

9th Scientific Graduation Conference

ABSTRACT BOOK

FOREWORD



I am delighted as I write a foreword for this abstract book of the 9th Scientific Graduation Symposium 2017. This symposium has been jointly organized by Bugando [CUHAS and BMC] in collaboration with our traditional partners Calgary, Cornell, Stellenbosch and Wurzburg Universities. This surely reflects an element of coordinated collaboration and harmonized research growth trend of these Institutions. For two days, we are going to witness a variety of research papers, being presented by students, residents, as well as both young and senior faculty members, focusing on the theme "**Quality Health Research in Low Income Countries: Challenges and Opportunities**".

Scanning through the abstract book, one realizes that there are 103 abstracts. Mother and Child Health (26) as well as Public Health (22) contribute to almost 50% of the abstracts. Microbial Infections and Anti-Microbial Resistance (13%), Parasites and Vectors (13%), HIV and Other Viruses (11%), and non-Communicable Diseases (11%), take second position, while Health Systems Research (7%) closes the pack. It can be assumed that this distribution reflects not only the interest of the researchers but also the level of challenges we have in relation to the presented disciplines. Thus, the quality of research from the presented abstracts may provide insight on strategies leading to addressing health and health-related challenges we face, as Low Income Countries, emanating from the researched disciplines.

This underscores the need to remind our researchers to always remember that besides fostering (international) collaboration through research, and the fulfilment of criteria for academic promotions through publications, our health research results must always be locally relevant so that they contribute to solving the health and health-related challenges we face, transforming our own lives, giving better services to our patients, and improving the lives of the community around us through provision of effective prevention and management of diseases and conditions. I would urge the Scientific Team of the Organizing Committee to identify and reward presentations that lead us to this path.

I wish to take this opportunity to thank the Organizing Committee, the Collaborators, the Sponsors, the Presenters, and all those who participated in one way or another to facilitate this event, without forgetting you Participants for coming to this Symposium. Last, but not least, for the visitors to Mwanza, take time to socialize responsibly and explore the natural beauties of this Rock City.

Prof. Paschalis G. Rugarabamu

Vice Chancellor, Catholic University of Health and Allied Sciences

MOTHER AND CHILD HEALTH



CU01MC: High Seropositivity of *Brucella abortus* Antibodies among Women with Spontaneous Abortion in the City of Mwanza: Is it a Coincidence?

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Background: Brucellosis is a neglected zoonotic febrile illness of public health concern in most resource-constrained countries including Tanzania. It has been associated with abortions in animals but its association with abortion in human population remains controversial. We investigated the magnitude of brucellosis among women with spontaneous abortions and those with term pregnancy in Mwanza city, Tanzania. This information may ascertain the gap for future research in this area.

Methods: A total of 398 archived sera samples from two groups of women (148 women with spontaneous abortion and 250 term pregnancy) were retrieved and tested for specific *Brucella spp.* antibodies using slide agglutination test (SAT) (Eurocell A/M® Euromedi equip LTD.UK). Socio-demographic and other relevant information were extracted from existing database. Data were analyzed using STATA version 13 software.

Results: The median age of the study participants was 25(IQR:21-30) years. The overall seropositivity of brucella

antibodies was significantly higher among sera from women with spontaneous abortion than in those with term pregnancy (86/148(58.1%, 95% CI: 50-66 vs. 65/250 (26%,95% CI:18-33), $P < 0.001$). Further analysis revealed that seropositivity of *B. abortus* was significantly higher among women with spontaneous abortion than in women with term pregnancy (31.8% vs. 10.8%, $P < 0.001$). No significant difference was observed between seropositivity of *B. melitensis* antibodies among the two groups. Only unknown HIV status ($P = 0.019$) was significantly associated with *B. melitensis* seropositivity among women with spontaneous abortion while only being married ($P = 0.040$) was significantly associated with *B. abortus* seropositivity among women who had full term pregnancy.

Conclusions: In the city of Mwanza, seropositivity of *B. abortus* antibodies is alarmingly high among women with spontaneous abortion. There is a paramount need to investigate the effect of brucellosis in women with spontaneous abortion, especially in resource limited countries

Keywords: *Brucella abortus*; Spontaneous abortion; Tanzania.

CU02MC: Congenital Infections: Rubella Virus, *Toxoplasma gondii* and *Treponema pallidum* among Full-Term Women in an Urban Area of Tanzania: A Call for Improved Antenatal Care

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Background: A significant proportion of newborns in developing countries are born with congenital anomalies or infections which often affect the development of the children. The contribution of infections to congenital anomalies is unclear. This study estimated the magnitude of congenital infections due to rubella virus, *Treponema pallidum* and *Toxoplasma gondii* among pregnant women with full-term live births in Mwanza, Tanzania.

Methods: A total of 300 paired sera samples were collected from mothers and their newborns during delivery from 2014 to 2015. All sera from mothers were serologically tested for *Treponema pallidum* and *Toxoplasma gondii* infections. Sera of newborns from the mothers with acute infections were also tested for the presence of *T. pallidum*- and *T. gondii*-specific antibodies. In addition, all sera from newborns were tested for the presence of Rubella IgM antibodies.

Results: The women's median age was 24 (IQR: 20.5-29.5) years while the mean gestation age at delivery was 38.8 ± 1.44 weeks. A total of 13/300 (4.3 %) mothers had *T. pallidum*-specific antibodies as

determined by the *T. pallidum* particle agglutination (TPPA) assay. Out of these, 3 were VDRL positive indicating acute infection, making in 1.0 % of acute infections among the studied population. Two (0.7 %) of the newborns from mothers with acute infection were confirmed with congenital syphilis. Regarding toxoplasmosis, 92/300 (30.7 %) mothers were IgG seropositive with only 1/99 (1%) woman who delivered a healthy baby being IgM seropositive. Only 1/300 (0.3 %) newborn had rubella IgM antibodies indicating rubella congenital infection.

Conclusion: In the city of Mwanza, for every 100,000 live births, about 300 and 600 newborns have congenital rubella and syphilis infections respectively. In addition, about 300 in every 100,000 pregnant women have acute *T. gondii* infection. There is a need to emphasize syphilis screening during ANC visits, coupled with appropriate management to prevent syphilis-associated congenital infections. In addition, it is high time to consider screening of other pathogens such as rubella and *T. gondii* during pregnancy in low income countries to ascertain their magnitude and impact.

Keywords: Rubella; *Toxoplasma gondii*; *Treponema pallidum*.

CU03MC: Hepatitis B and Hepatitis C Antibodies among Pregnant Women in the Urban Area of Mwanza City, Tanzania

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Background: Hepatitis B and hepatitis C viruses (HBV and HCV) are life-threatening infections of public health importance due to their association with cirrhosis and liver cancer in a significant proportion of individuals. Despite HBV being moderately endemic in many low-income countries, including Tanzania, there is no routine HBV vaccination among women of reproductive age, hence putting them at high risk of transmitting the infections during pregnancy. We investigated the prevalence of HBV surface antibodies (HBsAB) and HCV antibodies among pregnant women in Mwanza city Tanzania to provide data that may be used in devising preventive strategies.

Methods: This was a cross-sectional hospital-based study involving 339 pregnant women from Makongoro antenatal clinic conducted between June and July 2017. Socio-demographic data and other relevant information was collected by using structured data collection tool. Detection of HBsAg natural antibodies was performed using enzyme linked Immunosorbent assay

(SIEMENS-Enzygnost Anti-HBs II, Marburg/Germany) while a qualitative rapid immunochromatographic tests was employed to detect HCV antibodies. Data was analyzed by using STATA version 13.

Results: The mean age of the study participants was 25.6±5.8. The prevalence of HBsAB was found 85/339 (25.1%, 95% CI: 20.4-29.6) while that of HCV antibodies was 1/333(0.3%, 95% CI:0.1-0.4). By univariate analysis increase in age (OR:1.4,95% CI:1.00-1.09, P=0.03), unknown HIV status (OR:0.3,95% CI:0.11-0.79P=0.035) and multigravidity (OR:2.12,95% CI:1.18-3.8, P=0.038) were significantly associated with HBsAB seropositivity.

Conclusion: A substantial number of pregnant women have natural antibodies to HBV while the prevalence of HCV is low among pregnant women in the city of Mwanza. Routine screening of HBV infection among pregnant women coupled with appropriate management is highly recommended in developing countries

Keywords: *Hepatitis B; Mwanza; natural antibodies; pregnant women.*

CU04MC: Parvovirus B19 is Associated with Severe Anemia among Under-fives in Mwanza City, Northwestern Tanzania

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Background: Anemia is a significant public health problem in low-income countries and a major cause of hospital admission and deaths among children. Parvovirus B19 (B19) can cause transient aplastic crisis which may result into acute severe anemia. This study investigated the relationship between B19 and anemia among children under five years attending Bugando Medical Centre (BMC) in the city of Mwanza, Tanzania.

Methodology: Children aged between 6 and 59 months old, receiving care at BMC with anemia were recruited. Socio-demographic and clinical data were collected using a pre-tested questionnaire. An enzyme immunoassay was used to detect B19 IgM and IgG specific antibodies. Anemia was categorized according to the World Health Organization (WHO) guidelines. Analysis was done using STATA version 11.

Results: A total 265 children were enrolled between November 2016 and April 2017. The median age was 28.5 months (IQR 18-39.5), and the median

hemoglobin was 7.9 g/dl (interquartile range [IQR]:6.6-10.2). Eighty-six (32.5%) of the participants had severe anemia (hemoglobin < 7 g/dl). B19 specific IgM and IgG antibodies were detected in 24 (9%; 95% Confidence interval [CI]: 5.5-12.4) and 46 (17.4%; 95% CI 12.7-21. %) respectively. The prevalence of B19 IgM was significantly high in children with severe anemia ($p=0.018$). Lower hemoglobin level (Odds ratio [OR]: 1.3, 95% CI 1.0-1.7, $p=0.031$), *P. falciparum* infection (OR 6.0, 95% CI 2.2-16.8, $p=0.001$) and residing in rural areas (OR 3.4, 95% CI 1.2-9.9, $p=0.025$) independently predicted B19 IgM seropositivity. Acute infection with B19 virus decreased hemoglobin level by 1.1 g/dl ($p=0.003$).

Conclusion: In malaria endemic areas, acute B19 infections should be considered among children under five years of age with severe anemia from rural areas. Furthermore, there is a need to provide health education regarding B19 transmission among the population at an increased risk of B19 infection to minimize the complications associated with B19 infections.

Keywords: B19; under-fives; anemia; Mwanza

CU05MC: High Rubella Seroconversion Rate and Adverse Pregnancy Outcomes among Pregnant Women in the City of Mwanza, Tanzania

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Background: Rubella virus infection in early pregnancy has been associated with congenital rubella syndrome (CRS). Data regarding outcomes of acute rubella virus infection and sero-conversion rate during pregnancy are limited in resource-limited countries. This study was carried out to investigate the seroconversion rate and adverse pregnancy outcomes associated with acute rubella virus infection during pregnancy in Mwanza, Tanzania.

Methods: A longitudinal study (2014 to 2016) was conducted among pregnant women attending antenatal clinics, in Mwanza, Tanzania. Enrolled women were screened for rubella IgG and IgM antibodies using enzyme immunoassay (EIA). Seronegative and IgM seropositive pregnant women were followed until the end of the pregnancy. The pregnancy outcomes were documented; CRS and congenital rubella infections were diagnosed using the CDC guidelines.


Results: The median age of participants was 23 (interquartile range [IQR]:19-27) years. Out of 685 pregnant women, 629(91.8, 95% Confidence Interval [CI]:89- 94) were found to be rubella IgG

seropositive while 61 (8.9%, 95% CI: 6-11) were seropositive for rubella IgM antibodies. A total of 52(7.5%) were seronegative. The IgM seropositivity was found to decrease significantly from first trimester to third trimester (18.9%, 6.6% and 3.3%; $P<0.001$). Of 55 women with acute rubella infection, 46 (83.6%) had adverse pregnancy outcome and 6(10.9%) were confirmed to have babies with CRS, making the overall incidence of CRS to be 6/685(0.87%). IgM seropositive women in their first trimester during diagnosis had significantly higher adverse pregnancy outcomes than those who were in second/third trimesters (70.4% vs. 35.7, $P=0.01$). The rubella seroconversion rate during the course pregnancy was found to be 37/48(77.1, 95% CI: 65-88)

Conclusion: Rubella transmission rate in developing countries is significantly high and might be associated with about 875 cases of CRS in every 100,000 pregnancies. Susceptible pregnant women are at an increased risk of contracting acute rubella infections. There is a paramount need to consider additional strategies to reach a goal of elimination of CRS in developing countries.

Keywords: Rubella; Seroconversion; Outcome; Pregnancy; CRS.

CU06MC: Adenovirus Infections among Children with Acute Watery Diarrhea in an Urban Area of Mwanza City, Tanzania

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Introduction: In resource-constrained countries, diarrhea among children under-five has been associated with significant morbidities and mortalities. Despite four years of the rotavirus vaccine implementation, acute watery diarrhea cases with severe dehydration are still being reported. There is a paucity of data on the magnitude of other viral causes of diarrhea among children under-five in many resource-constrained countries. Here, we report that a significant proportion of children with acute watery diarrhea in Mwanza, Tanzania are infected with adenovirus.

Methods: A cross-sectional hospital-based study among children under five years of age with acute watery diarrhea was conducted from April to July 2017. Socio-demographic data were collected by using modified world health organization (WHO) rotavirus surveillance tool. Immunochromatographic test was used

to detect Human Adenovirus antigen in stool specimens as per manufacturer's instructions (CERTEST-BIOTEC S.L, Spain). Data were analyzed using STATA version 13.

Results: A total of 78 children under five years of age with acute watery diarrhea were enrolled with the median age of 11, interquartile range [IQR]: 8-15 months. Out of 78 infants tested, 25(32%) were positive for adenovirus antigen in their stool. Duration of diarrhea ($P=0.009$) and being dehydrated ($P=0.03$) were significantly associated with adenovirus positivity.

Conclusion: The prevalence of adenovirus in the city of Mwanza is alarmingly high, emphasizing the need of further studies to establish the viral etiological patterns of diarrhea in the city following the 4 years of rotavirus vaccine implementation.

Keywords: *Adenovirus; Infants; Mwanza; Diarrhea.*

CU07MC: Evaluation of Immune Response to Hepatitis B Vaccine in Children Under Five Years of Age, in an Urban Areas of Mwanza City, Tanzania

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Background: Hepatitis B virus infections is moderately endemic in many countries of sub-Saharan Africa including Tanzania. Immunization of children under-five has been found to be an effective strategy in controlling infectious diseases. However, the data regarding immune responses following vaccination are very limited in the setting. Here, we report the sero-conversion among children under-five after three doses of hepatitis B vaccination in Mwanza, Tanzania.

Methods: Children under-five who received three doses of hepatitis B vaccine were enrolled from Makongoro Reproductive and Child health (RCH) clinic between May and June 2017. Socio-demographic data were collected and vaccination status was confirmed from RCH cards. Serum Hepatitis B surface antibodies (HBsAB) were quantified using enzyme immunoassay (Enzygnost Anti-HBs II). Data were analysed by using STATA version 13 software.

Results: A total of 300 children under five years of age who received three

doses of hepatitis B vaccine were enrolled. The median age of enrolled children was 15 (Interquartile range[IQR]: 9-15) months. The median interval from last dose to the time of evaluation was 8(IQR: 5-18) months with all children assessed ≥ 8 weeks post-vaccination. Out 300 children, 265(88.3%, 95% Confidence interval [CI]:84-91) had ≥ 10 IU/L HBsAB indicating sero-conversion. The median titres among those seroconverted was 66(IQR: 26-134) IU/L. The median age of those who seroconverted was significantly lower than those who were not seroconverted [14(IQR: 9-21) vs. 18(IQR: 11-26, P=0.03]. The titres were found to significantly decrease by 0.84 and 0.98 IU/L with a unit increase in interval from last dose and a unit increase in age respectively.

Conclusion: A significant decrease of HBsAB titres with an increase in age was observed among children under five years of age post Hepatitis B vaccination. There is a need to consider a booster dose after 10 years to ensure lifelong protection.

Keywords: *Hepatitis B; Children; Immune response.*

CU08MC: The association between urinary tract infection and pre-eclampsia among pregnant women at Bugando Medical Centre and Sekou Toure Regional Referral Hospital- Mwanza Tanzania: A 1:2 matched case control study

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Background: Urinary tract infection (UTI) and preeclampsia are common among pregnant women and are associated with adverse maternal-fetal outcomes. Despite this, there is limited information on the association between UTI and pre-eclampsia in Tanzania to guide specific therapy and avert adverse maternal-fetal outcome.

Methods: This was a 1:2 matched case control study (by age and gravidity) involving 131 pregnant women with pre-eclampsia (cases) and 262 without pre-eclampsia (controls). Information was collected using structured questionnaire. Mid-stream urine was collected for culture and antimicrobial susceptibility testing. Conditional regression analysis was done using STATA software version 13.0.

Results: Out of 393 pregnant women enrolled, 110 (28.0%) had significant bacteriuria with predominance of *Escherichia coli*, 50 (45.5%) and *Klebsiella*

spp., 25(22.7%). Over 75% of bacteria were resistant to ampicillin and trimethoprim-sulphamethoxazole; as opposed to ceftriaxone (16% to 42%) and meropenem (0.02%). The mean current systolic and diastolic blood pressure of 131 pre-eclamptic women were 160.5 ± 16.1 mmHg and 104.6 ± 11.0 mmHg, respectively. Pregnant women with significant bacteriuria were found to have 7.7 odds of developing preeclampsia compared those without significant bacteriuria [OR=7.7, 95% CI (4.11-14.49); p-value<0.001].

Conclusion: Pregnant women with significant bacteriuria are significantly more likely to develop preeclampsia compared those without significant bacteriuria. Therefore, routine urine culture and susceptibility testing among pregnant women with preeclampsia should be introduced in the antenatal clinics to guide specific antimicrobial therapy.

Keywords: UTI, preeclampsia, pregnant women

CU09MC: Burden of anemia in pregnancy and poor compliance with preventive strategies among women delivering in Mwanza City

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Background: The consequences of anemia in pregnancy can be detrimental to both maternal and unborn baby's health. It is prevalent in sub-Saharan Africa despite the implementation of anemia prevention strategies. In Tanzania, anemia ranks fourth as the cause of maternal mortality. The effectiveness of anemia preventive strategies partially relies on compliance of pregnant women for preventing and reducing anemia in pregnancy, which this study aimed at investigating.

Methods: A cross sectional study was conducted from February to April 2017 at Bugando Medical Centre, Sekou Toure Regional Referral Hospital, Nyamagana District Hospital and Buzuruga Health Centre among 768 pregnant women at term. Face to face interviews were carried out and some information was extracted from antenatal cards. A venous blood sample was collected and processed according to standard operating procedures to determine the hemoglobin level by using hemaCue hemoglobimeter. The F test was used for association between compliance and anemia while associated factors were investigated through ordinal logistic regression using STATA 13.

Results: The prevalence of anemia in pregnancy was found to be 67.1% during labor with mean hemoglobin level of 10.1g/dL. Considering anemia prevention during antenatal care visits, pregnant women receive prophylaxis for malaria, iron supplements, deworming, and advice to sleep under a mosquito treated net. Only 18.9% pregnant women reported complying to all four anemia preventive strategies with most participants reporting partial or poor compliance. The mean hemoglobin level decreased with the level of compliance from 11.72g/dL(1.62g/dL), 10.15g/dL(1.75g/dL) to 8.87g/dL(1.88g/dL) for excellent, partial and poor compliance respectively. Booking late for antenatal care, primary education and no schooling and practicing pica were significantly associated with poor compliance to anemia preventive strategies.

Conclusion: Anemia in pregnancy is prevalent among women delivery in Mwanza city. The compliance of anemia preventive strategies is lacking among pregnant women with late booking compromising its benefit. In order to reduce consequences of anemia in pregnancy, the importance of early booking should be emphasized among women.

Keywords: *Anemia in pregnancy; Preventives measures; Compliance, Maternal health*

CU10MC: Missed opportunities for improving the health of pregnant women and pregnancy outcomes in rural communities in Geita district, Northwest Tanzania

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Background: Despite the significant benefits of early detection and management of pregnancy related complications during antenatal care (ANC) visits, not all pregnant women in Tanzania initiate antenatal care in a timely manner. Due to high rates of maternal mortality in Tanzania, it is important to investigate factors associated with the initiation of antenatal care in rural communities of Geita district, Northwest Tanzania.

Methods: A household survey involved face-to-face interviews of 1714 pregnant women in their 3rd trimester from September 2016 to August, 2017 in ten selected wards out of 35 wards in rural Geita district. Ordinal logistic regression was used to investigate the associated factors for later initiation of antenatal care using STATA 13.

Results: Out of the pregnant women who participated, only 54 (~4 reported initiating antenatal care in the 1st trimester with a considerable number of women 228(13%) who had not started ANC at the time they were interviewed in the third trimester of their pregnancy. Of the 1486 women who had attended ANC at least once, the majority 1235(83.22%) had been

checked for HIV infection, less than a half 715(48.12%) were checked for hemoglobin level, and only a minority had been screened for syphilis 75(5.05%). HIV prevalence was 3.68%, syphilis 18.56%, and anemia based on Hemoglobin level <11g/dL 54.27%. Preventive measures such as iron supplement (76.35%), deworming (65.30%), and antimalarial drugs 76.55% were also limited. Ordinal logistic model revealed that increased parity was significantly associated with later initiation of antenatal care. The odds of multiparous women not attending ANC was three times higher than those of nulliparous women.

Conclusion: Many pregnant women in Geita district did not receive antenatal care services that could promote maternal health and prevent pregnancy complications. Women that were multiparous were much more likely to not participate in antenatal care. Further, although most women were screened for HIV, screening for anemia, syphilis and provision of preventive measures which can impact the health of the woman and unborn baby were limited. To improve and promote healthy pregnancy, timely and quality of antenatal care services remain of public health importance.

Keywords: *Timing antenatal; Missed opportunity; Maternal health*

CU11MC: Association of C-Reactive Protein and Urinary Tract Infection in a Pediatric Population at Bugando Medical Centre, Mwanza, Tanzania

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Background: Urinary tract infections due to Gram negative bacteria are the major problems in children. C-reactive protein is an important marker of systemic infections especially in bacterial infections. Here, we report the association of C-reactive protein and gram negative bacterial urinary tract infections among children at Bugando Medical Centre.

Methods: Mid-stream urine and venipuncture blood specimens were collected from children with presumptive diagnosis of urinary tract infection. Sample were processed following standard operating procedures and manufacturer guidelines within an hour of collection. Data were analyzed using STATA version 13.

Results: A total of 250 children with median age (IQR) of 3(1-4.5) years were enrolled in the study. A total of 56(22.4%, 95%CI; 11.5-33.3) children had significant bacteriuria due to gram negative bacteria. *E. coli*, *K. oxytoca* and

K. pneumoniae were detected in 32.2 % (19/59), 18.6 % (11/59) and 15.3 % (9/59) of children, respectively. Gram negative bacteria were 94%, 82%, 49% and 39% resistant to ampicillin, amoxicillin/clavulanic acid, gentamicin and ceftriaxone respectively. Of 250 children studied, 114(45.6%) had positive CRP. By univariate logistic regression analysis, children with fever had 10.6 times higher odd of having CRP positive results compare to children with no fever 95% CI: 8.3-29.3, P<0.001. In addition, children with significant bacteriuria due gram-negative bacteria were more likely to have positive CRP than those not having significant bacteriuria (OR 2.2, 95% CI: 1.2-4.04, P=0.01).

Conclusions: Urinary tract infection is still prevalent in our settings and is mainly caused by multi-resistant strains of *E. coli*. C-reactive protein is mostly likely to be positive in children with fever and those with significant bacteriuria due to gram negative bacteria.

Keywords: Urinary tract infection, *E. coli*, C-reactive protein, Fever

CU12MC: Tanzanite girls program: an effort to reduce teen pregnancies

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Background: In Lake Zone, 28.8% of girls who are 15 to 19 years old have begun child-bearing (TDHS, 2010), leading them to leave school, as the constitution doesn't allow pregnant girls to attend public schools. At our clinic we have 106 girls 15 – 19 yrs, with at least three to four adolescent pregnancies a year. As culture and taboo do not allow young girls to discuss reproductive and sexual health freely with their parents or caregivers, most of the girls rely on their peers for information.

Methods: Participation is by appointment from the clinical team based on risk assessment. Factors considered in selection of participants are: out of school, no reliable care giver, adolescent girls head of households, age 12 – 17 years, etc. After selection, parents are invited for orientation and obtaining their consent. Adolescent girls meet once a month for six months. Topics include: early pregnancies, GBV, puberty, relationships, girls' empowerment, and children's rights. There are at least 30 to 35 girls each visit. We use lecture and

group discussions and shared experiences as teaching methods.

Results: Tanzanite girls club has been a forum for girls to discuss challenges they face at school and at home. They have been able to disclose abuse, physical and sexual, that is happening or has happened; all reported cases were addressed appropriately. Among 45 girls enrolled in the first group, 11 were sexually active, none were using condoms, and 3 had more than one partner. Physical abuse was reported from 16 girls. Through this club we have found there is a huge number of girls who do not know how to read and write – even those in school. We were able to receive and give feedback from and to caregivers and parents.

Conclusion: This program has enabled us to identify challenges faced by each girl more than we can during clinic hours. Another group has been enrolled, and we plan to work with other facilities to support them in starting similar clubs for empowering young girls.

Keywords: *Tanzanite girls; teen pregnancy; empowering girls; sexual.*

CU13MC: Outcome of PMTCT Services and Factors affecting vertical transmission of HIV Infection in Mwanza, Tanzania.

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Background: Globally 77% of all pregnant women living with HIV received lifesaving ARV medicine that prevents transmission of HIV infection to their babies by 2015. As a result of these scaled-up HIV interventions (PMTCT Option B+), new HIV infections among children have declined by 52%. In Tanzania, national prevalence of HIV at ANC has declined to 4% by 2015. Despite roll out of PMTCT Option B+ vertical HIV transmission persists. By 2015, the national HEI positivity after cessation of breastfeeding is 5%. Therefore, this study had set out to evaluate the outcome of PMTCT interventions among HEI attending Lake Zone COE after 18months.

Methods: This is a retrospective chart review of HEI enrolled from January 2014 - December 2016. Inclusion criteria: all HEI enrolled during this period. Demographic, nutrition, prophylaxis, feeding practice and infant test results data from the EMR was evaluated among this cohort.

Results: 953 charts of HEI were reviewed, 55% (521/953) were female,

Keywords: *PMTCT; HEI; exposed infant; outcome.*


42% (401/953) were discharged from care after a definitive negative test, 28% (270/953) were found to be positive and are enrolled into care and treatment services, 20% (194/953) were lost to follow up. In the cohort, 52% (496/953) of mothers were on ART before conception, 18% (174/953) started ART as part of Option B+ strategy and 30% (282/953) did not have any PMTCT intervention. However, 67% (635/953) of the infants received NVP for 6 weeks and only 3% (29/953) did not have documented PMTCT. Among 282 children whose mothers who did not receive PMTCT, 19% (53/282) were found to be positive by confirmatory tests of DNA PCR. (4 died, 32 are active in care, 11 LTFU and 4 transferred out)

Conclusions: PMTCT option B+ interventions have greater potential to eliminate transmission of HIV to newborns. Therefore, strengthening of PMTCT, supportive counselling as well as retention into care is needed to ensure all pregnant mothers are tested for HIV and receive timely interventions and stay on treatment.

CU14MC: Socio-demographic factors associated with poor attendance to PMTCT program in Njombe Town Council, Tanzania

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Background: By the end of 2015 the overall retention in PMTCT care among women receiving ARVs for prevention of vertical HIV transmission in Tanzania was 74%, 70% and 67% at 3, 6 and 12 months respectively. To date few studies from Tanzania has examined the reasons for inadequate utilization of PMTCT services. This study sought to determine the socio-demographic factors associated with poor attendance to PMTCT program in Njombe, Tanzania, one of the regions with the highest HIV prevalence in Tanzania.

Methods: Descriptive cross-sectional study employing quantitative method interviewing HIV infected pregnant and lactating women. Chi square was performed to determine the association between socio-demographic and attendance to PMTCT services. Crude and adjusted odds ratio was calculated to assess the likelihood of some factors that were found significant by Chi square method.

Results: A total number of 196 participants were interviewed of which 73 (37%) reported to have missed clinic since ART initiation. Social cultural factors like age above 35years AOR=1.7(0.51-6.07), divorced/separated AOR=12.2(1.77-85.8), educational level of secondary school and above

AOR=12.2(1.77-83.8), norms and beliefs AOR=4.1(1.71-9.92) including religious beliefs AOR=4.4(P=1.25-15.67) were associated with higher likelihood of missing clinic. Conversely, economic factors studied with the exception of lack of road accessibility throughout the year were not associated with missing clinic. Lack of privacy AOR=3.5(P=1.59-8), confidentiality AOR=7.5(P=1.090-52.35) and satisfaction AOR=8.8(P=3.074-25.614) to the services provided by the HCPs were associated with increased likelihood of missing clinic. Time spent at the clinic was another factor found to affect attendance AOR=15(P=4.59-50.31)

Conclusion: Age above 35years, being divorced and norms and belief in this study are among factors contributing to poor retention in PMTCT services. Facility factors such as lack of adequate privacy, confidentiality, lack of client satisfaction as well as long waiting time were also associated with likelihood of missing clinic. This study highlights the need for innovative and effective counseling techniques for this population since the factors varied from age, education level and facility infrastructure breaking privacy and confidentiality rendering services unsatisfactory.

Keywords: Socio-demographic; poor attendance; PMTCT


CU15MC: Patterns of attendance for pregnant and lactating mothers in PMTCT option B-plus program in Njombe town council, Tanzania

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Background: Linking and retaining pregnant and lactating women living with HIV to HIV care and treatment programs is a priority under the National PMTCT option B+ program. This study looked at the patterns and reasons for missing PMTCT option B+ clinic for pregnant and lactating HIV+ women.

Methods: Retrospective records review of a cohort of all pregnant and lactating mothers with HIV enrolled into PMTCT option B+ care between October 2013 to Dec 2014 at 7 participating sites in Njombe town Council. Full retention in care was defined as attending PMTCT services up to 12 and 18 months post-partum. Patterns of attendance were categorized as full, partial and not retained depending on the number of visits missed. Data for those who did not come to clinic within 7 days of their appointment was analyzed.

Results: A total of 871 HIV+ pregnant and lactating women were enrolled into the program of which general retention into care at 12 months and 18 months was 465/781 (59.5%) and 408/781 (52%) respectively. Full retention in care (attends at stated time, ± 2 weeks and at least 80% of 12 or 18 scheduled visits) at 12 and 18 months was 258 (55%) and 123 (30%) respectively. Partial retention (attends at stated time, ± 2 week but for only 30% -80%

of scheduled visits at 12 and 18 months) was 86 (18.5%) and 199 (48.8%) respectively. Failed retention (attended < 30% of scheduled visits) was 121 (26%) and 86 (21%). A total of 873/1054 (82.8%) clients were traced back to care through phone calls by health care providers, home visit by home-based care and community health workers. The average time interval between missed appointment and traced back to care was 22 days and average duration from missed appointment to the start of actual tracing was 9.5 days. Common reasons for missing appointment were traveling 276(32%), very sick 138 (16%) forgetting dates 130(15%) and lack of transport fare 116(13%). Other reasons were feeling better 68(8%), concern about partner disclosure 67(8%), alternative therapy (local herbs) 44(5%) and denied permission from work 34(4%).


Conclusions: Full retention into care for pregnant and lactating women is very low at 12 and 18 months considering their children need interventions at such particular time. This poses a threat to the PMTCT program efforts in eliminating MTCT and keeping their mothers alive. Established reasons for low retention included traveling, falling sick, forgetful, no transport fare, local herbs and no permission from work.

Keywords: *pregnant women; lactating mothers; mother-to-child transmission.*

CU16MC: Barriers and facilitators for missing the Lifelong ARVs for Pregnant and Lactating Mothers program in Njombe Town Council, Tanzania

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Background: HIV-infected clients who do not receive regular HIV care are significantly more likely to die than those who maintain good contact with their HIV clinic. Reasons given for missing a medical appointment have been widely analyzed in the Care and Treatment program and include factors such as forgetfulness, feeling better or worse, and transport problems. This study examined barriers and facilitators to PMTCT option B+ clinic attendance.

Methods: A descriptive cross-sectional study was performed employing quantitative method, using a structured questionnaire to interview HIV-infected lactating mothers attending PMTCT option B+ clinics. Responses were analyzed and presented as frequency and proportions.

Results: Clients recruited into this study were 196; mean age of participants was 28.5 years with age range of 20-40 years. One hundred and twenty-three (62.8%) participants reported not to have missed PMTCT option B+ clinic since they were enrolled. The reasons for missing clinic were provided by 73 (37.2%) participants included travelling to other regions or districts for economic and social activities as reported by 21%, being busy

with income generating activities required to meet their needs (17%), being very sick (16%), and not having bus fare (16%). Other reasons provided included feeling tired of using medication (7%), feeling not sick (7%), seeking alternative medicine (5%), and attending prayer services and believing to be cured (5%), forgetting appointments (4%) and stigma of relatives (4%). Clients who never missed clinic appointments were asked to give reasons for their good attendance: 53% reported that they wanted to protect their children from HIV infection, 23% reported that they wanted to maintain their improved health condition, and 10% reported to be feeling sick and they wanted to get better. Other reasons given for good attendance included to know the progress of their children's health each month (8%), to avoid opportunistic infections (4%), and to get health education on living positively (2%).

Conclusions: Major barriers to attending PMTCT option B+ clinic in this study included traveling, being very sick, being busy with income generating activities, and lack of transport fare. Protecting children from HIV infection, the desire to remain stable, and getting updates on the ongoing health status of children were major facilitators for clients to remain in care.

Keywords: *PMTCT, option B+; barriers to attending PMTCT; clinic attendance*

CU17MC: Predictors of Failed Induction of labor, and its associated maternal and neonatal outcomes in Northern-Tanzania

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Background: Induction of labor is a life-saving medical intervention in obstetrics aiming at starting labor artificially and attaining vaginal delivery. Sometimes this intervention fails and necessitate emergency caesarean delivery, and can lead to adverse neonatal and maternal health outcomes. There is paucity of information on the current burden and predictors of failed labor induction despite the steady increase in induced deliveries in northern-Tanzania. This study aimed at determining the prevalence of failed induction and factors associated with its failure as well as adverse maternal and neonatal outcomes attributable to such failures.

Methods: Historical cohort was conducted using maternal data from the Institution for deliveries from 2000 to 2015. All deliveries that were induced and records available at database were considered. A total of 11,483 eligible deliveries were included. The analysis was done using STATA version 13 software. A chi-squared test was used to determine maternal and neonatal characteristics associated with failed

labor induction. Relative Risk and 95% Confidence Interval for factors associated with failed induction, maternal and neonatal outcomes were estimated using log-binomial regression models. Robust estimations was used to control for repeated deliveries.

Results: A total of 11,483 deliveries were induced. The prevalence of failed induction was 19.2%. The study found that nulliparity (RR 1.83 CI: 1.57 – 2.14), obesity (RR 1.58 CI: 1.33-1.67), and fetal macrosomia (RR 5.30 CI: 2.47 – 11.37) were independent predictors of failed labor induction. Neonatal outcomes were admission to Neonatal Intensive Care Unit (RR 2.47 CI: 2.17-2.82) and Maternal outcomes was blood loss of >1 Litre (RR 4.05 CI (1.84-8.91).

Conclusions: Nulliparity, obesity and macrosomia are predictors of failed labor induction in northern Tanzania. Routine assessment of these characteristics and preparation for emergent situation is warranted in this setting so as to reduce adverse pregnancy outcomes related to failed labor induction.

Key words: Labor Induction; Failed labor induction; Predictors; Northern-Tanzania

CU18MC: Child Illness Prevalence, Care-seeking and Facility Service Readiness in Misungwi District, Rural Tanzania

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Background: Tanzania has made significant gains in reducing child mortality. Still, momentum remains to further prevent and treat illness in children under five years old (U5s). National policy emphasizes community-based interventions and facility service quality. Misungwi District in the Lake Zone has amongst the worst U5health indicators in the country. Prior to a district-wide maternal newborn child health (MNCH) intervention, a needs assessment was conducted. This study aimed at determining the prevalence of illness, care-seeking and facility service provision for well and ill U5s, pre-intervention.

Methodology: Two quantitative tools were used: a MNCH-focused household coverage survey (HHS) was administered to a cluster sampled selection of household heads and women aged 15-19 years. Analysis was descriptive and accounted for cluster effects using interclass cluster correlation coefficients and a health facility survey (HFS) collected data from district health facilities. In-charge interviews and observation by data collectors documented staffing, equipment, supplies, and services. Analysis was descriptive and included 'readiness assessments' of service areas including well and ill-child services based on a

scoring grid which tallied indicators relevant to the service area.

Results: For the HHS, 2438 women participants provided information about their 2722 U5s. Prevalence of recent illness was reported for fever (30%), pneumonia (8%), and diarrhea (16%). Care-seeking indicators included anti-malarials for fever (53%), care-seeking for pneumonia (56%) and oral rehydration salts (ORS) for diarrhea (52%). Health promotion practices included vector control (69%), Vitamin A (73%), DPT3 (87%). In health facilities, the following were present: infant scales (87%), child health cards (80%), measles vaccine (64%), ORS (83%); staff were IMCI-trained at 63% of sites. On average, 'Well-child Service Readiness Scores' were 71% across all facilities (highest at 73% at health centres; lowest at 67% at hospitals) and Ill-Child Readiness Scores were 64% on average (highest at 92% at hospitals and lowest at dispensaries at 60%).

Conclusion: Prevalence of key U5 illnesses in Misungwi is high, yet care-seeking for ill children remains sub-optimal. Reasonable capacity exists at health facilities; however, IMCI training remains minimal. Better understanding of demand-side gaps is critical for upcoming implementation.

Keywords: *Child illness; Care seeking; Facility Service*

CU19MC: Affordable ambulance transport services for pregnant women in Kwimba: a feasibility study

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Background: Distances to rural health facilities and transport challenges are among the factors preventing women in rural Tanzania from giving birth safely. The recent Safer Deliveries project investigated the feasibility of implementing a low-cost motorcycle-based ambulance service offering free-of-charge transport for pregnant women to their local health centres. The transport service was made available at two rural health centres in Kwimba district. The study investigated costs, feasibility and acceptability.

Method: Following a qualitative formative research phase involving in-depth interviews and focus-group discussion with women and men in the communities and healthcare workers in the two study health centers, a transport service was designed and implemented using affordable motorcycle ambulance trailers and a telephone hotline was put in place allowing pregnant women to call and request transport.

Results: Since the introduction of the transport system in the two health centers in June 2017, the ambulance service has been providing transport to about 15 pregnant women per month in each health center. The transport system

has helped more women deliver safely by transporting them to the health center or sometimes to the district hospital. The daily operational costs covering drivers' availability 24/7, fuel and minor maintenance activities is about 10,000 Tsh per day. Despite the relative success of the transport system in terms of increasing uptake and support in local communities, we have also faced some challenges including: (1) resistance at higher levels to the idea of using a motorcycle-based transport service, (2) inaccessible roads in places and (3) reliability issues at the participating health centres which are responsible for receiving and responding to telephone calls from women requesting ambulance transport.

Lesson learnt: The issue of poor transport means in the villages is a major barrier preventing from women from accessing skilled delivery care. Low-cost ambulance transport, which is free at the point of use, is feasible to implement and can help reduce the maternal health risks by making health facilities accessible to all women around the time of birth. This MAT system has shown feasibility in terms of low running costs, maintenances, and its availability.

Keywords: ambulance services; pregnant women; Tanzania

CU20MC: Perception of first time mothers on support provided by Nurse-Midwives during labour and delivery in private faith-based hospitals in Mwanza-Tanzania

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Background: The first-time mothers lack experience in the labour process and they need support from nurse-midwives to attain normal labour outcomes. Their support can be perceived differently depending of the care provided by nurse-midwives. This study assessed the perception of first time mothers' emotional and tangible information support provided by nurse-midwives during labour and delivery in Mwanza-Tanzania

Methods: This was a cross-sectional study, conducted in faith-based hospitals in Mwanza region. Purposive sampling method was used to select the hospitals while 250 first time mothers were conveniently recruited. The respondents were those who had delivered by spontaneous vertex delivery and both the mother and baby had no documented complications. Analysis was done using statistical and data version 11 and descriptive statistics were reported.

Student t test and logistic regression were carried out to determine the significance of associations of the different mean scores at 95% confidence interval and P-value ($P < 0.05$) in between variable.

Results: All categories of support were valued as helpful and it was significant in married primipara. Generally, emotional support was ranked as the most helpful while tangible support was the least helpful supportive behaviour. The women reported that they were treated with respect by nurse-midwives during labour and delivery.

Conclusion: Nurse-Midwives need to recognize all forms of supportive behaviour and provide it to all women during labour. Their practices need to focus more on tangible support like back massage to relieve labour pains and promote women's satisfaction during the delivery process.

Keywords: *First time mothers; Nurse-Midwives labour support; Mwanza-Tanzania*

CU21MC: Routine and Emergency Obstetrical and Newborn Care Services in Misungwi District, Rural Tanzania

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Background: Strengthening facility-based routine and emergency care services is critical for mortality reduction. Availability of Basic Emergency Obstetrical and Newborn Care (BEmONC) is especially important and a list of 7 key life-saving ‘signal-function’ interventions is used to measure facility functionality and responsiveness. Prior to a comprehensive intervention targeting Maternal Newborn and Child Health in Misungwi District, rural Tanzania, a detailed health facility assessment was conducted to evaluate the status of delivery-related services pre-intervention at district health facilities.

Methods: During July-August 2016, a cross-sectional health facility survey tool was administered to all facilities to assess staffing, equipment, supplies, and infrastructure capacity relevant to delivery and newborn care (i.e. recent BEMONC Signal Function practice). In-charge responses and recorded observations were entered into a REDCap database. Analysis in “R” software used proportions, means and medians; a composite scoring grid was developed to tabulate overall readiness scores for various clinical areas including “Labour and Delivery (L&D)”, “Essential

Newborn Care (ENC)” and “Newborn Resuscitation (NR)”.

Results: Data was collected from all 46 (100%) health facilities. Facilities reported 60% achievement of signal functions during the prior 3 months (range 14–86%); no facilities achieved 7/7 functions. Lowest function achievement was for assisted vaginal (vacuum) delivery (2%) and anticonvulsant use (27%). Readiness scores overall were 44% for L&D, 40% for ENC and 59% for NR. Facilities scoring better for L and D readiness were higher volume (73% for >200 deliveries/year vs. 40% for <50/year) and 18% of facilities had BEmONC-trained staff; sets for delivery, episiotomy, & manual vacuum aspiration (MVA) were 69%, 7%, & 49%, respectively; supplies included anticonvulsants (82%), uterotonics (89%), intravenous fluids (79%), intra-partum antibiotics (7%).

Conclusion: While some capacity exists for maternal and newborn services, significant gaps in training and supplies may be critical. Challenges to BEmONC achievement involve limited use of MVA and anticonvulsant therapy which need decision-maker input to reduce risk of maternal and newborn mortality.

Keywords: *BEmONC; Signal functions; Readiness score; Misungwi*

CU22MC: Motivators and Barriers for Antenatal Care, Facility Delivery, and Postnatal Care in Rural Tanzania: A Qualitative Assessment

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Background: Sub-Saharan Africa contributes significantly to the global maternal and child mortality burden. Improving maternal and newborn health requires strengthening of antenatal care (ANC), health facility delivery (HFD) and postnatal care (PNC) services. An MNCH coverage household survey conducted at baseline prior to a district-wide MNCH intervention in rural Misungwi District demonstrated relatively low ANC 4+ attendance HFD and PNC. The study explored motivators and barriers to ANC, HFD and PNC at intervention baseline.

Methods: A qualitative study used focus group discussions (FGDs) and key informant interviews (KIIs) to survey purposefully selected health leaders, health providers and community members (men and women). Trained facilitators used solution-based, semi-structured interview guides. Recorded data were transcribed and translated then coded using NVivo 10 software; thematic analysis was used to identify key messages and emerging themes.

Results: During July-August 2016, 12 FGDs and 7 KIIs were conducted. Participants identified women less likely to seek care for ANC, HFD and PNC as those with multiple prior uncomplicated

deliveries, without a partner/husband, living far from health facilities, low-literacy and whose families refuse permission. Suggested motivators for care-seeking at facilities included increased 'friendliness' of services, reduced distance to facility, better-equipped facilities and increased sensitization and male involvement during critical periods such as the antenatal period. Two specific issues highlighted were (1) policies limiting access to care to women who attended with male partners only; and (2) lack of understanding of the purpose of PNC with common belief that pregnancy is over after delivery and attendance at a facility is only important in the postnatal period if a problem arises.

Conclusions: Facility care-seeking may be increased by reducing barriers faced by vulnerable groups including those with low-literacy and single women. Motivators such as clean, better-equipped and friendly services can be targeted through joint effort from facility providers, community health workers, development partners and other stakeholders. A policy limiting access to care for women without partners may have unintended consequences and warrants better understanding

Keywords: *motivators, barriers, ANC, HFD&PNC.*

CU23MC: Creating Space for women's supported discussions: A Protocol for a Community-Based Intervention for Reducing Biomarkers of Mental Health Issues

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Background: Addressing maternal mental health and preventive health behaviors is crucial and effective in supporting child development. Maternal mental health disorders around the time of pregnancy and childbirth have been identified as key risk factors for poor child development outcomes in growth, cognition and overall child health in low and middle-income countries. CUHAS, Catholic Relief Services and Catholic Dioceses of Geita are carrying a community-based intervention project (Viz., Thrive II) seeking to create spaces for women supported discussions to improve maternal mental well-being.

Methods: A community based intervention is carried out in Selected Communities in Mwanza and Geita. Care Group Model is carried out in the intervention and control arms while Mothers and Babies Course is carried out only in the intervention arm. A lead mother organizes one neighbor mother group comprising up to 10 pregnant women or mothers of children 0-23 months who live in her community. The project is evaluated using a Mixed – Methods Quasi – Experimental Design and evaluated at Baseline, After 6 months

(mid intervention) and end-line (12 months).

Results: A total of 986 (562 – in the control arm and 424 – in the intervention arm) pregnant women/mothers of children 0-23 months were enrolled. The socio-demographic and mental health status of the participants in both arms were relatively comparable. Nevertheless, mean depression and anxiety values were significantly high in mothers with pre-lacteal feed, poor child health and those with food insecurity ($p < 0.05$). Based on the baseline results, mental health could have a significant impact on child development. Findings from mid-evaluation indicated a significant decrease in depression and anxiety up to 70%, and acceptability of model among women and male partners.

Conclusions: Findings from mid-evaluation indicated a significant decrease in depression and anxiety up to 70%, and acceptability of model among women and male partners. Current evidence suggests that, the Care group model and MBC has been well received and could be integrated into community based activities in the near future.

Keywords: *Maternal, Mental Health, Depression, Anxiety*

CU24MC: Criterion based audit of infection prevention performance during vaginal birth. An uncontrolled intervention study at Kilimanjaro Christian Medical Centre, Tanzania.

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Background: In Tanzania, infections account for an estimated 20% of neonatal death and 11% of maternal death. Healthcare workers' hands are in most cases the vehicle for transmission of microorganisms. To improve quality of care and patient outcomes, WHO has developed hygiene guidelines for healthcare institutions. Criterion based audit (CBA) is a process of quality improvement through systematic review of care against explicit criteria and the implementation of change. Little is known about the impact of CBA on hand hygiene in infection prevention (IP) during vaginal delivery. We hypothesized that CBA will increase the quality of IP performance at vaginal delivery and the knowledge of staff on hand hygiene.

Methods: This is an uncontrolled intervention study (February to June 2017) at KCMC labour ward. Criteria for best practice on hand hygiene were established with key staff at labour ward. Procedures during vaginal birth were observed and assessed by a structured checklist and compared to criteria. Baseline findings were discussed with staff and combined with a training

intervention. Observations of performance after intervention were compared to that before the intervention.

Results: The global score on infection prevention performance increased significantly from 77.9% to 82.3% ($p=0.006$). The rate of hand washing before a procedure increased from 38.3% to 48.3% (RR=1.26 CI; 0.83 - 1.91), but not significant. There was a significant increase in hand washing after procedure from 46.7% to 80% (RR=1.71 CI; 1.27 - 2.31). The use of alcohol-based hand rub before procedure increased significantly from 1.7% to 33.3% ($p<0.001$) and so did use of alcohol-based hand rub after procedure from 0% to 30% ($p<0.001$). In the knowledge test, an increase in the mean score was seen from 59.3% to 65.3% (mean difference = 6.1% CI; -4.685 - 16.879), but this was not statistically significant.

Conclusion: Criterion based audit has shown to be effective on improving the performance on infection prevention in standard of care. For sustainable improvement, criterion based audit must be adopted and implemented continuously as part of standard operating procedure.

Keywords: *Criterion based audit; Infection prevention; Hand hygiene*

CU25MC: Nutritional Status of Young Children in Misungwi District

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Background: Poor nutritional status among children under five years old (U5s) is associated with increased morbidity and mortality. Misungwi district in rural Tanzania has some of the worst U5 health indicators in the country. Prior to initiation of a maternal newborn child health (MNCH) initiative in Misungwi District, a needs assessment was undertaken for planning purposes and to establish baseline needs. This study aimed at describing U5 anthropometrics and feeding practices pre-intervention.

Methodology: An MNCH-focused household coverage survey (HHS) used standardized questions administered by trained research assistants to a cluster-sampled selection of household heads and women aged 15-19 years. U5s were weighed and measured and 24-hour dietary intake recorded. Data was entered into tablet-computers and managed in 'R' software. Analysis was descriptive using international standard growth charts and dietary practice definitions. Logistic regression model was used to determine associations between dietary practices, anthropometrics characteristics and facility care-seeking.

Results: Anthropometrics from 1586 U5s in 1977 households revealed moderate

and severe stunting (-2 and -3 SD respectively) in 30% and 11% of under-fives. Wasting was present in 6% (<-2SD) and 2% (<-3SD). Moderate and severe underweight status occurred in 16% and 5%, respectively. Underweight and stunted children were less likely among mothers who attended 4+ antenatal care visits vs those who did not (OR=0.7 and 0.7, respectively) and with health Centre deliveries vs home births (OR=0.6 and 0.8). Underweight (OR 0.6) or wasted (OR 0.4) children were less likely in the highest quintile compared versus lowest. Exclusive breastfeeding occurred in 51% of babies <6 months. Very-early/early breastfeeding initiation (<1 hour/<24 hours post-birth) occurred in 16% and 90%. Minimum dietary diversity, meal frequency, and acceptable diet were reported in 12%, 28% and 4% in <2 years. Health facility delivery, high-quintile, and non-dominant tribe increased likelihood of very early breastfeeding initiation (OR=2.5, 2.3, 2.4, respectively); exclusive breastfeeding was reduced with 4+ ANC visits (OR 0.6).

Conclusion: Poor nutrition is a challenge in Misungwi and likely to impacts U5 mortality. The MNCH intervention should seek to improve breastfeeding and weaning practices which may lead to improved growth status.

Keywords: *Nutritional Status; Young Children*

CU26MC: Antenatal Care-Seeking by Pregnant Women in Misungwi District, Rural Tanzania: A Qualitative Assessment.

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Background: A key strategy for improved maternal and newborn survival is antenatal care (ANC) attendance at least four times during pregnancy. Prior to implementation of a district-wide maternal newborn and child health initiative in Misungwi District in Lake Zone, rural Tanzania, a baseline household survey found that only 47% of women had achieved this target. A qualitative study was designed to better understand care-seeking practices in this population pre-intervention. The objective of the study was to explore barriers and enhancing factors for complete ANC attendance in Misungwi District.

Methods: A qualitative study with focus group discussions (FGDs) and key informant interviews (KIIs) was conducted during June /July 2016. Participants were purposefully selected to represent pre-identified stakeholders (user-groups, community members, health providers, and district and regional health decision-makers). Interviews were conducted in Swahili, recorded then transcribed into English. Data was entered and coded in NVivo software; analyzed by content analysis method

Results: 12 FGDs and 7 KIIs were conducted. Barriers to ANC attendance were: (1) Lack of husband/partner -since those without a husband/partner could not attend or were required to wait longer; (2) Long distance to facility/ANC since women living further were less likely to attend; (3) Male dominance system since some women were not permitted by their husbands to attend; and (4) Low levels of education since some women are unaware of the need and how to access ANC. Four enhancing factor themes related to ANC attendance emerged: (1) Attendance with a partner; (2) Continuous health education; (3) Favorable physical access to the clinic; (4) Improved education and Kiswahili language understanding.


Conclusions: Gender norms education, proximity to care, and social equity were underlying, cross-cutting themes related to ANC care-seeking. Interventions aiming to increase ANC achievement must address the complex underlying barriers to care-seeking and focus on potential enhancers addressing these which will require commitment from district and community leaders, health facility workers, household decision-makers and communities together.

Keywords: *Antenatal Care; Barriers; Gender; Tanzania*

PARASITES AND VECTORS



CU01PV: High Prevalence of *Plasmodium falciparum* Malaria among Human Immuno-Deficiency Virus Seropositive Population in the Lake Victoria Zone, Tanzania

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Background: Malaria and Human Immunodeficiency Virus (HIV) infections are major public health problems in sub-Saharan Africa. The overlapping geographical distribution often results into co-existence of these infections which accounts for high morbidity and mortality rates. This study was designed to establish the prevalence of falciparum malaria among HIV infected populations. This information may stimulate further studies to establish the course of malaria in HIV infected individuals.

Methods: A cross-sectional hospital-based study involving 250 sera from HIV seropositive individuals was conducted on July 2017 at the Bugando Medical Centre, Mwanza, Tanzania. Socio-demographic and other relevant information were extracted from pre-existing database using structured data collection tool. Detection of malaria

antigens was carried out by immunochromatographic test (Care Start Malaria Test, USA). Data were analyzed using STATA version 13

Results: The mean age of the study participants was 40.0±13.5 years with most of the study participants being from Mwanza (28.5%) and Mara (23.5%). The prevalence of *P. falciparum* was 56 (22.4%, 95% CI: 17-27). None of the factors under study was found to be associated with *P. falciparum* infection among HIV infected individuals

Conclusion: The prevalence of *P. falciparum* is high among HIV seropositive individuals in the Lake Victoria zone which calls for more control interventions targeting this group. Further studies to explore the course and factors associated with *P. falciparum* positivity among HIV infected individuals are recommended.

Keywords: *Plasmodium falciparum*; HIV seropositive; Lake Victoria.

CU02PV: In Vitro Evaluation of Anthelmintic Activity of Zingiberaceae Species Commonly Available in Mwanza Tanzania

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Background: Helminthiasis is one of the most common infestations in man, affecting about 2 billion people worldwide. Modern synthesized anthelmintic medicines are very effective in curing the disease but there is an increase trend of drug resistance for the drugs currently used and the treatment options are limited; thus, there is a need for new compounds with a good efficacy. Folk medicine claims the use of medicinal plants for this. This study will therefore evaluate the efficacy of *Curcuma longa*, *Zingiber officinale* and *Elletaria cardamomum* (turmeric, ginger and cardamom) as biological anthelmintics on *Pheretima posthuma* (earthworms).

Methods: *Pheretima posthuma* were collected from fishermen at Kamanga ferry in Mwanza. Water and ethanolic extracts of turmeric (*Curcuma longa*), ginger (*Zingiber officinale*) and cardamom


(*Elletaria cardamomum*) were prepared at concentrations of 20mg/ml, 40mg/ml and 60mg/ml to test their efficacy on *P. posthuma*. Normal saline solution was used as control.

Results: All extracts showed anthelmintic activity in a time-concentration dependant manner with more ability to cause early death being shown with ginger while cardamom caused early paralysis. Turmeric was more effective at a concentration of 60mg/ml. The activity of the extracts increased when the time-concentration variables also increased.

Conclusion: Ginger, turmeric and cardamom represent hopeful alternatives for chemical anthelmintic drugs. An *in vivo* study is highly recommended to test the efficacy of these plants against worms affecting people.

Keywords: Anthelmintic activity; Zingiberaceae species; *Pheretima posthuma*

CU03PV: Placental parasitic infections among women in the third trimester at Kilimanjaro Christian Medical Centre, Tanzania

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Background: Despite various interventions, placental parasitic infections continue to be a public health problem. The infections may cause poor pregnancy outcomes such as maternal anaemia, low birth weight and stillbirth. There is limited information on the burden of placental parasitic infection among pregnant women in Tanzania. This study aimed at determining the prevalence of placental parasitic infections and associated pregnancy outcomes at Kilimanjaro Christian Medical Centre (KCMC), Northern Tanzania.

Methods: A cross-sectional study was conducted at KCMC in Kilimanjaro region between June and July 2016. Pregnant women were interviewed before and after delivery. Malaria was tested using a rapid malaria diagnostic test (mRDT). A total of 80 placental slide sections were made following histological protocols. After staining, slide sections were examined for the

presence of parasites microscopically. Pearson Chi-square and Fisher's exact test were used to test for associations.

Results: Malaria parasites were found at a prevalence of 10%, none of which had a positive mRDT. Other placental parasites like *Toxoplasma* sp., *Schistosoma* sp., *Borrelia* sp., amoebas, *Leishmania* sp. and *Trypanosoma* sp., were not found. Education status was significantly associated with placental malaria ($\chi^2=5.535$, P value= 0.041). The outcomes significantly associated with placental malaria were stillbirth, maternal anaemia, low birth weight and preeclampsia, with (P value <0.05).

Conclusion: Placental malaria was found to be prevalent in the studied population and was associated with stillbirth, maternal anaemia and preeclampsia. Efforts for early diagnosis and treatment of malaria among pregnant women should continue to be emphasized to prevent poor pregnant outcomes.

Keywords: Placenta; parasitic infections; women; Kilimanjaro; Tanzania

CU04PV: Preliminary results of an intensified praziquantel treatment regimen aiming to eliminate schistosomiasis on Ijinga Island, Lake Victoria, Tanzania

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Background: In sub-Saharan Africa, Mass Drug Administration using praziquantel drug is the main control approach against schistosomiasis. The main objective of MDA campaigns is to reduce the burden and morbidities associated with schistosomiasis. In the region, MDA is repeated once or twice a year and mainly in school children. Non-school going population is not included. Untreated population will continue to maintain the transmission and act as a source of infection to treated population. To achieve elimination, the entire population in endemic areas needs to be treated to break the life cycle of the parasites, which is not currently done. The Ijinga Island Schistosomiasis Elimination Pilot Study aims at eliminating schistosomiasis by an intensified treatment protocol involving the entire population. The main objective of this study was to examine the feasibility and effectiveness of an intensified praziquantel MDA in a pilot study setting.

Methods: In September 2016, a baseline cross-section prevalence study involving 931 individuals of all age groups was conducted using a commercial Point of Care urine-Circulating Cathodic Antigen-rapid test (POC-CCA) and Kato-Katz (KK) technique for urine stool examination. In January, March and May

Keywords: *Schistosoma mansoni*, Praziquantel; mass drug administration, school children, adult population, Ijinga islands, Tanzania

2017, three (3) rounds of praziquantel 40mg/kg were provided as directly observed treatment with 5-6 weeks interval. A sentinel group of 223 school children aged 8-15 years was followed up 5-6 weeks after each praziquantel treatment round.

Results: At baseline study, 642 of the 931 participants (69%) were found positive in the KK test and 879/930 (94.5%) in the urine POC-CCA test. In the age group 8-15 years 346/350 (98.9%) were positive on the CCA-test and 306/350 (87.4%) on the KK-test. After the 1st round of treatment the prevalence rate dropped to 53.4% for the CCA-test and 33.6% for the KK-test in the sentinel group. The 2nd round reduced the rate to 10.8% for the CCA- and 12.6% for the KK test. After the 3rd round CCA positivity was 12.6% and KK 3.6%.

Conclusion: Intensified praziquantel treatment protocol with three (3) MDA rounds in 5-6 weeks interval achieved a substantial reduction in the prevalence of schistosomiasis in a high transmission area as determined by Kato-Katz-technique and POC-CCA-urine test. Despite these efforts it was not possible to achieve zero prevalence. Anticipating this, two more treatment rounds are planned according to the study protocol.

CU05PV: Environmental monitoring of *Schistosoma mansoni* infection rate in *Biomphalaria sudanica* - results of the Ijinga Island Schistosomiasis Elimination Pilot Study, Mwanza, North-western Tanzania

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Background: Despite repeated mass drug administration (MDA) campaigns the prevalence of schistosomiasis in the Tanzanian population still remains high. Thus, the interruption of the transmission cycle through integrated intervention measures cannot be re-emphasized. To monitor the success of Mas Drug administration intervention, the infection rate of the intermediate host snails can be used. Therefore, the objective of this study was to examine the snail intermediate hosts of human schistosomiasis in the study area before mass drug administration campaign and identify transmission hotspots of schistosomiasis at Ijinga Island, Magu district, Northwestern Tanzania.

Methods: Snails were collected from 16 sites along the lakeshore of the island. Species of snails were identified based on shell morphology. Cercaria infectivity rate of snails was determined using species specific real-time PCR. Vegetation cover and physico-chemical characteristics of the water at each snail collection point were recorded.

Results: Out of 5,082 snails collected, 4888 (96.2%) were putatively identified as *Biomphalaria sudanica*, and 194 (3.8%) as *Bulinus globosus*. A random sample of 931 snails (788 *Biomphalaria* and 143 *Bulinus*) underwent molecular analyses for *Schistosoma* cercaria infection. Overall, 288 (34.4%) of *Biomphalaria* and 2 (1.2%) of *Bulinus* were infected with *Schistosoma* cercaria in real-time PCR for *S. mansoni* and *S. haematobium*, respectively. Fourteen (14) snail collection points were infected with *S. mansoni* cercariae with three among them have prevalence of >90%.

Conclusion: The prevalence of *S. mansoni* cercaria was very high with most of collection point having high abundance. These areas can be considered as local hotspots for intestinal schistosomiasis transmission. The transmission pattern was closely related to the abundance and spatial distribution of intermediate snails. In transmission hotspots the focal use of molluscicides could be considered as a complement to praziquantel MDA in reducing transmission of schistosomiasis.

Keywords: *Biomphalaria*, *Bulinus*, Real time Polymerase Chain Reaction, *Schistosoma mansoni*, *Schistosoma haematobium*, Tanzania

CU06PV: Sensitivity and Specificity of Point-of-Care Circulating Cathodic Antigen before and after praziquantel treatment in diagnosing *Schistosoma mansoni* infection in adult population co-infected with Human Immunodeficiency virus-1, North-western Tanzania

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Background: The effect of Human Immunodeficiency Virus-1 (HIV-1) on CD4+ Th2 cells is hypothesized to affect parasitological diagnosis of *Schistosoma mansoni* using Kato Katz technique. Thus, the use of more sensitive technique such as Point-of-Care Circulating Cathodic Antigen (POC-CCA) test is recommended. The present study aimed at assessing the sensitivity and specificity of the point-of-care POC-CCA test in diagnosing *S. mansoni* infection before and after praziquantel treatment in adult population co-infected with Human Immunodeficiency Virus-1, north-western Tanzania.

Methods: A prospective longitudinal study was conducted among individuals aged 15-55 years at Igalagala village, northwestern Tanzania. At baseline and four weeks after treatment, a single stool and urine samples were collected from each participant. Kato Katz (KK) technique and POC-CCA tests were used for diagnosis of *Schistosoma mansoni*. A finger prick blood sample was obtained from each participant and tested for HIV-1 infection using the Tanzanian algorithms. A questionnaire was used to collect demographic information of study participants.

Results: At baseline, based on KK and POC-CCA, the prevalence of *S. mansoni* was 57.8% (95%CI: 52.9 – 62.4) and 87.5% (95%CI: 83.9 – 90.4). The prevalence of HIV-1 infection was 6.9% (95%CI: 4.8 – 9.8). Based on KK technique and POC-CCA test, 3.6% and 5.7% of the study participants were co-infected with *S. mansoni* and HIV-1. Four weeks after treatment, based on KK technique and POC-CCA, the prevalence of *S. mansoni* was 17.6% and 28.7%. At baseline the sensitivity and specificity of POC-CCA were 96.3% (95%CI: 93.1-98.3) and 24.6% (95%CI: 18.4-31.6). In the HIV-1 seropositive group, the sensitivity and specificity of POC-CCA were 93.3% and 28.6%. Four weeks after treatment, the sensitivity and specificity were 47.8% (95%CI: 26.8 – 69.4) and 74.7% (95%CI: 67.9 – 80.8).

Conclusion: The sensitivity of POC-CCA in diagnosing *S. mansoni* infection is high than KK technique in adult individuals likely to have low infection intensity and co-infected with HIV-1. However, its sensitivity decreases following praziquantel treatment but remained higher than Kato Katz technique. If the goal of the post-treatment evaluation is to identify uncured individuals, then POC-CCA test offers the best choice.

Keywords: *Schistosoma mansoni*, Circulating Cathodic Antigen, Kato Katz technique, sensitivity, specificity.

CU07PV: Co-infection of *Schistosoma mansoni*/Hepatitis C virus and their associated factors among adult individuals living in fishing villages, Northwestern Tanzania

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Background: *Schistosoma mansoni* and Hepatitis C virus (HCV) are co-existent in sub-Saharan Africa and co-infection is common among human population. The immunological responses characterized with Th₂-immune responses for *S. mansoni* and Th₁-immune responses for HCV are responsible for development hepatic morbidities in infected individuals. However, the co-occurrence of *S. mansoni* and HCV infection, their related ultrasound detectable morbidities and associated risk factors at community levels have not been examined in fishing communities, north-western Tanzania.

Methods: A cross-sectional study was conducted among 1,924 asymptomatic individuals aged 15-55 years in four fishing villages (Igombe, Igalagala, Sangabuye and Kayenze) of Northwestern Tanzania. A single stool sample was collected from each study participants and examined for *S. mansoni* eggs using Kato Katz technique. Hepatitis C surface antigen (HCVsAg) was determined from a finger prick blood sample using a rapid test.

Results: Overall, 51.8% (997/1,924; 95%CI: 49.6-54.1) of the study participants were infected with *S. mansoni* and had a mean intensity of 223.7epg (95%; 202.4-247.1). Of the study participants, 90 (4.7%) were infected with hepatitis C virus (HCV). Overall, 2.4% (47/1,924) of the study participants were co-infected with *S. mansoni* and hepatitis C virus. Among the co-infected individuals, 42.6%, 70.2% and 19.1% had splenomegaly, hepatomegaly and periportal fibrosis (PPF). Factors associated with *S. mansoni*/HCV co-infection were being aged 26-35 years (aRR=2.67, 95%CI: 1.03-6.93, $P<0.04$), 46-55 years (aRR=2.89, 95%CI: 1.10-7.57, $P<0.03$) and having marked hepatomegaly (aRR=2.32, 95%CI: 1.09-4.9, $P<0.03$).

Conclusion: In this setting, *S. mansoni* and Hepatitis C are co-endemic and a proportion of individuals were co-infected. Hepatosplenic morbidities characterized with hepatomegaly, splenomegaly, hepatosplenomegaly and PPF were observed in co-infected individuals. These results highlight the need for integrated interventions measures against parasitic and viral diseases.

Keywords: *S. mansoni*, hepatitis C, co-infection, hepatomegaly, splenomegaly, periportal fibrosis, fishing village, Tanzania.

CU08PV: Prevalence, intensity of infection and factors associated with *Schistosoma mansoni* among Human Immunodeficiency Virus-1 infected children attending care and treatment clinics at Ukerewe district hospital, northwestern, Tanzania

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Background: *Schistosoma mansoni* and Human Immune Deficiency Virus-1 (HIV-1) co-infection may occur in adult individuals in sub-Saharan Africa. However, even though children are equally at risk of being co-infected with these infections, no study was conducted to assess the co-occurrence and risk factors associated with these infections in the age group. The overall objective of the present study was to determine prevalence, intensity of infection and factors associated with *Schistosoma mansoni* among HIV-1 infected children attending Care and Treatment Clinic at Ukerewe district hospital.

Method: This was an analytical cross-sectional study conducted among children aged 1-16 years between June and July 2017. A single stool and urine samples were collected from study participants and screened for *S. mansoni* infection using Kato Katz technique and Circulating Cathodic Antigen (CCA) test. A questionnaire was used to collect demographic information and history of water contacts among children.

Result: A total of 112 children aged 1-16 years attending Care and Treatment Clinic were recruited into the study. The median age of the study participants was 10 years (IQR = 7 - 12years). Of the

participants, 46.4% (n=52) reported to have history of water contact when swimming and fetching water for domestic use. Based on CCA test, 28.8% (n=32) of the children had *S. mansoni* infection. Based on Kato Katz technique, 10.68% (n=11/103) had detectable *Schistosoma mansoni* egg in their stool samples. The geometric mean egg per gram of feces was 13.49gmepg (95% CI: 30.83 - 175.24). Children with history of water contacts had higher prevalence of *S. mansoni* infection ($\chi^2 = 12.1715$, $P < 0.001$). At bivariate and multivariable analysis, reporting lake Victoria as the main source of water remained independently associated with *S. mansoni* infection (aOR = 23.56, 95%CI: 1.97 - 281.229, $P < 0.013$). Reporting history of deworming was associated with reduced odd of being infected with *S. mansoni* infection (aOR = 0.1, 95%CI: 0.01 - 0.45, $P < 0.01$).

Conclusion: *Schistosoma mansoni* infection does occur in HIV-1 infected children attending a single care and treatment clinic. Regular deworming is highly recommended in these children when attending the Care and Treatment clinic for management of HIV-1 infection. This will reduce their chances to suffer the severe consequences of *S. mansoni* infection at adult age.

Keywords: *Schistosoma mansoni*, HIV-1, intensity, risk factors, children, Tanzania

CU09PV: *Plasmodium falciparum* malaria and *Schistosoma mansoni* among pregnant women at term, North-western Tanzania: Prevalence, co-infection pattern, risk factors and impact on pregnancy outcomes

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Background: This study aimed at determining the prevalence of *P. falciparum*, *S. mansoni*, co-infection pattern, associated risk factors and their impact on pregnancy outcomes at term among pregnant women in North-western Tanzania.

Methods: An ongoing analytical-cross-sectional study was conducted among 390 pregnant women aged 15-45 years delivering Sengerema hospital. A finger prick, placenta and cord blood samples were examined for malaria parasite using thin and thick smears. Urine and stool samples were examined for *S.mansoni* eggs and antigens using Kato Katz (KK) technique and Circulating Cathodic Antigens (CCA). Haemoglobin levels were estimated using HemoCue system. Newborn status and weight were also recorded. A questionnaire was used to collect socio-demographic-economic information.

Results: The overall prevalence of maternal *P. falciparum* malaria both peripheral and placenta was 34.6%

(95%CI: 29.8-39.4) and 23.3% (5%CI: 19.1-27.5) respectively. The prevalence of congenital *P. falciparum* malaria was 22.8% (95%CI: 18.6-27.0). Based on KK technique and CCA test, 9.7% (95%CI: 6.4-12.9) and 63.4% (95% CI: 58.5-68.3) of the participants had *S. mansoni* infection. Of these, 3% (9/30) and 37.8% (91/241) were co-infected with *P. falciparum*. Overall, 55.9% (218/390) of the participants were anaemic (Hb<11g/dl). Multigravidae women co-infected with *P. falciparum*-*S. mansoni* had higher prevalence of placenta malaria (53.8% versus 46.2%, $P<0.03$). Only 8.2% (32/390) of the newborns had low birth weight. Malaria in pregnancy were mainly associated with being primigravidae AOR=1.88 (95%CI: 1.003-3.49, $P<0.04$).

Conclusion: *Plasmodium falciparum*, *S. mansoni* infection and anaemia are common in the study population. Integrated public health intervention measures against malaria, *S. mansoni* and anaemia during pregnancy is highly needed.

Keywords: *Plasmodium falciparum*; schistosomiasis

CU10PV: Assessment of larvicidal effect of lemongrass and garlic essential oils against *Anopheles gambiae sensu stricto*

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Background Mosquitoes are well known to be vectors of vector-borne diseases, mostly malaria and lymphatic filariasis. The use of synthetic insecticides is one of the most preferred methods for vector control. However, synthetic insecticides are linked with a number of problems including toxicity, mosquito resistance, ecological pollution and high operational cost. These problems call for search and development of environmentally safe and low-cost insecticides using innate sources. This study evaluated the larvicidal effectiveness of lemongrass and garlic essential oils against *anopheles gambiae sensu stricto*.

Methods: The essential oils were collected from local market at Market in Mwanza. These oils were used for larvicidal activity using WHO standardized procedures and guidelines for larvicidal test method under laboratory conditions using third instar mosquito larvae of *Anopheles gambiae s.s.*

under exposure of 24hrs,48hrs and 72hrs Lethal concentrations causing 50% and 95% mortality, LC₅₀ and LC₉₅ were determined by Probit analysis using statistical program for social scientists, version 17.0 (SPSS 17.0)

Results: Lemongrass and Garlic essential oils caused mortalities were dose-dependent and their P-value did not show any statistical significant difference. Overall mortality induced in time based observation showed that, mortality was time-dependent with highest mortality in 72 hours but had no significant differences between observing hours.

Conclusion: These results suggest that the investigated essential oils had a potential as larvicides against *Anopheles gambiae s.s* and could be a useful lead in the search for other plants-derived larvicides products.

Keywords: *Anopheles gambiae*; larvicidal effect; lemongrass; garlic.

CU11PV: Novel insecticide with extended mortality effect: A case of SumiShield® 50WG against wild resistant populations of *Anopheles arabiensis* from northern Tanzania

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Background: Management of insecticide resistance among malaria vectors is of paramount importance. Insecticide resistance has been reported in malaria vectors against different classes of insecticides used in endemic areas. Having a novel compound that can increase mortality of resistant vector populations is a priority in managing insecticide resistance, particularly due to the rapidly increasing cases of reduced vector susceptibility.

Method: Comparative biological efficacy trial was conducted in the field from August 2016 to February 2017 to determine the efficacy of SumiShield® 50WG, a neonicotinoid insecticide containing 50% w/w clothianidin as a new class of insecticide for Indoor Residual Spraying (IRS) against the wild populations of *Anopheles arabiensis*. The efficacy of SumiShield® 50WG was compared with that of K-Othrine 250 WDG, a highly concentrated formulation that contains deltamethrin 25.0% w/w. The study was conducted in Mabogini ward (Rural Moshi district, Kilimanjaro Region). Indoor surfaces of 20 houses were sprayed for each formulation. Bioefficacy of the two compounds was evaluated

monthly for 6 months against the field-derived *An. arabiensis* using the standard WHO cone bioassays.

Results: Comparative evaluation of SumiShield® 50WG and K-Othrine 250 WDG insecticides showed that SumiShield® 50WG maintained optimal efficacy in field settings for the 6-month study duration while K-Othrine® 250 WDG efficacy declined against field populations starting from the fourth month from 100% to 90%. Good initial mortality was observed in houses treated with SumiShield® 50WG with extra killing effect reaching 100% by 144 to 168 hours after exposure. There was no adverse side effect reported in houses sprayed with SumiShield or K-Othrine.

Conclusion: The findings of this study confirm that SumiShield® 50WG is a viable alternative and strong IRS insecticide for malaria vector control in Tanzania and in all areas where pyrethroid resistance is a problem. The effectiveness of SumiShield in causing extended mortality could be attributed to its stability on different surfaces and lack of irritant or repellent effect which enables long contact and subsequently lethality to vectors.

Keywords: Resistance, mortality, pyrethroids, SumiShield, *Anopheles arabiensis*

CU12PV: Prevalence of Schistosomiasis and Renal Dysfunction Among Primary School Children Living in Schistosomiasis Endemic Area In Northwestern Tanzania

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Background: In sub-Saharan Africa, Chronic Kidney Disease is a public health concern. Multiple risk factors are associated with the disease. However, poor data quality limits our understanding on the interplay of communicable diseases such as schistosomiasis and chronic kidney disease. The present study aims at understanding the contribution of schistosomiasis on kidney disease among school children living in schistosomiasis endemic areas of Northwestern Tanzania.

Methods: A cross sectional study was conducted among 507 school children aged 6-13 years attending various primary school along the shore of Lake Victoria, Northwestern Tanzania. A single urine sample was collected from each child and examined for the presence of proteinuria and *Schistosoma mansoni* circulating cathodic antigen (CCA). The urine sample was further examined for presence of *S. haematobium* eggs using urine filtration test. Serum creatinine levels were measured in venous blood. Estimated glomerular filtration rate (eGFR) was calculated using the modified Schwartz equation to define the status of renal function. Kidney disease was defined operationally as eGFR <60mL/min/1.73m²

and/or proteinuria > 1.5g/L in a single urine test. Urine for protein levels and presence of red blood cells was also examined using dipstick.

Results: Of the study participants, 50% (254/507) were female and their mean age was 8.51 ±1.30 years. In general, 64% (n=326/507) of the study participants were infected with *Schistosoma mansoni* based on point of care - CCA test. Based on urine filtration test, 1.58% (8/507) were infected with *Schistosoma haematobium*. In total, 3.94% (20/507) of the study participants had renal dysfunction based on eGFR. Based on dipstick urinalysis for proteinuria, 14% (71/507) had protein (>2+) and 7.3% (n=37) had red blood cells in urine. Male gender was the only factors independently associated with kidney disease (AOR= 2.69, 95%ci: 1.0-7.2/ P<0.049).

Conclusion: The present study population is highly infected with *Schistosoma mansoni* and some infected children had kidney disease. To reduce the development of chronic morbidities related to schistosomiasis including chronic kidney disease, repeated rounds of mass drug administration using praziquantel are recommended in this age group

Keywords: Kidney disease; schistosomiasis

CU13PV: Knowledge, Attitude and Practices on Schistosomiasis in Relation to its Transmission among School Children Attending Kayenze Primary School In Ilemela District – Mwanza Tanzania

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Background: *Schistosomiasis* is an acute and chronic disease caused by parasitic worms. The disease is highly prevalent in both school and non-school going children. However, there is little data on school children knowledge about the disease. In this view, the present study was conducted to determine awareness among primary school children of mode of transmission, acquisition, signs and symptoms and preventive measures against *Schistosomiasis*.

Methods: A cross-sectional survey was conducted among 400 school children aged 8-15 years using a quantitative questionnaire. The questionnaire had questions of mode of transmission, acquisition, signs, symptoms and preventive measures.

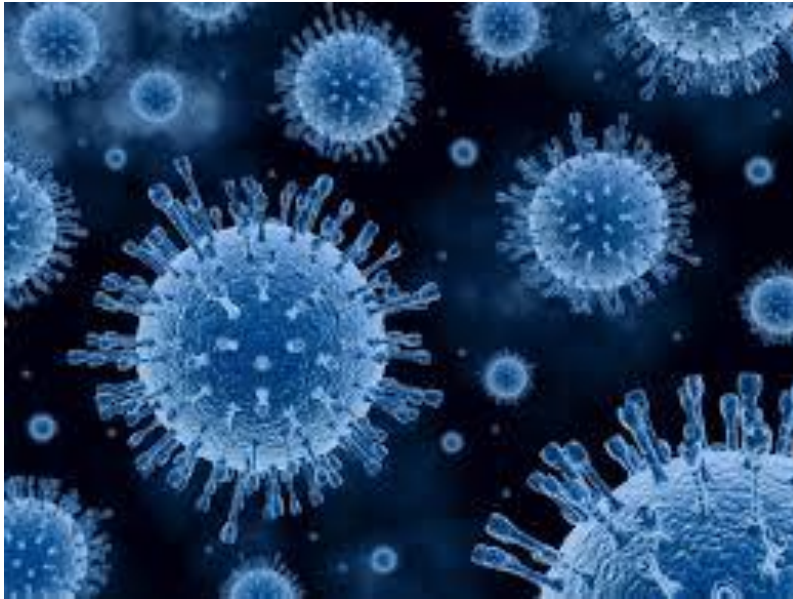
Results: Out of 400 children, 289 (72.31%) knew the preventive measures

against the disease. About, 200 (50%) respondents said that *Schistosomiasis* was not a serious disease and 378 (94.50%) respondents had a history of swimming in the lake and continue to swim currently. Out of 194 who had the prior episode of the disease and attended the hospital, 42 (21.65%) didn't finish the dose prescribed. There was no association between respondents' knowledge on the preventive measures, signs and symptoms of the disease and their practices of using lake water for domestic purpose, as the p-value > 0.05 (CI=95%, P-value = 0.222).

Conclusion and recommendation: School aged children are aware of the disease in terms of mode of transmission, signs and symptoms, treatment, complications and preventive measures but they still don't practice what they know.

Keywords: Knowledge; Attitude; Practices; *Schistosomiasis*.

HIV AND OTHER VIRUSES



CO01HV: Hepatitis B Natural Antibodies and Associated Factors among Health Professional Students of The Catholic University of Health and Allied Sciences Mwanza, Tanzania

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Background: Hepatitis B virus (HBV) infection is a public health concern worldwide. Health care workers and students undertaking various health related programmes are at increased risk of acquiring this infection due to their frequent exposure to the body fluids of infected persons. Despite this high risk, there is no routine immunization of these students, especially in low income countries. This study investigated the magnitude and factors associated with natural antibodies against HBV (HBsAB) among students in various health related professionals of the Catholic University of Health and Allied Sciences (CUHAS).

Methods: A cross-sectional study involved CUHAS health professional students in Mwanza city, Tanzania. Socio-demographic and other relevant information was extracted from an existing database. Detection of HBV


natural antibodies was carried out using Sandwich enzyme-linked immunosorbent assay. Data were analyzed by STATA version 13.0.

Results: The median age of the study participants was 22[IQR:21-24] years. The overall prevalence of HBsAB was found to be 21.98%, 95% CI: 19-24. Male sex (OR:1.77, 95% CI:1.31-2.38, p=0.000), being married (OR:1.82, 95% CI:1.25-2.64, p=0.002) and being in clinical practices (OR:1.39, 95% CI:1.03-1.86, p=0.028) independently predicted HBsAB positivity.

Conclusion: A significant proportion of students taking health-related sciences have protective levels of HBsAB emphasizing the need to consider screening for these antibodies before HBV vaccination.

Keywords: *Hepatitis B; Natural antibodies; CUHAS*

CU02HV: Seroconversion after Hepatitis B Vaccine among Students pursuing Health Related Sciences, Six Months Post Vaccination in Mwanza City, Tanzania

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Background: A successful immune response after Hepatitis B virus (HBV) vaccination has been found to range from 85–90% with a possibility of a variation in different populations. In resource-limited countries, there is little information regarding immune responses following vaccination, including the response to HBV vaccine. This study was designed to investigate the HBV vaccine immune responses among student pursuing health related sciences in Mwanza, Tanzania, six months after vaccination.

Methods: A total of 285 hepatitis B surface antigen(HBsAg) and anti-HBsAg (HBsAB) negative health related sciences students who received various doses of hepatitis B-vaccine (HBV) six months post vaccination were investigated. The HBsAB were quantified using enzyme immunoassay (SIEMENS, Enzygnost® Anti-HBs II) to detect the presence of protective anti-HBsAg antibodies. The presence of HBsAB greater than 10IU/ML was defined as presence of protective antibodies.

Results: The median age of the study participants was 23(Interquartile range [IQR]:21-32) years. Female formed the slightly majority 155(54.4%) of the study participants. A total of 30(10.5%), 121(42.5%) and 134(53.6%) received one dose, two doses and three doses of HBV vaccine respectively. Titres greater than 10IU/ML were detected in 43.3% of those received one dose, 69.4% of those received two doses and in 89% of those received three doses ($P<0.001$). The median titers of the participants who received three doses were significantly higher than median titers of participants who received two doses and one dose (97IU/ML vs. 27IU/ML vs. 56IU/ML, $P<0.001$). Factors found to independently predict titres more than 10IU/ML were; two doses (OR: 2.6, 95%CI: 1.12-6.03, $p=0.026$) and three doses (OR: 9.9, 95%CI: 3.9-25.0, $p<0.001$).

Conclusion: There is a need to ensure that three doses of HBV vaccine are given to achieve the desired immune response. In addition, the HBsAB should be routinely determined post-HBV vaccination to ensure the presence of the protective immunity.

Keywords: Hepatitis B; Immune response; Mwanza.

CU03HV: High Prevalence of Viral Hepatitis (Hepatitis B And C) among Human Immunodeficiency Virus (HIV) Seropositive Adult Population in Sengerema District, Mwanza, Tanzania

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Background: Viral hepatitis (Hepatitis B and C) is a major public health concern among immunocompromised patients. Hepatitis B virus (HBV) accounts for approximately 370 million chronic infections while hepatitis C virus (HCV) accounts for an estimated 130 million cases worldwide. There is limited data on their magnitude among HIV infected individuals in the resource limited countries. Here we report the prevalence of HBV and HCV antibodies and the magnitude of HBV surface antigen (HBsAg) among HIV seropositive population in Sengerema district, Mwanza Tanzania.

Methods: A cross-sectional study of 243 HIV seropositive adults was conducted at Sengerema district hospital from January to February 2017. Socio-demographic and other relevant information were collected by using a structured data collection tool. Sera were tested for HBsAg and HCV using immunochromatographic tests (Wondfo one step HBsAg, China [HBV] and ACON laboratories, Inc., CA92121, USA [HCV]) while enzyme linked immunosorbent assay (ELISA-Enzygnost) was used for detection of

HBsAB. Data were analyzed by using STATA version 13.

Results: The median age of the study participants was 44.2 (Interquartile range[IQR]:18-75) years. A total of 26/243 (10.7%, 95% Confidence interval [CI]:7-14) were HBsAg positive while 100/243(41.2%,95%CI:35-47) and 20/243, (8.2%,95%CI:4-11) were positive for HBsAB and hepatitis C antibodies respectively. History of blood transfusion (Odds ratio [OR]: 2.34, 95%CI: 1.08-5.06, P=0.028) was significantly associated with HBsAB. The HBsAB were found to decrease by 2.02 IU/ML in a year increase in age. HCV was significantly associated with having traditional marks (P<0.001) while only co-infection with HCV predicted HBsAg positivity (OR: 4.45, 95% CI: 1.51-13.21, P=0.007).

Conclusion: Viral hepatitis among HIV seropositive individuals at Sengerema district is alarmingly high, which calls for the need to emphasize screening for viral hepatitis and provision of appropriate management and health education among HIV infected individuals.

Keywords: *Viral hepatitis; HIV; Tanzania.*

CU04HV: High Human Immunodeficiency Virus (HIV) Viral Load and Co-Infection with Viral Hepatitis are associated with Liver Enzyme Abnormalities among HIV Seropositive Patients on Antiretroviral Therapy in The Lake Victoria Zone, Tanzania

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Background: Liver enzyme abnormalities have been found to be common among patients on antiretroviral treatment (ART). Apart from the effects of ART, there is a paucity of data regarding other factors that can potentially contribute to the abnormal levels of these enzymes in this population. This study investigated the factors associated with liver function abnormalities among Human immunodeficiency virus (HIV) infected individuals on ART from different regions of the Lake Victoria Zone, Tanzania.

Methods: A cross-sectional study involving a total of 230 sera from HIV seropositive patients from different regions of the Lake Victoria zone was carried out in July 2017. Sociodemographic and other relevant information were obtained from patient's records. Liver function tests; alanine transaminase (ALAT) and aspartate transaminase (AST) was done by using spectrophotometric manual analyzer. Hepatitis B and Hepatitis C

virus were detected by using immunochromatographic test as per manufacturer's instructions. Data were analyzed by using STATA version 13.

Results: The median age of the study participants was 37.4 (Interquartile range [IQR]:1-75) years. A total of 60/230 (26.09%) had elevated ASAT while 55/230 (23.9%) patients had elevated ALAT levels. ASAT levels were significantly high among patients with high HIV viral load ($P=0.002$) while ALAT levels were significantly high among those co-infected with hepatitis C virus ($P=0.017$) and hepatitis B virus ($P<0.001$)

Conclusion: A significant proportion of HIV seropositive individuals on ART have abnormal levels of liver enzymes which is significantly associated with high HIV viral load and viral hepatitis. This calls for the need on emphasizing screening of viral hepatitis and provision of appropriate management among HIV seropositive individuals.

Keywords: *Viral hepatitis; HIV viral load.*

CU05HV: Acute Human Cytomegalovirus Infection among Voluntary Blood Donors in The Lake Victoria Zone Blood Transfusion Centre: Should It Be Considered In Screening?

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Background: Blood transfusion is a medical emergency treatment used in the management of cases such as injuries, surgeries and other life-threatening conditions. Despite being a feasible lifesaving option, it might be associated with transmission of blood borne infections including the Human Cytomegalovirus (HCMV). WHO recommends that blood to be transfused to vulnerable groups like pregnant women, neonates and immunocompromised patients should be screened for HCMV. However, this is not practiced in many resource limited countries including Tanzania. This study investigated the seroprevalence of specific HCMV IgM antibodies among volunteered blood donors at the Lake Victoria zone blood transfusion centre.

Methods: A cross-sectional study was conducted between June and July 2017 by using 228 archived sera specimens collected from volunteered blood donors at the Lake Zone center in 2016. Socio-

demographic and other relevant information were collected from pre-existing database. Samples were tested for specific HCMV IgM antibodies using HCMV IgM μ capture enzyme linked immunosorbent assay (ELISA) assay. Data were analyzed by STATA version 13.

Results: The median age of the study participants was 19(IQR: 18-23) years. The seroprevalence of specific HCMV IgM antibodies was 23/228 (10.09%, 95% CI: 6-14). None of the factors was found to be associated with CMV IgM seropositivity.

Conclusion: About one tenth of blood donors in the Lake Victoria Zone Blood Transfusion Centre are acutely infected with HCMV. As per WHO recommendations, there is a need to screen blood and other blood products for HCMV before blood transfusion, particularly in resource-limited countries.

Keywords: *Blood transfusion; Lake Victoria zone; Tanzania.*

CU06HV: HIV Viral Suppression and Its Associated Factors among Patients on Antiretroviral Therapy at Baylor Tanzania - Lake Zone Paediatric HIV Centre of Excellence

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Background: Difficulties of achieving HIV viral suppression, particularly in paediatric patients of resource limited settings, is challenging the universal 90% suppression target. Due to routine unavailability of HIV viral load testing for patients on cART, latest reports on HIV viral control and its determinants are scanty in Tanzania and other countries in sub-Saharan Africa. The current study investigated the HIV Viral non-suppression and associated factors among children and adolescents on cART at a Paediatric HIV Centre of Excellence in the Lake Zone of Tanzania.

Methods: A cross-sectional study retrospectively reviewed data of 539 children, adolescents and young adults aged < 22 years who received ART for at least 6 months and had HIV Viral Load (HVL) measurement between May 2015 - December 2016 at Tanzania's Lake Zone Paediatric HIV Centre of Excellence. Associations between the latest HVL values and the different characteristics at the time of enrolment into care and at their latest visit dates during the study period were determined by logistic regression analysis.

Results: Among the 539 patients (50.8% females; mean age 11.2 years, on ART for mean duration of 4 years and 9.6% of them having prior ARV exposure), the prevalence of HVL ≥ 1000 c/ml at the latest measurement was 27.6% (n=149). Using multivariate logistic regression analyses for all the variables having p-value <0.2 on univariate regression, latest CD4% <25 (for <5 yo) (aOR: 8.41; 95%CI: 3.41-20.7; p-value:<0.001) compared to CD4% >25, total duration on ART for ≥ 6 years (aOR: 3.58; 95%CI: 1.25-10.27; p-value:0.018) compared to duration on ART for <6 years and being on first line regimen compared to being on second line regimen (aOR: 12.92; 95%CI: 2.93-56.91; p-value: 0.001) have independently and statistically significantly increased the odds of viral non-suppression (HVL ≥ 1000 c/ml).

Conclusion: The latest prevalence of HIV viral non-suppression at Baylor Tanzania Lake Zone COE was 27.6%, which is unacceptably higher than the nationally and globally set target of <10%. Presence of severe immunodeficiency (CD4%<25) in children<5 years, being on first line ART regimen and taking ART for ≥ 6 years have independently predicted the occurrence of HIV viral non-suppression.

Keywords: Child HIV; Adolescent HIV; treatment failure; Sub-Saharan Africa; Tanzania.

CU07HV: Prevalence and factors associated with Mycobacteremia among Febrile HIV infected patients in Mwanza, Tanzania

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Background: Tuberculosis remains an important public health concern across the world. It is a common preventable opportunistic infection causing high mortality in human immunodeficiency virus (HIV) infected patients. Disseminated tuberculosis remains a common cause of blood stream infections in patients with HIV and tuberculosis co-infection. This study aimed at determining prevalence and factors associated with mycobacteremia among febrile HIV adults attending Bugando Medical Centre and Sekou Toure hospitals in Mwanza.

Methods: A total of 154 patients were enrolled in the study. Blood samples for culture, sputum for acid fast bacilli and chest radiograph were obtained from all patients. Blood culture was done on BACTEC Myco/F Lytic bottles, then sub-cultured into Lowenstein Jensen media for identification of Mycobacterium tuberculosis. In addition, sputum samples were tested to detect Mycobacterium tuberculosis using Auramine staining and Xpert MTB/RIF assay. Fourteen days-in hospital mortality and factors associated with it was also determined. Analysis was done using STATA software.

Results: The mean age of study participants was 41.5±12.2 years. Female formed the majority 93 (60%) of the study participants. The prevalence of mycobacteremia was 3.3% (5/154), 95%CI; 0.4-5.9. Other bacteria were detected in 13 (8%) patients. Factors found to be significantly associated with mycobacteremia were lower mean age (p=0.03), HIV infection diagnosed within one year or less (p=0.005), not taking HAART (p=0.031), higher respiratory rate (p=0.003) and low CD4+ count (p=0.002). Factors significantly associated with 14 days in hospital mortality were male sex (p=0.031), advanced HIV infection (p <0.001), poor ART adherence (p < 0.001), diarrhoea (p=0.002), weight loss (p=0.034), low platelet count p (<0.001), low CD4+ (p=0.0002) and mycobacteremia (p = 0.007).

Conclusions: The prevalence of mycobacteremia was low, however it was significantly associated with mortality. Furthermore, low CD4 count, not taking HAART, recent diagnosis of HIV infection of less than a year were significantly associated with mycobacteremia. Mycobacteremia should be considered as alternate diagnosis in high risk febrile HIV infected individuals to reduce associated morbidity and mortality.

Keywords: *Mycobacteremia; HIV; CD4.*

CU08HV: Case Report: Walking the Opportunistic Infection Fine Line - Treating Kaposi Sarcoma, Multidrug Resistant Tuberculosis, HIV Treatment Failure and Severe Malnutrition in an HIV Positive Adolescent in Mbeya, Tanzania

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Background: Patients with severe immunosuppression are at risk to acquire life threatening opportunistic infections requiring complex treatments. We describe the challenges and successes of treating a severely malnourished HIV positive adolescent on 2nd line ART who was treated for Kaposi sarcoma (KS) while receiving concurrent treatment for multidrug resistant tuberculosis (MDR TB).

Case Report: A 21-year-old HIV positive female well known to the Mbeya COE presented for a sick visit with a nodular violaceous palate lesion and inguinal lymphadenopathy (Fig 1). The patient also had abdominal distention and severe acute malnutrition (SAM; BMI 13 kg/m²). CXR showed streaky peribronchial thickening and abdominal ultrasound revealed massive ascites. CBC was notable for lymphopenia (absolute lymphocyte count of 670 x 10³ cells/ μ L) and moderate anemia (Hb of 10.9 g/dL).

Despite initiating 1st line ART in 2011, the patient had poor adherence, persistent

severe immunosuppression with CD4 never exceeding 200 cells/ μ L and multiple elevated viral loads. At time of evaluation, the patient had been on second line ART (ABC-3TC-ATV/r) for 24 months but still had CD4 of 1 cells/ μ L (0%) and viral load 121,217 cp/mL.

The patient was clinically diagnosed with Kaposi sarcoma and was treated at the COE with paclitaxel 135mg/m² (dexamethasone, ranitidine and chlorphenamine given as premedications).

Conclusions: We describe a case of successful concurrent treatment of Kaposi sarcoma with presumed visceral involvement and MDR TB in a complex and severely immunosuppressed patient on 2nd line ART with severe acute malnutrition. This was the first case of its kind at the Mbeya COE, and demonstrated how a thoughtful, detailed patient-centered approach by a dedicated clinical team can successfully manage a patient with KS, MDR TB, treatment failure and SAM within the resources of the COE.

Keywords: *Kaposi sarcoma; drug resistance TB; SAM; patient centered approach.*

CU09HV: Pack up your troubles and send them off to summer camp: adolescents living with HIV who attended camp in Mbeya experienced no differences virologic suppression, mortality or loss-to-follow compared to HIV+ adolescents not attending camp

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Background: While camps for adolescents living with HIV (ALHIV) are generally well-received by adolescents and health care providers and can have a positive impact on psychosocial health, there is little literature examining the post-camp virologic treatment success and outcomes in those ALHIV who attend camps. This abstract examines HIV viral load results and treatment outcomes of ALHIV who attended "Salama Camp" at the Mbeya COE in Tanzania compared to ALHIV not attending camp.

Methods: Salama Camp activity reports and EMR files of those Mbeya COE clients who attended Salama Camp between 2012 and 2016 were reviewed. Salama Camp is a 5-day overnight camp supported through a partnership with SeriousFun Network, and aimed at improving psychosocial health, life skills, self-care and adherence to ART in ALHIV. In Mbeya, ALHIV struggling with adherence and/or having multiple social challenges are prioritized to attend camp. Most recent post-camp viral load and current chart status were extracted for all campers to determine virologic suppression (defined as VL<1000 copies/mL) and treatment outcome (defined as "active," "transferred out," "died," or "lost to follow up (LTFU).") As a comparison group, viral loads and chart status outcome were extracted from age matched (12yo-18yo) HIV positive patients on ART at the COE between 2012 and 2016 who did not attend camp. Chi-square test was used to compared categorical variables.

Results: 258 total HIV positive adolescents (12-18 years old) attended Salama Camp in Mbeya, Tanzania, representing 39.2% (258/658) of all adolescents aged 12 to 18 years on ART at the Mbeya COE. 95.7% (247/258) of campers have a recorded post-camp VL result, of which 67.6% (167/247) had VL < 1000 copies/mL (viral suppression). Current treatment outcomes of ALHIV who attended camp were 86.4% (22/258) active in care at the COE, 7.8% (20/258) transferred out, 4.3% (11/258) died, and 1.6% (4/258) LTFU.

In age-matched ALHIV on ART at the COE who did not attend camp (n=400), 72.5% (290/400) were virologically suppressed, 83.3% (333/400) remain active in care, 8.8% (35/400) transferred out, 4.5% (18/400) died, and 3.5% (14/400) LTFU. There was no statistically significant difference in viral suppression (67.6% campers vs 72.5% non-campers, p=0.18), mortality rates (4.3% campers vs 4.5% non-campers, p=0.90), or LTFU rates (1.6% campers vs 3.5% non-campers, p=0.15) between the two groups.

Conclusion: No statistical difference was noted in key clinical outcomes of viral suppression, mortality or LTFU in ALHIV on ART who attended camp when compared to ALHIV who did not attend camp, despite the intensive and costly camp program and efforts. In resource-limited settings, such resource intense programs must be continuously re-evaluated to ensure optimal use and maximal impact of scarce resources for ALHV.

Keywords: Adolescent living with HIV; camp; psychosocial health; adherence

CU10HV: HIV viral non-suppression and associated factors among children and adolescents on cART at Baylor Tanzania-lake zone centre of excellence

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Background: The UNAIDS “90-90-90” goal and the “test and treat” recommendations are in effect in high HIV-burden settings to achieve the global target to end the HIV epidemic by 2030. However, viral non-suppression due to many factors, particularly in paediatric patients receiving ART, is a potential hurdle to achieving the universal virologic suppression target. This study was set out to determine the HVL outcome and associated factors among children and adolescents on cART at the Lake Zone COE since the centre has started accessing HVL testing in May 2015 to Dec 2016.

Methods: Cross-sectional retrospective audit of EMR data was conducted for children and adolescents treated for HIV at the Lake Zone COE with at least one HVL measurement. Associations between their latest HVL value and the different characteristics at the earliest time of enrolment into care, and at their latest visit dates during the period, were analysed by crude and adjusted odds ratios using STATA. Significance was considered at p value < 0.05 and/or doesn't include 1.0. For all the variables with p-value < 0.2 on univariate regression, multivariate logistic regression was performed. Virologic non-suppression was defined as HVL \geq 1000 cells/mL.

Results: A total of 539 children and adolescents had HVL determinations with 274 (50.8%) being females. The mean age was 11.2 years (SD=4.5) and the majority, 311 (57.7%) had their biological mothers as caregivers. The prevalence of virological non-suppression at Baylor LZ COE is 27.6%. On multivariate logistic regression, the following factors predicted virologic non-suppression: latest CD4% (for <5yo) between 15-25 (OR: 8.41; 95%CI: 3.41-20.7; p-value:<0.001) and latest CD4% < 15 (OR: 20.4 ; 95%CI: 4.86-85.6; p-value<0.001), total duration on ART for 6-9 years (OR: 3.58; 95%CI: 1.25-10.27; p-value:0.018) and total duration on ART for > 9y (OR: 5.03; 95%CI: 1.05-24.3; p-value: 0.043). Being on second line cART) was independently preventive of virological non-suppression (OR: 0.08; 95%CI: 0.017-0.034; p-value: <0.001).

Conclusion: Presence of severe immunodeficiency (CD4% < 25) in children < 5 yr, (CD4 < 500 cells/ml) in children above 5 years and total duration on ART for > 6 yr have independently and significantly predicted HIV viral non-suppression while being on 2L regimen regardless of its duration was independently preventive HVL non-suppression.

Keywords: HVL, non-suppression, children, adolescent

CU11HV: Hyperpigmented Skin Lesions on Patients Who Receive Isoniazid Preventive Therapy (IPT): Case Series

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Background: World Health Organization and National Tuberculosis and Leprosy Program recommends that all children who are living with HIV need to receive isoniazid preventive therapy (IPT) once screened negative for tuberculosis. When on IPT, the guidelines recommend supplementation with pyridoxine to avoid vitamin B6 deficiency. The other side effect of isoniazid is vitamin B3 deficiency, but there is no recommendation for nicotinamide supplementation. Since 2016, we no longer receive pyridoxine from the national system. Most of our clients have been receiving isoniazid without pyridoxine; with this, we have noted that a few of our clients had skin lesions when on or after completing IPT.

Methods: This was a retrospective chart review of all clients who started IPT from January 2016 to May 2017. We selected clients who had a diagnosis of pellagra and a description of hyperpigmented skin lesions on the dermatological examination, either when on IPT or after completing IPT.

Results: 346 children aged 2 to 17 years were started on IPT during study period.

Keywords: IPT; skin lesion; hyperpigmented; side effect.

Among those, five (1.6%) children developed hyperpigmented skin lesions, and all were not on pyridoxine. All five children had normal nutritional status when started on IPT, and had been on ART for more than two years (range: 2-5 years). Location of lesions differed in each child, but was most commonly on the neck, arms, legs, palms and sole of the foot; sun exposed areas were more affected. All cases were managed with multivitamins, advised to use emollients and stop IPT, and all had a good response.

Conclusion: Although only a small percentage of children developed Vitamin B3 deficiency this should not be ignored; the number and impact will be much bigger when IPT is fully rolled out. It is of concern that there are no clear recommendations and guidelines on how to handle such side effects. Being able to do a comparison study on plasma levels of niacin in patients who are on IPT and those who are not will help in determining the magnitude of the problem and advise on recommendations and guidelines.

NON-COMMUNICABLE DISEASES



CU01NC: Depression and its associated factors Among AFRICOS Study Participants

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Background: Depression is a common mental disorder and one of the main causes of disability worldwide. The CES-D (Centre for Epidemiological Studies Depression Scale) is a short self-report scale designed to measure depressive symptomatology in the general population. The World Health Organization estimated depression to be the leading cause of disability as measured by Years Lost due to Disability (YLDs) contributing to almost 12% of all disability in 2004. Depression is common among PLWHAs, as infected individuals must adjust to a chronic, life-threatening illness associated life changes and social stigma. The African Cohort Study (AFRICOS) has the objective of longitudinally assess the impact of clinical practices, biological factors and socio-behavioural issues on HIV infection and disease progression in an African context. This includes an evaluation for depressive symptoms using the CES-D scale.

Methods: A cross-sectional assessment of depression on 423 participants of AFRICOS volunteers on their first visit was carried out using the CES-D scale. Data entry and analysis was achieved by SPSS v 20. Statistical significance was set at a Type I error of 0.05.

Results: The mean age of the participants whose data was analysed was 39.1 (SD 12.4). Of these, 273 (64.5%) were female and 26% (110/423) of the participants had depression symptomatology. The median CESD score was 6.00 (IQR 3-16). Female participants had twice the chance of developing depressive symptoms compared to men (OR=2.2, 95% CI 1.34 - 3.66, p=0.001). Those diagnosed to be HIV positive for more than a year had less chances of developing depressive symptoms compared to those diagnosed within the same year of the CESD evaluation (OR 0.58, 95% CI 0.367 - 0.935, p=0.02).

Conclusion: Depression is common among HIV +ve clients. HIV treatment guidelines are rather silent on this aspect. Depression should be addressed by screening and managing clients. This could be incorporated in the routine clinic care designing scales that will ease the assessment of depression and other mental illnesses. Newly diagnosed HIV +ve clients, being more likely to develop depression, need continual counselling and evaluation for depressive symptoms given the repercussion on their response to HIV/AIDS treatment and care and quality of life in general.

Keywords: *Depression; HIV; AFRICOS*

CU02NC: Pharmaceutical Personnel's Role & Barriers to Counselling Obesity and Overweight Patients: A Case Study of Mwanza Community Pharmacies.

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Background: Obesity and overweight are growing health concerns in Tanzania. Both have been identified as key risk factors for many chronic diseases such as hypertension, dyslipidaemia and type 2 diabetes mellitus. In developed countries, community pharmaceutical personnel's involvement is associated with successful weight management but little is known in low income countries. This study investigated the role of community pharmaceutical personnel in obesity and overweight counselling, identifying the barriers and facilitators in Mwanza, Tanzania.

Methods: A descriptive cross-sectional study involved 74 community pharmacies selected randomly. Questionnaires were used to collect information on frequency, comfort level and the perceived effectiveness of four aspects of obesity-overweight management. Information on barriers to counselling was also collected. Descriptive and Spearman's r analysis were conducted using STATA version 13. Responses with Likert scale rating 1(low score) to 5 (high score) and binary choices (yes/no) were presented as mean and percentages.

Results: The response rate was 89.19%. Pharmaceutical personnel counselled obese-overweight patients 'sometimes' to 'most of the time', 3.59 (1.08) and were 'neutral' to 'comfortable' with counselling

3.69 (1.04). Respondents perceived obesity-overweight management aspects as 'somewhat effective', 3.66 (1.08). Counselling obese patients was positively correlated with the perceived comfort with counselling and perceived effectiveness of obesity-overweight management aspects ($r=0.08$, $p=0.0051$ and $r=0.61$, $p=0.016$ respectively). Anticipated barriers were lack of patient awareness about pharmaceutical personnel expertise in counselling (77.27%), lack of patient demand or expectations for counselling (65.15%) and lack of time for counselling (56.06%).

Obesity-overweight management facilitators were perceived as 'somewhat effective' in weight loss. Creating awareness among patients was perceived as the most important facilitator in overcoming the barriers.

Conclusion: Overall, counselling was positively correlated with comfort levels and perceived effectiveness of obesity-overweight management. Similarities and differences in beliefs and practices between pharmaceutical personnel in Mwanza and those in developed countries were identified. Involvement of respondents in counselling, identifying perceived barriers and facilitators would be an advantage to the provision of weight management services at community pharmacy level in Mwanza.

Keywords: Community Pharmacy; Pharmaceutical Personnel; Obesity

CU03NC: Epilepsy Management Among People of Mwanza

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Background: Epilepsy is one of the most common neurological disorder worldwide. It is associated with high socioeconomic burden. Epilepsy successful treatment depends on appropriate diagnosis, correct choice of anti-epileptic drugs (AEDs) and adherence to the prescribed AEDs. While up to 90% of PWE in developing countries don't get appropriate treatment, there is limited information about care offered to people with epilepsy (PWE) in Tanzania. Therefore, this study aimed to describe available care offered to PWE in Mwanza.

Methods: This cross sectional descriptive study enrolled 218 PWE (or their caretakers) attending outpatient clinic at Bugando Medical Centre and four selected district hospitals of Mwanza region. 18 health workers (HWs) who regularly treat PWE in the selected hospitals also participated. PWE or caretakers were interviewed using structured Swahili translated questionnaires while HWs completed self-administered questionnaires. Coded data were analyzed using SPSS.

Results: Nurses were majority of HWs who routinely diagnosed and treated PWE. Only 2/18 (11.1%) HWs reported

that, they sometimes used investigations to confirm epilepsy diagnosis and explore the causes. 10/18 (55.6%) of HWs reported that counseling was given to patients. However, counseling information was largely inadequate regarding the use of AEDs. The AEDs prescriptions were mainly dictated by drug availability and affordability to patients, rather than seizure types. 27/218 (12.4%) patients were given lower and 109/218 (50.0%) lower normal doses, despite large number of them had one or more seizures in the last 30 days. No follow-up investigation was done in any of the 218 participant patients. Ten (55.6%) HWs did not stop AEDs medication to their patients and the rest stopped after varying periods (1-5 years) of seizure free.

Conclusions: Most PWE in Mwanza were diagnosed and treated by nurses. Patients were not thoroughly investigated, counseled and followed-up, and had limited choice and accessibility to AEDs. Some patients particularly in district hospitals were under-medicated despite of seizure recurrence. There was discrepancy between hospitals and practitioners regarding AED withdraw. We recommend short-course training about epilepsy management to the HWs who diagnose and treat PWE regularly.

Keywords: *Epilepsy Management; Mwanza; Tanzania; Care Offered*

CU04NC: Prevalence and factors associated with diabetes in pregnancy among women who delivered at a tertiary hospital in northern Tanzania

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Background: Diabetes mellitus is one of the non-communicable diseases which have been reported to increase worldwide. Diabetes among women of reproductive age is a global public health problem. During pregnancy, diabetes can either be pre-gestational or gestational. Little is known regarding the prevalence and factors associated with diabetes in pregnancy in sub Saharan Africa, including Tanzania.

Methods: A hospital-based retrospective cohort study was conducted from April to June 2017, using maternally-linked data from Kilimanjaro Christian Medical Center (KCMC) medical birth registry for the period of 2000 to 2015. A total of 53,543 singleton deliveries were studied. All women who were diagnosed with diabetes before or during the index pregnancy were included in the study. Data were analyzed using SPSS version 20. Descriptive statistics were summarized using frequencies and percentages for categorical variables while mean and

standard deviation was used for continuous variables. Adjusted odds ratios with 95% CI for risk factors associated with diabetes in pregnancy were estimated using multivariable logistic regression models. Finally, statistical significance was tested at P-value <0.05.

Results: The prevalence of diabetes in pregnancy of 0.3%. Maternal age ≥ 30 years (OR 3.79; 95% CI: 1.33 - 10.84), gravidity ≥ 5 (OR 4.58; 95% CI: 1.94 - 10.81), chronic hypertension (OR 4.21; 95% CI: 1.67 - 10.62) and pre-pregnancy obesity (OR 3.61; 95% CI: 1.18 - 10.91) were significantly associated with higher odds of diabetes in pregnancy.

Conclusions: Multiple risk factors were identified. Efforts to screen at risk women during prenatal care is warranted in order to provide appropriate clinical management to reduce/ prevent adverse pregnancy outcome related to diabetes mellitus.

Keywords: *Diabetes in pregnancy, prevalence, associated factors, Tanzania.*

CU05NC: Post hospital discharge linkage to care challenges among heart failure patients who attend referral hospitals in Mwanza City, Mwanza – Tanzania.

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Background: Despite the strides made in clinical management of heart failure, post hospital outcomes have remained suboptimal. Few studies done in sub Saharan Africa have documented high rate of mortality, readmission and lost to follow up. Reasons for these poor outcomes are poorly understood. This study aimed at identifying barriers to post discharge linkage to care at referral hospitals in Mwanza, Tanzania.

Methods: We conducted face-face In-depth interviews with heart failure patients attending clinics at referral hospitals in Mwanza City. All interviews were digitally recorded, professionally transcribed, de-identified, and transferred to NVivo 11 for analysis. Patients' additional information was collected during the interviews. Emerging themes and exemplar quotes were documented.

Results: This is an ongoing study; to date we have interviewed 11 patients. 80 % were female, mean age was 54. Three major themes emerged from our analysis. The themes included (1) Scarcity of drugs,

(2) high cost of drugs (3) access to care. Participants reported that the prescribed drugs were mostly out of stock. Participants especially those of low income status reported that they could not afford prescribed drugs. Finally, because heart failure clinical care was provided only on few specialised hospitals, patients reported challenges with access and long waiting times.

Conclusion and recommendations: The findings suggest that there is room for improvement in the quality of heart failure care. Future research and interventions should focus on understanding factors that contribute to scarcity of heart failure medicines in government hospitals, cost effectiveness of providing subsidies for medicines and acceptability of mobile heart failure clinics in the hard to reach areas. We recommend the provision of subsidies of medications, mobile clinics to rural areas as well as staffing clinicians at rural areas with updated knowledge, skills and facilities to treat and detect conditions which need referral to specialised centres.

Keywords: Heart failure, Post hospital discharge

CU06NC: Prevalence and Associated Factors of Red Blood Cell Alloimmunization Among Sickle-Cell Patients with Multiple Transfusions at BMC in Mwanza City-Tanzania

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Background: Red blood cell transfusions have reduced morbidity and mortality for patients with sickle cell disease (SCD). However, transfusions can lead to erythrocyte alloimmunization with serious complications for the patient including life-threatening delayed hemolytic transfusion reactions and difficulty in finding compatible units, which can cause transfusion delays. This study aimed at studying the prevalence of alloimmunisation in multiply transfused sickle cell disease patients and associated risk factors.

Methods: This was a hospital based descriptive cross-sectional study that involved 200 with SCD patients from May to July 2017 with more than two units of blood transfusion with red cells in the last one year. A structured questionnaire was used to gather demographics and clinical information, complete blood count was done by Sysmex hematology analyser and antibody screening was carried out by a standard tube method using a panel of three screen cells with known antigenicity, R1wR1 (D,E,c,M,S,P1,k,Leb,Fyb,Jkb), R2R2 (D,E,c,M,S,P1,k,Leb,Fyb,Jkb) and rr (c,e,N,s,P1,k,Kpa,Lea,Fyb,Jka), Lorne Lab, UK.

Results: Of 200 patients enrolled, 108 (54%) were females. Median (IQR) age was 4.5 years (3-9), mean (SD) number of transfusions was 3(1) with mean (SD) pretransfusion hemoglobin of 6.6 (2.7) g/dl. The prevalence of alloimmunisation was found to be 8.5% with IgG while 1 patient developed cold IgM antibody. Screen cells 1 (C,D,e,Cw,M,N,s,P1, K,k,Leb,Fya,Jka,Jkb) had the highest proportion of antigenicity compared to other screen cells. There was no statistical significant association between number of transfusions and the risk of alloimmunisation.

Conclusions: The prevalence of Alloimmunisation in multiply transfused SCD patients attending BMC is similar to other studies, reported to range from 4 to 40 percent. The number of transfusion did not determine the risk of alloimmunization, possibly because SCD already had altered the immune response, increasing the frequency of certain HLA antigens before transfusions, so that a small amount of transfused donor red cells is required to sensitize the immune system. We recommend National Blood Transfusion services and hospital blood banks to have an extended matching of red cells for SCD patients.

Keywords: Sickle Cell Disease; Alloimmunisation; Alloantibody; screen cells

CU07NC: Isoniazid-related vitamin deficiency rashes in the Baylor-Mwanza cohort during IPT scaleup: a retrospective cohort study

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Background: Isoniazid (INH) is known to induce vitamin B6 and B3 deficiency in children, causing characteristic clinical syndromes. Per the World Health Organization, intermittent preventive therapy (IPT) for tuberculosis with INH is recommended for HIV-positive children, and should be provided along with B6 prophylaxis. Baylor-Mwanza started prescribing IPT to clients in 2016, but due to medication shortages does not provide routine vitamin B6. Shortly after introduction, we started diagnosing B6 and B3 deficiency rashes in the patients receiving IPT. In this retrospective cohort study, we describe our experience with these side effects during IPT rollout.

Methods: We reviewed the charts of all clients prescribed INH for description of a characteristic B6- or B3-related rash and for prescriptions likely to be given for such a rash. We diagnosed INH complications retrospectively if the rash: occurred while receiving INH or within 6 months of discontinuation; was accompanied by neuropathy or sun sensitivity in characteristic locations; or resolved with discontinuation of INH, B6 supplementation and/or B3

supplementation. Age, weight, nutritional status, and ART regimen at start of IPT were compared between groups of IPT recipients who did and did not experience side effects using Student's T-tests or ANOVA, as appropriate.

Results: 218 clients were prescribed IPT in 2016; seven had likely INH-induced B6 or B3 deficiency syndromes. Rash incidence was 3.2%. Average age and weight did not vary between groups. There was no difference in rash incidence between those on non-nucleoside reverse transcriptase inhibitors (NNRTIs) versus those on protease inhibitors; 85% of children with side effects and 88% of children without side effects were on NNRTI-based regimens. Nutritional status at IPT initiation did not vary significantly between the groups.


Conclusion: In a cohort of HIV-positive children on IPT, B6 and B3 deficiencies may be common enough to warrant prophylactic provision of B6 and nicotinamide. Analysis of risk factors was limited by small sample size, and warrants more consideration with larger samples.

Keywords: Isoniazid, IPT, vitamin B6, Vitamin B3

CU08NC: Prevalence and Mapping of Sickle Cell Disease in Northwestern Tanzania

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Background: Tanzania has the 3rd highest number of infants in the world born annually with sickle cell disease (SCD) and lacks national newborn screening (NBS). Prior studies have suggested that the northwestern area of the country around Lake Victoria served by Bugando Medical Centre (BMC) has a particularly high incidence of SCD. BMC also houses the HIV early infant diagnosis (EID) laboratory. All dried blood spots (DBS) from exposed children in the Northwestern part of the country are shipped to BMC for PCR testing and are afterwards stored on-site. This study aimed to determine the prevalence of sickle cell trait (SCT) and SCD by region and district in northwestern Tanzania, to explore associations between SCT, SCD, malaria and HIV, to characterize regional hemoglobin variants and to build local capacity for accurate diagnosis and appropriate care for children born with SCD in Northwestern Tanzania.

Methods: The Tanzania Sickle Surveillance Study (TS3) is a year-long cross-sectional study among HIV-exposed infants born in northwestern Tanzania, whose DBS collected by the EID program are tested at BMC and available for further

testing of SCT and SCD. Samples collected from children < 24 months of age will be included. Isoelectric focusing (IEF) is used to determine sickle cell status, and specifically sickle trait versus disease. Further identification of other hemoglobin variants will be conducted using HPLC, DNA-based techniques such as PCR, and sequencing of the alpha and beta globin genes.

Results: Over the course of 6 months, 91 gels have been run. A total of 6,105 DBS samples have been scored, and 5,941 were collected from children less than 24-months old. Only 13 DBS yielded uninterpretable IEF results. All samples with SCD or variant hemoglobin have been confirmed on a repeat gel. The overall prevalence of SCT is 20.78% and the prevalence of SCD is 0.89%. The prevalence of variants is 0.13%. Malaria and HIV correlations will be performed at the study end.

Conclusions: Collaborative research partnerships provide an excellent mechanism for building local capacity to diagnose and improve care for SCD. The prevalence SCT and SCD is high in northwestern Tanzania.

Keywords: *Mapping; Northwestern Tanzania; Sickle cell disease;*

CU09NC: Simultaneous Point-of-Care Detection of Anemia and Sickle Cell Disease in Tanzania: The RAPID Study

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Background: Anemia is a common cause of global morbidity and mortality. The etiology of anemia is multifactorial but sickle cell disease (SCD) is one of the most important cause. Simple, inexpensive, point-of-care (POC) diagnostic assays for both anemia and SCD could allow for timely, life-saving medical interventions. Recently developed POC assays have been evaluated in controlled laboratory settings by experienced US investigators, but their feasibility and accuracy have yet to be evaluated. Therefore, this study aimed to evaluate POC assays for both anemia and SCD in Mwanza, Tanzania.

Methods: RAPID was a prospective study performed at Bugando Medical Centre. Patients <21 years old were recruited. SCD status was determined using Sickle SCAN™, a POC lateral flow assay able to qualitatively identify the presence of HbS, HbC, and HbA. The presence and severity of anemia was determined using POC color-based assay. Both assays are performed using 5-10 μ L of blood collected by finger prick, providing results within 5 minutes. Hemoglobin electrophoresis and a complete blood

count (CBC) were also completed for each participant as gold standard.

Results: RAPID recruited 752 participants with average age 5.2 ± 4.2 years, and data were available for 745. Sensitivity and specificity for the SCD POC assay were excellent for both Scorer 1 (sensitivity 99.4%; specificity 94%) and Scorer 2 (sensitivity 98.1%; specificity 91.1%), with excellent interobserver agreement (Kappa = 0.95). The absolute difference (mean \pm SD) between the color-based anemia POC assay and the CBC result was 1.0 ± 0.9 g/dL for Scorer 1 and 1.1 ± 0.9 g/dL for Scorer 2. There was a moderately strong correlation between the anemia POC assay and the measured hemoglobin concentration ($r=0.65$), and the POC assay had 83.2% sensitivity and 74.5% specificity for detection of severe anemia (Hb ≤ 7 g/dL, $n=171$). Interobserver agreement was excellent in the POC anemia assay ($r = 0.96$).

Conclusions: The POC SCD device was highly sensitive and specific. Overall, the pilot data for these POC assays represent important steps toward refining and implementing them in limited resource settings where they are needed the most.

Keywords: Anemia; Sickle cell disease; Tanzania.

CU10NC: Molecular Diagnosis of Alpha Thalassemia in a Newborn Population at Mwanza City, Northwestern Tanzania.

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Background: Alpha thalassemia is prevalent in tropical and sub-tropical regions worldwide where anemia from malaria, iron deficiency, or sickle cell disease are also common. The true prevalence of alpha thalassemia is unknown. Children are often diagnosed with iron deficiency anaemia based on a low haemoglobin and erythrocyte microcytosis because iron studies such as serum iron and serum ferritin are unavailable. Therefore, we conducted a study to determine the prevalence of alpha thalassemia and its haematological indices in a new-born population.

Methods: This was a cross-sectional study conducted among new-borns at Bugando Medical Centre (BMC) and Sekou Toure Hospital (STH) from August 2014 to February 2015. New-borns aged ≤ 7 days old with no history of blood transfusion were recruited. At enrolment, dry blood spots from a heel prick were collected for PCR analysis and 0.5 mLs of venous blood were collected in an ethylene diamine tetra-acetic acid (EDTA) vacutainer tube for complete blood count (CBC) using a Cell-Dyn 3700 (Abbott Diagnostics, USA) at STH. Blood samples for alpha

thalassemia variants were processed at the National Institute for Medical Research (NIMR), Mwanza.

Results: A total of 863 neonates were screened, 414 (48%) were from BMC, 440 (51%) were from STH, and 8 (1%) were delivered in other nearby hospitals and admitted to BMC or STH. The median age was 2 days (inter quartile range [IQR], 1-2 days). There were 454 (52.7%) male neonates. Out of 863 neonates, Patients were called by phones and scheduled on the date to receive their results and counselling was done on the same day. Alpha thalassemia was detected in 398/863 (49.6%) neonates. Of the 398 with alpha thalassemia, 310/863 (38.6%) were silent carriers ($\alpha\alpha/\alpha_*$) and 88/863 (10.2%) had thalassemia trait (α_*/α_*).

Conclusions: The prevalence of alpha thalassemia in North-western Tanzania is one of the highest in the world. It is important to distinguish between causes of microcytic anaemia in children living in areas where alpha thalassemia is prevalent. Children with red cell indices suggestive of alpha thalassemia should be screened so as to avoid unnecessary iron therapy, which could later result to iron overload.

Keywords: Alpha thalassemia; New-born; North-western Tanzania

CU11NC: Prevalence, patterns and predictors of thyroid dysfunction among patients with diabetes mellitus attending outpatient clinic at a Tertiary Hospital in North-western Tanzania

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Background: Diabetes mellitus (DM) and Thyroid dysfunction (TD) are the most common endocrine disorders and tend to co-exist. Diabetic patients are more likely to develop thyroid dysfunction than the general population. The prevalence of thyroid dysfunction in diabetic patients is reported between 10 and 15% in different studies worldwide. A meta-analysis reported an average prevalence of 11%, versus a TD prevalence in the general population of 0.6% to 6%. Studies from Africa have reported prevalence levels from 61% to 1.6%. The effects of thyroid dysfunction in diabetic patients include poor glycemic control, increased cardiovascular risks and increased short and long-term complications of DM. Increased insulin demands and serum lipid derangements have also been observed in diabetic patients with TD. The objective of this study was to determine the prevalence, patterns and predictors of TD in diabetic patients attending diabetic outpatient clinic at Bugando Medical Center (BMC) Mwanza Tanzania.

Methods: This was a hospital based cross-sectional study conducted at Bugando Medical Centre (BMC) diabetic outpatient clinic. A structured pre-tested questionnaire obtained socio-demographic and clinical information;

files were reviewed to obtain records of previous admissions if present and medications; random or fasting blood glucose levels were tested on clinic day and recorded. Laboratory testing for thyroid hormones (FT3, FT4 and TSH), cholesterol, triglycerides and HbA1c was done.

Results: A total of 201 adult diabetic outpatients were recruited, majority of which were female 63.7%, with a median age of 57[47 - 63] years and median diabetes mellitus duration of 6.5 years. Thyroid dysfunction was found in 64(31.2%) with isolated FT3 thyrotoxicosis being the most prevalent pattern by 47% followed by euthyroid sick syndrome (28.7%) and subclinical hypothyroid (15.1%). Female gender and previous history of thyroid disease predicted thyroid dysfunction in this population. Clinical symptoms and/or signs were reported in less than 6%.

Conclusions: The high prevalence of thyroid dysfunction in our population calls for a regular screening and close follow up of our patients. Further studies are warranted to ascertain the best screening tool and the impact of treatment of thyroid dysfunction in diabetes mellitus patients.

Keywords: *Thyroid dysfunction prevalence; diabetes mellitus; Northern Tanzania; FT3 thyrotoxicosis.*

MICROBIAL INFECTIONS AND ANTIMICROBIAL RESISTANCE



CU01AR: Drug Resistance Testing in HIV Patients virologically Failing First-Line Antiretroviral Therapy in Tanzania

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Background: The introduction of antiretroviral drugs (ARV) has changed the HIV epidemic into a chronic and manageable disease in many settings, thus reducing HIV infection-associated mortality and morbidity rates. The emergence and spread of viral resistance to ARVs can put antiretroviral therapy (ART) programmes in jeopardy, as it leads to unexpected poor treatment outcomes. This study determined the prevalence of HIV drug resistance in patients virologically failing first-line ART.

Methods: HIV-1 RNA was extracted from plasma using the QIAamp Viral RNA kit from 280 adult patients at Bugando Medical Centre, Mwanza. The HIV-1 *pol* gene that includes the Protease (PR) and a partial segment of the Reverse Transcriptase (RT) region (HXB2 nucleotides 2082 - 3334) was characterized. Complementary DNA synthesis and first round PCR amplification was done with the Access-RT PCR system. Second round nested PCR amplification was done with the native GoTaq DNA polymerase system. PCR products were sequenced using the BigDye Terminator v 3.1 Cycle Sequencing Ready Reaction Kit and run on an ABI Prism 3130 Genetic Analyzer. Both strands were sequenced using overlapping primers, sequences were,

read, manually edited and assembled into contigs using Sequencher v 5.1. The sequences were then submitted to Stanford's HIV drug resistance database for analysis.

Results: Virological failure occurred in 25%, (95%CI 20-30) of the participants. Poor adherence was associated with increased risk of virological failure, (OR 2.3, 95%CI 1.2-4.7). Sequences obtained from 47 patients and 89% had at least one major mutation with the potential of conferring resistance to ARVs. Common Reverse transcriptase mutations were M184V (25%), K103N (20%), G190A (13%), M41L (12%), D67N (11%) A98G (11%), Y181C (10%) and T215 (10%). High-level resistance was against 3TC (73%), FTC (69%), NVP (65%), EFV (64%), AZT (37%), RPV (27%), TDF (15%) and ETR (2%). HIV-1 subtypes found were subtype C (38%), A1 (32%), D (28%) and a recombinant A1/D (2%).

Conclusion: Virological failure and drug resistance associated mutations observed in this study were high and threaten existing and future treatment options. The integration of HIV drug resistance testing into existing HIV treatment and monitoring practices is crucial in achieving the expected health outcomes.

Keywords: HIV drug resistance; first-line ART; virological failure

CU02AR: Prevalence of extended spectrum beta-lactamase-producing enterobacteriaceae carriage among patients admitted at Morogoro Regional and Mazimbu hospitals, in Morogoro, Tanzania

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Background: Extended Spectrum Beta-Lactamases (ESBL)-producing Enterobacteriaceae (ESBL-PE) have been declared as a threat to public health worldwide. There is limited information on the carriage of ESBL-PE among patients in low-income countries. This study delineated the prevalence and factors associated with ESBL-PE carriage among patients admitted at Morogoro regional and Mazimbu hospitals, in Morogoro, Tanzania.

Methods: A cross-sectional hospital based study was conducted between May and July 2017. Socio-demographic and clinical information related to the study goals were recorded. Rectal swabs were collected and inoculated onto MacConkey Agar supplemented with 2µg/ml of cefotaxime to screen for ESBL-PE. Positive isolates were confirmed by the use Double Disk Synergy test. Data were analysed using STATA-13 software.

Results: Of the 285 patients investigated, 123 (43.16%) carried ESBL-PE in their

gastrointestinal tract. Five of the 123 ESBL positive patients were colonized with two different bacteria, making 128 isolates in total. *Escherichia coli* (n=95, 74.2%) formed the majority of ESBL-PE. History of antibiotic use (OR: 1.83, 95%CI: 1.1-3.2, P=0.03), being on antibiotic treatment (OR: 2.61, 95%CI: 1.5-4.53, P=0.001) and history of previous admission (OR: 2.24, 95%CI: 1.2-4.1, P=0.009) were independent predictors of ESBL-PE carriage. On cox regression analysis, 75% of patients acquired ESBL-PE in the first week of admission; and history of antibiotic use was found to predict fast acquisition of ESBL-PE (HR: 1.89, 95%, CI: 1.2-2.9, P=0.004).

Conclusions: ESBL-PE carriage among hospitalized patients in Morogoro region is alarmingly high. Since ESBL-PE carriage has been linked to subsequent occurrence of infections, there is a need to improve infection prevention and control measures to prevent cross transmission among patients.

Keywords: *ESBL, Carriage, Morogoro*

CU03AR: The effect of *Cymbopogon citratus*, (Lemon grass) on the Growth of bacteria causing urinary tract infection.

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Background: Plant products has been historically appreciated for their therapeutic purpose of different diseases. As natural products play a major role in treatment of disease, they form a base for traditional medicine system. For the past few decades the increase of antibiotic resistance among clinically important bacteria known to cause urinary tract infection has been reported. Due to this many antimicrobials are losing their efficacy. Therefore, this study focused on finding an alternative therapy for urinary tract infection by the use of *Cymbopogon citratus* leaves.

Methods: A laboratory based experimental study. Using 20 stored (-400C) clinical isolates of Klebsiella species (10; 5-ESBL and 5-non ESBL) and Escherichia coli (10; 5-ESBL and 5-non ESBL) associated with urinary tract infection. Distilled water and 70%v/v ethanol was used for extraction. Muller

Hilton Agar was prepared supplemented with herbal extract of different concentrations. Concentrations used was similar to both extracts; 0.075g/ml, 0.15g/ml, 0.225g/ml and 0.3g/ml. Subculture isolates was then cultured onto these MHA agar, observing the minimum herb extract concentration that inhibit growth of the test organism.

Results: The extracts were able to inhibit the growth of the test bacteria. For ESBL producing MIC was 0.3g/ml of *Cymbopogon citratus* aqueous extract while for non ESBL was 0.225g/ml of *Cymbopogon citratus* ethanoic extract.

Conclusion: This study has shown a potential antibacterial activity of *Cymbopogon citratus* leaves against Escherichia coli and Klebsiella species. Toxicological studies and susceptibility test against other bacteria and fungi is needed.

Keywords: *Cymbopogon citratus*; Urinary tract infection; ESBL; MIC

CU04AR: In vitro evaluation of ethanolic extract effectiveness of stembark of *Kigelia africana* (sausage tree) against ciprofloxacin-resistant strains of *Neisseria gonorrhoeae* clinical isolates in Mwanza city, Tanzania

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Background: Due to emergence of resistant strains of *Neisseria gonorrhoeae* against ciprofloxacin and ceftriaxone which are recommended drugs of choice, treatment of gonorrhea has been challenging. This study was conducted to evaluate antimicrobial activity and minimum inhibitory concentration (MIC) of *Kigelia africana* as a potential alternative remedy.

Methods: Ethanolic crude extract of *Kigelia africana* was prepared at CUHAS-Multipurpose laboratory. Different concentrations (0.001, 0.003, 0.006, 0.0125 and 0.025) g/ml were tested to determine MIC against four ciprofloxacin-resistant strains of *Neisseria gonorrhoeae* at the National Institute for Medical Research (NIMR)-Laboratory.

Results: Ethanolic extract of stembark of *Kigelia africana* inhibited growth of 4

stored clinical isolates of ciprofloxacin-resistant strain of *Neisseria gonorrhoeae* (GC -032, 115, 187, 028). Bacteria growth was observed upon inoculation in all four regions of plates at 0.001g/ml and 0.003g/ml. Growth was also observed in only two regions of inoculation on the plates at 0.006g/ml and 0.0125g/ml concentrations where growth inhibition of *Neisseria gonorrhoeae* was observed at 0.025g/ml, connoting MIC of these strains.

Conclusion: This study has shown antimicrobial activity of *Kigelia africana* stembark ethanolic crude extract against ciprofloxacin-resistant strains of *Neisseria gonorrhoeae*. There is need to perform toxicological studies to determine margin of safety for human use.

Keywords: *Kigelia africana*; *Neisseria gonorrhoeae*; MIC

CU05AR: Faecal coliform contamination of fresh produced local juices obtained from retail restaurants located in Nyamagana, Mwanza-Tanzania

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Background: Fresh produced local juices have health and nutritional benefits when consumed. However, when hygienic practices are not stringently observed during processing, the risk of juice contamination is very high. The main objective of this study was to determine the prevalence and factors associated with faecal coliform contamination of fresh fruit juices in Mwanza City.

Methods: A cross section community based study was conducted in Nyamagana, Mwanza involving 45 restaurants, from which 59 juice samples were collected. Juice samples were collected into sterile containers and transported to the CUHAS Multipurpose Laboratory for analysis basing on the standard operating procedures.


Results: Out of 45 interviewed participants, 25 were females (55.6%),

median age was 34 [IQR 24-41] years and majority were primary school levers 22 (48.9%). Out of 59 juices samples collected, 20 were contaminated with faecal coliform (33.9%), with predominance of *Escherichia coli*, 45% (9/20). There was a significant association between fresh produced local juices contamination and restaurant cleanliness status (p value = 0.014).

Conclusion: Approximately one third of fresh produced local juices in Nyamagana, Mwanza are contaminated with faecal coliform and the contamination is associated with poor hygienic practices. These underscores routine inspection of these restaurants by relevant authorities to reinforce hygienic status and subsequently reduce the risk of contamination of fresh produced juices.


Keywords: *Faecal coliform; Fresh produced local juice; Mwanza; Tanzania*

CU06AR: Prevalence and predictors of extended spectrum beta lactamase producing Enterobacteriaceae neonatal sepsis at Bugando Medical Centre Mwanza, Tanzania

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Background: Neonatal sepsis is a worldwide problem and accounts for 2 million deaths of the new-borns every year. Neonatal sepsis due to extended-spectrum-beta lactamases producing enterobacteriaceae (ESBL-PE) is of increase and is associated with significant morbidity and mortality. Here we report the magnitude of ESBL neonatal sepsis and its associated factors.

Methods: A hospital based cross-section study was conducted at the Bugando Medical Centre (BMC) neonatal units between July 2016 and December 2016. Neonates and their mothers were enrolled and screened for ESBL-PE colonization. In addition, blood culture was carried out for all neonates. Step wise logistic regression analysis was done to determine predictors for ESBL-PE neonatal sepsis, ESBL-PE colonization and mortality using STATA-11 software.

Results: A total of 304 neonates with median age of 6 days (IQR 3-9) were enrolled. Of 304 neonates, 166(54.6%; 95%CI: 49-60.1) were found to be colonized by ESBL-PE. Neonatal ESBL-PE sepsis was detected in 32 (10.5%, 95%CI: 7.1-13.9). Factors found to predict neonatal ESBL-PE sepsis were: admission at neonatal Intensive Care Unit (NICU) (OR: 3.02, 95%CI; 1.19-7.69,

p=0.021), positive mother ESBL-PE colonization (OR: 2.8, 95% CI; 1.29-6.3, p=0.009) and positive neonate ESBL-PE colonization (OR: 3.1, 95% CI; 1.19-7.99, p=0.021). Positive ESBL-PE colonization of the mother (OR: 2.2, 95%CI 1.26-3.7, p=0.005) and history of antibiotic use (OR:1.73,95%CI 1-2.9, P=0.048) were found to predict neonatal ESBL-PE colonization. Deaths occurred in 55(18.1%, 95% CI 13.4-22.4) neonates. Predictors of death were being admitted at NICU (OR 2.7, 95%CI 1.12-6, p=0.015), referral from other centres (OR:2.9,95%CI 1.4-6.1, P=0.004) and positive ESBL-PE neonatal sepsis (OR 3.2, 95%CI 1.3-7.7, P=0.011). *Klebsiella pneumoniae* isolate were commonly found infecting and colonizing these neonates.

Conclusion: Most neonates at BMC neonatal units were infected with ESBL producing *Klebsiella pneumoniae*. Maternal and neonatal ESBL-PE colonization, and being admitted at NICU were risk factors for ESBL-PE neonatal sepsis. Neonates referred from other centres, infected with ESBL-PE and admitted at NICU had significantly high mortality rate. Routine screening for ESBL-PE among neonates at BMC should be an enduring exercise so as to guide specific antimicrobial therapy and reduce adverse neonatal outcomes.

Keywords: ESBL; Neonatal sepsis; Mwanza.

CU07AR: ESBL producing *Escherichia coli* and *Salmonella* spp., in retail meat and humans working in retail meat shops in Mwanza City, Tanzania

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Background: Extended spectrum beta-lactamases (ESBL) producing *Escherichia coli* are prevalent in animals and humans in Mwanza, Tanzania. Limited information is available regarding the presence of ESBL producing bacteria in retail meat products. The present study aimed at investigating the presence of ESBL producing bacteria in the retail meat samples and in the stool of the humans working in various retail meat shops in this city.

Methods: About four samples of 250g meat stake each were collected from a single retail meat shop, in addition stool samples were taken from all humans working in the shop. Meat and stool samples were processed to detect ESBL producing *Escherichia coli* (*E. coli*) and *Salmonella* spp., following standard operating procedures. Standardized data collection tool was used to collect socio-demographic and other related factors.

Keywords: *ESBL; E. coli; meat; humans.*

Results: A total of 65 retail meat shops were sampled; 260 meat samples and 130 non-repetitive stool samples were obtained from these shops. Out of 130 human stool samples, 15(11%, 95%CI, 6-16.9) were positive for ESBL-producing *E. coli*. Whereas, of 260 meat samples, 227(87.3%) and 14 (5.3%) were contaminated with *E. coli* and *Salmonella* spp., respectively. ESBL producing *E. coli* were detected in 57(25%, 95%CI: 19.3-30.6) of 227 *E. coli* isolates from meat samples and none of *Salmonella* spp., was found to produce ESBL.

Conclusions: A significant proportion of retail meat samples are contaminated with ESBL-producing *E. coli*. The observation highlights on the need of 'One Health' approach in combating the spread and the emergence of antimicrobial resistance especially in low-income countries.

CU08AR: The population structure of clinical Extra-intestinal *Escherichia coli* isolated from patients in a teaching hospital from Nigeria

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Background: The escalating antimicrobial resistance (AMR) and its attributable negative health impacts calls for simple and cost-effective laboratory tools to delineate the circulating bacterial clones and subsequently guide specific infection prevention and control (IPC) strategies. The utility of novel polymerase chain reaction (PCR) - based method as an epidemiological tool has been sparsely evaluated in Africa.

Methods: We characterized 60 non-repetitive extra intestinal pathogenic *Escherichia coli* (ExPEC) strains isolated between June and November 2014 from patients in Bauchi, Nigeria using a 7-single nucleotide polymorphism quantitative PCR. Circulating septatypes, sequence types (ST) and antimicrobial resistance profiles were identified.

Results: Most of the isolates were from urine samples (58.3%). Antimicrobial

resistance among ExPEC strains to ciprofloxacin, gentamicin, piperacillin-tazobactam and ertapenem were 70.0%, 55.0%, 15.0% and 0.0% respectively. Approximately two third of these isolates were ESBL producers expressing blaCTX-M-15 allele. The most common clones were ST131 (23.3%), followed by ST457 (20.0%). Of the twelve distinct septatypes obtained, septatypes 360 (26.7%) and 561 (23.3%) predominated, and these corresponded to ST457-fimH145 clone and ST131-fimH30 lineage respectively.

Conclusions: Approximately one quarter of ExPEC isolates in Nigeria belong to the global ST131-fimH30 lineage. Therefore, delineation of the global distribution of ExPEC ST using this simple and cost-effective method will largely assist IPC and antimicrobial surveillance programs in developing countries.

Keywords: *Extrapatogenic E. coli*; ST131; Nigeria

CU09AR: Prevalence of Extended Spectrum Beta Lactamases producing enterobacteriaceae intestinal carriage among cancer patients on chemotherapy at Bugando Medical Centre

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Background: Extended Spectrum Beta Lactamases producing Enterobacteriaceae (ESBL-PE) are responsible to various infections worldwide. Cancer patients are at increased risk of infections as a result of colonization of ESBL-PE. The data regarding colonization of ESBL-PE among cancer patients in low-income countries are limited; therefore, this study was done to investigate the magnitude ESBL-PE colonization among cancer patients on chemotherapy at BMC.

Methods: A cross-section study was conducted among cancer patients on chemotherapy. Stool sample was collected and processed to detect ESBL-PE. Demographic and clinical information were collected by using pre-tested data collection tool. Data were analyzed using STATA version 13 software according to the objectives of the study.

Results: A total of 206 cancer patients on chemotherapy between April and July 2017 were enrolled. The slightly majority 54.37% (112/206) of participants were female. The median age (IQR) of study participants was 49 (28 – 63) years. The overall prevalence of ESBL-PE colonization was 35/206 (17%). The ESBL-PE colonization by cycle was 2.7%, 7.1%, 10.3%, 11.5%, 11.3%, 12.7% and 3.6% in cycle 1 (N=37), cycle 2(N=127), cycle 3(N=174), cycle 4 (N=141), cycle 5(N=79) and cycle 6(N=56), respectively. There was no significant difference in ESBL colonization between neutropenic patients and non-neutropenic patients 9 (30%) vs. 11 (22%) $p=0.424$.

Conclusions: The prevalence of ESBL-PE among cancer patients on chemotherapy is almost similar to that of general population in the city of Mwanza underscoring more research to investigate the drivers of ESBL-PE in the city.

Keywords: ESBL, Cancer patients, Chemotherapy, *E. coli*

CU10AR: Chemotherapy induced neutropenia among cancer patients at the Bugando Medical Centre oncology unit

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Background: Neutropenia among cancer patients receiving chemotherapy increases the risk of infections hence increased morbidity and mortality. This study was designed to determine the magnitude of neutropenia among cancer patients receiving chemotherapy attending Bugando Medical Centre between April and July 2017 at oncology unit of the Bugando Medical Centre.

Methods: Patients attending the oncology unit on various cycles of chemotherapy were serially enrolled. Whole blood sample was collected and processed by BC- 3200 haematological analyser for neutrophil counts. Data were analysed using STATA version 13.

Results: A total of 206 cancer patients on chemotherapy between April and July 2017 were enrolled. The slightly majority 54.37% (112/206) of participants were female. The median

age (IQR) of study participants was 49 (28 - 63) years. The prevalence of neutropenia at baseline, first cycle, second cycle, third cycle, fourth cycle, fifth cycle and sixth cycle were; 8.74% (18/206), 35.92% (74/206), 44.66% (92/206), 38.35% (79/206), 30.58% (63/206), 14.56% (30/206) and 8.25% (17/206), respectively. Neutropenia at cycles 2, 3 and 5 were found to be statistically associated with being female; [52.83% (56/106), P = 0.046], [54.74% (52/95), P=0.002] and [47.62% (20/42) P=0.049], respectively.

Conclusions: More than a third of cancer patients receiving chemotherapy becomes neutropenic at cycle 2, 3 and 4. There is a need to vigorously screen for infections in order to provide early appropriate management among cancer patients receiving chemotherapy at our-setting especially at cycle 2, 3 and 4.

Keywords: *Neutropenia, chemotherapy*

CU11AR: Prevalence of Contamination of Clinical Coats by Extended Spectrum Beta Lactamase Producing Enterobacteriaceae among Clinicians and Medical Student at Bugando Medical Centre

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Background: Contaminated clinical coats have been associated with transferring of multi-drug resistant bacteria from hospital settings to the community and as well as cross transmission between patients. This study investigated magnitude and pattern of extended spectrum beta lactamase producing Enterobacteriaceae contaminating clinical coats.


Methods: A cross-sectional study was conducted between April and July 2017 at Bugando Medical Centre. A total of 157 clinical coats were aseptically swabbed with sterile cotton swabs at mouth end of pockets. Swabbed material was inoculated into blood and MacConkey agar and incubated at 37°C for 18-24 hours. Bacteria were identified to species level by in-house biochemical identification tests. Antimicrobial susceptibility testing was done by disk diffusion method and interpreted as recommended by the Clinical Laboratory Standards Institute.

Results: Out of 157 clinical coats, 79.6% (125) had positive bacterial culture. A total of 55/125 (44%) had single bacterial growth while 70/125 (56%) had mixed growth of two predominant species making a total of 180 bacteria spp. Among the isolated bacteria 88/180 (48.9%) were gram negative bacteria. The most leading isolated gram-negative bacteria was *Pseudomonas aeruginosa* 22/88 (25%) followed by *Citrobacter freundii* 17/88 (19.3%). The prevalence of extended spectrum beta lactamase producing Enterobacteriaceae was 23/88 (26.1%); *Citrobacter freundii* being the leading 43.4% (10/23). ESBL producing *E. coli* and *Klebsiella pneumoniae* were detected on 1 (4.3%) and 2 (8.7%) of clinical coats, respectively.

Conclusions: The prevalence of extended spectrum beta lactamase producing Enterobacteriaceae contaminating clinical coats is high. Infection prevention and control measures and personal hygiene should be emphasised.

Keywords: Pathogens, Extended spectrum beta lactamase producing Enterobacteriaceae, clinical coats

CU12AR: Antibiotic Prescription Pattern at the Department of Internal Medicine: A Case Study from Bugando Medical Centre

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Background: Irrational antibiotic prescribing can lead to the increase of antibiotic resistance and cost of health care. Hospital settings are a good breeding environment for propagating antibiotic resistance, and are promoted, in part by clinicians prescribing practices. The objective of this study was to assess the prescribing pattern of the internal medicine department of the Bugando Medical Centre (BMC)-a tertiary hospital in Mwanza, Tanzania.

Methods: A hospital based cross-sectional study was carried out in May 2017. The study involved 355 randomly selected hospital files from patients that attended internal medicine department between January 2016 and December 2016. A standardized check list was used to retrieve patients' information like age, sex, indication, antibiotic prescription frequency, route of administration, generic prescribing, prescribing from NESML and culture and sensitivity. Data were analyzed by STATA version 13.

Keywords: *Irrational prescribing, antibiotic resistance*

Results: Antibiotic prescriptions were noted on 152(43%) hospital files. The average number of antibiotics prescribed per encounter was 1.6. Cephalosporins 95 (36.1%), were the most common group of antibiotics prescribed. Antibiotics were commonly prescribed for respiratory tract infections 77(49%). The percentage of injections was 135(51.8%). A total of 261(99.2%) of the antibiotics prescribed were generics and 262(99.6%) were from the National Essential Medicines List. The average treatment days with antibiotics were 7 days. Microbiological culture guided prescribing was performed in only 11(7%) encounters.

Conclusions: The majority of antibiotics prescription at BMC are not guided by culture results. Drug sensitivity patterns of common pathogens at the Bugando Medical Centre should be established so that appropriate choices can be made to avoid antibiotic resistance and treatment failure.

CU13AR: Oral Candida Carriage among Cancer Patients at Bugando Medical Centre, Tanzania

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Background: Opportunistic fungal infections, mainly candidiasis is common in immune-compromised patients including cancer patients on chemotherapy. This study was done to investigate the prevalence and species of candida colonising cancer patients on chemotherapy attending the Bugando Medical Centre, Mwanza Tanzania.

Methods: A total of 206 cancer patients on chemotherapy were investigated to detect *Candida* spp. colonization. Oral swabs were cultured on Sabouraud agar followed by species identification using Candida ChromoAgar.

Results: The median age (IQR) of the participants was 49 (28-63) years and the slightly majority were female 54.37%

(112/206). A total of 21(10.2%) patients were HIV positive and of them 95.24% (20/21) were on HAART. The prevalence of *Candida* spp., oral colonization was found to be 26.21% (54/206). *C. albicans* 51/54(94.4%) was the most common *Candida* spp., detected. Non-albicans *Candida* spp. accounted for the 5.6 % (3/54) of *Candida* oral colonization whereby 2/54 (3.71%) were *Candida glabrata* and 1/54(1.85%) was *C. tropicalis*.


Conclusions: Oral *Candida* spp. colonization is high among cancer patients receiving chemotherapy at Bugando Medical Centre. Studies should be done to investigate the role of these *Candida* spp. in causing infections in this immunocompromised group of patients.

Keywords: Carriage, *Candida albicans*, Chemotherapy

HEALTH SYSTEMS RESEARCH



CU01HS: The Risk Factors for Inappropriate Blood Requisition among Government and Private Hospitals in Tanzania

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Background: Blood is used widely as a part of treatment in life saving situations which has increased the demand for it. Blood requisition practices can lead into either an increase or a decrease of blood stored in the banks. This study aimed at determining the risk factors for inappropriate blood requisition in Tanzania.

Methods: A cross-sectional survey investigated secondary data of 14,460 patients' blood requests from 42 transfusion hospitals. Primary data were obtained by using a cluster-sampling design. The data were analysed using a two-level mixed-effects Poisson regression to determine fixed-effects of individual-level factors and hospital level factors on inappropriate blood request. P-value <0.05 (2-tails) was considered statistically significant.

Results: The proportion of inappropriate requisition was 28.8%. Significant risk factors were as follows: reporting pulse rate and capillary refills decreased the risk by 26% (RR 0.74; 95% CI 0.64, 0.84; p<0.0001) and 27% (RR 0.73; 95% CI 0.63,

0.85; p<0.0001) respectively, compared to those who had not report. Patients who had surgery during hospital stay had a 22% higher risk (RR 1.22; 95% CI 1.06, 1.4; p<0.0001). Being in surgical wards presented a higher risk than being in a medical ward as follows: general surgical ward, by 3.3 times (RR 3.3; 95% CI 2.7, 4.2; p<0.0001), paediatric surgical ward, by almost 2 times (RR 1.8; 95% CI 1.2, 2.7; p<0.008), obstetric ward, by 2.5 times (RR 2.5; 95% CI 2.0, 3.1; p<0.0001). Furthermore, being in a gynaecological ward had higher risk by 2.1 times (RR 2.1; 95% CI 1.5, 2.9; p<0.008) and orthopaedics ward by 3.8 times (RR 3.8; 95% CI 2.2, 6.7; P<0.0001) of a risk of inappropriate blood request comparing to being in a medical ward. Other risk factors were age of the patient, reporting paleness and haemoglobin level of the patient.

Conclusions: The proportion of inappropriate requests was high, determined by clinical, laboratory findings and admitted ward; hence, better adherence to transfusion guidelines is recommended.

Keywords: *Blood; Inappropriate requisition; hospitals*

CU02HS: Loss to Follow-Up among HIV Infected Women in Option B+ In Moshi Municipality, Tanzania: A Retrospective Cohort Study

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Background: This study aimed to determine the loss to follow-up (LTFU) in care among HIV infected women initiated on Option B+ and to investigate possible predictors of LTFU.

Methods: This was a historical cohort design among HIV positive women who initiated on option B+ between February 2014 and December 2015 in Moshi Municipality, Tanzania. Logistic regression analysed factors for LTFU in the first 3 months. Survival analysis estimated cohort survival functions for the whole period of follow-up and Cox proportion regression analysis examined factors associated with LTFU.

Results: Among 468 women included in the analysis, 375 (80.13%) were retained in care at 3 months. The overall retention during a follow-up time of 8 months was

54.9%. Younger age at ART initiation (OR; 2.219 (95% CI; 1.239-3.971), breastfeeding as reason for ART initiation (OR; 4.100 (95% CI; 1.476-11.38) and having no treatment supporter (OR; 3.758 (95% CI; (2.286-6.176) were associated with the higher odds of early LTFU (3 months). Having no treatment support was the only significant factor that was associated with the increased risk of LTFU for entire period of follow-up (aHR: 1.354; 95%CI [1.326-2.214]).

Conclusions: Younger age at ART initiation, breastfeeding as reason for ART initiation and having no treatment supporter were associated with risks of LTFU. Special attention to HIV infected women with limited treatment and social support and concerns about starting treatment for life in younger age may be crucial in improving engagement in care.

Keywords: *Loss to follow-up; HIV infected women; Option B+*

CU03HS: Postnatal Care Utilization and Facility Service Readiness in Misungwi District, Rural Tanzania: A Mixed Methods Evaluation

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Background: Majority of infant and maternal deaths occur in the first month after birth. Of the 7.6 million deaths in children under the age of five, 44 % occur during the neonatal period and nearly half of these deaths occur during the first 72 hours of birth. This makes postnatal period to be the most important time to offer care to mothers and their newborns. Tanzania Demographic and Health survey- malaria indicator survey (TDHS-MIS) 2015/2016 shows that only one-third (34%) of women receive a postnatal checkup within two days of delivery while 63% do not receive a postnatal checkup within 41 days of delivery. According to the One Plan II (2016-2020), the lake zone particularly Misungwi district perform poorly in all Maternal Newborn and Child Health (MNCH) indicators. Therefore, this study aimed at determining the postnatal care service usage and the health facility capacity to provide them.

Methodology: This was a cross sectional study which used qualitative approach conducted between July and October 2016. Health Facility Survey collected data from all 45-health facility in-charges using verbally administered questionnaires. MNCH coverage was conducted among heads of household

and women aged 15-49 years using probability sampling techniques to get 1977 households including 2438 women. Qualitative Survey included Focus Group Discussions (women) and Key Informant Interviews (Health Care Providers).

Results: Health Facility Survey shows that, only 18% of staff are trained in Basic Emergency Obstetric and Newborn Care (BeMONC) and 40 % had essential Newborn Care training. However, BeMONC was only 55.4% functioning in 16 facilities, compared to the 85.7% functioning of all the three Comprehensive Emergency Obstetric and Newborn (CeMONC) facilities. MNCH Coverage survey was found to be 43% and 51% for mothers and babies respectively. Qualitative Survey see no need as most informant report women feel that, “everything is over” after delivery.

Conclusion: Poor attendance to postnatal care (PNC) is associated with no perceived importance to get the services after birth is complete. Women will attend PNC to get vaccination, measure weight and get their children registered. It is therefore recommended that vaccination services be merged with PNC care packages to increase the use for both.

Keywords: *Postnatal care; Health System.*

CU04HS: Assessment of Knowledge and Practice Associated with the Use of the Nursing Process at Sumve and Kolandoto Schools of Nursing.

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Background: The nursing process in the discipline of nursing is considered as an organized, systematic approach used by nurses to meet the individualized health care needs of their patients. The study aimed at exploring the challenges faced by nursing students at Sumve and Kolandoto School of nursing in using the nursing process during caring patients.

Methods: A descriptive cross-sectional design was used in this study. Nursing students at Sumve and Kolandoto Schools of nursing were involved. Sample size was 336. Data was analyzed using STATA version 13. Results presented into percentages. Chi² used to show the association between knowledge and the use of nursing process. P value of < 0.05 and 95% confidence interval (CI) was considered as statistical significant.

Results: 83.82% of respondents enrolled in the nursing schools were O level secondary education. There was no relationship between the level of

education and the use of nursing process. The study revealed that only 33.77% certificate nursing students were competent to formulate clear nursing interventions. There was an association between the program attained and the formulation of nursing interventions. The study showed that 39.81% of the respondents agreed that time allocated in clinical areas was enough to practice nursing process and 35.93% of the respondents disagreed. The association between time allocated for student nurse and the use of the nursing process was significant. The study revealed that 58% of the respondents stated that the shortage of staff hindered utilization of the nursing process.

Conclusions: Nursing institutions should ensure that the application of the nursing process taught in clinical areas occupies sufficient time in order to make student nurses more competent in applying the nursing process.

Keywords: *Nursing process; Nursing care plan.*

CU05HS: Poverty-Related Barriers to Antenatal Care Attendance in Misungwi District, Northwestern Tanzania: A Qualitative Assessment.

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Background: Globally, maternal and newborn mortality reduction remains a priority. Antenatal care (ANC) visits at least four times during pregnancy (ANC 4+) is a key national strategy. A household survey conducted at baseline prior to a district-wide maternal newborn and child health intervention in rural Misungwi District demonstrated relatively low ANC 4+ attendance (47%); achievement by lowest wealth quintile women was 45% versus that of the highest (49%). The main objective of this study was to investigate the barriers to ANC attendance in Misungwi District using a social equity lens.


Methods: An explorative qualitative study used focus group discussions (FGDs) and key informant interviews (KIIs) involving purposefully-selected participants representing pre-identified stakeholder and user-groups (i.e. community members, health providers, health leaders) was conducted. Trained facilitators used semi-structured FGD and KII guides and solution-based probes to illicit perceptions about care-seeking around the time of birth including ANC. FGD/KIIs were conducted in Swahili, recorded, and then transcribed into English. Data was entered and coded; in NVivo software thematic analysis was used.

Results: During July-August 2016, 12 FGDs and 7 KIIs were conducted. Four potentially poverty-related key barriers for ANC attendance emerged:(1)“*Long distance*” from home to health facility may most affect poorest families who cannot obtain money for transport; (2)“*Time-cost at health facility*” occurs when women spend long time waiting for ANC, complicated by hunger due to lack of money for food while away from home; (3)“*Dependence by women on men for decisions and money*” due to male dominance in decision-making and finances; and (4)“*Lack of ANC education*” which leaves women (and partners) uninformed on why and when to attend ANC. (4) was linked by participants to poverty because of inability by poorer families to attend the health facility for ANC sensitization and their lower attendance at community gatherings which emphasize ANC.

Conclusion: Long distance, time-cost at health facility, male dominance, and lack of health education amongst low-income families may limit their ANC attendance. Community solutions will be critical to increasing care-seeking for lowest wealth-quintile women during the upcoming intervention.

Keywords: *Poverty; Antenatal care; Maternal health; Equity*

CU06HS: Postpartum Engagement in HIV Care in the context of Option B+ in Tanzania: An Implementation Science Study

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Background: In 2014, Tanzania started to implement WHO's Option B+ protocol for prevention of mother to child transmission of HIV (PMTCT). Under the Option B+ protocol, all pregnant women living with HIV initiate lifelong antiretroviral therapy (ART). There are concerns about implementation challenges, particularly with retention and adherence in the postpartum period. Here, we describe preliminary results of a study, which aimed to (1) examine patient-level factors that impede or support postpartum care engagement; and (2) examine the facility-level implementation of Option B+ in the Kilimanjaro region.

Methods: We enrolled a cohort of 200 women, initiating or continuing ART during pregnancy from 9 clinical sites. Baseline surveys were conducted during pregnancy and will be repeated 3, 6, and 12 months postpartum to measure potential predictors that affect retention in care. A sub-set of 24 women will complete in-depth interviews (IDI's) during pregnancy and 3 months after delivery. We documented current practices through clinical observations at 3 representative clinics and explored implementation facilitators and barriers by 30 key informant interviews (KIIs).

Results: Two hundred women were enrolled, the median (IQR) age was 30 (25-35). Approximately half (47.5%) are newly HIV diagnosed. We have initiated follow up data collection for 165, with 98.7% follow up rate for those eligible thus far. Data collection will continue until December 2018. Furthermore, we have conducted 35 hours of observation and 30 KIIs at three healthcare facilities. Adaptability was confirmed by the protocol uptake among the three healthcare facilities, despite the variability in staffing structures and flows of care among the clinics. Observations and interviews revealed that lack of patient HIV disclosure to partners and family members due to fear of stigma likely impeded full implementation of the protocol. Despite challenges, there was consensus among health care providers that Option B+ was effective in preventing vertical HIV transmission.

Conclusion: The proposed study will produce implementation science data that can identify and inform best programmatic practices under Option B+. Ideas for intervention will be developed through focus group discussions and facilitated dissemination of findings via stakeholder meetings.

Keywords: *Option B+; postpartum care engagement; Implementation science; HIV*

CU07HS: Use of Mycare Tool for Assessment of Clients' Experiences of Services Given in Primary Healthcare Facilities of Mwanza Districts, Tanzania: A Qualitative Appraisal

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Background: Exploring client's experiences of health care services aimed to obtain information from users which, when strategically used help in planning to improve services in primary healthcare facilities. The purpose of this study was to explore and describe clients' experiences of primary healthcare services in six selected healthcare facilities located in Mwanza districts, Tanzania.

Methods: A qualitative appraisal using focus group discussions and an exit questionnaire for demographic data of respondents were used to collect data. Qualitative content analysis method was employed to analyze the Focus group discussion data. The elements of MyCare tool namely punctuality of staff, queue system, staff attitudes, availability of treatment, information provision and opportunity of clients to provide feedback; guided data collection and analysis. Information from the exit questionnaire were analyzed using Excel computer program.

Results: A total of 59 informants were included in the study. Majority (64.4%)

were female. More than half (54.2%) were young adults (20-40 years) with 39% of them to be between 41-60 years old. Fewer (6.8%) were 60 years and above. Results from focus group discussions yielded 6 main categories. The category "punctuality" showed informants' need for staff to utilize their time better. The "attitude" category describe in its subcategory "role of language" that informants were dissatisfaction with the use of Kiswahili language to the native Kisukuma users. While subcategories "respect to clients" and "empathetic" emerged to indicate satisfaction in other relationship aspects. The sub categories under each respective category reported showing "Unavailability" of treatment "costs too high", "favoritisms," "HCW always in a hurry" and "no opportunity to provide feedback" emerged as major issues that needed improvement.

Conclusion: Primary health care service quality can be improved by using information from its users. MyCare tool was a useful instrument to elicit information from primary health service

Keywords: Primary healthcare facilities; Clients experiences; MyCare tool; Focus group discussion.

PUBLIC HEALTH



CU01PH: Prevalence of Patients Using Traditional Medicine and Conventional Medicine in the Management of Type 2 Diabetes Mellitus, attending Clinic at Sengerema Designated District Hospital.

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Background: Diabetes mellitus is a major cause of mortality worldwide with about 347M people affected. Patients try to find ways of managing the disease. Traditional medicine is now a common practice among diabetic patients but little is known on the safety of the drugs and on the factors which lead to use of traditional remedies in the management of Diabetes Mellitus.

Methods: A cross-sectional study involved all type 2 Diabetic patients attending clinic at Sengerema hospital. The patients were interviewed using a Swahili questionnaire. The results were transferred into an Excel spreadsheet and data were analyzed by STATA version 13.

Results: 203 patients were enrolled in this study. Among those, 126 participants (66.3%) said that they had been using

traditional medicine and, out of 126 participants, 86(68.2%) reported a concurrent use of traditional medicine and conventional medicine. Age ($p=0.001$) was the factor associated with the use of Traditional Medicine among diabetic patients. Individuals with diabetes mellitus got the information on traditional medicine use from their friends and relatives (50%), mass media (34.7%) and at the hospital (15.3%).

Conclusions: Traditional Medicine use was commonly practiced among diabetic type 2 patients at Sengerema DDH and most of them used it concurrently with conventional medicine, unknowing of the side effects. Most of the respondents had a positive perception about the concurrent use of traditional medicine and conventional medicine.

Keywords: *diabetes mellitus; Traditional medicine; conventional medicine.*

CU02PH: Status of Water, Sanitation and Hygiene (WASH) Services in Health Facilities, Misungwi District, Northwestern Tanzania.

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Background: Adequate water, sanitation and hygiene (WASH) in and around the time of birth is critical to save maternal and newborn lives. Infection-related deaths could be reduced through improved WASH indicators (water supply, sanitation, hand hygiene, cleaning, waste management). A planned intervention seeks to improve Maternal Newborn and Child Health (MNCH) services, including WASH, at facilities throughout Misungwi District, rural Tanzania. A pre-intervention needs assessment evaluated health facilities.

Methods: A cross sectional quantitative health facility survey used a de novo, interviewer-administered questionnaire to assess WASH, amongst other facility indicators at all district facilities. Standardized questions and observation checklists selected and modified from Averting Maternal Death and Disability and Demographic Health Survey tools assessed by teams that included a clinical technical expert and a trained research assistant. Responses by faculty in charges and observations were recorded and

entered in REDCap, 'R' software. Descriptive analysis was used to calculate key indicators. A composite readiness scoring grid tabulated WASH indicator into a single percentage achievement score.

Results: Data was collected from all 46 (100%) health facilities in Misungwi. Overall, 28% had access to a nearby (<500m) improved water source; 39% had a dedicated client latrine/toilet; 30% had hand washing available near the delivery area; 30% provided safe contaminated waste disposal; 52% demonstrated safe equipment processing; 30% safely disposed of medical waste and 29% safely disposed of sharps. The recommended 3 bucket system was observed in 83% of facilities. Average achievement of 'WASH Readiness' across all facilities was 61%; hospitals (86%); dispensaries (57%).

Conclusion: Access to WASH services in Misungwi health facilities remains a challenge which increases risk of infection for delivering women and newborns.

Keywords: Sanitation; Infection; Maternal health; Newborn health.

CU03PH: Understanding Perceived Usefulness of Contraceptive Methods among Married Couples in Rorya District

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Background: The growing use of contraception methods around the world has given couples the possibility to choose the number and spacing of their children. Despite the impressive gains, contraceptive use is still low while the need for contraception is high in some of the world's poorest and most populous places. Little is known on the factors contributing to low level of utilization of contraceptives in Rorya district, particularly among married individuals where the prevalence of contraceptive use was found to be only 28%. Therefore, this study aimed at understanding perceived usefulness of contraceptive methods among married couple in Rorya district

Methods: A qualitative design was used. Six Focus Group Discussion and 6 In-depth Interview was conducted among married individuals as the key informants to understand on the perception on use of contraceptive in Rorya District.

Results: Key informant's perceived benefits on use of contraceptives as reducing pregnancies, health management and polygamy practices. Respondents reported as perceived ease of use per type of contraceptive on the concerns like community perception, accessibility reflection of contraceptive methods, Confidentiality and Misconception about Family Planning (Myth). Intention to recommend to others to use contraceptive methods perceived as Attitude on sexual reproductive health, Religious beliefs, Accessibilities of Family Planning supplies and Partners consent.

Conclusion: The communities have been made to believe negatively towards the contraceptive use especially on the myths. People perceive contraceptive as the barriers toward the traditional believes which continue to increase the fertility rate. However, as unmet need is still increasing in Rorya district, there should be interventions.

Keywords: *Contraceptive Use; Married couples; Tanzania*

CU04PH: Promoting Psychosocial Support for Adolescent Care and Treatment Services through Formal Health Sector in the Southern Highlands of Tanzania

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Background: Adolescents living with HIV (ALHIV) are a vulnerable population and struggle with issues related to HIV care and treatment, including delayed diagnosis of HIV, opportunistic infections, adherence to treatment, life skills, stigma, psychosocial support and retention into care. Tanzania's Southern Highland's Zone (SHZ), home to nearly 12 million people, has an HIV prevalence of 9.3%, well above the national average of 5%, as well as a higher HIV prevalence for ALHIV (range 2-5% vs. 1% nationally). The diverse needs and challenges of ALHIV and low levels of youth friendly services in health facilities place increased risks and burden on the adolescent population, requiring unique programmatic and educational strategies.

Methods: Starting in April 2017, Baylor in partnership with UNICEF Tanzania launched a program to improve identification, linkage and care and treatment for ALHIV in the SHZ. The program specifically aimed to empower facilities to implement the following: Facility-Community Bi-directional linkages, Know Your Child and Adolescent Status (KYCAS) campaigns, psychosocial teen clubs, forming the Teen Ten Cell Leadership networks, creating


Behavioural Change Communication messages, and enhancing peer support networks for ALHIV.

Results: 40 HIV clinics (from the Southern Highlands Zone) have been supported through the program. After training 4 staff from each clinic in all 40 CTCs, 2 on Teen Clubs and 2 on KYCAS (160 staff total), all 40 sites established adolescent friendly services and 15 of them have already established psychosocial teen clubs. The remaining 25 sites are in the recruitment process to start by the end of August 2017. To date over 2,000 ALHIV have been reached with positive messages through teen club sessions targeting to reach 5,000 ALHIV. Challenges faced include difficult tracking of ALHIV registered into teen clubs due to lack of mobile phones, delays with index client sensitization, and high costs required by community leaders to be involved in our efforts.


Conclusions: After full implementation of the program's adolescent friendly services, Baylor SHZ will conduct a quarterly mentorship and supportive supervision, and collect data to measure the impact and effectiveness of the program on ALHIV. If the pilot intervention proves successful, we intend to scale up this intervention throughout Tanzania.

Keywords: *Adolescents living with; adolescent friendly services; know your child status; support*

CU05PH: Loss Analysis: Where are the Defaulters? Lessons Learnt from Baylor Mbeya SHZ COE - Tanzania

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Background: A patient who fails to attend ART clinic within a specified interval of 90 days from a previous visit is classified as lost to follow-up (LTFU). Tracing LTFU clients and re-introducing them into care is one of the challenges that health care providers face. In 2016, the SHZ COE implemented a comeback to care project with a goal of reducing LTFU from 7% to <5%. This analysis aims to document tracking outcomes of clients who are documented as LTFU at our clinic.

Methods: From January 2016 to June 2017, LTFU clients were traced by phone calls and home visits after retrieving their socio-demographic information from the clinic EMR. Information obtained after tracing was analyzed and summarized as proportions.

Results: A total of 645 clients were recorded as missing clinic within 2 weeks of their last scheduled appointment. Of those, 249/645 or 38.6% were recorded as LTFU. For all defaulters, the mean time between start of ART and date of default was 12.5 months \pm 17.5 days. The number of clients segregated by age at which default to care happened were for <1 year, 8 (3.2%); 1-4 years, 126 (50.6%); 5-

9 years, 47 (18.9%); 10-14 years, 27 (10.8%); 15-19 years, 22 (8.8%); and 20 years and above, 19 (7.6%). Among the defaulters, 145/249 (58.2%) were using ARVs, 62/249 (24.9%) were HIV-exposed infants, 37/249 (14.9%) were TB patients (not HIV-infected), and 5/249 (2.0%) were HIV-infected but not using ARVs. Among clients who were using ARVs, 84/145 (57.9%) self-transferred to other facilities without records, 33/145 (22.8%) were true LTFU, and 28/145 (19.3%) had died. Among those who were HIV exposed 34/62 (54.8%) self-transferred without their records, 19/62 (30.7%) had died and 9/62 (14.5%) were true LTFU.

Conclusions: Most of the clients documented as LTFU at the SHZ clinic were found to have self-transferred to another facility without medical records. The true LTFU number accounted for only 16% of the total with the rest having died. Labeling all of these clients as LTFU makes it difficult for the team to achieve its target. Baylor SHZ COE will continue with tracing of clients who miss clinic within 2 weeks and will perform a quarterly loss analysis and document tracing outcome to avoid mislabeling of clients as LTFU.

Keywords: *self-transferred; tracing LTFU; using ARVs; defaulters*

CU06PH: Development of a Multidisciplinary Paediatric Palliative Care Program in Mbeya Tanzania

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Background: A multi-disciplinary palliative care program was established in March 2014 at an outpatient pediatric HIV clinic in Mbeya, Tanzania to support children and adolescents with life-threatening illnesses.

Methods: Retrospective chart review was conducted to describe characteristics and outcomes of patients enrolled in palliative care between 1 March 2014 and 31 Dec 2016. Palliative services included consultation with a dedicated palliative care nurse, pain management, and memory making activities.

Results: 99 patients were enrolled with a median age of 13 years (Range: 6 months-20 years). 69% were adolescents (ages 10-19 years). 84% were HIV positive with median CD4 of 92 cells/mm³ (range: 0-1360). Common conditions in HIV positive patients included Kaposi sarcoma (35%), end organ dysfunction (10%), chronic lung disease (5%), stroke (5%),

extrapulmonary TB (5%) and other (40%). Common conditions in HIV negative patients included cerebral palsy (38%), acute myeloid leukemia (13%), Kaposi sarcoma (13%), extrapulmonary TB (13%) and other (23%). 69% of all patients had severe acute malnutrition. Of all patients, 29% died, 7% were lost to follow up, 5% transferred care and 58% survived despite their life-threatening conditions. Of those who died (n=29), 83% were adolescents. 24% of patients reported pain and received effective analgesia. 56% completed memory making activities.

Conclusions: Despite resource limitations, a multidisciplinary approach to palliative care can be successfully implemented for HIV positive and negative children and adolescents. Patients with HIV still present with advanced disease and need palliative care. In this cohort, the majority of patients were adolescents, highlighting the vulnerability of this population.

Keywords: *Pediatric Palliative Care; Mbeya*

CU07PH: Meeting Psychosocial Needs of Adolescents Living with HIV through Overnight Camping: Lessons Learnt from Baylor Tanzania

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Background: With the roll-out of antiretroviral therapy in Tanzania there are many children entering adolescence and adulthood with a chronic infectious disease. Adolescence is a particularly vulnerable period for HIV-infected people in relation to engagement in risk behaviors, including non-compliance with medical treatment. Baylor Tanzania has been addressing adolescent Living with HIV (ALHIV) psychosocial needs in different ways, including overnight camp. This study evaluates short term behavioral outcome of ALHIV who attended overnight camp in Morogoro and Songea regions of Tanzania.

Methods: Sixty ALHIV from the study area struggling with adherence attended an overnight camp offering psychosocial support to build positive relationships, improve self-esteem and acquire life skills through recreational and educational activities. A questionnaire and clinical and laboratory assessment were administered before camp. Three months post camping in-depth qualitative interviews were conducted to 47 campers, 44 caregivers, and 20 health care providers from their respective CTC

clinics. Data transcribed and analyzed thematically.

Results: Pre camping challenges to adherence to ARVs included self-stigma, lack of care giver support, inadequate knowledge on the importance of good adherence, lack of disclosure, and adverse side effects to ART. Campers and their caregivers strongly agreed that training provided in the camp helped to: change their views on importance of attending clinic and use of medicine on time 46 (97.9%) and 44 (100%); change behavior at home and school 46 (97.9%) and 44 (100%); fight stigma and discrimination 45(95.7%)and 44 (100%); improve confidence)45 (95.7%) and 44 (100%). Health care workers subjectively reported improved communication skills, self-confidence and understanding of HIV/AIDS related topics.

Conclusions: Campers reported remarkable behavioral improvement in self-confidence and self-esteem, character development, coping with emotion and ability to fight stigma culminating to good adherence to and ARVs. Health care providers reported subjective improvement on adherence and knowledge regarding HIV related topics.

Keywords: *Psychosocial need; overnight campers; adolescent; adherence.*

CU08PH: Psychosocial Support and Team Work Saved a Life

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Background: E.D is 16 years old female living with HI, she was transferred to Baylor COE from a military hospital after being on ART for 4 years. She lives with both parents and was in secondary school. She had overwhelming social challenges including poor maternal care leading to poor adherence to ART. She experienced sudden and severe weight loss, was depressed and was unable to continue with school.

Description: Examination revealed that the patient had severe acute malnutrition and labs confirmed TB disease. Her CD4 count was 7cell/ul, VL= 12,4765c/ml. Patient showed no signs of improvement on outpatient management, developed cryptococcal meningitis and was admitted for two weeks. She was later switched to second line, which she was unable to tolerate. Her nutritional status and mental health continued to deteriorate.

Management: At Baylor, an interdisciplinary approach to comprehensive patient care factored in her home situation, depression, and limited resources. It was determined that the patient's critically low weight would need on-site care and monitoring during

the period of her SAM treatment. Also, daily observation was conducted with the patient's therapy on bulky medicines. Baylor planned a daily dietary follow up at the clinic for the patient to ensure breakfast, lunch and snacks. Patient had frequent contacts with counselors, nutritionist, social worker, and peer educators. Notably, interaction with peers was an added advantage to the patient's recovery. She gained approximately 5kg in the first 4 weeks. Currently she is 46kg (from 27.2kg a year earlier) and has a rising CD4 count. As a result of this management, she is back to school, actively involved in providing peer support at the COE, and recently facilitated at Camp Matumaini. She wrote a thank you note to Baylor staff: *"I have seen others being in good health and doing well at school, I can become better than them and reach my dreams if I use well my medicine, I am thankful to Baylor staff for saving my life."*

Lessons Learned: It is important to review treatment plans on a case-by-case basis when necessary. Thinking out of the box, team work, and going the extra mile made it possible to save the life of this young lady.

Keywords: Team work; extra mile social challenge; treatment plan.

CU09PH: The Contribution of Community Trackers in the Reduction of Loss To Follow Up at Baylor College of Medicine Children's Foundation Tanzania- Lake Zone COE.

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Background: Like in any other chronic illness, attrition in care for people living with HIV has been observed with greater concern on treatment outcome and public health implications. At the Baylor College of Medicine Children's Foundation – Tanzania Centre of Excellence (COE) in Mwanza, Tanzania, all clients who have either missed their appointments or lost-to-follow-up (LTFU) are usually traced by the social worker and a team of community trackers through phone calls and home visits. This study assesses the contribution of community trackers on the reduction of LTFU.

Methods: A retrospective review of monthly reports was done. This involved looking at the LTFU data and tracking results of all exposed infants and clients on ART. Our analysis includes data from October 2016 through April 2017, after the establishment of community trackers team.

Results: 239 clients were LTFU between October 2016 and April 2017. After the community tracking intervention, 136 clients (57%) were traced. Of those 136

clients who were traced, 21 (15.4%) returned to clinic; 42 (30.8%) had self-transferred to other clinics; 1 (<1%) client promised to come, 6 (4.4%) were discharged as exposed uninfected but their files were not closed; 39 (28.7%) were confirmed LTFU, 17 (12.5%) opted out of service; 10 (7.4%) died; while the remaining 103 are still being tracked by community trackers.

Conclusion: There are several factors attributing to missed appointments and lost-to-follow-up among our clients, including: not having enough money for transport, living far from the healthcare facility, and caregiver attitudes towards treatment. The use of community trackers has proved to be beneficial because they know the families of our clients well, making it easy to follow up by conducting home visits and reminding or advising them to return to care. Monthly meetings give the trackers an opportunity to share and explore barriers to good adherence, both at the individual client level and the facility/system level.

Keywords: *lost-to-follow-up, community trackers, returns to care, reduction of LTFU*

CU10PH: Improving Adherence of ART for Adolescents Struggling with Medications Through Drop in Counseling Program at Baylor Lake Zone COE

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Background: Adherence to antiretroviral therapy (ART) is a significant challenge for adolescents living with HIV (ALHIV), whereby failure to do so can potentially lead to treatment failure as well as increased morbidity and mortality. Many adolescents struggle with taking their medication properly or stop taking ARV for various reasons. An intervention was introduced at the Lake Zone COE in which adolescents struggling with adherence were invited to attend weekly Drop-in Counseling Sessions (DICS) to discuss as a group their challenges as well as strategies to improve adherence. This analysis considers the impact of this intervention on adherence.

Methods: 11 adolescents (4 females, 7 males) were referred to the program by clinicians due to poor adherence. The program occurred weekly from July to October 2016, attendance was voluntary, and each session was facilitated by both peer educators, and a doctor or counselor. Pre-DICS and post-DICS adherence was calculated for 10 months before and 10 months after the start of the intervention. It was calculated by labeling each visit attended as “good” or

“poor” adherence, and calculating a proportion of visits with good adherence for each client. The pre-DICS proportion was then subtracted from the post-DICS proportion to get the change in proportion of visits with good adherence. Good adherence was defined as 95-105%, and poor adherence was defined as below 95% or above 105%.

Results: Attendance at DICS varied greatly, with an average attendance of 45% of sessions. Even so, of the 11 DICS participants, we saw improvement in adherence for all, with an average change of +28% in the proportion of visits with good adherence.

Conclusion: Overall, the outcomes of DICS for adolescents with chronic poor adherence are promising, so we believe this intervention should be replicated with more participants with poor adherence and with a prospective study design. Given our early positive findings, we also recommend the intervention to be used in settings where teens are having difficulty maintaining good adherence. Limitations of this study included the population size (11) and variable DICS attendance.

Keywords: *adherence; counseling; adolescent; drop in.*

CU11PH: Most Vulnerable Children Committees Paves the Way towards Achieving First UNAIDS 90-90-90 for pediatrics

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Background: Despite the outstanding progress towards an AIDS-free generation, Tanzania continues to face challenges in meeting the UNAIDS 90-90-90 targets for pediatrics. These challenges occur at all stages along the clinical cascade: identifying HIV+ children, linkage to care and treatment, retention and adherence on treatment. Only 67% of the estimated 91,000 CLHIV in Tanzania have been identified. Baylor Tanzania embarked on a journey of educating the community in the catchment area through Most Vulnerable Children Committees (MVCCs).

Methods: We identified, trained, and supported members from the MVCC. These were tasked to educate and sensitize families and caregivers of OVCs for HIV testing, care and treatment services. MVCC were followed up monthly for ongoing support. A retrospective review of PITC monthly reports was done. Our review included statistics.

Results: Six months prior to the MVCC initiative, the total number of clients receiving PITC services at Baylor was 1163, where 810 (69.6%) of those total clients were children. Of the total clients tested, 119 (10.2%) were found to be HIV positive; 47 (5.8%) children were found to be positive. Once the MVCC initiative was started, the number of clients receiving PITC services increased to 2618, where 2004 (76.5%) of those total clients were children. Of the total clients tested, 136 (5.2%) were found to be positive: 62 (3%) of the children were found to be positive. 55.1% of all newly identified clients were children all were linked to care and treatment services.

Conclusion: MVCC sensitization efforts substantially increase number of families who know their HIV status. Targeting priority groups using community members may contribute in closing the gap needed to achieve the first 90 for pediatrics.

Keywords: *MVCC; clients tested; families; PITC*

CU12PH: Roll Out of Routine HVL Testing Successes and Challenges: Experience from Lake Zone COE, Mwanza, Tanzania.

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Background: UNAIDS '90-90-90' targets propose that in order to end the HIV epidemic by 2030, 90% of persons living with HIV (PLWH) worldwide should know their diagnosis, 90% of diagnosed PLWH should be on antiretroviral therapy (ART) and 90% of PLWH on ART should be virally suppressed by 2020. Tanzania adopted WHO's recommendations on routine viral monitoring for PLHIV on ART, with its roll out in May 2015.

Methods: This is a retrospective study utilizing data extracted from Lake Zone COE EMR. It included all children 0-18 years on ART for at least 6 months by 30th May 2017. Data was analyzed by using Microsoft excel.


Results: A total of 1016 children between the ages of 0-18 years were included in the study. 901(88.6%) had at least one viral load test done, 595 (66%) have received results from the lab and recorded on EMR, these were included in analysis. Of those with results, 16.3% were children under five years, 28.6% between five and ten years of age and

55.1% were above ten years. Out of 595 children and adolescents with test results; 409 (69%) had viral load below 1,000 copies. There was no difference between male and female on viral suppression rates. Further analysis showed: 58% of those with HVL <1,000 were on NNRTI based combination. Viral suppression was highest in the age group 5-10 years 77.6%, followed by adolescents 67.6% and lastly children under five years of age 55.5%.

Conclusions: Only 69% of our cohort has achieved viral suppression as recommended by WHO. The lowest rate of viral suppression is among under five of age (55.5%). This may be attributed by several factors including poor palatability of syrup LPV/r, transmitted resistance and unreliable supply of Pediatric formulations necessitating regimen/formulation changes. Ensuring reliable availability of Pediatric ARVs, reducing TAT for HVL test and strategies for improving adherence will be key in achieving 3rd 90 of UNAIDS 90-90-90 for HIV eradication.

Keywords: *viral suppression; resistance; viral load; children.*

CU13PH: Peer Educator Program: An Insider's Viewpoint

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Background: Adolescence is a transition period out of childhood which presents special challenges for adolescents living with HIV (ALHIV). It is a time of increased responsibility for one's own healthcare, sexual and reproductive health (SRH) decisions, and determining the course of one's future. Adolescents need a nurturing yet empowering environment in which to grow, develop and reach their full potential. ALHIV, if empowered, can be a bridge to reaching the needs of their peers.

Methods: The Peer Educator program was introduced in March 2016. Peer Educators assist the adolescent focal group, working closely with counselors and other clinical staff to provide life skills education and peer mentoring to adolescent clients at the COE. They also assist with monthly teen club preparation, drop-in counseling sessions, home visits, peer and patient education, adherence counseling, transition to adult care, and conduct Teen Talk every Tuesday. Peer Educators serve as role models for others and are able to naturally convey education on topics such as sexual health, adherence,

and HIV to the realities of present experiences in fellow teens' lives.

Results: As Peer Educators, we have worked to identify the problems adolescent are facing socially, emotionally and physically. These problems include peer pressure, medication adherence, teenage pregnancy, stigma, and more; all of which we are trying to alleviate via psychosocial interventions at the peer level. In coordination with counselors, social workers and other clinicians, we help provide peer counseling through teen talk, drop-in counseling sessions, home visits, and peer-to-peer counseling. We have also developed a program at every Teen Club whereby we provide adolescent SRH education as well as condoms to participants.

Conclusion: There is a need to establish peer educator programs in facilities serving ALHIV, especially at Baylor-supported sites. When adolescents work closely with clinic staff and their peers in various programs, they provide much needed advocacy for recognizing the unique needs of adolescent clients.

Keywords: *Peer educator; ALWHIV; adolescents; peer pressure*

CU14PH: Medication Error Recording Tool: An Intervention to Reduce Prescribing Errors at Baylor Clinic in Mwanza

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Background: Prescribing errors are common in both adult and pediatric medicine. However, pediatric prescribing errors are probably more common due to frequent dose adjustment necessitated by continuous changes in body weight, either due to growth or illness. At the Baylor-Lake Zone Centre of Excellence, patient flow has been designed in such a way that the pharmacist has an opportunity to find and correct medication errors before the patient leaves. The objective of this study is to assess the effectiveness of the medication error recording tool in reducing prescribing errors at the clinic.

Methods: The medical error recording tool was introduced as an initiative to improve medication and patient safety. It was adapted from a tool kit designed by the California Health Care Foundation. The tool records the date, patient ID and a description of the error. Errors were defined as prescribed dosages outside the range for antiretroviral and antituberculous therapy based on weight and for cotrimoxazole prophylaxis based on age. WHO dosing charts were used as

references. Errors were reported to and corrected by the clinicians before dispensing medicines. The study is a retrospective review of data collected routinely at pharmacy. Data were collected from the period spanning January to May 2017 and analyzed using Microsoft Excel.

Results: A total of 5829 prescriptions were written during the study period. Out of these prescriptions 135 (2.3%) had errors. The errors were grouped as either overdosing or under-dosing. Of the 135 errors, 98 (72.5%) were under-dosing errors. Drugs which were commonly involved were cotrimoxazole, efavirenz, and two other combination pediatric antiretroviral formulations, AZT+3TC+NVP and ABC+3TC tablets.

Conclusion: Most of the errors captured were under-dosing errors which may lead to sub-therapeutic treatment and eventually resistance. Most overdosing errors were of minor significance. Reporting of these errors encouraged clinicians to adhere more closely to treatment and dosing guidelines.

Keywords: *Prescribing errors; error recording tool; clinician.*

CU15PH: Mbeya Prison Blues: Results of TB, HIV and Malnutrition Testing Events at Juvenile Detention Centres in Mbeya, Tanzania

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Background: Incarcerated individuals are at high risk for TB, and frequently targeted for TB screening. While efforts have been made to screen adults in prisons in Mbeya for TB, little has been done for children and adolescents in similar juvenile detention centres. In 2016, the Mbeya TB focal group began implementing comprehensive testing events at local juvenile detention centres to screen, diagnose and treat TB, HIV and malnutrition in these settings.

Methods: The Mbeya COE TB focal group worked with the regional TB/leprosy coordinator to identify local juvenile detention centres, and liaise with the heads of these facilities to coordinate health screening events. "Know-Your-Child-Status" testing event procedures were adapted to include TB screening (via questionnaires and tuberculin skin tests/TSTs), HIV testing, and malnutrition screening (via anthropometrics). In addition, age-appropriate education was provided on health topics of TB, HIV and nutrition, including question and answer sessions. Any child/adolescent with presumptive TB, HIV or severe or moderate malnutrition (SAM or MAM) was linked to Baylor COE for further services. Any child/adolescent with latent TB infection (i.e. positive TST>5mm if HIV positive or >10mm if HIV negative, and no symptoms of TB) was offered isoniazid preventative therapy (IPT).

Results: Two juvenile detention centres were identified and visited by a TB nurse and TB counselor. A total of 56 children and adolescents (aged 12-18yo) screened for TB, HIV and malnutrition. 12.5% (7/56) symptom screened positive for TB, had sputums collected, and were further evaluated for TB. None (0/7) of the sputums were positive and none of these children (0/7) were diagnosed with TB. 100% of the children (56/56) had TSTs done, and 46.4% (26/56) had positive TSTs, all of which had no signs/symptoms of TB, indicating LTBI. All 26 of these children with LTBI were initiated on IPT. Only 1 child was found to be HIV positive, who linked to care, including IPT initiation. Nutritional screening found only 1 child with SAM, but 48.2% (27/56) has MAM without complications, and all were linked to nutritional services. Feedback on the events from all children, adolescents and staff was universally positive.

Conclusion: While few of the incarcerated minors living in juvenile retention homes in Mbeya were found to have TB disease, HIV or SAM, there were high proportions of LTBI and MAM in this population. We found it feasible to conduct integrated health screening and education efforts targeting incarcerated minors living in high TB, HIV, malnutrition burdened settings such as Mbeya.

Keywords: TB; HIV; Malnutrition; detention centres for adolescent.

CU16PH: Predictors of Ringworm Infections Among Primary School Children In Ilemela, Mwanza-Tanzania

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Background: Ringworm infection represents a significant public health problem particularly among school children in resource limited settings. Here, we report prevalence and factors associated with ringworm infection among primary school children in Ilemela, Mwanza, Tanzania.

Methods: A descriptive cross-sectional study was conducted involving 323 primary school children aged 4 to 10 years old. Pre-tested questionnaire was used to collect all data. Data was entered and cleaned using Microsoft Excel software and analyzed by using STATA Version 13.

Results: The mean age of the study participants was 7.63±1.27 years and the slightly majority were female 183(56.7%). The majority of the participants were from government owned school 277(70.3%), and 299 (92.6%) reported to be using tap water at home. A total of

94(29.1%) children had clinical presentation of ringworm infection. The majority of children presented with clinical signs of tinea capitis 92(97.9%). Factors independently predicted ringworms were: being a male child (OR = 1.98, 95%CI: 1.22 - 3.22, P = 0.01), attending government school (OR = 3.34, 95% CI: 1.76 - 6.32, P< 0.001), using lake /river/well water (OR = 3.18, 95% CI: 1.36 - 7.38, P< 0.01), playing in dust environment (OR = 2.65, 95% CI: 1.28 - 5.47, P< 0.01), playing with animals (OR = 2.13, 95% CI: 1.28 - 3.56, P< 0.003) and having family members with ringworm(OR = 10.56, 95% CI: 4.57 - 24.41 P< 0.001).

Conclusions: Male children were significantly more affected with ringworm infections. Further studies to identify the pattern of pathogens causing dermatophytes in these children are recommended.

Keywords: *Dermatophytes; Tinea capitis; Dust environment.*

CU17PH: *Candida albicans* colonizing the buccal cavity of patients with dental carries

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Background: *Candida albicans* is the most predominant *Candida* spp. colonizing the oral cavity of 20-75% health individual. However, *Candida albicans* is thought to be associated with the onset and development of cariogenic lesions. *Candida* is able to colonize hard tooth surfaces, invade dentinal tubules and produce large amount of acids which facilitate the adherence of *Streptococcus mutans* to the oral biofilm. The current study investigated the prevalence and factors associated with *Candida albicans* colonizing buccal cavity of patients with dental caries in Mwanza-Tanzania.

Methods: A cross-sectional hospital based study was conducted between April and July 2017 among patients with dental carries attending dental clinic at the Bugando Medical Centre and Sekou - Toure Regional Referral Hospital. Sample was taken from the decayed tooth by using a sterile cotton swab and processed within two hours of collections. Data was analyzed by using STATA version 13.0 software following the objective of the study. P value of less

than 0.05 at 95% confidence interval was considered as statistically significant.

Results: A total of 259 patients with median age [IQR] of 25[19-32] years were enrolled. The majority 61.39 % (159/259) of participants were from rural; 91.12% (236/259) clean their teeth once in a day. A total of 74.90% (194/259) had no history of having dental carries. *Candida* spp. was detected in 49 (18.92%) of the patients. By univariate logistic regression analysis; increase in age (OR 1.02, 95%CI [1.00-1.04], p=0.018), cleaning teeth once in a day (OR 2.54, 95%CI; 1.01-6.37, p=0.04) and having history of being diagnosed with dental carries (OR 2.01, 95%CI; 1.04-3.9, p=0.03) were significantly found to be associated with *Candida* spp. oral colonization.

Conclusions: Oral *Candida* spp. colonization among patients with dental carries in Mwanza, Tanzania is similar to oral colonization of health individual in the same settings. More studies to evaluate the pathogenic potential of *Candida* spp. in relation to dental caries are recommended especially in low-income countries.

Keywords: *Candida albicans*, Dental carries, Curious lesions

CU18PH: Dermatophytosis among Primary School Children in Mwanza-Tanzania

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Background: Dermatophytosis is a common fungal skin infection of hair, scalp, skin and nail caused by dermatophytes and transmitted by direct contact with infected human or animals. Here, we report the etiological pattern of dermatophytosis among primary school children in Mwanza, Tanzania.

Methods: This cross-sectional study was conducted between April and July 2017 and included 169 primary school children. Skin scrapes of the affected area was collected using sterile surgical blades and inoculated on the Sabouraud dextrose agar slant then transported to the CUHAS multipurpose laboratory for processing. Data was analyzed by STATA Version 13.

Results: A total of 169 participants were enrolled in this study with the slightly majority being males 101(59.8%). The

median age [IQR] of study participants was 9 [8-11] years. On recruitment; 16.6% (28/169) reported previous history of dermatophytosis, 26.04% (44/169) reported dams/pools swimming, 44.4% (75/169) reported close living with pets, 72.2% (122/169) reported combs sharing, 36.7% (62/169) reported towels sharing and 42.01% (71/169) reported sharing clothes. Out of 169 participants, 133 (78.7%) had culture results positive. The most frequently isolated dermatophyte was *Trichophyton tonsurans* 38.1% (51/133) followed by *Trichophyton rubrum* 23.1% (31/133).

Conclusions: A zoophilic dermatophyte *Trichophyton tonsurans* is the commonest dermatophyte causing dermatophytosis among primary school children in Mwanza. Further studies should be done to illustrate factors associated with these infections.

Key words: Ring worm infection; *Trichophyton tonsurans*.

CU19PH: Fungal Rhinosinusitis among Patients Attending Ear, Nose and Throat Clinic at the Bugando Medical Center

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Background: Chronic Rhinosinusitis is a symptomatic inflammatory condition of mucosa lining of the nasal cavity and paranasal sinuses. This study aimed at determining the prevalence of fungal pathogens causing chronic rhinosinusitis among patients attending the Ear, Nose and Throat clinic at Bugando Medical Center.

Methods: This study was a cross-sectional hospital based study conducted between April and June 2017. The samples were collected by ENT specialist using anterior rhinoscopy and middle meatus guided aspiration. Samples were aseptically placed in a Stuart transport media and sent to a microbiology laboratory within 2 hours for processing. Data were analyzed using STATA version 13.

Results: A total of 53 adult patients with chronic rhinosinusitis were involved in the study. Their median [IQR] age was 31[22-44] years and the majority 32(60.4%) were from urban areas. The majority 47 (88.68%) of patients reported history allergic reactions. Out of 53 patients enrolled, 25 (47.7%) had positive culture growth, 4/25(16%) patients had mixed growth of fungi. *Candida krusei* 10 (18.87%) and *Aspergillus* spp 4(7.55%) were commonly isolated.

Conclusions: *Candida krusei* was the most frequently isolated fungi causing chronic rhinosinusitis in Mwanza Tanzania. Culture and susceptibility is highly recommended to guide therapy of patients with chronic rhinosinusitis to reduce the associated morbidity.

Keywords: *Chronic rhinosinusitis, Ear, nose and Throat clinic, Candida krusei*

CU20PH: The Faecal Coliform Contamination of Fresh Produced Local Juices obtained from Retail Restaurants Located in Nyamagana, Mwanza-Tanzania

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Background: Fresh produced local juices have health and nutritional benefits; however, when the hygienic practices are not observed during processing the risk of contamination is very high. The main objective of this study was to determine the prevalence and factors associated with faecal coliform contamination in fresh fruit juices in Mwanza City.

Methods: A cross section community based study was conducted in Nyamagana District, Mwanza. A total of 45 restaurants and 59 juice samples were involved. Juice samples were collected using sterile containers and transported to the CUHAS multipurpose laboratory for analysis within an hour of the collection. In addition, researchers observed the cleanness of restaurant using a checklist.

Results: Out of 45 interviewed participants, 25 were females (55.6%), median age was 34[IQR 24-41], and 22(48.9%) had primary school education. Out of 59 juices samples collected, 20(33.9%) juices were contaminated with faecal coliform mainly *Escherichia coli* 45% (9/20). There was a significant association between fecal coliforms contamination and restaurant cleanness (p value = 0.014).

Conclusions: The proportion of contamination of fresh produced local juices with faecal coliform is very high and is associated with poor hygienic practices. The authority should organize regular training on hygienic practices among people working in restaurants in the city of Mwanza to ensure good hygienic practices.

Keywords: *Faecal coliform; Fresh produced local juice; Mwanza; Tanzania*

CU21PH: Predominance of *Brucella abortus* and *Leptospira* Serovar Sokoine (Serogroup Icterohaemorrhagiae) among Abattoir Workers and Meat Vendors in Mwanza City, Tanzania: A Call For One Health Approach Control Strategies

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Background: Brucellosis and leptospirosis are among zoonotic neglected febrile illnesses affecting both humans and animals, particularly in resource-limited countries. Despite being endemic in most of these countries, there is limited information on their magnitude among high risk groups including abattoir workers and meat vendors. This study investigated the seroprevalence of the commonest *Brucella* species and common leptospiral serovars and associated factors among slaughter house workers and meat vendors in the city of Mwanza, Tanzania.

Methods: A cross-sectional community-based study was conducted in Mwanza between May and July 2017. A pre-tested structured data collection tool was used to collect socio-demographic and other relevant information. Detection of *B. abortus* and *B. melitensis* was done by using slide agglutination test (Eurocell A/M® Euromedi equip LTD.UK) while that of leptospiral antibodies was done by using Microscopic agglutination test (MAT). Data were analyzed by using STATA version 13.

Results: The median age of 250 participants enrolled was 31(IQR:25-38) years. Overall,

sero-prevalence of *Brucella* antibodies was found to be 121/250 (48.4%,95% CI: 42-54). Seroprevalence of *B. abortus* 115/250 (46%,95%CI: 39-52) was significantly higher than that of *B. melitensis* 59/250(23.6% 95% CI:18-28, P<0.001). Co-infection of both species was found in 53/250 (21.2%, 95%CI:16-26). The seroprevalence of leptospirosis was 25/250(10%, 95% CI: 6-13) with predominance of serovar Sokoine which was detected in 7.2% of the participants. By multivariate logistic regression; being abattoir worker (OR 2.4, 95% CI 1.37-4.26, P=0.002), long working duration (OR 1.05, 95%CL 1.005-1.095, P=0.028) and having primary education (OR 2.23, 95%1.105-4.483, P=0.025) were found to predict *Brucella* seropositivity. Only being married (P=0.041) was significantly associated with leptospirosis among abattoir workers and meat vendors in the city of Mwanza.

Conclusion: Prevalence of brucellosis and leptospirosis are significantly high among abattoir workers with long work duration. There is a need to consider one health approach in controlling these diseases across the country.

Keywords: *B. abortus*; *B. melitensis*; *Leptospira*; Serovar Sokoine.

CU22PH: Determinants of sexual and reproductive health among street adolescents in Nyamagana district, Mwanza

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Background: There are about 150 million children growing up on the streets around the world. There is a large number of “street children” in the Nyamagana district, creating a burden that is anticipated to increase annually. Demand for adolescent Sexual and Reproductive Health Rights (SRHR) is less likely to be promoted in the Low and Medium Income Countries, with street adolescents having poor access to SRH services and quality health care.

Methods: A cross-sectional study was conducted in the Nyamagana district in Mwanza involving 156 street adolescents. Data was collected by providing structured questionnaires to the participants. The study focused on determining the knowledge about sexual and reproductive health (SRH), assess accessibility to services and the participants’ attitude on SRH, in addition to obtaining baseline knowledge on sexually transmitted infections and the socio-economic factors contributing to SRH behaviors. Finally, data were analyzed by using SPSS version 17.

Results: In the study, 127 (81.4%) of the participant were males and 29 (18.59%) were female. The age was 14.5 ± 1.5 years; 76% were born within Mwanza city and 27.6% did not attend school. For sexual behaviors, 49.4% had single partners while 15.4% had more than two partners. Among the study population, 40.3% used condoms and 21.8% admitted sexual abuse from street adolescents and other individuals, 59.4% had basic knowledge on common STI such as HIV/AIDS and 31.4% of total participants had knowledge of current sexual and reproductive health initiatives in their respective areas.

Conclusion: There is a need for a multidisciplinary approach by the government and NGOs to conquer the unmet sexual and reproductive health needs among street adolescents. From family level to health facilities there is a need for more advocacy targeting on SRH education. Provision of support on development of programs targeting to address gender and social norms that hinders SRH information and services to street adolescents.

Keywords: *Street adolescent, determinants, sexual, reproductive health*

CU23PHMission: Restore Network to Support Women Pursuing Global Surgery

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Background: According to the Lancet Commission on Global Surgery, Africa is facing a surgical workforce crisis. Over 50 million traumatic injuries occur worldwide and 5 million people die each year from injuries preventable by surgery. In Africa, it is estimated that 85% of children need treatment for a surgical condition before the age of 15. According to a 2013 study by the Medical Association of Tanzania, almost all healthcare facilities in Tanzania face multiple critical challenges in human resources for health. Furthermore, the number of female surgeon specialists in Tanzania is incredibly low, including 7 in Dar es Salaam; 2 at Kilimanjaro Christian Medical Centre; and 2 at Bugando Medical Centre.

Methods: Research was pulled from The Lancet Commission's "Global Surgery 2030: evidence and solutions for achieving health, welfare, and economic development" (April 2015); Sikika & The Medical Association of Tanzania's study "Where are the Doctors? - Tracking Study of Medical Doctors" (September 2013); and our own internal research on pinpointing female surgeon specialists in the country.

Results: According to the Lancet Commission, 2.2 million more surgeons,

anesthesiologists & obstetricians are needed globally to fill the surgical gap. The study, "Where are the Doctors?- Tracking Study of Medical Doctors" shares that the total number of doctors in Tanzania was estimated at about 2,250 medical doctors, making the current doctor to population ratio 1:20,000. The World Health Organization recommends a 1:300 doctor to patient ratio for local healthcare systems to be aptly equipped health emergencies.

Conclusion: Mission: Restore is a US based, global health non-profit that specializes in reconstructive surgery and provides long-term impact to East Africa surgeons through a network of surgeons, hands-on training, educational grants, conferences and telemedicine. Our organization recognizes that closing the gender gap in surgery not only promotes equality for women but is the most effective way to meet the current global surgical need. Through Mission: Restore's Women in Global Surgery Initiative, we aim to recruit, train and support female surgeons across Africa. Our organization offers a support network of surgeons, connections to COSECSA and WISA, and micro-grant opportunities to assist in fund

Keywords: Women in STEM; Surgery; Global Surgery; Reconstructive & Plastic Surgery; Tanzania

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Preamble to the CUHAS – BMC list of publications

In the past year, CUHAS/BMC' authors have published 67 publications in peer-reviewed journals, which is far more than the annual average rate of 55 per year. The topics investigated follow the National Health Research Priorities (2013-2018) and include Biomedical Research (66%), Health Systems Research (28%) and Social Determinants of Health Research (6%). These percentages are reflected in the publications output with a slight increase in the publications geared towards clinical subjects, in particular Mother and Child Health. Social sciences research publications remain rare but both institutions recognize their importance and will thrive to acquire the expertise in qualitative research.

Despite recognized challenges, CUHAS/BMC research has benefited from several promising environmental factors, particularly the availability of grants for specific research areas (e.g. antimicrobial resistance, neglected tropical diseases, schistosomiasis control, mother and child health, HIV and other viral infections).

CUHAS/BMC quality of research, based on its published papers, has been recognized both within the country and internationally. CUHAS/BMC is now in a position to develop its own institutional research agenda so as to facilitate the coordination and management of the research carried out at those institutions and increase the published research output.

CUHAS PUBLICATIONS OUTPUT 2017

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