna Daha, Sarah Galvin, Marco Mbata, Neema Kyamba, Omari Msumi, Hezron Festo

Background: Cervical cancer is 90% preventable but remains the leading cause of cancer-related death among Tanzanian women. In resource-limited settings, the NCD burden depends on health systems strengthening and cost-effective prevention services. The WHO recognizes leadership as a cross-cutting element to strengthening health systems, however, research on the impact of investing in the leadership capacity of frontline health workers (FHWs) on NCD prevention is limited.

Objective: This evaluation explores the impact of strengthening FHWs leadership skills on CECAP performance in 7 intervention districts.

Methodology: The NJIA initiative links FHWs with NGOs and international leaders to develop their leadership and innovation skills, enabling FHWs to leverage existing resources and pilot ideas to strengthen cervical cancer prevention (CECAP) services in 7 of 8 districts in Kagera. A quasi-experimental case-control evaluation was conducted extracting CECAP data from national health database (DHIS2) on 7 NJIA districts, and one control district with similar external support.

Results: The number of cervical cancer screenings conducted in NJIA districts was compared three years' pre-intervention (2013-2015) and three years since the intervention launch (2016-2018). A 137.41% increase in screenings in the control district was observed pre- and post-intervention period, alongside an average of 429.76% increase among intervention districts. Because the data was skewed for screenings in NJIA districts, a Wilcoxon signed-ranks test was run. The output indicates the median post-intervention scores in screenings in NJIA districts, $Mdn=12,323$ were statistically significantly higher than the median pre-intervention scores $Mdn=2,099$, $Z=-2.3664$, $p<0.017$.

Conclusion: A significant relationship between improving FHW leadership and increasing CECAP services is observed. Given government and NGO support for CECAP services in both control and intervention sites, the findings suggest investing in FHW leadership acts as

a performance accelerator for CECAP services. Investing in FHW leadership may improve other NCD outcomes in resource-limited settings.

Recommendation: The learning generated from the program evaluation recommends more attention is paid to strengthening the leadership and innovation the capacity of frontline health workers as a sustainable and more cost-effective strategy for strengthening NCD prevention efforts in Tanzania.

Impact of Malocclusions on quality of life of primary school children in Dar es Salaam

Authors: Gustav Rwekaza Justinian, Matilda Mtaya-Mlangwa

Background: Malocclusions are among the commonest oral conditions in different societies. Malocclusions can not only be associated with oral health problems but also influences one's; perception about the kind of person he/she is, confidence and self-esteem. Consequently, malocclusions can impact negatively somebody's quality of life (QoL). Individuals with an altered QoL due to malocclusions are likely to demand orthodontic care to correct their malocclusions.

Overall objective: This study aimed at assessing impacts of malocclusions on the QoL of primary schoolchildren in Dar es Salaam.

Methodology: Children aged 10-12yrs, from selected schools were interviewed and examined clinically, utilizing a method described by Björk et al. (1964) with modifications by Al-Emran et al. (1990). Data were coded and analyzed using computer software SPSS version 22.0. *p-value* for statistical significance of associations between variables was set at $p < 0.05$.

Results: A total of 620 children (39.7% 10-year-olds, 63.2% girls) participated in this study. The overall prevalence of malocclusions was 66.5%. Most children were satisfied with their dental appearances (60.6%), but 67.4% had negative self-perception and 30% presented with a lowered self-esteem. Malocclusions such as increased maxillary overjet, crowding, open bite and deep bite were significantly associated with children reporting a lowered self-esteem and perceiving themselves negatively ($p < 0.05$), compared to their counterparts without such malocclusions. The overall prevalence of QoL impacts was 18.2% the most impacted daily activities were eating and enjoying food, smiling as well as laughing and showing teeth without embarrassment. There were statistically significant associations ($p < 0.05$) between presence of different malocclusions in children and the reported QoL impacts.

Conclusion: Malocclusions affect schoolchildren's self-perceptions, self-esteem and generally impact negatively their QoL. Early malocclusions interventions in children are thus highly recommended.

Evaluation of parasites and fecal coliform removal by waste stabilization ponds from wastewater in Tanzania

Authors: Abdallah Zacharia, Wajihu Ahmada, Anne H. Outwater, Billy Ngasala, Rob Van Deun

Background: In Tanzania, Waste Stabilization Ponds (WSPs) are employed to treat wastewater and effluents are used for urban agriculture activities. The use of untreated or partially treated wastewater poses a risk of diseases transmission, including parasitic and bacterial infections, to the exposed communities. Little is known about occurrence, concentration and removal of parasites and fecal coliform (FC) indicator bacteria in WSPs in Tanzania.

Objectives: This study evaluates the concentration and removal of parasites and FC by WSPs and the validity of using FC as parasites indicator in WSPs wastewater.

Methodology: This was a cross-sectional study conducted between February and August 2018. Wastewater samples were collected from three WSPs systems located in the Morogoro, Mwanza, and Iringa regions. The Modified Bailenger method and Modified Ziehl-Neelsen Stain were used to analyze parasites. The Membrane Filtration method was used to analyze FC. Data were analyzed using IBM SPSS version 20.

Results: Helminths eggs removal ranged from 80.8% in Mwanza WSP to 100% in Morogoro WSP. Protozoa (oo) cysts removal ranged from 98.8% in Morogoro WSP to 99.9% in Iringa WSP. Mwanza WSP showed the highest FC log reduction (3.8 log units (100 mL)⁻¹) followed by Morogoro WSP (2.6 log units (100 mL)⁻¹) and then Iringa WSP (2.0 log units (100 mL)⁻¹). FCs were significantly correlated with protozoa ($p < 0.01$) and predicted better protozoa occurrence in WSPs ($p = 0.01$). Conclusion: Parasites and FC concentrations in the effluents of WSPs exceeded the World Health Organization and Tanzania Bureau of Standards recommendations except for helminths in Morogoro WSP and FC in Mwanza WSP. FC indicators were observed to be a good alternative for protozoa monitoring in WSPs but not for helminths.

Recommendations: To enhance the WSPs efficiency and ensure that the parasites and FC quality of effluents are achieved and sustained measures such as proper operation and maintenance must be taken. Since FC is not a reliable indicator of helminths in wastewater, therefore during wastewater monitoring for reuse or discharge into sensitive receiving water bodies, helminths quality has to be surveyed independently.

Preliminary Results from a Pilot Intervention of Entrepreneurship, Beekeeping, and Health

Authors: Anne Outwater, Ali Abraham, Masunga Iseselo, Method Kazaura

Background: In Dar es Salaam, petty theft can lead to the death of the thief. Those most at risk for perpetrating and being victimized by violence are young men, with poor education, under- or –unemployed, with family responsibilities. Theoretically, income for these young

men will decrease petty theft, and the subsequent homicides. In order to test the theory, a pilot intervention promoting entrepreneurship, beekeeping and health was implemented from 2015 – 2017.

Objectives: The aim of this presentation is to describe the effect of the entrepreneurship aspect of the intervention.

Methodology: Four pilot interventions were developed: 1) Control arm of one health session, 2) Entrepreneurship arm with six sessions, 3) Beekeeping arm with six sessions, and 4) All, ten interventions. By chance, the Entrepreneurship arm had a double-dose of entrepreneurship training. Data were collected at baseline, and 3, 6, and 12 months' post-intervention. Data were analyzed using descriptive statistics, including Empirical Standard Error Estimates and spaghetti plots for change in income over time.

Results: Overall, on average, weekly incomes increased 32%. Each intervention arm except the Control experienced increased income. The Control experienced a loss of 37% in their weekly earnings. All experienced an increase of 50%, and Beekeeping, 43%. The Entrepreneurship arm increased its weekly earnings by 145%, from TzS. 28,300 to TzS. 69,500 (slightly less than the legal minimum wage). This increased income was enough to lift most members of the entrepreneurship street camp into financial stability.

Conclusion: A short entrepreneurship program, tailored to those who are at most risk for violence, has the potential to lift them out of desperate poverty.

Recommendations: These results should be confirmed with an intervention trial.

Factors associated with access to basic households' water, sanitation and hygiene in Ngorongoro cholera epidemic Villages-Arusha, 2019

Authors: Boniphace Jacob, Method Kazaura, Senga Sembuche

Background: Between April and August, 2018 Ngorongoro District had 1007 reported cases of cholera and a case fatality rate (CFR) of 1.1%. The outbreak investigation team reported that persistence was fuelled by inadequate and unsafe water as well as poor sanitation and hygiene. This study aimed to determine access to basic households' Water, Sanitation and Hygiene (WASH) status and associated factors after interventions as a response to Cholera outbreak. It also provides recommendations on appropriate public health intervention to further improve WASH in the district.

Methods: The design was analytical cross-sectional. Study population was the heads of households who provided the current information on household water, sanitation and hygiene. Two-stage cluster sampling technique was used to recruit 410 participants. Interview schedule and observational checklist was used to collect data. A household had access to basic WASH if had all three; drinking water treated, a toilet not shared with other household(s) and had functional hand washing facility.

Results: Surveyed households had reported 145 cases of cholera with a CFR of 5.5%. Proportion of households treating drinking water had increased from 16.78% (n=45867) of March 2018 to 60.98% (n=410) of March 2019. Access to sanitation facilities had increase from 20% (n=27772) to 87.68% (n=403). Furthermore, access to hand washing facility had risen from 0.5% (n=27772) to 12.28% (n=399). Over 90% of respondents had high knowledge about cholera. However only 8.05% (n=410) of households had access to basic WASH. Household income and education of household head were predictors of access to basic WASH with both bivariate and multivariate analysis.

Conclusion: Promotions of access to household WASH need to be integrated with strategies to overcome issues of “access” associated with income. Also, interventions used to raise access to household WASH in Ngorongoro during outbreak can be adopted in other areas especially to nomadic community during cholera outbreak.

Do Tanzanian hospitals need Hospital Ethics Committees (HECs)?

Authors: M Aboud, D Bukini, R Waddell

Background: Clinicians face ethical challenge in day-to-day work with patients and families. Ethical issues associated with truth-telling, disagreements over treatment plans and patient distrust of local physicians and hospital staff affects clinicians work performance, quality of patient care and overall patient satisfaction. Clinician needs some sort of support in form of education or consultation in dealing with these ethical issues. Dartmouth/Penn Research Ethics Training and Program Development for Tanzania (DPRET) funded a training workshop on clinical ethics. The training took place on March 2014 at protea courtyard hotel, Dar-es-salaam, Tanzania.

Objective: To stimulate discussions about research and clinical ethics issues unique to Tanzanian healthcare providers.

Methods: The workshop comprised of 45 participants including doctors, nurses, lawyers, IRB administrators, and other scientists. Four group discussions of 10 participants each were conducted to gather information about clinical ethics oversight in their respective institutions. At the end each group compiled their information and presented to all participants. MUHAS IRB approval was secured for the retrospective analysis of workshop notes.

Results: Identified ethical issues include dilemma in truth telling, cultural views of women in the society, allocation of finite resources, end-of-life concerns, patient distrust of local physicians and the use of traditional healers. Conflicts identified include treatment delays, treatment refusal, patients’ inability to pay and conflicts between families and clinicians concerning patients’ best interests.

Conclusion: Participants proposed establishment of HECs with clinical ethics and research ethics sub-committees.

Recommendations: There is a pressing need for hospital ethics committees (HECs) to support clinicians in resolving ethical issues that arise in their day-to-day practice.

Isolation of a new cytotoxic compound, 3-((Z)-heptadec-15-enyl) benzene -3-ol, from root extracts of *Rhus natalensis*

Authors: Daniel Zacharia Matata, Mainen Julius Moshi, Francis Machumi, Olipa David Ngassapa, Swanepoel Bresler, M. Van de Venter, Matthias Heydenreich, Paul Erasto Kazyoba

Background: *Rhus natalensis* Bernh. ex C.Krauss is used by Traditional health practitioners (THPs) in Same district, northeastern Tanzania, for treatment of cancer and other diseases. The current study was done to determine its cytotoxic activity.

Objective: To determine antioxidant and cytotoxicity activities of roots of *Rhus natalensis*.

Methods: Dried root powder was extracted by maceration with methanol: dichloromethane (1:1). Sequential VLC fractionation with Petroleum ether, ethyl acetate, and methanol gave three fractions, which were tested for toxicity against brine shrimp (*Artemia salina*) larvae. The ethyl acetate fraction, which exhibited the highest toxicity against brine shrimp larvae, was tested for antioxidant activity and cytotoxicity against the HeLa cervical cancer cells, followed by isolation.

Results: Ethyl acetate fraction was both toxic to brine shrimps ($LC_{50} = 7.2 \mu\text{g/mL}$) and HeLa cancer cells ($IC_{50} = 17.2 \pm 3.4 \mu\text{g/mL}$). It also exhibited antioxidant activity in both the DPPH ($EC_{50} = 83.3 \mu\text{g/mL}$) and FRAP ($71.4 \mu\text{M Fe}^{2+}$ [EGC Geq/g.DW]) assays. New isolated compound, 3-((Z)-heptadec-14-enyl) benzene- 3-ol, exhibited cytotoxic activity on HeLa cells ($IC_{50} = 106.7 \mu\text{M}$). Cell cycle analysis revealed that the extract inhibited mitosis, induced apoptosis, caused activation of caspase 3 and PS translocation which confirm its effect to proliferation.

Conclusion: The present results provide initial evidence that the root extract of *Rhus natalensis* contains compounds with both cytotoxic and antioxidant activity.

Recommendations: Further studies are needed to determine activity on other cancer cell lines and to elucidate the mechanism of cytotoxic activity.