



**BIPAI**  
Baylor International  
Pediatric AIDS Initiative

Baylor  
College of  
Medicine



# **17<sup>TH</sup> BIPAI NETWORK MEETING**

**HOSTED BY BOTSWANA-BAYLOR COE**

**ABSTRACT BOOK**

**JOHANNESBURG, RSA**

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## ANGOLA

### AO1. PILOT PROGRAM OF NEWBORN SCREENING FOR SICKLE CELL DISEASE (SCD) IN ANGOLA - ANGOLA SICKLE CELL INITIATIVE (ASCI)

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**Background:** An estimated 20,000 babies are born annually with SCD in Angola alone. Without treatment, most of these babies die before five years of age. Early diagnosis through newborn screening followed by treatment including daily penicillin reduces mortality. In March 2011, the Republic of Angola entered into a public-private partnership with Chevron and Texas Children's Hospital/Baylor College of Medicine to pilot a comprehensive newborn screening and treatment program in order to reduce morbidity and mortality of children with SCD in Angola.

**Methods:** This unique program provides screening, diagnosis, care, treatment, health professional training, research, and community mobilization to improved care of children with SCD in Angola.

- The Ministry of Health provides governmental institutional support for execution of the project throughout the Angolan healthcare system including access to babies and support of maternity staff for blood spot collection; staff, supplies and medications for the care and treatment provided in government health facilities; and space for laboratory operations
- Chevron provides funding for the project
- Baylor College of Medicine and Texas Children's Hospital contribute expertise, personnel, training including pediatric hematology-oncology subspecialists based in Angola and manage program funds and operations by providing organizational capability, technical support for data management and procurement of drugs and supplies, and leadership guidance

#### Results

- At the end of February 2015, the program has screened more than 100,000 newborns. Of these, 2,000 were diagnosed with SCD
- 19 birth and health centers in Cabinda and Luanda provinces collect samples from newborns for testing
- More than 1,000 healthcare professionals have been trained in SCD screening and treatment

**Conclusion:** While the program has achieved remarkable screening results, challenges include locating and enrolling affected babies in treatment. Moreover, competing health priorities impede full integration of sickle cell program into Angola government healthcare system. Finally, the program needs to diversify its funding source to expand nationally.

## BOTSWANA

### BW1. BEYOND ADOLESCENCE: YOUNG ADULTS SUPPORT GROUP

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: **Background:** Since the success of the COE's Teen Club, a Young Adult Support Group (YASG) was created in 2013 following the Teen Club model, a 2008 *USAID-AIDSTARone* best practice service that provides psychosocial support for adolescents with HIV. By instilling emotional and educational skills necessary to successfully transition into adulthood, YASG aims to build self-esteem and ensure the long-term health and wellbeing of this patient population.

**Description:** By April 2014, a total of sixty young adults had registered. Curriculum topics cover healthy relationships, financial literacy, business management training, career planning, and entrepreneurship through a strong partnership with Barclays Bank. Staff at Barclays Bank and KFC have co-facilitated sessions and acted as mentors for young adults. Participants from YASG participated in the Youth Employment Program (YEP) which provides job-readiness training. YEP participants attend a weeklong Job-Readiness Training (JRT) in which they learn skills such as resume writing, interview skills, communication and conflict management skills. After completing the JRT, participants work with the YEP coordinator in finding employment or returning to school. To date, 50% of YEP participants have found employment, are volunteering or have returned to school or vocational training. This has also indirectly helped in retaining these patients in care at the COE.

**Lessons learned:** During the periodical evaluations young adults reported that curriculum should be geared towards all topics including life skills, healthy relationships and transitioning into adulthood with less of a focus on employment, entrepreneurship and financial planning. Young adults identified and set curriculum for a year of programming taking their needs into consideration.

**Conclusions/Next steps:** Having youth take over the primary implementation and facilitation of the group will provide YASG participants with a catered curriculum tailored to their needs. The youth who are facilitating the group learn valuable skills and build their resume.

## **BW2. BEYOND ADOLESCENCE: YOUNG ADULTS SUPPORT GROUP**

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**Background:** Botswana's successful Prevention of Mother To Child Transmission of HIV program and national access to free Antiretrovirals is preventing new infections and allowing children born with HIV to grow into adulthood. As they do so, they are faced with a new set of challenges. In 2013, the COE opened the Baylor Bristol-Myers Squibb Phatsimong Adolescent Centre housing Adolescent Services, Psycho-Social support team, library and sports court as an answer to the plight of adolescent with HIV.

**Description:** In order to equip adolescences and ease the transition into adulthood the COE has implemented *Finding the Leader Within*, a yearlong leadership program for out-of-school youth aged 16 to 25, through a partnership with Stepping Stones International (SSI), a non-profit organisation based in Mochudi, Botswana. SSI serves orphans and vulnerable children and their families in the Kgatleng District and has successfully implemented the Leadership Program for three cohorts. The Leadership Program runs four days a week with curriculum designed to give participants tangible skills to gain meaningful employment. Each week participants complete lessons in leadership development, career and vocational development, healthy and productive lifestyle education, financial and business literacy and ICT with an optional English tutoring component. Opening its doors in April 2015, the COE's Leadership Program has 37 participants.

**Lessons learned:** The Leadership program is primarily staffed by members of the Adolescent Services Department with support from the Social Worker and Psychologist. Throughout the year, participants form mentorships with session facilitators and work alongside a vocational placement officer in developing career or educational goals with the aim of getting participants to return to school or gain meaningful employment. Previous Leadership Programs have had a two-thirds success rate in placing graduates in jobs or schools.

**Conclusions/Next steps:** The Leadership Program is the first of its kind at the Botswana COE, since inception the Leadership team has learned the value of training facilitators, securing independent funding rather than relying on sub-grants. In looking towards the future, the Leadership Program Coordinator is a volunteer, for future program expansion and sustainability the program needs to be transitioned to - fulltime COE staff.

## **BW3. COMMUNITY ENGAGEMENT IN GENOMICS RESEARCH ON HIV AND TB: OUTCOMES OF A COMMUNITY STAKEHOLDERS WORKSHOP**

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Organization: Botswana-Baylor Children's Clinical Centre of Excellence, Collaborative African Genomics Network (CAfGEN), Genome Adventures

**Background:** Genome Adventures is an innovative Wellcome Trust-funded community engagement initiative of the Collaborative African Genomics Network (a member of the Human Heredity and Health in Africa - H3Africa Consortium)

coordinated by the Botswana-Baylor Children's Clinical Centre of Excellence (COE) to help the general public in Botswana and throughout the African continent better understand genomics and biomedical research.

**Methods:** In December 2015, a workshop was held to sensitize community stakeholders about genetics and genomics research and the specific work being done by CAfGEN. Didactic lectures were given on the following topics: building biomedical research capacity in Botswana; intro to heredity and genomics; ethical, legal, and societal implications of genomics research; and cartooning and science communications. The workshop also included interactive group activities related to heredity (creating pedigree charts) as well as ethical issues in genomics research (role plays). Pre and post tests were administered as well as pre and post focus group discussions.

**Results:** 37 participants attended the workshop, representing non-governmental organizations, public sector (namely education), private sector, policy makers, and youth. At the end of the workshop, 81% agreed that they had a better understanding of heredity, health and genomics and 77% agreed they had a better understanding of the importance of community engagement for genomics and biomedical research. Pre and post test scores indicated a 13% increase in knowledge related to genetics and genomics research. At least one participant expressed a desire to join an existing Community Advisory Board related to the research presented.

**Conclusion/Recommendations:** A workshop containing didactic and interactive sessions can increase science literacy among community stakeholders and increase their appreciation and understanding of the importance of community engagement in biomedical research. A long-term strategy should be employed to continue active engagement of community stakeholders in genomics and biomedical research.

## **BW4. HIV, GENOMICS, AND YOU: IMPROVING HEALTH EDUCATION AND SCIENCE LITERACY THROUGH PEER SUPPORT GROUPS**

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Organization: Botswana-Baylor Children's Clinical Centre of Excellence, Collaborative African Genomics Network (CAfGEN)

**Background:** Teen Club is a psychosocial peer support and life skills education group at the Botswana-Baylor Children's Clinical Centre of Excellence (COE) for youth ages 13-19. The COE is currently the coordinating center for the Collaborative African Genomics Network (CAfGEN), which aims to integrate genetic and genomics technologies to probe host factors that are important to the progression of HIV and HIV-TB infection in sub-Saharan African children.

**Methods:** Two modules on genetics/genomics and research ethics were developed and delivered to adolescents attending Teen Club. In the first module, youth were introduced to the concepts of heredity, DNA, and genetics, as well as how genomics research can provide insight into health and disease, including HIV and TB disease progression, through interactive group activities. In the second module, youth learned about ethical issues related to genomics research through role plays. After each module, our teens completed a post-module evaluation.

**Results:** 33 youth (18 male/15 female) and 30 youth (15 male/15 female) took part in modules I and II, respectively. As a result of this module, our teens reported that they know more about genetics (94%); understand why it is important to do genetic

research (94%); would be willing to participate as a subject in a genetic research study (88%); feel that more time should be spent in school on learning about genetics and genetic research (79%); and are more interested in science (79%). By the end of module II, pre and post test scores indicated a 12% increased in knowledge among the participants.

**Conclusion/Recommendations:** The collaboration between Teen Club and CAFGEN provided the opportunity for the teens to learn more about genetics, their bodies, and the importance of research ethics in a creative and fun environment. Interactive educational activities can improve science literacy among youth on topics related genetics and genomics research.

#### **BW5. INCREASING VOLUNTEER ENGAGEMENT: IMPLEMENTING A VOLUNTEER ORIENTATION PROGRAM AT THE BBCCCOE**

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**Background:** Due to the success of prevention from mother to child transmission (PMTCT) and the provision of life-saving antiretroviral therapy (ART), Botswana has witnessed a rapid growth in the number of adolescents living with HIV. As a result of the high volume of adolescents and young adults accessing psycho-social support services at the BBCCCOE, the Adolescent Services department relies heavily on volunteer support.

**Description:** Volunteers have reported the need for a formal orientation, as well as the feeling that they have been underutilized or unappreciated; most importantly, adolescents we serve report the need for consistent volunteers, as disclosure to volunteers is a sensitive subject. As of January 2015, there were 248 volunteers in the volunteer database, 71% of whom had only volunteered once or not at all. By providing a dependable and trained set of volunteers, we can only better serve our clients. To this end, the Adolescent Services Department began implementing a volunteer orientation program in March 2015. On average, volunteer post-test scores increased by 10.8%, from 88.2% to 99.0%; 84 out of 95 volunteers scored 13/13 on their post-test. Not only did volunteers gain measurable knowledge from the orientation, but they also report having acquired interpersonal skills that are valuable when working with children and teenagers.

**Lessons learned:** Well trained volunteers can be engaged safely to assist in quality health care delivery. Community involvement in care key in delivering affordable services to HIV infected patients. Volunteers reported retaining more information when they were able to discuss and learn from their peers.

**Conclusions/Next steps:** We can expect volunteers to contribute over 2,300 hours of work at the BBCCCOE by the end of 2015. If volunteers were paid minimum wage (USD 0.40 an hour) for their time here at Baylor, they would incur a cost of at least USD 1, 615.00 per year. Thus, the monetary investment for lunch and interactive orientations is more than paid off by the number of hours worked by volunteers. Next steps include adding a volunteer sign up to our website, and continuing the orientation program.

#### **BW6. CASE SERIES: MALNUTRITION OR DRUG TOXICITY; DILEMMA IN PAEDIATRIC HIV CARE IN BOTSWANA**

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**Issues:** The introduction of antiretrovirals(ARVs) in conjunction with nutritional interventions has improved wasting, weight loss and micronutrient deficiency in HIV positive children. Today majority of these children live longer healthier lives with fewer opportunistic health problems. However, a significant number of patients, especially those on Protease-Inhibitors(PIs) and Non-Nucleotide Reverse Transcriptase Inhibitors(NRTIs) lipodystrophy that is often misdiagnosed as true malnutrition.

**Methods:** We report a case series of three patients with malnutrition on ARVs. We reviewed records of patients referred to dietician at our centre.

#### **Results**

**Case #1:** 21.8 years old Female was referred to dietician for Obesity. Wt: 105.0kg, BMI: 44. Patient was previously on NTRI/PI. Dietary advice given but patient went on to develop buffalo hump, moon face, enlarged breasts, big belly, and abdominal/lower trunk stria. Patient isolated herself from other patients in waiting area. Endocrine issues ruled out. Was seen by psychologist who reported depression and treatment failure. Patient was switched to NNRTI based regiment and has done well with improvement but not resolution.

**Case #2:** 18.9 years old Female referred for weight loss. Wt: 40kg, BMI: 17.08. Patient has been on a NRTI(Didanosine and Stavudine) and a PI. Developed facial, buttock and limb wasting, and in addition, had enlarged breasts. Fellow students mocked her at school about her big breasts, and had reduced motivation. She was given dietary supplements and switched off to non-D analogue NRTIs with minimal changes.

**Case #3:** 11.4 years old Male referred for severe wasting. Wt: 19.10kg, BMI: 11.65. Started ARVs with a PI with Didanosine and Stavudine. Patient presented with severe buttock and lower limbs wasting and also developed central/truncal obesity. He was given dietary advice, supplements and also switched off to non-D analogue NRTIs with minimal changes.

**Conclusion:** Lipodystrophy is not uncommon in the general patient population and is a debilitating condition for some patients. It has multifactorial causes and is commonly mistaken for malnutrition. Unfortunately, nutritional interventions do not yield any significant results but use of newer drugs may lessen the effects. Sensitization of all Health care providers on the side effects of some ARVs on the health and psychosocial impact on these children.

#### **BW7. DO PILL TOSSERS HAVE HIGHER MARKS/GRADES?**

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**Background:** With an ageing paediatric HIV population, clinicians

at Botswana-Baylor Clinical Centre of Excellence (BCCOE) have begun to observe "pill tossing" behaviour where patients throw away or hide extra pills in order to have an ideal medication reconciliation count. This has invariably led to viremia, immune decline or clinical deterioration with consistently "perfect" pill counts, a situation that baffles clinic staff. Here we describe cases where this has been documented as it has been hypothesized that pill tossing and adjusting takes a fair amount of academic skill. We posit the question: are children who pill toss considered good students?

**Methods:** We carried out a retrospective chart review and searched for the specific terms indicating that the clinician believed the child was adjusting pill counts. A challenge patient is defined as a patient identified by clinicians as having some difficulty with adherence, behaviour or maintaining viral suppression.

**Results:** Utilizing the 2014 registry of challenge patients at BCCOE (N=102) we found fifty-seven patients (56%) at the BCCOE were identified as pill tossers using this method. Further retrospective chart review determined what academic marks a child received. Review of documented history helped determine which marks a child had received within 3 years of the identified pill tossing. 56 of the 57 (98%) had documented marks in the EMR. Patients were stratified as "good students" (As and Bs) or "poor students" (Ds and Es). Patients who received Cs were excluded. Final analysis included 48 identified pill tossers who had documented school marks on the chart. Of the 48 identified pill tossers 31 (65%) were identified as "good students". 17 (35%) students were identified as "poor students". Chi square value was 4.083. This difference was statistically significant according to a chi-square analysis at a  $p=0.0433$  level.

**Conclusion:** Many adolescents manipulate tablets to indicate they are taking medicines well, while objective and clinical data belie calculated adherence. Our study reveals that patients who are pill tossers at the BCCOE are more likely to get good marks than poor marks. Further research will help inform caregiver which patients toss pills and why they choose to do it.

#### **BW8. INTRODUCING TEEN CLUBS INTO THE BOTSWANA SCHOOL SYSTEM; FEASIBILITY STUDY**

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**Background:** Increasing numbers of HIV infected adolescents in the Botswana school system has necessitated newer approaches to support this population in schools. Our prior work with schools revealed issues of stigma, bullying. Poor grades, poor support in this group. BCCOE developed a successful peer support group for adolescents whose aim is to empower HIV-positive adolescents to build positive relationships, improve their self-esteem, and acquire life skills. The TC method involves a tripartite arrangement where BCCOE is the technical partner, local clinic is the medical partner and a local Non-Governmental Organization is the implementing partner. USAID's AIDSTARONE recognises TC as a best practise. The objective of this study was to find out from the adolescents themselves, their caregivers, teachers and other stakeholder if there is need for this approach in schools.

**Methods/Description:** The TC approach has been proposed to help deliver HIV messages and life skills curricula in schools. A 10 question questionnaire was developed and adapted to be answered by adolescents with HIV, students 10-19 years, teachers, parents and other stake holders in 5 varied sites around the country representing rural and urban localities. Focus group discussions were held with stakeholders and policy makers as well.

**Results:** Of the 111 interviewed in five sites the most startling finding was that 92% of all the people interviewed including teachers knew nothing teen clubs. 89% indicated that this will be a good idea to introduce TC in schools. Most (84%) indicated that they should be called teen clubs and operate along the current model used at Baylor and 12% felt they should be incorporated in existing clubs while 4% indicated they should be called health clubs and address other health issues as well. Majority of participants felt these clubs will help address stigma and discrimination and improve adherence to medications. Focus group discussion revealed similar trends.

**Conclusions/Next steps:** Although a lot of people did not know much about teen clubs it will appear that the formation of teen clubs at schools will be generally an accepted concept. There was also a general consensus as to the perceived benefits of formation of these clubs.

#### **BW9. INTRODUCING COMMUNITY ADHERENCE GROUPS IN BOTSWANA**

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**Background:** Increased availability of antiretroviral therapy (ART) in sub-Saharan African countries like Botswana, with the second-highest prevalence of HIV/AIDS in the world, has resulted in unprecedented numbers of perinatally HIV-infected children surviving into adolescence and young adulthood. The Botswana-Baylor Children's Clinical Centre of Excellence (COE) has the largest HIV-positive adolescents cohort in Botswana. Given the high rate of return for transitioned patients, introduction of community refill project was conceived in order to deal with the congestion in clinic as well as bring services closer to the people.

**Description:** The team started exploring ways of decongesting clinic and worked with Rotary Club Gaborone on options. Medicin San Frontiers published a strategy that successfully transitioned almost 20 000 patients to community adherence groups in Khayelitsha, Cape Town South Africa. We therefore wanted to pilot this relatively easy program in different settings in Botswana. Multidisciplinary team comprising social worker, psychologist, nurses, adolescents, parents and doctors met to discuss feasibility of this approach. These adolescents helped adapt, pilot, and finalize the project methods and appropriate tools: a new Mtswedding Health card, Community adherence Group(CAG) registers, checklist and pharmacy records. A group of caregivers were called at a

pre inception meeting. They were given choices of potential place for meetings as well as options for meeting times. Of the 20 caregivers introduced to the model, only 3 refused enrolment, while 5 needed more time to think about it. 3 were excluded due to co-morbidities or enrolment in other studies. Upon roll-out in Botswana, tools will be shared and piloted in other resource-limited countries.

**Lessons learned:** The collaborative and inclusive nature of the multidisciplinary team, caregivers, including adolescents themselves, ensures local relevance and ownership of the programme and its tools. Public-private partnership development model is key for sustainability. As the programme continues to grow, we will share the results of the pilot with partners in other countries.

**Conclusions/Next steps:** Novel methods are needed to decongest clinics and continue to provide excellent care to our patients. The approach is generally acceptable and will likely be well received in similar resource-limited settings.

#### **BW10. IMPACT OF RIFAMPICIN-PROTEASE INHIBITOR COADMINISTRATION ON HIV CLINICAL OUTCOMES IN PAEDIATRICS**

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**Background:** It is well documented that coadministration of rifampicin(RIF) significantly reduces the concentrations of protease inhibitors(PI) especially in children tuberculosis/HIV coinfection. To overcome this issue most guidelines recommend doubling the dose of PI in adults while there are no recommendations for children on RIF containing antituberculous treatment(ATT). Sometimes what is significant drop in blood level does not translate into clinical significance. Our objective in this study was review clinical outcomes data for children who were put on rifampicin while on a PI based regime in paediatric population.

**Methods:** We reviewed charts of patients from January 2008 to December 2014 on RIF containing ATT who commenced antiretroviral therapy comprising PI plus two nucleoside reverse transcriptase inhibitors. Data extracted include demographic data, TB outcomes data, HIV parameters(CD4/VL). Viral suppression was any VL <400 per national guidelines. We reviewed the likelihood of viral load suppression between same participant prior to ATT and post ATT. Simple frequencies were used to study pre and post ATT HIV parameters. Study was covered by an existing audit protocol.

**Results:** 197 patients were treated for TB at our clinic between 2008- 2015. Of these, 161 were <19 years of age with F:M ratio of 96/101. 83/161(52%) were on double dose PI regimen while on ATT. 82 were on Lopinavir/ritonavir and 1 on Atazanavir. Of these 53/83(64%) were suppressed prior to ATT and 49/83(59%) suppressed post ATT. All 4 that did not suppress had history of poor adherence with multiple psychosocial interventions. Two re-suppressed intermittently afterwards suggesting no resistance

developed. Of those with recorded pre and post ATT CD4, average CD4 improved from 373 to 869 cell/mm<sup>2</sup>. Similar trends were seen in the 0-5 year group.

**Conclusions:** Though historically double dose of PI yields low blood serum levels in young children treated concurrently with rifampicin, our findings suggest that it is not a clinically significant effect in our setting. The data indicate that most patient do well with double dose PI even with RIF coadministration. Our results may not be generalizable given small sample sizes. Much more rigorous prospective studies are needed to answer this important question.

#### **BW11. CASE REPORT: MAUNCHAUSEN'S SYNDROME BY PROXY IN PEDIATRIC HIV CARE IN THE RESOURCE LIMITED SETTING**

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**Background:** Adherence in HIV management is critical in ensuring treatment success. As pediatric patients a fully dependant on their adult care givers, their outcomes are good marker for level of care received. Where this nurturing relationship is compromised, pediatric patients suffer. One such instance is in the case of Maunchausen's Syndrome by proxy where the care giver fabricates or induces an illness in order to meet his or her own emotional attention needs through the treatment and care process.

**Methods:** We report a case of a 22 month old male patient, HIV positive on DNA PCR who presents with persistent viremia since starting ART at age 8 months with perceived good adherence to medications. We reviewed mother and infant's charts for data below. Was born via spontaneous vaginal delivery at 37 weeks and received single dose Nevirapine and 1 month of zidovudine per National Guidelines.

**Results:** Was born full term with no complications to a 30 yo HIV positive mother. Mother was on PMTCT Program and given Zidovudine/ Lamivudine/ Nevirapine regimen from second trimester. Tested PCR positive at 7 months and started HAART at 8 months of age.

See **Appendix 1.1** for Table 1

Resistance assay was sent September 2013 showed no mutations. Mother had viremia with persisted good adherence on Zidovudine/Lamivudine/Nevirapine regimen. Child developed Miliary TB in October 2013 and was started on standard Anti-Tuberculosis medication with directly observed therapy with improvement. Mother started suppressing her virus on same regimen around the same time. No other causes of treatment failure were identified in the child's history such as drug-drug interactions, storage issue or unusual HIV subtype. Mother and the family attended counseling with a clinical psychologist.

**Conclusions:** Though uncommon, Maunchausen's syndrome by Proxy does exist in the developing world. It is a difficult diagnosis to make where laboratory services

are inadequate. To our knowledge, this is the first such case in our setting and as such all clinicians need to be aware and make necessary care plans for both mother and child.

## **BW12. INTRODUCING COMMUNITY ADHERENCE GROUPS IN BOTSWANA**

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**Background:** Unemployment in Botswana has remained high at nearly 20% and is higher among young people. This exposes them to financially driven high risk sexual relationships. New efforts are needed to understand young people who face a concert of challenges including social stigma surrounding HIV+ status and the need to become financially stable. An innovative program that is youth focused and allows participants to express their thoughts for therapeutic purposes, and links needs assessment to community engagement, to inform more proactive intervention efforts is needed.

**Methods/Project Description:** Photovoice is a group analysis method that combines photography with grassroots social action, commonly used in community development, public health, and education. This is an extension of a project that explored unemployment in Cape Town. Participants are given digital cameras and asked to capture things in the community that motivate/inspire them, as well as things in the community that represent an aspect of their struggle to pursue employment or further education. The pictures are collaboratively interpreted, and group and individual narratives developed. The method is informed by an understanding that everybody has a right to be heard by community members and by policy makers. Photovoice creates a safe space for multiple narratives to be heard; it is therapeutic, giving participants a safe distance to explore painful experiences and find strategies to address them. We offered participation to out of school students between the ages of 16 and 25, and 24 students enrolled in the project. One outstanding participant will be encouraged to continue to train others.

**Lessons Learned:** Through photography, participants represent their environment in a way that is expressible to community outsiders. In light of new forms of technologized globalization, rapid photograph dissemination makes a step in the right direction by blurring the roles of aid recipient, social activist, storyteller, and researcher. Complications of carrying an expensive camera must be dealt with, and guidelines surrounding camera policy and consent must be clear before a project begins. The importance of consistent attendance must be emphasized.

**Conclusions/Next Steps:** The next steps are to examine themes that emerge from the current group's pictures. This will increase the understanding of ways that social pressures act on unemployed young adults, which can be then targeted by programs at the Adolescent Centre.

## **BW13. YOUNG ADULT'S SUPPORT GROUP PARTICIPANTS IN TERTIARY LEARNING AT BOTSWANA-BAYLOR'S CLINICAL CENTRE OF EXCELLENCE (COE)**

**Authors:** N. Boitumelo<sup>1</sup>, M. Matshaba<sup>1,2</sup>, K. Carpenter<sup>1</sup>, A. Rice<sup>1</sup>, K. Koboto<sup>1</sup>, E. Pettitt<sup>1,2</sup>, L. Phetogo<sup>1</sup>, G. Anabwani<sup>1,2</sup>

<sup>1</sup>Botswana-Baylor Children's Clinical Centre of Excellence

<sup>2</sup>Baylor College of Medicine

**Background:** The success of the Botswana Antiretroviral program has led to children born with HIV surviving into adulthood. The Young Adult's Support Group (YASG) at Botswana-Baylor COE is working proof of this theory. Current literature review links HIV infection with negative cognitive outcomes for exposed children as well as those become infected with HIV. YASG there focuses on providing a nurturing environment, building practical skills to help youth transition into adulthood. We review outcomes of our participants.

**Methods:** The YASG, started in 2013, are a group of young adults who have graduated from Teen Club. The aim of YASG is to empower young adults to set life goals for themselves and make positive decisions for their future. They comprise young adults aged from 18 to 21. They meet once every month and discuss ways on how to tackle their future plans in terms of education, career, life skill, careers and life skills. They are led by other youth who engage them using different media. This group provides help to adapt well to the "new adult life" (Vision) by promoting life skills, "lifelong learning"(Mission) and a philosophy of self help by educating linking as well as empowering individuals.

**Results:** Of the 142 registered participants, 15(10.6%) are attending or graduated from higher level colleges of education. YASG registered its first successful graduate who has been conferred an Honors degree in Bachelor of Business Entrepreneurship. Fourteen other YASG participants have since been enrolled in various tertiary institutions for certificate, diploma and degree courses. As a group, they are pursuing a wide range of specialities such as Medicine, Business, Nursing, Hotel Management, Biology, Agriculture, and Public Relations. Others are re-sitting their high school exams (BGCSE) to qualify for tertiary leaning.

**Conclusion:** The transition into adulthood for ALHIV often needs to be accompanied by psychosocial support. Many of the YASG participants discussed above took advantage of multiple programs offered by the COE such as weekly YASG, tutoring and improved their grades in school. Those who have successfully navigated the transition from adolescence to adulthood must be encouraged to give back

## **BW14. CHARACTERISTICS OF VICTIMS OF SEXUAL ABUSE AT THE BOTSWANA-BAYLOR CHILDREN'S CLINICAL CENTRE OF EXCELLENCE, GABORONE, BOTSWANA**

Ontibile Tshume<sup>1</sup>, Mogomotsi Matshaba<sup>1,2</sup>, Onkemetse Phoi<sup>1</sup>, Tapiwa Tembwe, Grace Karugaba<sup>1</sup>, Gabriel Anabwani<sup>1,2</sup>

Botswana Baylor COE, Gaborone, Botswana  
Baylor College of Medicine, Houston, TX, USA

*Botswana-Baylor Children's Clinical Centre of Excellence, Gaborone, Botswana*

**Background:** The UN Convention on the Rights of the Child, Article 19: protects children against maltreatment and abuse of

any form. Sexual abuse is a form of Gender Based Violence that includes sexual exploitation and sexual abuse. It may also take the form of exposing children to pornography and may also refer to any act, attempt, or threat of a sexual nature that result, or is likely to result in, physical, psychological and emotional harm. Though the family and the community take the first role in protecting the victims, perpetrators are often close relatives, friends, and landlords. We look at characteristics of victims of sexual abuse in our clinic

**Methods:** A retrospective chart review of all HIV positive children with history or suspicion of sexual abuse, who have been followed up at Botswana Baylor Clinic from January 2008 to December 2014. Social work and psychologists notes were reviewed and socioeconomic, demographic and clinical data extracted. Simple frequencies were then described. The study was covered a local audit protocol.

**Results:** All of the 16 cases identified were females, and occurred between the ages of 8- 19 years. 5 out of 16 (31.3%) have evidence of developmental delay. 5/16 have HIV negative mothers. Three victims were admitted to psychiatric facility due to suicidal ideation and only 2 completed their secondary school education. 10/16(62.5%) had other psychiatric issues like depression, anger/acting out, poor school grades. 15/24 (62.5%) perpetrators were known to the victim or family. Most were reported to the police with only 2 perpetrators getting successfully prosecuted and incarcerated.

**Conclusions:** These 16 cases show that sexual abuse is not uncommon and reveals lack of proper referral system for counseling for children and follow up. Though majority of cases are reported and perpetrators known, they are seldom prosecuted and incarcerated. Further research is needed to understand the reason behind the apparent lack of protection of children and adolescents.

#### **BW15. FACTORS ATTRIBUTED TO NON ADHERENCE AMONG FAILING HIV POSITIVE ADOLESCENTS AT BCCOE**

*Onkemetse Phoi, Grace Karugaba, Gaone Gabana, Mogomotsi Matshaba, Gabriel Anabwani*

**Introduction:** Worldwide, HIV-related mortality among adolescents living with HIV (ALHIV) increased by 50% from 2005 to 2012 and is attributed in part to a lack of support for adolescent retention to care and adherence to antiretroviral therapy (ART). This vulnerability reinforces the need to better understand incomplete ART adherence among ALHIV, particularly in sub-Saharan Africa, where the majority of the world's 2.1 million ALHIV reside.

**Methods:** From January to November 2013 we reviewed Electronic Medical Records of 10 ALHIV aged 17 to 22, comprising of 5 females and 5 males. All the notes, nursing, doctors, psychologist and social worker were reviewed. Clinical data such as the unsuppressed Viral load was also abstracted from EMR. Themes were summarized regarding the barriers to and facilitators of ART adherence.

**Results:** The highest barriers to ART adherence included pill fatigue which was reported by 80% of the patients, followed by the side effects of treatment with 60% and both depression and lack of family reported by 50% of ALWH. Over 50% of this group had at-least defaulted treatment more than once. Other barriers were reported included, self-stigma, forgetfulness, negative attitude to treatment (still struggling with self acceptance of HIV status) grief and bereavement, family conflicts and food insecurity.

**Conclusions:** These data highlight the importance of having

interventions that geared addressing both pill fatigue and treatment side effects as this population grow into adolescents stage. This also calls for every adolescent to be screened for depression before it affects adherence. Further intervention in dealing with treatment retention is also vital. Family-based interventions to prepare ALHIV and their adult caregivers for HIV self-management are of paramount importance. Future programmes at BCCOE also need to address HIV related self-stigma, forgetfulness, negative attitude toward treatment, grief and bereavement and family conflicts in order to shape young peoples' adherence behaviours.

#### **BW16. RETENTION IN CARE AND ADHERENCE SUPPORT FOR CHALLENGE PATIENTS AT BOTSWANA-BAYLOR CHILDREN'S CLINICAL CENTRE OF EXCELLENCE (COE)**

**Authors:** O. Phoi<sup>1</sup>, G. Karugaba<sup>1</sup>, B. Thuto<sup>1</sup>, K. Koboto<sup>1</sup>, M. Matshaba<sup>1,2</sup>, G. Anabwani<sup>1,2</sup>  
Botswana-Baylor Children's Clinical Centre of Excellence, Gaborone, Botswana  
Baylor College of Medicine, Houston, USA

**Background:** Ensuring good adherence and retention in care continue to be two of the biggest challenges facing antiretroviral treatment especially for adolescents. According to WHO, while globally the number of AIDS-related deaths overall fell by 30% between 2005 and 2012, deaths among adolescents rose by 50% in the same period. Additionally, research shows that for adolescents with chronic illness, mastery of self-management skills is a critical component of the transitioning to adult care and adolescents are vulnerable to treatment failure if they are poorly supervised. We report one of Botswana-Baylor's efforts to equip adolescents with self-management skills in order to affect medication adherence, independence in health care tasks, and retention in care.

**Description;** A baseline survey was conducted with challenge patients who identified barriers to adherence including: forgetfulness, lifestyle issues, drug fatigue, lack of self-motivation and poor caregiver support. Proposed interventions included peer support meetings, caregiver motivation and interaction with role models who successfully navigated adherence challenges. Based on the results we implemented a 3-session caregiver and patient focused intervention to promote self-management skills, positive parenting and effective parent-child communication on adherence and retention in care. 40 patient-caregiver pairs selected on the basis of complex psychosocial issues, poor adherence and treatment failure attended. Strategically selected role models shared their lived experiences. We held one meeting for caregivers, one for challenge patients and one mixed group meeting for patients and their caregivers.

**Lessons learned:** The fact that other people are facing similar challenges helped individuals to openly discuss their experiences, provide emotional support to each other, and identify creative ways of dealing with complex problems. Further, peer support group led by positive role models has potential to reduce blame issues and promote self-responsibility as they share lived experiences. Being in a support group can also help individuals to develop new skills to relate to others. Positive behavior change should be rewarded by caregivers and healthcare workers.

**Next Steps**\_The COE will expand the intervention to more caregiver-patient pairs. Conduct a mid-line and end-line survey after 6 months and 12 months respectively to assess the

outcome of intervention

#### **BW17. RETENTION IN CARE AND ADHERENCE SUPPORT FOR CHALLENGE PATIENTS AT BOTSWANA-BAYLOR CHILDREN'S CLINICAL CENTRE OF EXCELLENCE (COE)**

**Authors:** O. Phoi<sup>1</sup>, G. Karugaba<sup>1</sup>, B. Thuto<sup>1</sup>, K. Koboto<sup>1</sup>, M. Matshaba<sup>1,2</sup>, G. Anabwani<sup>1,2</sup>  
Botswana-Baylor Children's Clinical Centre of Excellence,  
Gaborone, Botswana  
Baylor College of Medicine, Houston, USA

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**Next Steps** The COE will expand the intervention to more caregiver-patient pairs. Conduct a mid-line and end-line survey after 6 months and 12 months respectively to assess the outcome of interventions.

#### **BW18. EFFECT OF SOCIO ECONOMIC STATUS ON TREATMENT FAILURE IN A PAEDIATRIC HIV CLINIC IN A RESOURCE LIMITED SETTING.**

Lekalake, S<sup>1</sup>, M. Matshaba<sup>1,2</sup>, T. Tembwe<sup>1</sup>, M. Mathule<sup>1</sup>, G. Anabwani<sup>1,2</sup>

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**Background:** The rates of viral suppression on Highly Active Antiretrovirals(HAART) are significantly high especially among children who adhere to their medications in our setting. Although the proportion of failing adolescents remain small and significant number of children on HAART with detectable viral loads. We developed the in-reach program to assess home environment and tease out any issues leading to poor adherence. Our earlier work revealed a negative correlation between Food Insecurity and CD4 cell count linking Socio Economic Status (SES) directly to the infection. The objective of the study is to learn how SES affects the viral load.

**Methods:** We reviewed all electronic medical charts(EMR) of patients enrolled in the challenge clinic, our failure management cohort. Data was extracted from the EMR as well as program files for children that were lost to follow up from January 2008 to December 2014. Viremia was defined as and Viral Load >400 copies/ml. All those with viremia are referred to challenge clinic for more intense counselling. Data on their demographic factors, gender, SES (with food assistance/ Food insecurity and need for transport support as proxies), employment, housing extracted from the in-reach form . Simple frequencies and relative risk were used to define this population.

**Results:** Of the 63 files found and analysed 30/63 patients (48%) had high level viremia after intervention. Of those with persistent viremia, 20/30 (67%) were assisted with both food rations and transport money to come to the clinic. The relative risk of developing viremia when SES was present was 3.7 as compared to those with high SES.

**Conclusions:** Low SES was associated increased likelihood viremia possibly through lack of food affecting response to treatment as well as difficulties in attending scheduled medical appointments in this cohort. These results should be interpreted with caution as the sample size was small and other confounders like adherence were not fully mitigated. Larger prospective studies needed to characterize this relationship further.

#### **BW19. IMPLEMENTATION OF FREEZERWORKS UNLIMITED V 6.0 © AT COE: CAfGEN STUDY EXPERIENCE**

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**Background:** : Genomic analyses and individualised medicine are now common in Europe and other Western countries. Most studies undertaken are in non-African, adult populations; yet there are more than 2 million new cases of HIV and HIV-TB in Sub-Saharan Africa every year, including more than half a million in children. Studies of HIV-infected children -who differ from their adult counterparts in their route of acquisition, clinical course, and pathophysiology – have been conspicuously absent. The Collaborative African Genomics Network (CAfGEN) aims to

redress this scientific imbalance by integrating genetic and genomics technologies to probe host factors that are important to the progression of HIV and HIV-TB infection in sub-Saharan African children. The Network incorporates five sites –the Botswana and the Uganda Children’s Clinical Centres of Excellence for clinical expertise and patient recruitment; Makerere University and the University of Botswana for molecular genetics expertise; and Baylor College of Medicine for training and resources that will be transitioned to African researchers and institutions. Due to different capabilities and storage capacity, samples at different stages of processing will be shared among 5 sites making it difficult to track samples hence need for a tracking system. We describe our experience with one system that manages sample processing.

**Description:** Freezerworks unlimited V6.0 is a copyright 2013 by Data Works Development Inc from Mountlake Terrace ,WA 98043 US. The sample tracking and management program for laboratories, clinics, and bio-banks. Freezerworks efficiently tracks what is being stored, moved, and shipped to outside organizations, down to the precise location in the freezer. From initial data entry, to printing bar coded labels, to viewing your data in a wide variety of ways, Freezer works speeds the tasks of sample management while the audit trail automatically compiles the details of each event.

**Lessons Learned:** For the Genetics and genomics studies to be successful and reliable every sample should be tracked and managed properly by implementing systems which are compatible and able to link to each other. Freezerwork is a user-friendly software that can be used in resource limited settings.

**Conclusion:** Freezer works centralises inventory management, easy to set up, easy to use, saves time and very affordable.

#### **BW20. PREVALENCE AND IMPACT OF NON-DISCLOSURE ON PAEDIATRIC PATIENTS BY PARENTS/CAREGIVERS AT THE BOTSWANA-BAYLOR CHILDREN’S CLINICAL CENTRE OF EXCELLENCE (COE)**

**Authors:** T. Tembwe<sup>1</sup>, J. Makhanda<sup>1</sup>, M. Matshaba<sup>1,2</sup>, G. Anabwani<sup>1,2</sup>

1. Botswana-Baylor Children’s Clinical Centre of Excellence, Gaborone, Botswana
2. Baylor College of Medicine, Houston, USA

**Background:** Disclosure support, whether it is for a child’s own HIV status or for a caregiver’s HIV status to a child, is considered to be an integral support component of comprehensive HIV/AIDS treatment care. Generally, evidence suggests that while caregivers have concerns that disclosure may harm their children and cause difficulties in their care giving relationships, this is seldom the case. Lack of disclosure has been shown to increase behavioral and emotional difficulties among children and can jeopardize treatment outcomes in children. Therefore family-based age-appropriate disclosure is very critical with the support of health professionals.

**Objectives:** To evaluate the prevalence and impact of non disclosure by parents/care-givers of HIV positive children seen at the COE.

**Methods:** We reviewed all electronic medical charts (EMR) of patients enrolled in the clinic. Annual statistics for January to December 2014 were reviewed for all patients referred to Psycho-Social department for any issues needing counseling. The EMR as well as program files were queried and all clinical/demographic data was extracted.

**Results:** Among 2469 active patients, 1289 (50.6%) were referred to the psychosocial department for various issues (Depression, Adherence, Disclosure, food insecurity). 552 (22.3%) poor adherence 314 (12.7 %) presented with depression, 209 (8%) behavioral changes, 146 (5.9%) with anger, 9 (0.4%) with suicidal ideations and 1 (0.03%) with suicidal attempt. Almost all of the cases had multifactorial causes including disclosure. It was difficult to isolate individual causes. However 58 patients were found to have disclosure issues as the main issue and had to continue with disclosure counseling. Parents of these 58 patients revealed during sessions that several different reason were to blame for the situation: fearing to be blamed by their children; lack of knowledge on disclosure, fear to hurt the children’s feelings or the belief that health professionals are the best people to disclose to their children.

**Conclusion:** Adherence and disclosure support should also be delivered and supported within the family context. Identifying appropriate and effective, family-based disclosure approaches for parents, and other support interventions should be an integral part of HIV care and treatment. Larger prospective studies can help answer this issue.

## **Ethiopia**

### **ET1. COLLABORATION TO IMPROVE QUALITY OF PEDIATRIC CARE IN RESOURCE-LIMITED SETTINGS**

**Authors:** David M. Gordon\*, Mehretie Kokeb, Sebastian Wanless, Michael B. Mizwa

**Location:** University of Gondar Hospital, Ethiopia

**Subject:** Education and related topics: quality improvement, newly introduced innovative program descriptions

**Issues:** In 2000, the WHO advised governments in the global south to prioritize health systems strengthening in national development programs. Although many countries have bolstered capacity at the regional and district levels since that time, few have addressed quality of care at the hospital level.

**Description:** The Collaboration for Locally-Driven Improvement in Pediatrics (CLIP) was created in 2013 to address operational failures at University of Gondar Hospital (GUH), Ethiopia. Physicians from the Baylor International Pediatric AIDS Initiative (BIPAI) and GUH tested a novel, didactic, eight-module quality improvement (QI) curriculum with three nurses and fifteen pediatrics residents. National guidelines were integrated into training materials wherever possible. Each trainee received faculty supervision and technical support during one plan-do-study-act (PDSA) cycle. Structured feedback informed the development of four additional training modules and a computer-based QI implementation tool. Trainees completed seven QI projects during the one-year pilot.

**Lessons learned:** Health care providers in the global south can identify and address systems-level problems at their institutions. To meet its objectives, CLIP needed to 1) establish a culture that blamed systems rather than individuals for operational failures, 2) improve documentation of hospital processes and patient outcomes, 3) develop strategies to minimize the burden of data collection and analysis, 4) promote computer literacy among staff, 5) create an on-site infrastructure for supervising QI implementation, and 6) adapt to the scheduling and technical needs of participants. Confidential surveys and department-wide meetings helped project coordinators tailor the program to local needs.

**Next steps:** CLIP will test its program in 2 additional sites to determine replicability. It will also develop a web site that integrates 1) ancillary QI training resources, 2) automated QI implementation and reporting tools, and 3) networking systems. Ongoing follow-up is underway at GUH to measure CLIP's sustainability. Further research is needed to determine the cost-effectiveness of CLIP's "bottom-up" approach to QI implementation.

## Houston

### US1. CONNECT TO PROTECT (C2P): MOBILIZING THE COMMUNITY TO ADDRESS HIV AMONG ADOLESCENTS

Kimberly K. Lopez\*, Mary E. Paul, and the Adolescent Trials Network for HIV/AIDS Interventions  
Baylor College of Medicine, Houston, Texas, USA.

**Issues:** Often times health interventions are implemented without involvement of the community or population being targeted despite knowing that interventions are more likely to succeed if there is buy in from the target audience. By acknowledging the expertise that community brings and by facilitating community driven strategic planning, C2P is able to identify root causes of risk for HIV among youth and further, identify sustainable remedies for those root causes. C2P involves community through the development of a community coalition. The members of the coalition have one common goal: to impact HIV transmission among youth. The coalition is focused on structural changes which are changes to programs, policies or practices. C2P coalition members include: community members, youth, medical providers, social service providers, health department officials, academic researchers, clergy, parents, school district personnel, and representatives of elected officials.

**Description:** There are fourteen C2P locations across the USA. Baylor College of Medicine, Houston, Texas has been a C2P site for four years. Key initiatives that have been accomplished include: expanding access to HIV testing and linkage to care, increasing availability of HIV testing, improving transition from pediatric care to adult care, and development of key partnerships with school districts to improve health education.

**Lessons Learned:** Building and sustaining a coalition takes time and resources. The coalition while committed to a common goal sometimes has competing interests among members. It is the responsibility of the coalition facilitator to navigate through these issues so ultimately the common goal is addressed.

**Next Steps:** Future goals of the Houston C2P include: formalizing a school district policy that would allow on-site HIV testing, expanding community-based testing initiatives for young MSM, developing and implementing a peer education program and improving retention in care through the use web-based communication tools. Long-term sustainability is an important part of the coalition process. In fact the coalition has formal sustainability discussions twice year. For C2P Houston, finding local community members to take on more shared leadership responsibilities to sustain and advance the coalition is critical to the continued success of C2P.

### US2. THE IMPORTANCE OF BEING CLINICAL: WHY BEING AN EXPERT – DESPITE XPERT - IN CLINICAL DIAGNOSIS OF TB REMAINS CRUCIAL WITHIN THE BIPAI NETWORK

J. Bacha<sup>1</sup>, L. Campbell<sup>1</sup>, R. Golin<sup>2,3</sup>, S Dlamini<sup>3</sup>, H. Lukolyo<sup>2</sup>, M. Murungi<sup>4</sup>, K. Ngo<sup>5</sup>, A. Mandalakas<sup>5</sup>

<sup>1</sup>Baylor College of Medicine Children's Foundation - Tanzania, Mbeya, Tanzania.

<sup>2</sup>Department of Pediatrics, Baylor College of Medicine, Pediatrics, Houston, TX, USA.

<sup>3</sup>Baylor College of Medicine Children's Foundation –Swaziland, Mbabane, Swaziland.

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<sup>5</sup>Baylor College of Medicine, Pediatrics – Global TB Program, Houston, USA.

**Introduction:** Diagnosis and treatment of childhood TB has become a priority for the BIPAI Centres of Excellence (COEs). The COEs have scaled up their childhood TB efforts through improved i)partnerships with national TB programs/partners, ii)TB training and capacity building, and iii)access to advanced TB diagnostics. This abstract shares multi-site data to highlight the diagnostic successes and challenges of TB programs at the Tanzania, Swaziland and Uganda COEs.

**Methodology:** Using a standardized data collection tool, the TB focal persons at each site collected retrospective TB data on children ages 0-15 years evaluated for TB between January 2013 and December 2014. Data sources included the electronic medical record, patient files, TB registry books, and standardized TB collection tools to support verification and ensure accuracy. Definitions for diagnostic certainty were based on the EMR definitions that were adapted from international consensus. All COEs are nationally recognized pediatric TB treatment centres that offer daily onsite diagnostics and anti-tuberculosis treatment (ATT).

**Results:** All sites had access to advanced diagnostics such as sputum analysis for smear, culture and geneXpert; chest x-ray and other imaging; and fine needle aspiration or lymph node biopsy. Tanzania and Uganda had access to tuberculin skin testing (TST). A total of 1801 children were investigated for presumptive TB, with 454 being diagnosed with TB, and 99% (450/454) initiating ATT (Table 1). Across all sites, children diagnosed with TB were likely to be HIV-infected (57.1%-97.0%) but varied widely in the provision of sputum (21.2%-84.8%). Only a small percentage of TB cases were bacteriologically confirmed (6.6%-15.3%).

**Conclusions:** BIPAI COEs are diagnosing and treating TB in many children, especially children living with HIV. Despite increasing access to advanced diagnostics, very few of these children have bacteriologically-confirmed TB. This likely reflects sub-optimal sputum collection and the poor performance of current diagnostics in children who typically have paucibacillary TB. Hence, use of clinical diagnosis – with or without support of CXR or TST – still plays a major role in the diagnosis of childhood TB at these COEs.

See **Appendix 1.2** for Table 1

### US3. ISONIAZID PROPHYLAXIS TO CHILDREN AT THE BAYLOR COLLEGE OF MEDICINE-BRISTOL MYERS SQUIBB CHILDREN'S CLINICAL CENTRE OF EXCELLENCE SWAZILAND: A FOLLOW-UP STUDY

Stephanie A Marton\*, Piluca Ustero, Anna M Mandalakas, Jeffrey R Starke, Andrea T Cruz

Swaziland

**Background:** Tuberculosis (TB) is a leading cause of death in HIV-positive children in sub-Saharan Africa; the World Health Organization recommends providing isoniazid preventive therapy (IPT) to all HIV-positive children > 12 months. We evaluated IPT

delivery and outcomes in HIV-positive children attending the Baylor College of Medicine-Bristol Myers Squibb Children's Clinical Centre of Excellence pediatric HIV clinic in Mbabane, Swaziland.

**Methods:** A retrospective chart review captured all HIV-positive children three months-14 years who received IPT from 2008-2010. Demographic data, IPT completion, adherence, medication side effects, and outcomes including death, lost to follow-up, interval development of TB disease, and the TB diagnostic criteria were recorded.

**Results:** Of 168 children receiving IPT, 144 (86%) completed six months of treatment; medication adherence via monthly pill counts was recorded for 27%. 145 (86%) were on antiretroviral therapy while receiving IPT. 14 (8%) were severely immunosuppressed at the start of IPT. Four (2%) experienced adverse effects requiring isoniazid cessation—jaundice, vomiting, a rash and epigastric pain. One patient died during treatment of suspected non-TB myocarditis. Patient charts were reviewed for a mean of 36 months after IPT initiation. Ten (6%) were treated for TB after receiving IPT; 3/10 were started on isoniazid and subsequently switched to TB disease treatment; None of the children treated for TB were microbiologically-confirmed; all were probable cases of TB with 10/10 having clinical symptoms and 8/10 having x-ray findings compatible with TB. Eleven (7%) children were lost-to-follow-up or transferred out of clinic during or after IPT administration. No patients died during follow-up.

**Conclusions:** IPT for HIV-positive children in a resource-limited setting is safe, effective, and feasible. Few developed serious adverse events. Six percent developed clinical TB, which is comparable to other studies in sub-Saharan Africa evaluating TB in HIV-positive children receiving IPT. More research is needed to determine best methods of operationalizing IPT distribution to all who would benefit.

## LESOTHO

### LS1. HEALTH SCREENING AND ASSESSMENT IN ORPHANAGES IN LESOTHO

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**Issues:** There are over 200,000 orphans and vulnerable children living in Lesotho with only 29 institutions designated as places of safety for the care and protection of children. In countries like Lesotho with limited health resources, simple low-technology interventions such as health screenings can have a profound impact on child health. This project aims to develop effective health screenings for use in Lesotho orphanages to identify common health problems among the orphans; define the commonality of HIV/AIDS, TB, and malnutrition; delineate barriers to care; and improve the overall health of orphans.

**Description:** A program evaluation study has been developed in which children residing in orphanages registered with the Lesotho Ministry of Social Development will undergo comprehensive health screenings. The health screenings will be piloted at two orphanages with known transportation limitations. The screenings

will include 1) evaluations of nutritional status based on anthropometric measurements, 2) vaccine completion rates and missed vaccinations according to Lesotho Expanded Programme on Immunization, 3) rapid HIV testing, 4) tuberculosis symptom-based screening, 5) neurodevelopmental assessment using Ten Questions<sup>1</sup>, 6) vision and hearing screening using Snellen chart and audiometer, respectively, and 7) physical examinations for general, oral and skin health.

**Lessons Learned:** Research has shown that children residing in orphanages represent a population of vulnerable children with unique health care needs, however the literature on health screening in orphanages worldwide is limited. A comprehensive screening package has been designed with readily-available and easy-to-use tools to be conducted by two health care professionals.

**Next Steps:** Screenings will begin once all ethical approvals for the project are in place. The outcomes of the health screening and the ease or difficulty of wide-scale implementation will be shared with local and international child health providers. Additional interventions will largely depend on what are found to be common health conditions and identified health service delivery gaps.

### LS2. MAINTAINING HIGH RETENTION RATES IN AN URBAN PEDIATRIC HIV CLINIC

Jill E Sanders\*, Alyssa Vecchio, Mokhiti Mokhali, Edith Q Mohapi

Baylor College of Medicine Children's Foundation – Lesotho (BCMCFL)

**Background:** The Centre of Excellence has over 3,100 active patients with 92% of HIV-infected patients receiving ART. As increasing numbers of HIV-infected children and adolescents are diagnosed and initiated on ART, optimal health outcomes will depend on the ability to successfully retain them in treatment services over time. A number of facility characteristics are associated with high pediatric retention (e.g. age-appropriate counseling, experienced healthcare workers, co-location of PMTCT services, computerized tracking). Retention rates were analyzed over a ten year period with these consistent facility-level factors and treatment services available to patients.

**Methods:** The BCMCFL electronic medical record was reviewed to extract retention rates according to the year of ART initiation. The attrition rate includes loss due to death or loss-to-follow-up (LTFU). Patients who transferred out are excluded from the analysis.

**Results:** The COE has been able to maintain high rates of retention over nearly ten years of providing HIV treatment to children and families in Maseru. Greater than 90% of the patients are retained in care at the COE at 12 months of ART. The retention rate steadily decreases in the subsequent years (see graph 1). Recent efforts at maintaining and improving retention in care have contributed to stabilization of rate of decline.

**Conclusion:** The COE has been able to maintain a high retention rate over ten years. The high rate of retention of those initiated in 2005 relates to the small sample size. Further analysis of the retention between the enrollment years can illuminate both the factors that have contributed to the ability to retain patients in care as well as areas in need of treatment service improvements.

### LS3. THE IMPACT OF TEEN CLUB ON HIV-INFECTED ADOLESCENTS

Jill E Sanders\*, Teresa L Fritts, Ryan Elliott, Cameron Yi, Thabo Motseki, David Holtzman, Edith Q Mohapi

Baylor College of Medicine Children's Foundation – Lesotho (BCMCFL)

**Background:** In 2007, BCMCFL established Teen Club, a psychosocial support group for HIV-infected adolescents. There are currently over 2000 teens enrolled in five Teen Clubs across Lesotho: one based in Maseru and four based in satellite clinics (SCOEs). As Teen Club has been active in Lesotho for several years, it is now possible to examine the influence Teen Club has had in terms of general health outcomes. It was hypothesized that those who attended Teen Club consistently would have significantly better outcomes than those who did not attend regularly.

**Methods:** The data was extracted from the electronic medical record and Teen Club attendance logs for subpopulations of adolescents attending the Maseru Teen Club from June 2008 to May 2015. The top and bottom quartiles based on annual Teen Club attendance were compared for indicators of interest including long-term outcome (chart status), change in ART regimen, WHO clinical stage, CD4 counts, viral load and adherence. (Year 2009 includes June 2008 to December 2009.) This analysis excludes viral load and adherence measures due to incomplete data sets. Treatment failure is defined as a chart status of loss-to-follow-up or died.

**Results:** In the preliminary analysis, no significant difference was found between the two quartiles for CD4 counts and WHO clinical stages. However, a comparison of the patients' chart statuses revealed that the top quartile had consistently fewer treatment failures than the lowest quartile, with four years (2009, 2011, 2012, 2015) showing a statistical significance (two sample T-test: p-value < 0.05). A general downward trend was also noted in both quartiles, suggesting that the overall decrease in treatment failure was multi-factorial.

See **Appendix 1.3** for Table 1

**Conclusion:** Adolescents who consistently attended Teen Club were less likely to have treatment failure than their peers who attended Teen Club less regularly. While the lack of statistical differences in CD4 response and WHO clinical staging is not unexpected, the introduction of virologic monitoring will allow for more specific comparisons. Additional investigation is needed to better understand the impact of multiple interventions, but it appears that Teen Club has a beneficial effect on participants' health outcomes.

### LS4. NEEDS ASSESSMENT FOR DEVELOPMENT OF A GENERAL PEDIATRICS NURSE TRAINING CURRICULUM IN LESOTHO

Kanwal Merchant<sup>1</sup>, Lineo Thahane<sup>1</sup>, Caroline Hawes<sup>2</sup>, Nthabiseng Monahali<sup>3</sup>, Jill Sanders\*<sup>3</sup>, Edith Mohapi<sup>3</sup>

Baylor College of Medicine Children's Foundation – Lesotho

**Background:** The Kingdom of Lesotho has a Human Resource crisis in the health sector; children are primarily seen by nurses for primary and acute care. Recently, HIV management has dominated nurse training, with little focus on general pediatrics.

**Objectives:** To understand perceived knowledge gaps and training needs on general pediatrics among nurses in Lesotho,

identify their preferred training techniques and resources, and assess the feasibility of conducting this training in their clinics.

**Design/Methods:** Fourteen nurses employed at five Baylor College of Medicine Children's Foundation clinics throughout Lesotho completed a survey about prior training, knowledge gaps, preferred learning format, and content of a proposed general pediatrics curriculum. An investigator assessed four clinics, to better understand the setting and feasibility of conducting on-site trainings.

**Results/Conclusion:** The non-HIV training nurses received in the last three years was on sputum induction (79%), TB diagnosis and monitoring (14%), Basic Life Support (36%), and Emergency Triage Assessment and Treatment (14%).

General pediatric conditions seen most frequently were dermatologic conditions/skin infections (85%), cough/respiratory infections (77%), and diarrhea (46%) (N=13). Despite this, only 23% felt comfortable treating dermatologic conditions/skin infections, 31% cough/respiratory infections, and 46% gastroenteritis/diarrhea. Nurses felt least comfortable managing neurologic complaints (67%), cardiovascular issues (25%) and skin conditions (25%) (N=12).

The most useful training formats were small group discussions (54%), lectures (46%), and clinical mentorship (46%). Handouts or booklets were preferred to retain and refer back to information (69%). Site assessment indicated that all clinics had 1-2 hours each afternoon for training and a space with electricity and computer to project slides.

Few nurses surveyed had received recent training on general pediatric health conditions and felt comfortable managing common complaints. There is a need to address this training gap to strengthen nurses' general pediatrics knowledge base, incorporating their perceived knowledge gaps and preferred learning formats and supplementary materials.

### LS5. COMPARISON OF THE EFFECTIVENESS OF USING A SINGLE DRUG ZIDOVUDINE VERSUS A 3 DRUG COMBINATION THERAPY FOR PREVENTION OF MOTHER TO CHILD TRANSMISSION OF HIV AT BAYLOR COLLEGE OF MEDICINE CHILDREN'S FOUNDATION CLINICAL CENTER OF EXCELLENCE-LESOTHO

Lillian Nalwoga\*, Jill Sanders, Edith Q Mohapi  
Baylor College of Medicine Children's Foundation – Lesotho (BCMCFL)

**Background:** The global estimate of adults and children living with Human Immunodeficiency Virus (HIV) was 35.3 million in 2012, with majority of these living in Sub-Saharan Africa. <sup>(1)</sup> HIV is transmitted through unprotected sex, transfusion of infected blood and blood products, and greater than 90% of HIV-infected children are infected through mother to child transmission (MTCT) during pregnancy, delivery and breastfeeding. This is a retrospective data analysis of prevention of mother to child transmission of HIV (PMTCT) interventions at BCMCFL, comparing the rates of MTCT between infants whose mothers received Zidovudine (AZT) versus a 3 drug combination of antiretroviral therapy (HAART). HIV prevalence among pregnant women in Lesotho is 27.7%. <sup>(3)</sup>

**Methods:** Data from a total of 347 HIV-exposed infants enrolled at the COE between April 2011 and June 2013 was analyzed. 172 infants were in the AZT group and 175 infants were in the HAART group. Data collected included: HIV test results (at 6 weeks of age, 14 weeks and at definitive testing), sex, mode of delivery, maternal PMTCT regimen, infant PMTCT regimen, infant feeding

practice, maternal education, family income and patient chart status (active, closed-patient negative, transferred out, died and lost-to-follow-up LTFU).

Data was analyzed by calculation of rates of HIV infection for the two groups and odds ratio, trends of association between HIV test outcomes and feeding practice, and likelihood to be LTFU or dead.

**Results:** The MTCT rate was 7.6% at 6 weeks and 12.8% at definitive testing among the AZT group and 2.9% at 6 weeks and 2.9% at definitive testing among the HAART group. 12.2% infants were LTFU among AZT group and 0.6% among the HAART group. 10.5% infants died among the AZT group and 1.7% among the HAART group.

The odds ratio (comparing HAART to AZT) of HIV infection at 6 weeks of age after adjusting for feeding practice and birth history was 0.30(0.10-0.87), P-value 0.026. The odds ratio at definitive testing was 0.17 (0.06-0.46), P-value 0.0001.

**Conclusion:** To reduce MTCT rates to the World Health Organization target (<5%), the use of HAART for PMTCT combined with safe infant feeding practice is recommended.

<sup>1</sup> *Global Report UNAIDS report on global AIDS epidemic 2013*“UNAIDS/JC2052/1/E” revised & re-issued Nov-2013.

<sup>2</sup> Lesotho Global AIDS Response Country Progress report: *Towards zero new infant infections, zero AIDS related deaths & zero discrimination. January 2010-December 2011*

<sup>3</sup> Lesotho Ministry of Health: *National guidelines for the Prevention of Mother to Child Transmission of HIV; Jan 2010*

## LS6. INITIAL VIROLOGIC MONITORING IN CHILDREN LESS THAN 5 YEARS OLD, IN LESOTHO

Mosa Molapo Hlasoa, Jill E Sanders\*, David Holtzman, Mokhitli Mokhali, Edith Q Mohapi

Baylor College of Medicine Children's Foundation – Lesotho (BCMCF)

**Background:** With an estimated 30 000 children living with HIV in Lesotho, increasing access to ART is a priority. Immunological monitoring has been readily available, but virologic monitoring has been limited. At BCMCF, viral load (VL) testing was performed as targeted testing - reserved for patients with declining CD4 counts/% or other suspicion of treatment failure. There are different laboratory limits of detection for viral load but according to the Lesotho ART guidelines 2013, VL that is not suppressed to <1000 copies/ml, six months post ART initiation is the action point.

**Methods:** Routine virologic testing for specified groups of patients on ART started in 2014. VL testing is performed in all children < 5 years beginning six months post ART initiation. There were 251 children who met inclusion criteria. 90 children had been initiated on an NNRTI-based regimen whilst the other 161 children were initiated on a PI-based regimen with lopinavir/r.

**Results:** Only 199 (79%) patients had a viral load <1000 copies/ml. Among the 52 patients with viral load >1000 copies/ml, 30 were on PI-based regimen and the other 22 were on an NNRTI-based regimen, with no statistical difference between regimens.

Nineteen patients on NNRTI had a repeat VL >1000 copies/ml, and 18/19 (95%) have been switched to 2<sup>nd</sup>-line PI-based therapy. Seventeen children on PI-based therapy had a repeat VL >1000 copies/ml, and 2/17 (12%) have been switched to 2<sup>nd</sup>-line NNRTI-

based therapy. All other patients have continued their current regimens with intensive adherence support and provision of treatment literacy to caregivers.

Two children on PI-based therapy with repeat VL >1000 copies/ml have also received HIV genotypic resistance testing and have resistance to lopinavir.

**Conclusion:** Viral load monitoring is vital in the overall care of HIV-infected children on ART. This initial analysis reveals that we are not yet at the 90% viral suppression rate targeted by UNAIDS and adopted by the Lesotho Ministry of Health. Intensive adherence support and ongoing routine virologic monitoring should enable us to reach the goal.

## LS7. CAREGIVER DAYS FEEDBACK IN LESOTHO

Ryan Elliott, Thabo Motseki, Teresa Fritts\*, Jill E Sanders, Edith Mohapi

Baylor College of Medicine Children's Foundation – Lesotho

**Background:** Caregiver involvement is crucial for treatment success in HIV-infected children and adolescents. At least once a year, a special Caregiver Day is held in conjunction with Teen Club to involve caregivers and expand communication and education opportunities. Unfortunately, there has been limited involvement and feedback from caregivers in the planning process.

**Methods:** Caregivers attending both the younger and older Teen Club Caregiver Days in Maseru and Teen Club Caregiver Day in Botha-Bothe were invited to participate in an anonymous survey. The survey included multiple-choice questions on 1) basic information, 2) emotional and social wellbeing, 3) medication adherence, 4) HIV knowledge, 5) school-related questions, 6) Teen Club evaluations, and 7) Caregiver Day feedback. Additional open-ended questions were included at the end of the survey to give caregivers the opportunity to freely express opinions.

**Results:** Younger Maseru Teen Club members were the most likely to have a parent attend Caregivers Day compared to older Maseru and Botha-Bothe members (45% vs 21% vs 26%). Grandparents were more likely to attend for older Maseru (26%) and Botha-Bothe (23%) compared to younger Maseru (9%).

Caregivers of older Maseru Teen Club members were more likely to have attended a previous Caregiver Day compared to younger Maseru and Botha-Bothe (71% vs 39% vs 34%). Of those previously attending, 94% of caregivers from all groups reported very positive or extremely positive effect on the caregivers' knowledge of HIV and medication adherence. Similarly, of those previously attending, 84-97% of caregivers reported very positive or extremely positive effect on their relationship and communication with their HIV-infected adolescent.

Open-ended questions revealed that many caregivers would appreciate having more frequent Caregiver Days. They asked for additional opportunities to speak and share their concerns. They also asked for additional HIV education and access to HIV testing during the Caregiver Day. Suggestions for Teen Club programming were also shared.

**Conclusions:** Feedback from the caregivers of Teen Club participants was positive and encouraging to facilitators. However, important service delivery gaps for caregivers were also identified. Future Caregiver Day programming will incorporate the opinions and advice of caregivers themselves.

## LS8. CAREGIVER PERCEPTIONS OF TEEN CLUB IN LESOTHO

Ryan Elliott, Thabo Motseki, Teresa Fritts\*, Jill E Sanders, Edith Mohapi

Baylor College of Medicine Children's Foundation – Lesotho

**Background:** Caregiver involvement is crucial for treatment success in HIV-infected children and adolescents. At least once a year, a special Caregiver Day is held in conjunction with Teen Club to involve caregivers and expand communication and education opportunities. While healthcare professionals have recognized the importance of regular psychosocial support for adolescents, the perceptions of caregivers regarding Teen Club was unknown.

**Methods:** Caregivers attending both the younger and older Teen Club Caregiver Days in Maseru were invited to participate in an anonymous survey. The survey included multiple-choice questions on 1) basic information, 2) emotional and social wellbeing, 3) medication adherence, 4) HIV knowledge, 5) school-related questions, 6) Teen Club evaluations, and 7) Caregiver Day feedback. Additional open-ended questions were included at the end of the survey to give caregivers the opportunity to freely express opinions.

**Results:** Younger Teen Club participants were more likely than older Teen Club participants to have a parent attend Caregiver Day (45% vs 21%). Older Teen Club participants were more likely to have a grandparent attend (26% vs 9%).

77% of caregivers of younger Teen Club participants report very good or excellent ART adherence compared to only 58% of older Teen Club caregivers. However, 25% of caregivers of older Teen Club participants never remind the adolescent to take medications compared to 9% of younger Teen Club caregivers. Caregivers of both groups felt that Teen Club had a very or extremely positive effect on adherence (85%).

Caregivers report high or very high levels of HIV knowledge in Teen Club participants – 76% in younger members and 90% in older members – and increases in knowledge due to Teen Club participation.

Caregivers also report positive impacts of Teen Club on school attendance and performance.

Finally, caregivers are satisfied with Teen Club as 0% reported feeling dissatisfied or very dissatisfied with the program.

**Conclusions:** Feedback from the caregivers of Teen Club participants was positive and encouraging to facilitators. However, several issues regarding medication adherence and family support for HIV-infected adolescents were also identified. Future Teen Club and Caregiver Day programming will focus on the identified opportunities.

## LS9. HIV KNOWLEDGE AMONG TEEN CLUB PARTICIPANTS IN LESOTHO

Teresa Fritts\*, Ryan Elliott, Thabo Motseki, Jill Sanders, Edith Mohapi

Baylor College of Medicine Children's Foundation – Lesotho

**Background:** Teen Club, a peer psychosocial support group for HIV-infected adolescents, was introduced at the Maseru Center of Excellence in 2007. Due to expanding population, Maseru currently has a younger group for those 11-14 years of age and

an older group for those 14-18 years of age. Satellite Centers of Excellence in Leribe, Qacha's Nek, Mokhotlong and Botha-Bothe each have one group for those 11-18 years of age. The Teen Clubs at the Satellite Centers of Excellence also invite HIV-infected adolescents receiving medical care at nearby facilities. In an effort to better quantify and improve the HIV-specific knowledge of Teen Club participants, a Health Knowledge Survey (survey) was developed.

**Methods :** Between February and May 2015, the Teen Club Health Knowledge Survey was administered to 629 Teen Club participants in Maseru, Leribe, Botha-Bothe, and Qacha's Nek. The survey is a modified version of HIV-KQ-45<sup>1</sup>, a comprehensive, validated survey. Forty questions were written in English with Sesotho translations included and with possible answers of True, False and Don't Know. All survey responses were entered into a database and then coded as correct, incorrect, don't know or excluded (no response or multiple answers selected).

**Results:** The older Maseru Teen Club demonstrated the highest level of HIV knowledge with 63% of questions answered correctly and the younger Maseru Teen Club the lowest level at 42% correct responses.

See **Appendix 1.4** for Table 1

**Conclusions:** Administration of the survey has established a baseline for HIV knowledge among Teen Club participants. All groups show opportunities for increasing and improving the quality of HIV knowledge and practical application to life skills. Facilitators will use the results of the survey to develop new topics or improve existing curricula. An annual follow-up survey is planned to track learning over time in Teen Club participants.

<sup>1</sup>Carey, MP & Schroder, KEE (2002). Development and psychometric evaluation of the brief HIV knowledge questionnaire (HIV-KQ-18). *AIDS Education and Pre*

## LS10. REFILLS AT TEEN CLUB

Teresa Fritts, Ernest Chaka, Mamolibeli Ntjabane, Thabo Motseki, Mofihli Phangoa\*, Jill Sanders, Edith Mohapi

Baylor College of Medicine Children's Foundation – Lesotho (BCMCF)

**Issues:** Poor adherence to antiretroviral therapy is a serious problem among adolescents receiving care at BCMCF. Although clinical review is generally indicated only once every three to six months, the Lesotho Ministry of Health requires monthly refills of medications. Adolescents who live far from the clinic or are impoverished may miss refill dates due to a lack of transportation fare. Others miss refill dates due to scholastic commitments.

**Description:** Teen Club is conducted monthly at BCMCF and is well attended by adolescent clients. Meetings are held on Saturdays, and transportation fare is provided to all participating adolescents. Beginning in November 2014, Teen Club participants have been offered the opportunity to refill their medications at Teen Club. Participants drop off their bukanas (health passport) and any unused pills at the pharmacy when they arrive for Teen Club. Pharmacy personnel calculate medication adherence and refill medications. Participants then collect their refilled medications at the conclusion of Teen Club. Counselors, psychologists and other personnel are available to provide on-site counseling sessions for those identified with poor medication adherence.

**Lessons Learned:** A detailed evaluation of the project has not yet been conducted. However, several positive observations have been made.

- Peer support during Teen Club seems to motivate adolescents to adhere well to medications as the adolescents work in consistent small groups.
- Adolescents who refill at Teen Club seem to have taken greater responsibility for their treatment and actively participate in their own health care.
- Teen Club attendance seems more consistent among those who refill medications at Teen Club.
- Adolescents do not need to explain missed school days to their peers if they are refilling at Teen Club and not needing to come to clinic every month.
- Adolescents who refill at Teen Club may have reduced school absences.
- Adolescents with transportation challenges seem to have improved adherence to quarterly clinical visits.

**Next Steps:** An evaluation is planned to evaluate more fully the acceptability and impact of medication refills at Teen Club. As adolescent clients join Teen Club, they will be encouraged to refill their medications there. Implementation is also planned at the five Satellite Centers of Excellence in Lesotho.

#### LS11. WHAT OUR TEENS DON'T KNOW ABOUT HIV

Teresa Fritts\*, Ryan Elliott, Thabo Motseki, Jill Sanders, Edith Mohapi

Baylor College of Medicine Children's Foundation - Lesotho

**Background:** Teen Club, a peer psychosocial support group for HIV-infected adolescents, was introduced at the Maseru Center of Excellence in 2007. Maseru currently has a younger group for those 11-14 years of age and an older group for those 14-18 years of age. Satellite Centers of Excellence in Leribe, Qacha's Nek, Mokhotlong and Botha-Bothe each have one group for those 11-18 years of age. In an effort to better quantify and improve the HIV-specific knowledge of Teen Club participants, a Health Knowledge Survey was developed and administered between February and May 2015.

**Methods :** The Teen Club Health Knowledge Survey was administered to 629 Teen Club participants in Maseru, Leribe, Botha-Bothe, and Qacha's Nek. The survey is a modified version of HIV-KQ-45<sup>1</sup> and is described in more detail in a separate abstract. The forty survey questions include 17 on transmission, 9 on prevention, 10 on clinical aspects or progression and 4 on treatment. The 10 questions with the lowest percentage of correct responses were determined for each Teen Club program.

**Results:** Seventeen questions were included in the "Bottom 10" of at least one program. Seven questions addressed HIV transmission, three questions prevention, four questions clinical signs or progression and one question addressed treatment.

Five questions were in the "Bottom 10" correct for the five programs evaluated and one question was included for four programs. Teen Club participants did not understand that bleach kills HIV; that a person can be infected when getting a tattoo; that multivitamin is not an ARV; and that pap smears do not also involve HIV testing. Importantly,

participants thought that taking antibiotics can prevent HIV transmission and that a test for HIV taken one week after sexual exposure can determine transmission.

**Conclusions:** Although Teen Club participants knew many aspects of transmission and prevention as demonstrated by correct answers, there remain important gaps in their knowledge of both. Clinical aspects of disease including diagnosis and progression need additional education as participants scored poorly on those questions. Supportive therapy such as multivitamin administration needs to be differentiated from HIV-specific treatment. Curriculum development will be guided by survey responses.

<sup>1</sup>Carey, MP & Schroder, KEE (2002). Development and psychometric evaluation of the brief HIV knowledge questionnaire (HIV-KQ-18). *AIDS Education and Prevention*, 14, 174-184.

#### LS12. WHAT OUR TEENS DON'T KNOW ABOUT HIV

Teresa Fritts\*, Ryan Elliott, Thabo Motseki, Jill Sanders, Edith Mohapi

Baylor College of Medicine Children's Foundation - Lesotho

**Background:** Teen Club, a peer psychosocial support group for HIV-infected adolescents, was introduced at the Maseru Center of Excellence in 2007. Maseru currently has a younger group for those 11-14 years of age and an older group for those 14-18 years of age. Satellite Centers of Excellence in Leribe, Qacha's Nek, Mokhotlong and Botha-Bothe each have one group for those 11-18 years of age. In an effort to better quantify and improve the HIV-specific knowledge of Teen Club participants, a Health Knowledge Survey was developed and administered between February and May 2015.

**Methods :** The Teen Club Health Knowledge Survey was administered to 629 Teen Club participants in Maseru, Leribe, Botha-Bothe, and Qacha's Nek. The survey is a modified version of HIV-KQ-45<sup>1</sup> and is described in more detail in a separate abstract. The forty survey questions include 17 on transmission, 9 on prevention, 10 on clinical aspects or progression and 4 on treatment. The 10 questions with the lowest percentage of correct responses were determined for each Teen Club program.

**Results:** Seventeen questions were included in the "Bottom 10" of at least one program. Seven questions addressed HIV transmission, three questions prevention, four questions clinical signs or progression and one question addressed treatment.

Five questions were in the "Bottom 10" correct for the five programs evaluated and one question was included for four programs. Teen Club participants did not understand that bleach kills HIV; that a person can be infected when getting a tattoo; that multivitamin is not an ARV; and that pap smears do not also involve HIV testing. Importantly, participants thought that taking antibiotics can prevent HIV transmission and that a test for HIV taken one week after sexual exposure can determine transmission.

**Conclusions:** Although Teen Club participants knew many aspects of transmission and prevention as demonstrated by correct answers, there remain important gaps in their knowledge of both. Clinical aspects of disease including

diagnosis and progression need additional education as participants scored poorly on those questions. Supportive therapy such as multivitamin administration needs to be differentiated from HIV-specific treatment. Curriculum development will be guided by survey responses.

<sup>1</sup>Carey, MP & Schroder, KEE (2002). Development and psychometric evaluation of the brief HIV knowledge questionnaire (HIV-KQ-18). *AIDS Education and Prevention*, 14, 174-184.

### LS13. PLANNING FOR FUTURE YOUTH CARE

Teresa L Fritts\*, Jill E Sanders, Hope Chang, Edith Q Mohapi

Baylor College of Medicine Children's Foundation – Lesotho (BCMCFL)

**Background:** Youth present unique challenges in HIV care, requiring dedicated resources supporting disclosure of HIV status, knowledge and understanding of HIV infection and adherence to medications. They also need guidance and support in transitioning to adult medical care. With improvements in access and efficacy of HIV prevention and treatment, our pediatric cohort is aging.

**Methods:** The BCMCFL electronic medical record was reviewed to extract current ages of patients. Simple extrapolations were then performed to project age demographics in 2020.

**Results:** BCMCFL has a relatively young HIV-infected patient population. The number of adolescents aged 10-19 years is expected to increase by 15% over the next five years. However, the number of young adults 20-24 years of age will dramatically increase by 314%.

There are currently 1193 adolescents and 118 young adults enrolled at the Center of Excellence in Maseru, equaling 1311 HIV-infected youth. Based on current age demographics, it is estimated that in 2020 the COE will serve 1865 youth – 1376 adolescents and 489 young adults – an increase of 42%.

Psychosocial support groups do not perfectly match the internationally defined age-group definitions. Teen Club Lesotho supports those 11-18 years of age and Wise Ones youth group supports those 19-24 years of age. Adolescents eligible for Teen Club will increase by 17% from 974 to 1140 participants. Those eligible for Wise Ones will increase by 283% from 171 to 656 participants.

**Conclusions:** The proportion of adolescents and young adults served by the COE will grow in the next five years. Although not all of those eligible for psychosocial support will participate, significant increased demand is projected. Additional resource allocation will be needed to maintain desired clinical outcomes.

### LS14. A SUPPORT GROUP FOR THOSE WITH TREATMENT FAILURE AND/OR PILL FATIGUE ADMINISTERED AT TEEN CLUB

Teresa L. Fritts\*, Mamokone Koetle, Jill E. Sanders, Ernest Chaka, Thabo Motseki, Edith Q. Mohapi

Baylor College of Medicine Children's Foundation – Lesotho (BCMCFL)

**Issues:** Through a generous donation from Médecins Sans Frontières, BCMCFL has been able to offer routine viral load monitoring to patients on ART for at least five years. Adolescents with high CD4 counts, good adherence based on pill counts and yet high viral loads have been identified. Intensive adherence education was introduced which included questions about their perception of taking ARVs. Many of these adolescents had been taking ARVs since early childhood and complained of being tired of taking medication. This phenomenon of pill fatigue is also seen in other chronic diseases faced by adolescents.

**Description:** BCMCFL operates an Adolescent Clinic for patients 14-20 years of age at the neighboring national referral hospital. Adolescents with detectable viral loads are routinely referred to the BCMCFL psychologist for evaluation and management. Patients with pill fatigue identified by clinicians are also referred. The psychologist is active in Teen Club and saw an opportunity for group counseling at monthly peer psychosocial support meetings.

**Lessons Learned:** Group sessions have been conducted at the older Teen Club for about one year. Subjective reports from this group are positive. Members of the group achieving viral suppression serve as motivation to other members of the group to also work toward viral suppression. Due to fluctuating needs over time, members are added or removed from this group as clinically indicated.

Facilitating a treatment failure support group during Teen Club activities seems to be beneficial for our adolescents. Implementation challenges of hosting this separate group while also including the members in the overall organizational and programmatic activities of Teen Club are still being addressed.

**Next steps:** In the future, this type of support group may also be started at our younger Teen Club as these same issues begin to arise in our 11-14 year old patients. Similar support would be beneficial at Satellite Centers of Excellence but psychologists are not available.

## Malawi

### MW1. MEDICATION ERRORS IN A HIGH-VOLUME PEDIATRIC HIV CLINIC: A QUALITY IMPROVEMENT PROJECT FOR BAYLOR-MALAWI

A Bhalakia, S Ellickal, D Sullivan, P Kazembe

**Background:** Medication errors occur frequently in adults on Highly Active Anti-Retroviral Treatment (HAART) regimens, due to the complexity of the regimens, the changing labels and appearance of these medications, and the number of drugs available. In low-income countries, particularly in Sub-Saharan Africa, there is a high burden of HIV and pediatric populations relying on HAART. Medication errors related to incorrect ART dispensing, dosing or timing can lead to inadequate blood serum levels, causing drug resistance, and potentially ART regimen failure. ART failure limits future ART regimen options. ART medications have many adverse side effects that can be magnified with overdosing. Monitoring for these errors in a resource-limited setting is very challenging.

A medication error audit recently at the Baylor Center of Excellence (COE) in Lilongwe identified 136 errors among ART and other medications following a review of 919 patients in a 2.5 week period. The pilot audit showed that

medication errors are a real concern for patients seen at the Baylor Malawi COE.

We plan to implement a quality improvement initiative at the Baylor-Malawi COE to understand the scope of medication errors in a busy pediatric HIV clinic and to implement interventions to reduce these medication errors.

**Description:** This will be a quality improvement (QI) project to reduce prescribing and dispensing errors among anti-retroviral therapy (ART) and Bactrim (Cotrimoxazole Prophylactic Therapy or CPT) medications, at the Baylor Clinical Center for Excellence (COE), a large, pediatric HIV clinic in Lilongwe, Malawi. A medication QI task force will be formed comprising of a clinic volunteer, nurse, clinical officer, two physicians, and a pharmacy technician, representing all clinical areas that handle prescribing or dispensing medications.

Over a 9-month period, following quality improvement methodology, interventions will be trialed, effectiveness assessed, and stopped or modified accordingly.

**Next Steps:** It is hoped that this study will yield methods to reduce prescribing errors at the Baylor-Malawi and other COE's and in other resource limited settings where HIV related care is provided.

## **MW2. ASSESSING TUBERCULOSIS INFECTION PREVENTION MEASURES AND BARRIERS TO CARE FOR HEALTH CARE WORKERS IN PUBLIC HEALTH FACILITIES IN MALAWI**

**A Munthali, R Flick, A Dimba, K Simon, M Kim, PN Kazembe, S Ahmed**

Malawi

**Background :** Nosocomial transmission of tuberculosis (TB) is an important source of infection for both HIV-positive patients and health care workers (HCWs). In Malawi, guidelines exist for infection prevention and control (IPC) but little is known about their implementation. Our primary objective in this study is to assess the implementation and knowledge of IPC measures aimed at reducing nosocomial transmission of TB in health facilities in Malawi. Our secondary objective is to characterize HCWs' utilization of TB/HIV services.

**Methods:** In cooperation with the Malawi National TB Control Programme, we conducted a cross-sectional assessment of IPC measures at seven health facilities supported by the Baylor Tingathe community outreach program in Malawi from September 2014 through January 2015. Three approaches were used: structured interviews with facility managers; completion of an anonymous questionnaire by HCWs; and direct observations of pre-selected IPC measures by researchers.

**Results** Fifteen manager interviews, 211 HCW questionnaires, and 5 direct observations were analyzed.

Notable findings regarding facility implementation of IPC measures included: 47%(7/15) of managers reported active screening for TB amongst patients receiving antiretroviral therapy (ART); only one site (20%) had separate waiting

areas for ART and TB services; no sites were observed to have fans in use.

Assessing knowledge among HCWs of IPC measures demonstrated that only 20% of managers and 9% of HCWs correctly provided the most common symptoms of TB in adults. 37% (78/211) of HCWs were able to provide date of their last IPC training.

Characterization of HCW TB service utilization found that only 10% of HCWs provided a date for their last TB screening, with a median time elapsed of 2.3 years (interquartile range 0.6-5.1). 51% expressed concern that the facility layout might increase their chances of contracting TB. 2 HCWs (1%) reported currently taking TB treatment.

**Discussion :**Implementation and knowledge regarding IPC guidelines is suboptimal. HIV-positive patients are not routinely screened for TB and knowledge deficits among HCWs may further limit screening effectiveness. Especially given significant well-documented occupational risk in this setting, HCWs are not sufficiently screened for TB. Future work will address effective strategies to implement IPC measures and facilitate HCW access to care.

See **Appendix 1.5** for Table 1

## **MW3. Teen Support Line: Bridging Gaps In Access To Quality Psychosocial Support and Care Services for Adolescents Living With HIV (ALHIV) in Malawi Using an HIV-Specific Cellular Hotline Service**

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Location: <sup>1</sup>Baylor College of Medicine-Children's Foundation Malawi- Lilongwe, Malawi

<sup>2</sup>Teen Support Line Development Office- New York, New York

**Background:** Though a cornerstone for improving physical and mental health outcomes, quality psychosocial services are sparse across Sub-Saharan Africa and very limited for ALHIV. Regional networks of youth-friendly-services are forming to increase access to care, however distance to health centers and transport costs are major barriers to accessing services. The Teen Support Line bridges these service gaps giving ALHIV in Malawi 24-hour access to HIV-specific information, psychosocial support, and linkage to care centers through a free cellular hotline service. Teens can call, flash, or SMS the hotline. Call-takers provide counseling, information, referrals, follow-ups, and healthcare-center linkages. A clinician, social worker, and counselor are on-call for immediate response to emergent issues. Regional feedback is provided monthly to districts.

**Methods:** From March-2013 to December-2014, the hotline number was distributed to 2,563 teens in 12 districts using the existing "Teen Club" network. Call-takers complete M&E forms tracking caller demographics and call details. We collected data from the call-taker M&E forms from March 2013-December 2014 and a retrospective review and descriptive analysis of results was done. We used Fisher-exact tests to evaluate for statistical differences between gender and caller-ages for the most common call topics.

See **Appendix 1.6** for Table 1

**Results:** The hotline received 444 calls. 51%(201) callers were female and 49%(205) male. 52%(203) were 12-15 years, 38%(150) were 16-19 years. From Oct-Dec-2014, 75% of calls came from Southern districts (51/68). 35%(117) used their own phone and 52%(175) used a guardian's phone. Peak call time was 4-9 pm (31%). 51% were first-time callers and 49% called previously. Average call length was 6 minutes. 66 were referred, 18 for depressive symptoms, with a female predominance (p=0.046). 6%(27) calls were emergent (5-suicidal, 6-displacement, 16-abuse; female predominance, p=0.0001). 18%(43) of calls required follow-up. At the call conclusion, 95% felt better about their situation and 85% learned from the call.

#### **Conclusions:**

Teens demonstrated they have consistent access to cellular phones and will call a hotline. Callers were clustered in the region with highest service-delivery gaps. An ALHIV-specific hotline can provide psychosocial services lacking at health-centers, bridge transport-related barriers, and should be considered as an adjunct to care in countries burdened with adolescent-focused delivery gaps.

#### **MW4. THE IMPORTANCE OF OBTAINING SUSTAINABLE FUNDING FOR PATIENT AND FAMILY SOCIAL SUPPORT AT A PEDIATRIC HIV CLINIC IN LILONGWE, MALAWI.**

**C Chisala, G Mikwamba, D Sullivan, P Kazembe**

**Issues:** Faced with a growing number of challenges in caring for and supporting needy children and their caregivers at a busy pediatric HIV clinic, social workers have struggled to find a sustainable source of funding to support children and their caregivers who miss their appointments, those with frequent scheduled and unscheduled visits, as well as some with supplemental nutritional needs.

**Description:** Baylor Malawi's two social workers carried out an assessment of needy children and their caregivers who missed appointments, required on going counseling, lacked transport money, and had food insecurity. In some extremely needy and rare cases these families required school fees, hearing aids, eye-glasses and mobility aids. This year we have funds for supporting these children, but this is not guaranteed for the long term.

**Lessons Learned:** Having a reliable source of funding for transport and non medicinal support for very needy children, their caregivers, and adolescents is crucial for ART adherence and well being of these children and in particular adolescents as some of them come from distant places. Such financial resources can assist in reducing the high number of missed appointments, school drop outs, teen pregnancies, and lack of school fees, especially among orphaned children who are supported by aged grand parents, uncles aunts, and even by older siblings.

**Next Steps:** There is a need to strengthen the existing Women's crocheting group that meets every Thursday to make items that are sold within and outside Malawi with the support of the Association of Diplomatic Women in Malawi. Funds from these sales are used by the caregivers to support clinic visits, school fees and other household requirements. There is need therefore to scale up the enrollment of needy caregivers to this group, and to extend to other health care facilities, especially those within

Lilongwe city, and in future to other districts. Other sources of sustainable funding should also be sought.

#### **MW5. UTILIZING MAPPING TECHNOLOGY TO IMPROVE IDENTIFICATION, ENROLLMENT, AND CLINICAL CARE FOR HIV-INFECTED CHILDREN AND FAMILIES IN MALAWI**

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4. University of North Carolina at Chapel Hill

**Issues:** In Malawi, only one-third of HIV-infected children in need of antiretroviral therapy (ART) receive it and among patients on ART, rates of loss to follow up remain high. Through the Tingathe community outreach program, community health workers (CHWs) have been trained to perform door-to-door HIV testing and counselling and to provide treatment support for HIV-infected pregnant women, exposed infants, and children. Many of Tingathe's catchment areas do not have detailed maps available posing a challenge to patient tracking while some regions have reported testing saturation of less than 10-20% of the estimated population. Other programs have demonstrated that global positioning system (GPS) technology utilized by CHWs can be effective in mapping where patients live and better understanding barriers to care.

**Description:** In this pilot program, we propose to utilize electronic data collection and GPS technology on cell phones (Open Data Kit and Commcare) to map HIV testing and services delivery, improve enrollment of HIV-infected patients into care, monitor pediatric antiretroviral therapy adherence, and decrease the number of patients diagnosed with HIV who are lost to follow up.

**Lessons Learned:** The literature suggests that inconsistent systems of data collection and monitoring, distance and cost of transport to health facilities, and delayed ART initiation contribute to high rates of loss to follow up. CHWs have expressed that utilizing cell phones in lieu of paper charting may ease their work burden. Direct on-site entering of electronic data reduces transcription errors and allows for rapid monitoring and evaluation and operational research. Furthermore, this approach allows for built-in skip patterns and data quality assessment checks, features that are impossible with paper-based tools.

**Next Steps:** Through more effective mapping of HIV testing efforts, we hope to determine if there is geographical clustering of pediatric HIV cases, determine how distance and location impact outcomes among pediatric HIV patients, and to improve supervision and follow up of HIV services. Data collected in this pilot will guide focused community-based interventions and contribute to national dialogue on the epidemiology of pediatric HIV as a function of geography. This project will begin once approved by the Malawi and Baylor IRB.

## MW6. QUANTIFYING FACILITY-LEVEL HUMAN RESOURCES FOR HIV TESTING AND COUNSELLING

E Kavuta\*†, R Flick†, S Ahmed, PN Kazembe, MH Kim, K Simon

Malawi

**Background:** HIV Testing and Counseling (HTC) is a critical component of HIV prevention and a gateway to life-saving antiretroviral treatment. As HTC coverage increases, burden on HTC counselors grows. While estimates of clinician-to-patient ratios for optimal clinical care exist, to our knowledge there is no accepted measure for the number of counselors necessary to provide adequate HTC services. We tested a measure to assess for correlation between the number of dedicated HTC staff per 10,000 population and the proportion of women at ANC with known HIV status (a proxy measure for HTC coverage).

**Methods:** Sites were visited between from March-June 2015 for evaluation as part of routine Tingathe programmatic evaluation. Teams conducted semi-structured interviews with facility managers to assess number of staff providing dedicated and non-dedicated HTC. Dedicated staff were defined as health surveillance assistants, community-based distribution assistants, community health workers, or volunteer counselors who conducted at least one test in the past month. Proportion of women at ANC with known HIV status was assessed using month-disaggregated data from January-March of 2015 abstracted from routinely collected data reported by the Malawi Ministry of Health (MoH) Department of HIV/AIDS. Number of dedicated HTC staff per 10,000 population was calculated using health facility catchment area size projections from Malawi MoH. Simple linear regression was used to assess for correlation.

**Results:** 122 sites were assessed with a total catchment area population of 3.1 million (median=25,000, IQR 16,797-34,964), employing 523 dedicated HTC staff (median=4, IQR 3-5). A weak but significant correlation existed between dedicated HTC staff per 10,000 people and ANC testing coverage ( $p=0.0164$ ,  $R^2=0.0164$ ). One-unit increases in dedicated HTC staff per 10,000 people was associated with a 1.46% increase in testing coverage (95% CI 0.25-2.67; Figure 1).

**Conclusion:** Number of dedicated HTC staff per 10,000 population is weakly correlated with ANC testing coverage. Describing dedicated HTC staff as opposed to all HTC-trained staff and using facility catchment area size may be a useful strategy for classifying future human resource needs for HTC. Lack of robust correlation warrants further assessment. Future efforts should better classify total facility testing coverage instead of relying on a proxy measure like ANC coverage.

See **Appendix 1.7** for Figure 1

## MW7. PREPARING FOR HTC SCALE-UP: HIGH-YIELD RAPID ASSESSMENT FOR PLACEMENT OF A PILOT CADRE OF DEDICATED HTC COUNSELORS IN MALAWI

E Kavuta\*†, R Flick†, MH Kim, S Ahmed, PN Kazembe, K Simon  
Malawi

**Issues:**UNAID's 90-90-90 target aims to end the AIDS epidemic by 2020. Despite rapid progress, only 24% of

children living with HIV are currently on life-saving antiretroviral therapy (ART). Since HIV testing is a key entry point, increasing coverage of provider-initiated testing and counselling (PITC) is crucial. To address this, the Malawi Ministry of Health recommended establishment of a dedicated cadre called HIV Diagnostic Assistants (HDA), responsible for facility-based HIV testing. Tingathe was asked to pilot the HDA cadre at 124 new sites in the southeast zone of Malawi to rapidly increase testing and treatment. The increase in sites from 20 to 135 and lack of familiarity with this new region demanded a rapid but thorough site evaluation before implementation.

**Description:** We designed and conducted a rapid site assessment of 124 health facilities in six districts to evaluate baseline rates of HIV testing and treatment and barriers to scale-up. Teams including a clinician, M&E, program staff and ministry representative visited two facilities a day on average. Teams assessed human resource, infrastructure, and commodity needs. Sites were evaluated through semi-structured interviews with facility managers and a collection of predetermined observations. Summary measures were tabulated and entered into a database that generated an automated facility-level dashboard for each site. The exercise took six weeks.

**Lessons learned:** Use of comprehensive but concise tools geared towards rapid assessment allowed efficient collection of key data. Prompting same-day tabulation of key measures allowed rapid and clear feedback. Definitions of common terms must be standardized to allow reproducible measurement of staffing needs; for example using "dedicated HTC counselor" to describe staff whose core responsibility is HIV testing, instead of "HTC counselor" which describes anyone trained to conduct testing regardless of contribution to testing coverage.

### Next steps

Assessment results are guiding placement of recruited dedicated pilot HDAs according to ministry TORs. As recruitment proceeds, training on PITC for all facility staff will be expanded. The use of automated facility-level dashboards will continue using a combination of data sources to monitor progress and allow real-time feedback to staff.

## MW8. IMPROVEMENTS IN HIV/AIDS KNOWLEDGE IN A HIGH HIV PREVALENCE SETTING AFTER TARGETED EDUCATION BY COMMUNITY HEALTH WORKERS

FM Harawa, K Simon, R Flick, A Ng'ambi, MH Kim, S Ahmed, PN Kazembe  
Malawi

Theme: HIV and Related Diseases

**Background:** The Tingathe program utilizes community health workers (CHWs) to improve prevention of mother-to-child transmission of HIV. Despite high HIV prevalence in Mbeta Village, Kasungu District, CHWs had enrolled only 30 clients. A Knowledge, Attitudes, and Practice (KAP) survey was designed to evaluate gaps in HIV/AIDS knowledge that may contribute to limited HIV service uptake.

**Methods:** A 33-question oral survey was administered to a random group of respondents in Mbeta Village. Respondents indicated statements as true/false/not sure. Data was consolidated and analyzed, with results guiding development of a community sensitization. The survey was administered after the sensitization to a different group of randomly

selected participants. Two-tailed unpaired student's t-tests were used to analyse results, with significance assigned at  $p=0.05$

**Results:** 88 responses were recorded (44 pre, 44 post-intervention). Respondents were predominantly female (65%) with a median age of 25 (IQR 20-33), and most had completed at least primary school (58%). Many questions demonstrated high pre-sensitization scores, specifically: increased risk of HIV with additional sexual partners (100%); transmission through sex with infected partners (95%); and the ability of ARVs to prolong life (95%). Post-sensitization responses demonstrated a significant increase in total scores compared to the pre-sensitization responses (66% vs 82%  $p<.0001$ ). The most significant improvements regarded the belief that HIV-infected women have the right to become pregnant (45% vs 84%  $p<.0001$ ) and knowledge that HIV-infected women do not automatically give HIV to infants (43% vs 84%  $p<.0001$ ). Areas demonstrating no significant change included beliefs that people are infected because of irresponsible behavior (73% vs 68%,  $p=.65$ ) and that AIDS is God's punishment for immorality (57% vs 41%  $p=.14$ ).

**Conclusions:** CHWs can effectively address knowledge gaps through targeted education driven by KAP survey results, however refractory subjects—notably misconceptions that may drive stigma—demand further attention. Future initiatives should more aggressively target misconceptions. Further work should assess if improved knowledge leads to increased HIV service uptake.

#### **MW9. CAPACITY BUILDING THROUGH CLINICAL MENTORSHIP ON PAEDIATRIC HIV/AIDS-AN EMERGING RESOURCE FOR HEALTH SYSTEMS STRENGTHENING IN MALAWI**

**LD Sato\*, R Flick, PN Kazembe, MH Kim, S Ahmed, K Simon**

Malawi

**Issues:** In Malawi, 76% of the estimated 42,220 children living with HIV do not receive antiretroviral therapy. Inadequate human resource in Ministry of Health facilities and significant task-shifting undercuts provision of quality health services, particularly for HIV-infected children. Many nurses and clinicians in MoH facilities refrain from attending to HIV-infected children due to perceived complexity and knowledge deficiencies on comprehensive management of children on ART. This contributes to poor outcomes and low ART coverage rates in children.

**Description:** The Tingathe community-based outreach programme introduced clinical mentorship in 2010 at facilities in Malawi's Central Region to improve the knowledge, skills, and confidence among nurses and clinicians in treating and managing HIV-infected children. The programme includes one-on-one clinical mentorship, didactic lectures, and clinical attachment at the Baylor Center of Excellence (COE). Tools from the MoH are used to monitor progress of mentees.

**Lessons Learned:** This intervention strives to improve knowledge and skills of MoH health workers in managing HIV-infected children. Decline in inappropriate referral of cases due to knowledge deficits has been observed. Providing on-the-job training has decreased absenteeism that is often an unintentional effect of traditional training

programmes. Stock outs of essential supplies and medications have been minimized through emphasizing health system strengthening. However, some mentees were unwilling to participate without an allowance, a challenge exacerbated by protean allowance practices demonstrated by other organizations. An additional challenge was lack of commitment from facility leadership in monitoring mentorship processes.

**Next Steps:** The pediatric mentorship programme is expanding to 124 additional sites in all six districts of Malawi's South East Zone to scale up pediatric HIV testing and treatment. In light of the challenges faced in the Central Region, the programme will emphasize partner involvement to standardize incentive packages, and will engage facility leaders from an earlier planning stage to encourage ownership. Clinical attachments at the COE will be continued. Additional strategies include holding quarterly meetings with mentees and facility leaders; accompanying MoH mentors to equip them with mentorship skills; and providing mentorship awards to graduate mentees.

#### **MW10. UTILIZATION OF A PAEDIATRIC CLINICAL CARE HOTLINE FOR HEALTH CARE WORKERS IN MALAWI**

**LD Sato\*, R Flick, AL Dean, PN Kazembe, MH Kim, S Ahmed, K Simon**

Malawi

Theme: HIV and Related Diseases

**Background:** The lack of knowledge and skills on management of pediatric patients living with HIV/AIDS remains a challenge to health workers in many health facilities in Malawi. The Baylor Tingathe community outreach programme introduced a paediatric hotline in 2014 that Ministry of Health clinicians working at public facilities can call for free to contact in-country paediatric experts for consultation. We describe the utilization of this service during the first 14 months of use.

**Methods:** One Tingathe clinician was assigned to receive calls for one week at a time from 7:30am to 4:30pm Monday through Friday. We analyzed call data collected from forms that were completed by the call taker after every call and single-entered into a Microsoft Excel database. Call category was assigned retrospectively by a study clinician.

**Results:** 114 calls were recorded between January 2014 and March 2015, of which 42 were excluded due to inappropriate queries. The remaining 72(63%) involved a valid question and were included for analysis. The hotline averaged 5.1 calls per month and the median duration of each call was two minutes (IQR 0-4). The most common cadres utilizing the hotline were clinical officers (28%) and health surveillance assistants (22%), and the majority of callers (85%) worked in ART clinic.

The most common question categories were: antiretroviral therapy (ART) side effects (17%); what ART regimen to use for patients (14%); and care for the HIV-exposed infant (11%; Figure 1).

See **Appendix 1.8** for Figure 1

Of the patients cared for by callers, the majority were male (65%; Table 1). Most patients (39%) were 22 years or older. Almost all (93%) were HIV-positive, and of these, 85% (46/54) were on ART.

See **Appendix 1.9** for Table 1

**Conclusion:** Side effects of ART, choice of ART regimen, and care for HIV-exposed infants were common areas of inquiry that may require focused mentorship. The low rate of calls—5 per month—suggests utilization can be improved. Despite a paediatric focus, half of the patients whose providers consulted the hotline were adults, suggesting broader knowledge gaps exist that may be addressed by a more generalized consultation service. Future work should address the impact of this service on health care worker performance and on clinical outcomes of patients.

#### **MW11. LOST OPPORTUNITIES TO IDENTIFY AND TREAT HIV-INFECTED PATIENTS: RESULTS FROM A COMPREHENSIVE STUDY OF PROVIDER-INITIATED HIV TESTING AND COUNSELING (PITC) IN MALAWI**

M Schwarz, R Flick, FM Harawa, J Robison, S Ahmed

Malawi

**Background:** Early diagnosis and treatment of HIV improves patient outcomes and minimizes risk of transmission. Provider-initiated testing and counseling (PITC) is an effective case-finding strategy, but implementation models vary. Malawi Ministry of Health (MOH) guidelines recommend routine opt-out PITC, in line with WHO recommendations for countries with generalized epidemics, but little is known about its implementation. Our objective was to assess PITC implementation in Malawi.

**Methods:** We conducted a cross-sectional study of PITC implementation at 118 clinics and wards within 12 MOH facilities in central Malawi during June-July 2014. Qualitative data detailing PITC practices was collected through structured interviews with 71 providers who conduct HIV testing at their facility, and characterized using standardized definitions (Figure 1). Quantitative data describing patient visits and HIV tests recorded during 2013 was abstracted from MOH HIV testing reports.

See **Appendix 1.10** for Figure 1

**Results:** Variable models of PITC were reported across facilities and departments (Table 1). Overall, symptom-based PITC was most commonly reported. Only antenatal (11/12) and maternity (9/12) departments reported implementing routine opt-out testing. Use of a PITC register varied significantly according to department type.

Only 7.9% (86,657/1,102,802) of patient visits in 2013 included an HIV test. Subgroup analysis of TB and antenatal clinics with available data demonstrated that HIV status was ascertained in 94.3% (5,293/5,615) and 86.8% (26,831/30,961) of patients, respectively.

Providers most commonly cited test kit shortages (71/71 providers), inadequate physical space (58/71), and inadequate number of HIV counselors (32/71) as challenges in PITC implementation. Providers from inpatient units cited the inability to test on weekends (8/16).

See **Appendix 1.11** for Table 1

**Conclusions:** Various models of PITC concurrently exist at MOH facilities in Malawi. Only antenatal and maternity clinics demonstrated high rates of routine opt-out PITC. The low ratio of facility visits that included an HIV test suggest missed opportunities for HIV testing. However, the high

proportion of patients at TB and antenatal clinics with known HIV status suggest routine testing is feasible. These results underscore the need to develop clear, standardized PITC protocols and tools, and to address obstacles of limited health commodities, infrastructure, and human resources.

#### **MW12. AGE-BASED DIFFERENCES IN REFERRELS FOR INDIVIDUAL PSYCHOSOCIAL COUNSELING IN ADOLESCENTS ATTENDING A PEDIATRIC ART CLINIC IN LILONGWE, MALAWI**

**Authors:** Princess Nyirenda, Dr. Susan Hrapcak and Dr. Peter Kazembe.

**Introduction:** Adolescents living with HIV (ALHIV) experience multiple psychological and emotional distresses, which have a great impact on their adherence to anti-retroviral therapy (ART) and their overall physical and mental health. Individual sessions with a trained psychosocial counselor can be beneficial in attaining positive living. There are limited data on reasons for counseling among ALHIV, especially in resource-limited settings. This study aimed to evaluate the reasons for referral for individual psychosocial counseling among ALHIV.

**Methods:** Retrospective chart review of individual psychosocial counseling referrals from September 2013 to December 2014 was done to identify the most common reasons for referral for adolescents attending a pediatric HIV clinic in Lilongwe, Malawi. The number of sessions until completion of therapy was also evaluated. Fischer's Exact Test was used to evaluate age (younger teens 11-15 years versus older teens 16-22 years) and gender related differences.

**Results:** 217 ALHIV aged 11-22 years were referred for individual psychosocial counseling accounting for 60% of overall individual counseling referrals for the clinic and 18% of the 1197 active adolescents. 64% (n=138) were females, and 36% (n=79) were males, which does not reflect the gender variance in clinic enrollment for this age group (50.5% females, 49.5% males). 55% (n= 119) were younger teens, and 45% (n= 98) were older teens. 48% of adolescents have completed treatment, requiring an average of 4 sessions for younger teens and 3 sessions for older teens. The remaining 52% are still undergoing active counseling. The most common reasons for referral were depression (12.9%), anger (13.4%) and fear of dying (12.9%). Younger teens had significantly higher prevalence of fear of dying (p= 0.025) and confusion (p= 0.007), and older teens had significantly higher prevalence of body image issues (p= 0.022). There were no differences in reason for referral based on gender.

**Conclusions:** In general, younger teens require more sessions to complete therapy, and females appeared to have more psychosocial issues. To improve treatment and prevention of psychosocial problems in ALHIV, programs should focus on the most common issues of depression, anger, and fear of dying, focusing on specific issues in younger and older adolescents.

#### **MW13. A BASELINE ASSESSMENT OF TUBERCULOSIS OUTCOMES AND DIAGNOSTIC PRACTICES TO INFORM DEVELOPMENT OF A COMMUNITY-BASED TB/HIV PROGRAM IN CENTRAL MALAWI**

**R Flick, A Munthali, K Simon, WC Buck, A Dimba, Y Lo, MH Kim, PN Kazembe, S Ahmed**

Malawi

**Background:** Baylor College of Medicine Children's Foundation Malawi has a well-established community health worker program called *Tingathe* focused on improving outcomes by strengthening the continuum of care in the treatment and prevention of pediatric HIV. As the immunocompromised and pediatric populations served by the program are two of the highest risk groups for TB disease progression, *Tingathe* is developing a TB-specific program to layer onto existing activities. To inform the development of this TB module, a baseline assessment of TB outcomes and diagnostic practices at intervention sites was conducted.

**Methods:** Data from January 2011 through July 2013 from the National TB Control Programme (NTP) paper registers at 11 public health facilities in Malawi's central region was aggregated, de-identified, and compiled into a Microsoft Excel database. Demographics of caseload, diagnostic practices, and treatment outcomes were assessed by simple comparative analysis.

**Results:** Pediatric patients <15 years represented 8%(368/4765) of total TB caseload. Children were significantly less likely than adults to be diagnosed by sputum smear (22% vs 79%, OR=0.07, 95% CI 0.05-0.09); when sputum was obtained, pediatric patients were less likely to have smear-positive disease (49% vs 61%, OR=0.60, CI=0.39-0.94). As a result, cure rates – defined by smear conversion – were 7% in children vs 30% in adults (OR=0.17, CI 0.11-0.27).

A subgroup analysis of patients with final outcomes at time of data collection demonstrated that of 299 pediatric patients 20 (7%) were cured and 195 (65%) completed treatment; 23 (8%) died, 59 (20%) were lost to follow up, and 2 (<1%) transferred out. Of 3416 adult patients, 1018 (30%) were cured and 1214 (36%) completed treatment; 401 (12%) died, 637 (19%) were lost to follow up, 48 (1%) failed treatment, and 98 (3%) transferred out.

**Conclusion:** Children are under-represented in TB case notifications and have low rates of bacteriologic diagnosis due to inadequate capacity for obtaining sputum specimens. Rates of death and loss-to-follow-up are high in all age categories. Based in part on these findings, the *Tingathe* TB program will include intensified TB case finding in HIV-infected children and adults, community-based TB/HIV treatment support, and improved access to induced sputum and GeneXpert for pediatric diagnosis.

See **Appendix 1.12** for Table 1

#### **MW14. YIELD OF COMMUNITY HEALTH WORKER-DRIVEN INTENSIFIED CASE FINDING FOR TUBERCULOSIS AMONG HIV-POSITIVE IN RURAL MALAWI**

**R Flick, K Simon, A Munthali, A Dimba, MH Kim, PN Kazembe, M Hosseinipour, S Ahmed**

Malawi

Theme: HIV and Related Diseases

**Background:** Tuberculosis (TB) is the most common cause of death in HIV-positive patients. Prompt diagnosis and

initiation of anti-TB treatment improves outcomes and minimizes transmission. TB intensified case finding (TB-ICF) among HIV-positive patients is an effective approach endorsed by the World Health Organization however evidence to guide effective implementation in resource-limited settings like Malawi is scarce. The primary objective of this study is to describe the yield of TB-ICF conducted by community health workers (CHWs) among HIV-positive patients accessing antiretroviral therapy (ART) in rural Malawi.

**Methods:** Thirteen CHWs employed by the Baylor *Tingathe* outreach program were trained to conduct TB-ICF using a standardized symptom screening tool at a large rural district hospital. Patients were screened while awaiting routine services at ART clinic. Patients screening positive were triaged for assessment by a clinician and sputum analysis by smear microscopy and GeneXpert in parallel. Patients were followed up until final diagnosis and traced if they did not return for their results. CHWs supported patients diagnosed with TB through regular home and facility visits until a final outcome was reached, and screened all household contacts for TB. Sixteen months of pre- and six months of post-intervention data was abstracted from registers and tools used by CHWs.

**Results:** During the pre-intervention period, seven patients were newly diagnosed with TB at ART clinic. Total number screens done was unavailable. During the post-intervention period 459 screens were conducted yielding 46(10%) new TB diagnoses. The number needed to screen per case of incident TB was 10. Compared to the pre-intervention period, new TB diagnoses were made at ART clinic during the post-intervention period at a 19-fold higher rate (0.4 vs 7.7 per month). Pediatric TB was only diagnosed in the post-intervention period (9/46, 20%). Ten screens identified patients already on TB treatment at screening, yielding an observed prevalence of 12.2%(56/459) among screened patients.

See **Appendix 1.13** for Figure 1

**Conclusion:** These findings suggest using CHWs to conduct TB-ICF is an effective strategy to improve case finding among HIV-positive patients accessing routine care. However it remains unclear if the current rate of case finding will be sustained over time. Future work will assess the effect on patient outcomes.

#### **MW15. HEARING LOSS IN HIV-INFECTED CHILDREN IN LILONGWE, MALAWI**

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**Introduction:** With improved access to pediatric antiretroviral therapy (ART), HIV infection has become a chronic illness. Preliminary data suggest that HIV-infected children have a higher risk of disabilities such as hearing impairment. This study aimed to estimate the prevalence

and types of hearing loss in HIV-infected children in Lilongwe, Malawi.

**Methods:** This was a cross-sectional survey of 380 HIV-infected children aged 4-14 years attending ART clinic in Lilongwe, December 2013-March 2014. Data was collected through pediatric quality of life (PedsQL™) and sociodemographic questionnaires that were translated into Chichewa and reviewed with a research assistant, review of the electronic medical record, and audiologic testing for all participants. Hearing loss was defined as hearing loss >20 dB in either ear. Predictors of hearing loss were explored by multiple regression analysis generating age- and sex-adjusted odds ratios. Children with significant hearing impairment were fitted with hearing aids.

**Results:** Of the 380 recruited patients, 24% of patients had hearing loss in either ear. 82% of the hearing loss was conductive, 14% was sensorineural, and 3% was mixed. Twenty-one patients (23% of those with hearing loss) were referred by audiologists for hearing aid fitting. There was a higher prevalence of hearing impairment in children with history of frequent ear infections (OR 7.4, 4.2-13.0) and ear drainage (OR 6.4, 3.6-11.6). Hearing impairment was linked to history of WHO Stage 3 (OR 2.4, 1.2-4.5) or Stage 4 (OR 6.4, 2.7-15.2) and history of malnutrition (OR 2.1, 1.3-3.5), but not to duration of ART or measures of CD4. Only 40% of caregivers accurately perceived that their child had hearing loss. Children with hearing impairment were less likely to attend school and had poorer emotional ( $p=0.02$ ) and school functioning ( $p=0.04$ ).

**Conclusions:** Hearing impairment was common among children with HIV, and can affect school functioning and quality of life. Many children with hearing loss qualified for hearing aids. Caregivers were not reliable at identifying hearing loss. There is therefore an urgent need for improved screening and identification of hearing problems in HIV-infected children to treat this disability, especially in resource-limited settings.

#### **MW16. ISONIAZID PREVENTIVE THERAPY AMONG PRE-ART PATIENTS IN MALAWI: A REPORT ON UPTAKE AND RETENTION**

**Y Lo, R Flick, A Munthali, K Simon, A Dimba, MH Kim, PN Kazembe, S Ahmed**  
Malawi

Theme: HIV and Related Diseases

**Background:** HIV impairs the ability to contain a TB infection, increasing the risk of disease progression to active TB 20-fold among people living with HIV compared to HIV-negative individuals. To address this increased risk, the 2011 Malawi ART/PMTCT guidelines recommend provision of isoniazid preventive therapy (IPT) to patients enrolled in HIV care who have not yet initiated ART as both pre and post-exposure TB prophylaxis. Operational challenges have led to varying degrees of implementation. The objective of this report is to describe IPT utilization and patient outcomes since the rollout of the 2011 guidelines.

**Methods:** Data from 13 health centers were reviewed for rates of IPT initiation and completion, interruptions in IPT, and TB and ART outcomes. HIV-infected patients newly enrolled in HIV Care Clinics from April 2011 to September 2013 who had not yet initiated ART were included and

followed up for a minimum of 30 days. The mean length of follow-up was 178.0 days.

**Results:** 3,038 records were reviewed, of which 437 (14.4%) were pediatric cases <15 years. A total of 1,029 (33.9%) patients began IPT. Among those who initiated IPT, 269 (26.1%) had experienced at least one treatment interruption  $\geq 2$  months, and 661 (64.2%) remained active on treatment until October 2013. The median duration of isoniazid received was 92 days (IQR 58-169) for patients who were active on IPT versus 56 days (IQR 29-89) for patients who had discontinued IPT ( $P < 0.0001$ ).

Of the 368 who stopped IPT, 236 (64.1%) were LTFU, 3 (0.8%) transferred out, 1 (0.3%) experienced adverse side effects, 3 (0.8%) died, and 125 (34.0%) discontinued IPT according to guidelines due to initiation of ART. Among the patients who started ART, 3 (2.4%) were LTFU, 2 (1.6%) died and zero patients were confirmed for active TB.

**Conclusion:** IPT is underutilized as a TB prevention strategy and is challenged by high rates of LTFU and interruptions due to isoniazid stock-outs. However, our observations of only one event of adverse side effects, no cases of active TB and a low mortality rate among IPT recipients provide support for continued efforts to improve utilization and training for IPT in HIV care.

See **Appendix 1.14** for Table 1

See **Appendix 1.15** for Figure 1

#### **MW17. THE IMPACT OF BRIEF MENTOR-INITIATED DATA REVIEWS ON ANTENATAL AND MATERNITY HIV TESTING AND COUNSELLING SERVICES AT MCHOKA HEALTH CENTRE IN RURAL MALAWI**

**Z Nkhono\*, R Flick, PN Kazembe, MH Kim, S Ahmed, K Simon**  
Malawi

Theme: HIV and Related Diseases

**Background:** In 2011 Malawi adopted Option B+, a policy of universal lifelong test-and-treat antiretroviral therapy (ART) for pregnant and lactating women, to reduce mother-to-child transmission of HIV (MTCT). The Tingathe community outreach programme aims to increase testing coverage at antenatal (ANC) clinic and other high-yield service delivery points at public health facilities. Tingathe clinical officers provide mentorship to Ministry of Health (MoH) staff at public facilities to improve clinical knowledge and foster development of analytic skills for review of routinely collected data to identify areas of potential improvement. Our primary objective is to evaluate the impact of mentorship visits at a rural health center in Malawi on two outcomes: proportion of ANC attendees with known status, and proportion of ANC attendees receiving a new HIV test.

**Methods:** This is an observational study comparing key outcome measures abstracted from routine reports released by the Malawi MoH. Six months of pre-intervention and 12 months of post-intervention data was included for analysis. Continuous variables were analyzed using two-tailed student's t-tests. Simulation modeling was conducted in

Simulation Modeling Analysis (Version 9.9.28) using Pearson's-r statistics over 5,000 iterations.

**Results:** Both the proportion of ANC attendees with known status and who received a new HIV test increased significantly during the post-intervention period (25.2% vs 74.7%,  $p=0.0001$ ; 23.9% vs 71.9%,  $p=0.0001$  respectively). However both measures exhibited increases in the pre-intervention period and strong correlations with time regardless of intervention status ( $R=0.7750$ ,  $R=0.7650$ ). The average change in slope of both proportions was lower in the post-intervention period compared to the pre-intervention period, but did not reach significance (Table 1). Positive correlations for both measures were also demonstrated with country-level analysis.

### Conclusions

Brief mentor-initiated data reviews had an unclear impact on HIV testing coverage at ANC clinic. The positive correlation in both measures before the intervention and country-wide suggest there was an existing trend towards greater coverage that may have obscured any impact of our intervention. Future work should include additional measures that may be affected by clinical mentorship, such as incidence of stock-outs and rate of referral.

See **Appendix 1.16** for Table 1

See **Appendix 1.17** for Figure 1

## MW18. SEASONAL VARIATION IN MALNUTRITION AMONG CHILDREN IN MALAWI

**Z Nkhono\***†, **R Flick**†, **S Ahmed**, **MH Kim**, **PN Kazembe**, **K Simon**

Malawi

Theme: Global Health

**Background:** Malawi faces an ongoing crisis of malnutrition, with 47% of children stunted and 13% underweight. While the incremental challenges of the “hungry season”—the period between November and April defined by dwindling food stocks before the harvest in May—are noted anecdotally, they are not well-described. Formalizing the description of these seasonal trends in malnutrition could provide valuable data for targeted programmatic interventions. Here, we describe comparative seasonal variation in malnutrition among HIV-positive children at the Baylor Malawi Children’s Center of Excellence.

**Methods:** Data was abstracted from a MySQL electronic database detailing clinic visits at the Baylor Pediatric Center of Excellence in Lilongwe. Weight, height, and middle-upper arm circumference values automatically generated a nutritional score of mild, moderate, or severe according to the Malawi Ministry of Health Guidelines for Management of Acute Malnutrition. The number and proportion of clinic visits with each degree of malnutrition was assessed over time, with the months of November-April designated as the hungry season. Continuous variables were analyzed using two-tailed student's t-tests, and unadjusted bivariate odds ratios were calculated using generalized estimating equations with the unique patient used as the clustering variable.

**Results:** 8,106 patients logged 176,187 clinic visits between January 2007 and June 2015 that were included for analysis.

The proportion of patients diagnosed with malnutrition corresponds closely with onset of the hungry season (Figure 1). Clinic visits during the hungry season were associated with an increased risk of any malnutrition (OR=1.20, 95% CI 1.16-1.24) and of severe malnutrition (OR=1.26, 95% CI 1.19-1.34). A significant difference was noted in the average number of patients meeting criteria for any ( $p=0.0010$ ) and severe ( $p=0.0000$ ) malnutrition.

**Conclusion:** While not surprising, classifying these seasonal trends is important to assist in planning and advocating for country-level interventions for vulnerable groups, particularly children under five. Bolstering supplementary programs that include child-friendly formulations during this period may be valuable.

See **Appendix 1.18** for Figure 1

## ROMANIA

### RO1. WHERE WE ARE NOW AND HOW WE CAN IMPROVE ART ADHERENCE SUPPORT IN ROMANIA

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**Issues:** Improving adherence support (AS) to antiretroviral treatment (ART) is a priority in Romania and worldwide. Understanding current support provided in clinical practice in light of behavioral theory is essential for developing effective and sustainable interventions. We explored practitioners’ experiences of AS to assess care capacity and needs.

**Description:** The views of 10 clinical psychologists working in 6 out of 9 regional HIV centers in Romania (hospitals and related NGOs) were assessed via semi-structured telephone interviews covering topics such as: adherence measurement, its determinants, interventions used, and perceived influences on their own capacity to deliver adherence.

**Lesson learned:** There is solid foundation for AS in Romania (such as the existence of multidisciplinary teams, experienced and trained professionals, high degree of intervention tailoring, interest for the patients’ quality of life); services are usually delivered by experienced psychologists within multidisciplinary teams, with a high degree of intervention tailoring. AS services would benefit from adopting a more structured and focused approach to patient profiling and intervention delivery, conceptualizing and recording active intervention content using precise and standardized terminology, and actively monitoring intervention effectiveness.

**Next steps:** Our needs assessment provided valuable information on improving AS, and will guide the implementation of organizational changes and practitioner training programs. Recommendations include implementing organizational changes (definition of roles within the team, more standardized procedures) and ensuring professional development of clinicians (through specific training regarding

the development of effective and measurable evidence based and theory informed adherence interventions).

## **RO2. APPLYING BEHAVIOUR CHANGE TECHNIQUES IN ADHERENCE COUNSELLING**

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**Issues:** Medication adherence interventions have recently gained a valuable instrument in the new taxonomy of behavior change techniques (BCTs), a common theory- and evidence-based language that facilitates description of active ingredients of health behavior change. However, is still unclear how BCTs can be selected and translated into practical activities in specific settings, which could hamper implementation.

**Description :** We developed a counselling toolkit that maps setting-specific adherence determinants to BCTs and applications, and procedures for tailoring to individual patients. We aimed to test the feasibility of this toolkit and thus identify practical benefits and limitations of using the taxonomy. Five psychologists developed content for an evidence-based medication adherence counselling for young HIV+ adults in Constanta.

**Lessons learned:** Pre-defining a general counselling plan targeted for patients with a specific health condition (HIV) offered the implementers a framework with 29 BCTs and 49 determinants in 5 categories, to further tailor individual interventions to patient characteristics and practitioners' experience. The toolkit allowed a quick selection and implementation of individual sessions. Limitations were the extensive training required for implementation, and the limited evidence regarding the effectiveness of specific applications in similar contexts.

**Next steps:** Practitioners' everyday work can be supported through the development of pathology-specific toolboxes with pre-defined BCTs and applications, which facilitates intervention in a busy clinic. The leap from general BCTs to specific applications needs to be refined by training and practical guidelines, and the effectiveness of alternate applications recorded.

## **RO3. STRENGTHENING CHRONIC & INFECTIOUS DISEASE MANAGEMENT IN ROMANIA: A JOINT INITIATIVE OF THE BAYLOR BLACK SEA FOUNDATION AND AMERICARES**

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**Issues:** The Chronic & Infectious Disease Management Initiative is an attempt to respond to the health care needs of local communities, improve access to medicines and close the resource gap. The project goal is to strengthen the patient care in Romania by increasing the availability of medication and nutritional at more than ten public hospitals and to maintain a focus on addressing the healthcare needs among patients living in disadvantaged social situations.

**Description:** The partnership with AmeriCares has given to Baylor-Romania the opportunity to learn and apply good practices in supporting the local health system. The year 2014 marked the expansion of donations by a network of 27 hospitals and medical centers, with a total value of more than \$ 6.8 million. By initializing such a program at the national level, Baylor-Romania has succeeded to increase the availability of medicines and supplies to more than 14.000 patients in a year.

**Lessons learned:** Medication importation in Romania is a very well regulated process, especially since the country has joined the European Union. The country is living a paradox: although the health system is not able to secure free of charge medication and nutritional to all patients, regardless of their insurance status, the importation regulations are very tight. Despite challenges related to importation of medicines and supplies in Romania, the partners have been progressively improving their ability to deliver medical aid and reach more patients in a timely and effective manner. Coordination with government and non-government agencies to bring critical medicines to local medical practitioners is critical.

**Next steps:** This project has proved its efficacy and relevancy in Romania based on 2014 year's results. We have scaled out Baylor-Romania's role to support additional health care facilities across the country and thus reach out to more people and save more lives. It is critical to keep the momentum and continue to improve the gift-in-kind model in Romania even further to achieve sustainability.

## **RO4. IMPROVING ADHERENCE SUPPORT: EXPERIENCES FROM THE 'PARTNERSHIP IN ADHERENCE' (PIA) PILOT PROJECT**

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**Issues:** Taking medication as prescribed is key to achieving viral suppression via ART, and high levels of adherence to medical recommendations are required for all available ART medications. Non-adherence is still a prevalent problem at the clinic and the team needs to improve the provision of adherence support to its beneficiaries.

**Description:** "Partnership for adherence" is a pilot project for improving ARV adherence. The program was developed at Baylor COE using the information- motivation-behavioral skills (IMB) theoretical model (that has been proven to be effective in the adherence approach for HIV patients) and the Intervention mapping (IM) protocol, used in developing health intervention programs. PIA is based on a general

adherence plan that includes determinants, change objectives, behavior change techniques and practical applications.

**Lessons learned:** PIA has proven to add value in comparison to the usual care interventions, by using well-structured intervention plans, change objectives appropriate to the personal barriers identified and a wide range of behavior change techniques and practical applications. The patient is a partner in the whole process, being permanently involved by knowing the intervention plan and by offering constant feedback.

Limitations identified are the fact that PIA cannot be used with all the patients, because it requires a certain level of cognitive development and availability for the completion of the intervention program. Also, the initial evaluation, the conception of the personalized intervention plan, the implementation and the recording of the data requires quite a long time.

**Next steps:** The translation of the pilot program into standard practice needs to be well planned in order to lead to improvement of care available for patients with adherence issues.

#### **RO5. HEPATITIS C: PERSPECTIVES ON CHRONIC CARE IN CONSTANTA, ROMANIA”**

Authors : Ana-Maria Schweitzer<sup>1</sup>, Mihaela Bogdan <sup>1</sup>, [Violeta Cindea<sup>1</sup>](#)

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**Issues:** Developing and strengthening the capacity of health systems to handle hepatitis C in Romania is a public health priority. Baylor Foundation set to assess what is the current organizational model of care for patients with hepatitis C in a region of Romania, namely Constanța County, in order to identify strengths, existent capacity and areas of improvement.

**Description:** Fifty six persons (patients with hepatitis C and healthcare professionals) participated in group discussions and individual interviews about where the efforts of changing health systems should be directed.

**Lesson learned:** Findings indicate that there is some existent local capacity, especially regarding the organization of healthcare and delivery design, on which a more chronic patient-centered approach can be built. The results reveal the importance of community linkages and civil society resources in improving the quality of care, especially in supplementing self-management interventions that state run programs do not usually incorporate. Special capacity building efforts need to be made and specific resources to be allocated in order to compensate for the lack of development of important clinical decision support components and clinical information systems.

**Next steps:** There is growing body of evidence that isolated interventions to improve only one element of the care system do not impact the overall quality of care. Interventions to improve the chronic care of patients with HCV in Constanța region should address several components at the same time (not necessary all of them), to induce measurable results, both in terms of patients clinical outcomes and self-management results.

#### **RO6. STARTING EARLY – EDUCATING KINDERGARTEN CHILDREN: “THE ADVENTURES OF BRULEE, THE FIREFIGHTER”**

Authors: Irina Virginia Pitilina Preda <sup>1</sup>, [Stefania Florentina Mihale<sup>1</sup>](#)

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**Issues:** In Romania, there is not a health education program for kindergarten children. The national program "Health Education" is an optional program for Romanian schools that provides basic information about personal hygiene, but it is open to students enrolled in any form of education, starting with the first grade.

Meanwhile preschool education programs depend on local resources. Such programs need to be tailored to the children's level of understanding and to their ability to assimilate the concepts

**Description:** The "Adventures of Brulee, the Firefighter" began in 2013, and is an initiative of the Baylor volunteer team. They created a script for a puppet theater play that sends messages to children about proper behaviors for keeping their personal hygiene. Our puppeteers are high school students that are volunteers at Baylor.

Through the play we focus on encouraging children to adopt daily healthy behaviors in order to preserve their personal hygiene: brushing their teeth, washing their body and hair, using a tissue when they sneeze, combing the hair, etc.

Watching the play children can model the behavior and understand why is so important to follow through.

The audience of the puppet theatre play was seen by over 3000 children until the end of July 2015.

**Lessons learned:** After the first performances, interactions between children and puppets at the end of the play were added because children wanted to meet and talk directly to the characters. Also, as a reinforcer, small packages with hygiene products were distributed to children.

**Next steps:** Due to the high popularity of the project and of the requests of performances received from the local institutions, for the next years the aim is to fine tune measurement indicators and further tailor in accordance with other educational objectives for this target group.

#### **RO7. ASSESMENT OF CARDIOVASCULAR RISJ FACTORS AND PROJECTED 10 YEAR RISK OF CARDIOVASCULAR DISEASE IN HIV INFECTED YOUNG ADULT PATIENTS AT THE BAYLOR CENTRE OF EXCELLENCE IN CONSTANTA, ROMANIA**

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**Background:** There are no studies evaluating cardiovascular risk factors in HIV positive young adults in Romania. Several studies in other countries suggest that prolonged HIV and prolonged antiretroviral therapy (ART) lead to the development of cardiovascular disease (CVD). We evaluated cardiovascular risk factors in HIV positive young adults at the Constanta BIPAI Centre of Excellence.

**Methods:** We performed a retrospective, cross-sectional study, by analyzing clinical and laboratory data during 2014. We have screened and evaluated CVD risk factors and calculated the Pathobiological Determinants of Atherosclerosis in Youth (PDAY), coronary arteries (CA) and abdominal aorta (AA) risk scores among 286 HIV positive young adults [20 – 35 years old, stratified by protease inhibitor (PI) component of ART and duration of PI treatment].

**Results:** There is a significant difference in HDL levels after 10 years of PI use compared with the other two categories of PI duration (< 5 years:  $P=0.03$  and 5-10 years:  $P=0.01$ ). Comparing the BMI, there is a significant difference related to ART with PI duration with BMI decreasing after 5 years of PI use ( $P=0.03$ ), but increasing after 10 years of PI use ( $P=0.02$ ). As for CA and AA PDAY scores, more than 50% of our cohort had CA and AA scores  $\geq 1$ , representing increased CVD risk factor burden; among these, women had lower CA scores than men, but much higher AA scores than men, but this did not reach a  $P$  value threshold.

**Conclusions:** There is a substantial proportion of HIV positive young adults in our cohort having aggregate CVD risk factors. We will conduct a more in-depth analysis to identify significant predictors of CVD modifiable risk factors which will help improve the care of our patients through implementation of appropriate lifestyle changes and/or clinical interventions.

#### RO8. DENTAL CARE FOR HIV INFECTED PATIENTS – CASE PRESENTATION

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**Issues:** A 25 year old HIV infected man requested dental services at Baylor. The patient's concerns were not only medical, but mainly related with practical and social aspects: negative impact over his social life (interactions with friends, not being able to smile, etc.) and difficulties in eating some types of food.

**Description:** M. N. is 25 years old and has been living with HIV since he was 6 years old. First started ARV in 2000 and is on the same regimen since the beginning. Accessed previously Baylor dental service in order to address specific symptoms (pain, discomfort). The dental interventions started in April 2013 and were finalized in June 2015 in 25 interventions: 3 extractions (the patient had already 4 missing teeth), other dental treatments (pins/ posts implants), partial prosthetic denture.

**Lessons learned:** Although the patient struggled with dental problems over a long period of time, he became motivated to follow long term, in depth dental treatments, not for only addressing specific symptoms, especially when the social

life was negatively impacted. This was also encountered in other patients of similar age.

**Next steps:** To continue providing dental care for HIV infected people as dentistry remains the most difficult medical service to access in the community (stigma and cost related), and dental problems can have negative impact over the quality of life of HIV infected patients

#### RO9. CAPACITY BUILDING – IMPLEMENTING QUICK QUALITY IMPROVEMENT STEPS WITHIN THE ORGANIZATION

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**Issues:** Making quality changes and improvements within an organization while also delivering services can be extremely difficult, taking a lot of time and energy without knowing if the effort is worthwhile. Some of the encountered dilemma are: how to identify what aspect to start with, how long is going to take to see the change, is it possible to implement the desired change/ improvement without affecting the other activities, what are the steps, who is responsible, what to do next, etc.

**Description:** Baylor Romania used Plan-Do-Study-Act (PDSA) method in order to make quick quality improvements of services. PDSA cycle method was used to implement SBAR (situation, background, assessment, recommendation) for case presentation for the multidisciplinary team meetings. At the same time PDSA was also used in order to improve the content of the appointment cards used for Baylor's complementary medical services. The PDSA cycle helped in setting a change/ improvement objective, establishing measures to evaluate if the change really represents an improvement, planning and carrying out the steps and then evaluating the outcomes. In accordance with the outcome of the evaluation, the proposed change is either standardized or another PDSA circle begins.

**Lessons learned:** Using PDSA made possible integrating and testing small changes, using little amount of energy and time and deciding quickly if it is an approach that is worth continuing, what other changes are necessary to obtain the desired effect and if it can be expanded for the entire organization. It was also possible to start more than one PDSA at the same time, involving different personnel and working directly the beneficiaries in order to receive feedback. The success relies heavily on planning: who is responsible for implementing the action plan, who is responsible for monitoring and evaluating the whole PDSA cycle and deciding how the outcomes are measured.

**Next steps:** PDSA proved to be a useful tool to implement and test small step by step changes aiming to improve various aspects of the organization. It will be further used to implement the changes needed in order to turn Baylor Romania into a health literate health care organization.

#### RO10. TB GUARD – TB PROPHYLAXIS PROGRAM FOR PEOPLE LIVING WITH HIV/AIDS IN CONSTANTA, ROMANIA

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**Issues:** TB prevention among people living with HIV/AIDS (PLWHA) through prophylactic treatment is one of the three steps in addressing TB for PLWHA recommended by WHO. Primary prevention, aimed by the prophylactic treatment, depends also of the level of awareness of HIV infected patients about the risk represented by TB, of their level of knowledge about when they are at increased risk, what symptoms to pay attention to and what to do to protect their health.

**Description:** TB Guard, the program implemented by Baylor Romania since 2014 is focused on providing services for primary prevention of TB among PLWHA. The program is implemented by a small and dedicated team and it tackles the issue from various points of view in order to increase the impact: evaluating the patient's knowledge level, providing counselling about the risk of TB for HIV infected people, identifying risk situations, initiating prophylactic TB treatment for those at high risk (with CD4<200, pregnant women, patient with exposure to TB, etc.). The program also serves as a bridge between the HIV infected patients and the TB community services, referring for medical evaluation and diagnostic for those reporting symptoms associated with TB.

**Lessons learned:** One of the lesson learned through this project is that having specialized medical services available in the community (TB, infectious diseases, etc.) is not enough, medical interventions targeting patients' level of knowledge and awareness is crucial, especially when it comes to prevention.

**Next steps:** The TB Guard program plans to continue the development of instruments and materials that add layers of information and guide the education activity about the prevention of TB among PLWHA.

## SWAZILAND

### **SZ1. IMPACT OF POOR ADHERENCE ON FAILURE OF FIRST-LINE HIGHLY ACTIVE ANTI-RETROVIRAL TREATMENT (HAART), BASED ON ADOLESCENTS AT BAYLOR COLLEGE OF MEDICINE CHILDREN'S FOUNDATION SWAZILAND**

**A.A. Korsaa<sup>1</sup>, S. Dlamini<sup>1</sup>**

**INSTITUTION:**

1. Baylor College of Medicine Children's Foundation, Mbabane, Swaziland

**BACKGROUND:** Poor adherence to antiretroviral treatment regimens has serious consequences for human immunodeficiency virus—infected patients, including failure to prevent viral replication and an increased risk of developing viral resistance, the development of clinical complications, and shortened survival. Adolescents are at particularly high risk of having poor adherence and thus failing 1<sup>st</sup> line regimens.

**METHODS:** This study is a retrospective chart review using the Baylor Swaziland electronic medical record between March 2006 and May 2015. Patients 10-19 years old who

started ARVs and failed 1<sup>st</sup> line and then switched to 2<sup>nd</sup> line at some point between the ages of 10-19 years at Baylor Mbabane are included. Poor adherence, determined by pill counting, is defined as <95%.

**RESULT:** Eligibility criteria is met by 50 patients, 13 were excluded due to incomplete medical records. Of the remaining 37, 40.5% were women, 59.5% male, average age at start of 1<sup>st</sup> line HAART is 12.2 years. Among all adolescents 28 (75.7%) had a record of at least one episode of poor adherence (<95%) and the rest, 24.3% had good adherence (≥95%) during the entire period they took 1<sup>st</sup> line ARV regimen. Among adolescents who had poor adherence the average years on 1<sup>st</sup> line regimen enrollment was 3.8 and the median number of episodes of poor adherence was 5.

**CONCLUSION:** Majority of adolescents (75.7%) who are on 2<sup>nd</sup> line HAART had poor adherence at some point during 1<sup>st</sup> line HAART as measured by facility based pill counting. These findings support the well known association between poor adherence, treatment failure and drug resistance to 1<sup>st</sup> line HAART in Baylor College of Medicine Children's Foundation, Mbabane, Swaziland, suggesting facility based pill counting is a good indicator of future treatment failure.

### **SZ2. RECTAL KAPOSI SARCOMA IN CHILDREN: A CASE REPORT**

**Authors:**

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**Background:** Kaposi Sarcoma (KS) is among the commonest malignancies seen in people living with HIV infection. It is considered an opportunistic infection and classified as an AIDS defining illness. The commonest site for KS is the skin and the oral mucous membranes; however, lesions may occur in the lungs, liver and the digestive tract and in such cases, pose a direct threat to life. KS in the digestive tract often cause bleeding which may result in severe anaemia. This case is being presented because of the rare nature of rectal KS in general.

**Brief Summary of case:** This is a report on a 14year old male, HIV positive patient on ART (TDF/3TC/EFV) for about 9 months, and ATT (Category 1) for 4 months, prior to diagnosis of rectal KS; residing in a rural area in the Manzini region of Swaziland. He presented to the Baylor Swaziland, RFM Satellite Clinic with recurrent rectal bleeding and chronic anaemia. CD4 at diagnosis of rectal KS was 124cells/μl while baseline CD4 was 73cells/μl. No peripheral sign of KS was found in this patient. Colonoscopy showed nodular, friable bleeding spot in the rectum; rectal biopsy followed by pathological assessment confirmed KS in this patient. Patient has since been started on standard chemotherapy regimen and is responding to treatment even though anaemia is still a challenge after series of transfusion.

**Lessons learned:** The lesson learnt from this case is that clinicians must maintain a high index of suspicion for rectal KS in HIV positive individuals who present with persistent rectal bleeding with or without anaemia. Also, the need for early colonoscopy and rectal biopsy to rule out malignancy in HIV patients with rectal bleeding was well appreciated.

### SZ3. 'SEE AND TREAT' CERVICAL CANCER SCREENING PROGRAM OUTCOMES, SWAZILAND

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**Background:** The Baylor College of Medicine-Bristol Myers Squibb Children's Clinical Centre of Excellence (BCM-BMS CCCOE) in Mbabane launched its Breast and Cervical Cancer Screening Program in February 2015. In addition to primary prevention of breast and cervical cancer, this project was aimed at addressing the unmet need for adolescents and women with low-grade cervical cancer lesions which progressed to high grade lesions due to delays in the diagnostic cascade across various health care facilities in Swaziland.

**Description:** The BCM-BMS CCCOE was one of ten sites to receive grant funding from the Bristol-Myers Squibb Foundation through the Swaziland Breast and Cervical Cancer Network (SBCCN) to launch the 'See and Treat' campaign on the 13<sup>th</sup> of February 2015. Screening data was integrated into the clinic electronic medical record (EMR) system. Two of the clinic nurses were trained on how to perform visual inspection with acetic acid (VIA) and cryotherapy. The focal project doctor will undergo Loop Electrosurgical Excision Procedure (LEEP) and colposcopy training at Helen Joseph Hospital in South Africa.

**Results:** The mean age of women screened for cervical cancer at the Baylor-Swaziland Clinic was 34. The cervical cancer screening data depicted that the total number of VIA procedures done since February 2015 was 213 (189 VIA negative, 24 VIA positive). In addition, 295 PAP smears were done; 252 (85%) normal smears and 43 (15%) suggestive of cancer; 20 HSIL versus 23 LSIL) were performed. Also, 64 (22%) of the clients were referred for further gynaecological management. Of the total number of females screened, only 5 (2%) were adolescents (1 VIA positive adolescent with a normal PAP smear).

**Conclusions:** Progression of early cervical cancer lesions to fulminant cancer can be minimised through early screening, detection and management. The 'See and Treat' campaign has reduced the turnover times between diagnosis and treatment of cervical cancer, with more clients opting for VIA because it is quick and gives a spot-on diagnosis. Despite the success of this intervention, a lot of work still needs to be done to make this service more accessible to eligible adolescents.

### SZ4. BAYLOR-SWAZILAND CENTRE OF EXCELLENCE CHALLENGE CLINIC OUTCOMES

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**Background:** Treatment failure is a common problem across all age groups of HIV-positive patients attending follow-up care from the Baylor College of Medicine-Bristol Myers Squibb Children's Clinical Centre of Excellence (COE). Contributory factors include drug fatigue, complex psychosocial problems and change of caregivers, which underscore the need to engage a multidisciplinary team in the follow-up care of these clients. It is for this reason that Challenge Clinic was commenced in March 2014.

**Description:** Challenge Clinic (CC) is an intervention which provides multidisciplinary care for children failing antiretroviral therapy (ART). Patients are concurrently reviewed by a team of two doctors and a social worker, with the objective of early recognition and follow-up of clients at high risk of treatment failure. Inclusion criteria are defaulters, children 0-18 years of age and PMTCT clients with a viral load greater than 1000. Also included are adults failing ART who have a child with the same problem. Referral to Challenge Clinic is done by the aforementioned doctors and appointments scheduled on Thursdays. Psychosocial factors leading to poor ART adherence are discussed and comprehensive follow-up plans made. InReach visits are scheduled to conduct spot pill-counts, verify adherence and obtain insight into their social support system.

**Results:** A cumulative total of 105 patients are enrolled into Challenge Clinic, with 49 (47%) female and 56 (53%) male patients. The patient demographics comprise 65 (62%) adolescents and 14 (13%) adults, with 16 (15%) of the patient population under 5 years of age. Of the aforementioned patients, 70 (67%) are on 1<sup>st</sup> line HAART, 34 (32.3%) on 2<sup>nd</sup> line HAART, and 1 (0.95%) on 3<sup>rd</sup> line HAART. The total number of active patients is 72 (69%), and the total number of discharged patients 29 (28%). A cumulative total of 4 (3%) patients defaulted from care following Challenge Clinic enrollment.

**Conclusions:** Increased psychosocial support is mandatory, especially in the face of a growing number of adolescents and children under 5 years of age with treatment failure. Closer monitoring, stepped up adherence counseling, InReach and Challenge Clinic are ideal interventions to combat this problem in resource-limited settings.

### SZ5. DEVELOPING SWAZILANDS FIRST PUBLIC PEDIATRIC MDR TB CONTACT CLINIC

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**Issues:** Baylor College of Medicine Children's Foundation–Swaziland (BCMCF-SD) provides comprehensive HIV/TB services, including a standardized approach to pediatric TB diagnosis, treatment, and contact tracing. The high TB incidence (1,382/100,000) together with high rates of MDR-TB in Swaziland (7.7% of new cases, 34% of retreatment cases) led BCMCF-SD to develop the country's first public pediatric MDR-TB contact tracing clinic. The need for this clinic is underscored by the lack of a national standardized approach in diagnosing and treating pediatric MDR-TB.

**Description:** In order to meet the needs of MDR-TB exposed children and adolescents (CAD), BCMCF-SD established a monthly "MDR-TB Contact Clinic Day". Contacts of household MDR-TB index cases are identified and enrolled. Participating families receive reminder calls prior to their appointment. Contacts with a caregiver are requested to attend an education session regarding latent MDR TB-infection. TB screening and risk assessment is performed for all attendees. Follow up will be for 1 year for all patients, and for 2 years for selected cases.

**Lessons Learned:** Since its inception in February 2015, a total of 25 CAD have been enrolled. The average age is 6.6 years (with 10/25 (40%) being under 5 years old). Eighty percent (20/25) are HIV negative, 16% (4/25) are HIV infected and 4% (1/25) have pending DBS results. On average, contacts attended clinic 17.7 months after the household index case started MDRTB treatment. TB screening was positive in 32% (8/25) of cases, and 25% (6/8) had a GeneX-pert performed (all negative). Chest X-rays have been requested in all 8 patients. Drug sensitivity testing results from the source cases could only be identified in 30% (4/13) of cases. Children are expected to be followed up for 2 years, though transportation fares have been identified as a barrier by the caregivers.

**Next Step:** Experience demonstrates the feasibility of implementing a clinical approach that puts little strain on existing resources to improve outcomes for pediatric MDR-TB contacts. Strategies are needed to reduce the financial burden on families. The lack of national and international policy concerning provision of preventive therapy for these children, limits the further benefits of this program.

#### *HIV and Related Diseases*

### **SZ6. VIROLOGICAL SUPPRESSION OF CHILDREN AND ADOLESCENTS ATTENDING A RURAL CLINIC IN SWAZILAND**

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**Background:** The Hlatikhulu Satellite Center of Excellence (COE) is a rural clinic located in the southern Shiselweni region of Swaziland within the regional hospital campus, its catchment area comprising a remote rural area. At the clinic, we offer comprehensive TB/HIV services to young children, adolescents and their caregivers. Since 2009, we have enrolled 759 adolescents and young children, with 378 active on antiretroviral therapy (ART). Most of these children and adolescents are orphans from poor socioeconomic backgrounds, residing with elderly or unreliable caregivers or in child-headed households. Since December 2012, all clients at the clinic had access to annual and targeted viral loads supported by Doctors Without Borders.

**Methods:** We retrospectively reviewed data extracted from the clinic electronic medical record (EMR) database. 351 children were active and on ART, with a documented viral load result at any point in time. Ten were excluded as there were classified as pre-ART clients.

**Results:** Among the 341 client charts analyzed, 194/341 (57%) were males and 147/341 (43%) females. The mean age was 10.8 years old, with 140/341 (41%) young children (0 to 10 years old) and 201/341 (59%) adolescents (>10 to 19 years old). 267/341 (78%) of the clients were on a non-nucleoside reverse transcriptase inhibitor (NNRTI) regimen and 74/341 (22%) on a protease inhibitor (PI) based regimen. A total of 62/341 (18%) clients had a detectable viral load. Among these, 42/62 (68%) were on an NNRTI-based regimen and 20/62 (32%) on a PI-based regimen. Among all patients with a detectable VL, 11% were adolescents and 7% young children (0 to 10 years old).

**Conclusions:** In our cohort, there is a high number of children and adolescents with detectable viral loads, a significant number on PI-based regimens. Given that ART is life-long with limited treatment options in Swaziland, it is crucial that structures are implemented to ensure that children and adolescents remain virologically undetectable. With many of them residing in broken families, offering them comprehensive social support is paramount. Interventions like teen clubs, home visits, and peer support groups can contribute to improved long term clinical outcome of many of these adolescents and children.

### **SZ7. RISK FACTORS FOR TUBERCULOSIS DISEASE IN PEDIATRIC TB CONTACTS IDENTIFIED DURING A TB REACH CONTACT TRACING PROJECT IN SWAZILAND**

#### **Authors:**

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**Background:** Early detection of pediatric tuberculosis (TB) continues to be challenging in TB-HIV high-burdened settings. Swaziland has a TB case detection rate of 38% with 15% child TB case notification. As limited evidence exists, identification of risk factors for TB disease among child contacts could inform preventive interventions in Swaziland and similar high burden settings.

**Methods:** Funded by TB REACH, Baylor College of Medicine Children's Foundation – Swaziland (BCMCF-SD) implemented standardized contact tracing in 7 partner TB clinics. Cough monitors performed contact tracing of index cases (IC) receiving anti-TB treatment (ATT). This intervention aimed to improve TB case detection and promote Isoniazid Preventive Therapy (IPT) uptake. While adult contacts were assessed, our program prioritized child contacts (<15 years of age) and HIV-affected households.

Contacts were screened for TB symptoms, HIV status, relationship and sleep proximity to IC, household death, and presence of miner in the home. Data was collected regarding diagnostic testing (GeneXpert, smear, culture, CXR) and treatment initiation (ATT, IPT).

Utilizing this dataset, our study targeted child TB contacts as often pediatric TB is underreported.

**Results:** Of 2589 ICs, 1547 reported a child contact, yielding 4438 child contacts (2.86 child contacts/IC). 67 cases of pediatric TB were diagnosed (1510 cases/100,000 child contacts) of which 17 had bacteriologic confirmation, and 50 were clinically diagnosed.

TB was diagnosed 8 times more in contacts with a positive TB symptom screen (RR=7.90, CI 4.15-15.04) and 9 times more in HIV-infected contacts (RR=8.97, CI 5.29-15.20). Child contacts were likelier to have TB if they were <5 years of age, child of an IC, and shared a bed with an IC. TB was not associated with contacts' gender, recent household death, and miner in the home.

**Conclusion:** This program provides a unique opportunity to evaluate risk factors associated with TB disease in child contacts living in a high TB/HIV burdened, resource limited setting. High TB incidence among child contacts emphasizes a need for comprehensive contact tracing programs. TB symptom screening and reported HIV-infection are strong predictors of TB among child contacts. In resource-limited settings, prioritizing HIV-affected households with younger children may improve cost-effectiveness of contact tracing programs.

See **Appendix 1.19** for Figure 1

## **SZ8. JOINING HANDS TO HELP & PROTECT CHILDREN: BAYLOR COLLEGE OF MEDICINE CHILDREN'S FOUNDATION – SWAZILAND'S CHILD PROTECTION PROGRAM**

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**Issues:** Swaziland is recognized to have the highest prevalence of HIV and incidence of TB. This dual-epidemic has fueled a disproportionate number of children in the population (560,000 children under the age of 18 years, total population of 1.2 million). Adding to the vulnerability of Swazi children is the number orphaned (120,000; 78,000 are due to HIV) and low percentages receiving education. Such risk factors – orphan status, lack of education, and living with chronic or debilitating conditions such as untreated HIV or TB – place Swazi children at immense risk for abuse.

**Description:** Although exact figures of child abuse in Swaziland are unknown, Baylor College of Medicine Children's Foundation – Swaziland (BCMCF-SD) has encountered several patients who experienced maltreatment. As the national pediatric referral center, in early 2015, BCMCF-SD created a multi-disciplinary team devoted to the well-being of anyone who reports a history and/or demonstrates clinical signs of abuse.

BCMCF-SD developed a standardized operating procedure to fast-track, clinically monitor and minimize the re-traumatization for patients where abuse is reported or suspected. BCMCF-SD also sensitized all cadre of staff on recognizing neglect and abuse; all staff are required to read and sign a child protection policy. BCMCF-SD partners with the UNICEF-supported One Stop Centre to provide prompt medical and legal services. The Child Protection Team meets on a routine basis to ensure eligible patients receive appropriate follow-up.

**Lessons Learned:** It is vital for pediatric health care facilities to provide dignified biopsychosocial care for patients with a history or clinical signs of possible abuse. Sensitizing staff members is critical to the success of a child protection program. Partnerships such as the one that exists between BCMCF-SD and the One Stop Centre help facilitate the medical, psychological, and legal services required to help survivors heal.

**Next Steps:** Growing its reputation as the leader in pediatric care in Swaziland, BCMCF-SD will continue to strengthen its Child Protection Program through a formal memorandum of understanding with One Stop Centre. BCMCF-SD will inform other healthcare workers and facilities around the country about the biopsychosocial services available to patients who present with a concern of abuse.

## **SZ9. BAYLOR COLLEGE OF MEDICINE CHILDREN'S FOUNDATION-SWAZILAND & CONNECTHEALTH: REACHING THOSE AT RISK FOR BECOMING LOST TO FOLLOW UP**

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- 3 ConnectHealth, British Virgin Islands

**Issues:** Swaziland has the world's highest prevalence of HIV and incidence of TB; successful HIV and TB treatment requires retention in care. Baylor College of Medicine Children's Foundation-Swaziland's (BCMCF-SD) is proud of its

< 2% lost to follow up (LTFU) rate. However, we identified a need for providing appointment reminders for patients at risk of becoming LTFU. Connect Health (CH) is a social entrepreneurship organization that utilizes free missed calls and at-cost SMS technology to provide clinic appointment reminders.

**Description:** CH started working in Swaziland in 2008 and began partnering with BCMCF-SD in July 2014. During our pilot phase, enrollees were patients attending BCMCF-SD's Challenge Clinic, followed by the adherence committee, or newly initiated on ART. The second phase included new BCMCF-SD patients, those in the national community refill program, on TB medication, or who had missed a scheduled appointment.

Patient recruitment is carried out through social workers, prescribers, posters and healthtalks. Enrollment requires patient/caregiver consent and addition of contact information in the CH EMR fields. The EMR enables easy identification of patients enrolled in CH to create a database that is uploaded to CH on a weekly basis. Patients/caregivers receive two missed calls the evening prior to and two missed calls the morning of their scheduled appointment. During the first year of program implementation, 305 patients enrolled in CH, 72 (24%) of whom are adolescents aged 10 – 19 years old.

**Lessons Learned:** Retention in care is a pivotal component of HIV and TB care. Public-private partnerships can improve outcomes; the BCMCF-SD-CH partnership provides a more robust package of care via appointment reminders by decreasing LTFU risk. BCMCF-SD staff and patients recognize the ease and importance of this program. Beneficiaries and both organizations report positive feedback.

**Next Steps:** The third phase of this program includes enrolling all adolescents and will allow daily medication reminders for patients on TB medication. As the program grows, BCMCF-SD will offer appointment reminders to families receiving well-child care and expand CH services to satellite clinics. This anticipated step-wise growth will allow BCMCF-SD to offer appointment reminders to all patients receiving care at a BCMCF-SD center.

## **SZ10. OUTCOMES OF ISONIAZID PREVENTIVE THERAPY USAGE AMONG CHILDREN < 5 YEARS OLD IN A TB REACH CONTACT TRACING PROJECT IN SWAZILAND**

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**Background:** Swaziland is the epicenter of the HIV and TB pandemics. Despite national policy recommending Isoniazid Preventive Therapy (IPT) for all pulmonary tuberculosis contacts who are under age 5 years (U5) and/or HIV-infected, there is no data regarding IPT uptake in Swazi U5 contacts and IPT usage is recognized as sub-optimal. Barriers to IPT delivery include transport fares, facility and radiology fees, frequent drug shortages, and lack of recognition regarding the importance of IPT.

In concert with our Stop TB Partnership-funded TB REACH contact tracing program, Baylor College of Medicine Children's Foundation – Swaziland (BCMCF-SD) promoted IPT uptake among contacts of index cases starting anti-TB treatment at 7 local TB clinics (TBC).

**Methods:** BCMCF-SD's contact tracing enabled cough monitors to identify contacts eligible for IPT and make referrals for evaluation and management at the TBC. Barriers to healthcare access were addressed through home visits, transport reimbursement, and vouchers for chest x-rays. Analysis of IPT uptake was limited to U5 contacts as the validity of reported HIV-status was unknown.

**Results:** Of the 4171 index cases enrolled, 2589 (62%) underwent contact tracing, yielding 9803 reported contacts. 16.4% (1608) of contacts were U5, including 3.4% (55) HIV-infected, 51.7% (828) HIV-uninfected, 44.8% (718) HIV unknown.

Despite systematic referral of all eligible U5 contacts, IPT uptake was low (16% for all 7 TBC; range 1% - 36%). Contacts were more likely to initiate IPT if they were younger ( $p = 0.0012$ ), HIV-negative ( $p < 0.001$ ), slept in the same room as the index case ( $p < 0.001$ ), and were the child of the index case ( $p < 0.001$ ). IPT uptake was not associated with gender, recent household death, completion of a home visit, or presence of a miner in the household.

**Conclusions:** Uptake of IPT among U5 contacts is critically low in Swaziland. Although we identified an association between IPT uptake and some important factors such as HIV status and sleep location, uncertainty remains regarding factors limiting IPT uptake that might inform focused interventions to increase IPT uptake. BCMCF-SD's experience emphasizes the need to prioritize a national approach to evaluate and implement IPT for this vulnerable population.

See **Appendix 1.20** for Table 1

## **SZ11. BAYLOR SWAZILAND CENTER OF EXCELLENCE MOTHER BABY PAIR APPROACH: INNOVATIVE CARE PACKAGE FOR INCREASED SERVICE DELIVERY**

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**Issues:** Baylor Swaziland's Board Of Directors approved a strategic plan in December 2014 that included the Mother Baby Pair (MBP) concept. Prior to this concept, mothers and their children received care together at the 6 week Post Natal Care (PNC) visits only. After 6 weeks many babies were brought to facilities by other caregivers. This meant that mothers were missing key services such as FP, ongoing HIV testing and cervical cancer screening, and that babies were not getting retested for HIV at the appropriate intervals.

**Description:** The 2015 Swaziland National Guidelines on the MBP package were created following recommendations by WHO that clinics should provide comprehensive services for mothers and their babies from the prenatal period through 5 years of age. Because the strategic plan supported this model at the Baylor College of Medicine-Bristol Myers Squibb Children's Clinical Centre of Excellence (Baylor COE), the program has already begun implementation. As an alternative to having one PMTCT room that follows pregnant women and infants up to 6 weeks old & one room devoted to child health and vaccinations, two unique rooms have been set aside to see primarily mother/baby pairs. The nurses will provide babies with growth monitoring, immunizations, HIV testing, developmental assessment, nutritional management prophylaxis as needed (INH, CTX, NVP) and provide mothers with family planning, ART refills, HIV re-testing, nutrition counseling and internal referral for cervical cancer screening at 6 weeks post delivery then annually.

**Lessons learned:** Ongoing challenges exist in maintaining clinical flow while reducing patient wait times to incentivize mothers to come with their children. Development of job aids has been essential to streamline this process for the health care provider.

**Next steps:** Over time, measurements of wait times should be reduced, retention rates should be up, and most importantly mothers and their babies will receive the entire health care package needed at each clinical encounter. Multiple local small grants are in process that will allow the MBP rooms to be even more child friendly.

## SZ12. ANALYSIS OF ART RETENTION FOR RETROSPECTIVE COHORTS

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### **Background:**

Retention of patients in care is a very important part of the national strategy to improve the quality of life for PLHIV. Over the years, the Baylor Children's Centre of Excellence (COE) clinics have implemented many different interventions aimed at improving retention rates for their patients. These interventions include better adherence counselling (social work and challenge clinic), improved patient tracking systems (In-reach, phone-call for missed appointments), appointment reminder systems (connect

health), simplified ART regimens with less pill burden, and ARVs with less severe side effect profiles among others. We provide retrospective analysis of different cohorts starting ART to demonstrate the combined impact of these interventions as they are implemented and mature over time.

**Methods:** A dataset of all patients that started ART at the Baylor COE clinic (excluding satellites) was extracted from the electronic medical record (EMR). All patients who have completed at least 6 months of ART by December 31<sup>st</sup> 2014 are included in the analysis. This data is then imported into STATA which is used to perform descriptive statistics (medians, proportions) and trend analysis. Retention rates, as an outcome measure, are compared for retrospective annual cohorts.

**Results:** Data were analysed for annual cohort groups from 2007 to 2014. The clinic has maintained significantly high retention rates above 70% at 60 months on ART ( $p < 0.01$ ). As interventions aimed at preventing LTFU and bringing back those who had stopped treatment are implemented and strengthened over the years, we observe improvement in retention rates for progressive cohorts. These range from 85% to 93% at 12 months, 79% to 90% at 24 months, and 76% to 84% at 36 months outcome periods.

**Conclusion:** More people are retained in care at the clinic for progressive cohorts as the care and treatment program matures over time indicating a positive outlook for the COE. This is a reflection of the advancement of programmatic interventions that are put in place to help retain higher proportion of patients in care. This will result in more patients having confidence in the efficacy of ARVs as a treatment intervention.

## SZ13. ISONIAZID PROPHYLAXIS TO CHILDREN AT THE BAYLOR COLLEGE OF MEDICINE-BRISTOL MYERS SQUIBB CHILDREN'S CLINICAL CENTRE OF EXCELLENCE SWAZILAND: A FOLLOW-UP STUDY

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Swaziland

**Background:** Tuberculosis (TB) is a leading cause of death in HIV-positive children in sub-Saharan Africa; the World Health Organization recommends providing isoniazid preventive therapy (IPT) to all HIV-positive children > 12 months. We evaluated IPT delivery and outcomes in HIV-positive children attending the Baylor College of Medicine-Bristol Myers Squibb Children's Clinical Centre of Excellence pediatric HIV clinic in Mbabane, Swaziland.

**Methods:** A retrospective chart review captured all HIV-positive children three months-14 years who received IPT from 2008-2010. Demographic data, IPT completion, adherence, medication side effects, and outcomes including death, lost to follow-up, interval development of TB disease, and the TB diagnostic criteria were recorded.

**Results:** Of 168 children receiving IPT, 144 (86%) completed six months of treatment; medication adherence via monthly pill counts was recorded for 27%. 145 (86%) were on antiretroviral therapy while receiving IPT. 14 (8%) were severely immunosuppressed at the start of IPT. Four (2%) experienced adverse effects requiring isoniazid cessation—jaundice, vomiting, a rash and epigastric pain.

One patient died during treatment of suspected non-TB myocarditis. Patient charts were reviewed for a mean of 36 months after IPT initiation. Ten (6%) were treated for TB after receiving IPT; 3/10 were started on isoniazid and subsequently switched to TB disease treatment; None of the children treated for TB were microbiologically-confirmed; all were probable cases of TB with 10/10 having clinical symptoms and 8/10 having x-ray findings compatible with TB. Eleven (7%) children were lost-to-follow-up or transferred out of clinic during or after IPT administration. No patients died during follow-up.

**Conclusions:** IPT for HIV-positive children in a resource-limited setting is safe, effective, and feasible. Few developed serious adverse events. Six percent developed clinical TB, which is comparable to other studies in sub-Saharan Africa evaluating TB in HIV-positive children receiving IPT. More research is needed to determine best methods of operationalizing IPT distribution to all who would benefit.

Ethical approval: Ethical approval granted by Baylor College of Medicine Institutional Review Board H-32121

## TANZANIA (MBEYA)

### TZ1. PERCEPTIONS AND ATTITUDES AFFECTING MALNUTRITION IN CHILDREN UNDER FIVE YEARS IN BAYLOR SUPPORTED SITES: A CASE OF MBOZI DISTRICT COUNCIL, TANZANIA.

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**Background:** The aim of this study was to investigate socio-cultural factors influencing malnutrition among children under the age of 5 years in Mbozi District of Mbeya Region in Tanzania.

**Methods:** Cross sectional interview study was conducted in three reproductive and child health (RCH) facilities in Mbozi District. Interviews were conducted during RCH visits between May and June 2015 with 200 caregivers of children with malnutrition. Caregivers were eligible if they had children aged 0–59 months clinically diagnosed with any form of malnutrition, are residents in Mbozi district, and consented to the interview. Standardized questionnaires were used to determine individual perception and attitudes, knowledge and awareness, and norms and beliefs surrounding breastfeeding and infant nutrition.

**Results:** Types of malnutrition in children of participants: 26% (52/200) wasting, 48% (95/200) stunting and 27% (53/200) underweight. Reported reasons for not breastfeeding were 'mothers are busy' (26.5%, 53/200), 'milk is not enough' (21.5%, 43/200), 'practice traditional feeding' (10.5%, 21/200), other reasons (35.5%, 71/200), 'did not know' (5.5%, 11/200), or 'no nutritional advantage to breastfeeding' (0.5%, 1/200). Responses to age at introduction of complimentary foods: 3% (6/200) did not know, 3% (6/200) prior to 6 months, 94% (188/200) after 6 months. 52% (104/200) of caregivers could correctly identify at least one cause of malnutrition and 48.5% (97/100) could

identify at least one way to prevent malnutrition. 4.5% (9/200) reported that there are religious/traditional beliefs that discourage breast feeding practices. Lastly, 11% (23/200) of caregivers agreed that milk can harm a child, while 89% (177/200) disagreed.

**Conclusions:** In our setting a high percentage of non-breastfeeding mothers reported they do not breast feed because they are busy or perceive a lack of sufficient milk supply. Only about half of participants could identify causes and prevention of malnutrition, highlighting an area for improvement. Religious/traditional beliefs were not a commonly reported reason to discourage breastfeeding. Future targeted educational approaches will need to address misconception and beliefs on causes and prevention of malnutrition.

### TZ2. CHARACTERISTICS AND OUTCOMES OF HIV-INFECTED, ART-NAÏVE CHILDREN DIAGNOSED WITH TB DISEASE IN MBEYA, TANZANIA

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**Introduction:** HIV-infected children have increased risks for TB exposure, infection and disease, as well as poor response to treatment compared to their HIV-uninfected peers. Treatment is often complicated by delays in TB diagnosis, initiation of anti-TB treatment (ATT), and initiation of antiretroviral therapy (ART). In ART-naïve HIV-infected children with TB, guidelines favour earlier versus delayed ART initiation following initiation of ATT. However, the optimal timing of ART initiation is unknown and limited data exist describing outcomes of this paediatric population.

**Methods:** Retrospective chart review between March 2013 and December 2014 of patients at the Baylor Tanzania Center of Excellence (COE) in Mbeya, Tanzania. Inclusion criteria: HIV-infected children diagnosed with TB disease with no prior exposure to ART ("ART naïve"). Baseline, 6- and 12-month outcome data were captured using a standardized data collection tool and unique data base.

**Results:** Baseline data: 39 ART naïve patients were diagnosed with TB. 44% female (17/39); median age 6.1 years (0.7-17.8yr). 97% (38/39) initiated ATT. Type of TB: 85% pTB (33/39), 10% EPTB (4/39), 5% LNTB (2/39). Diagnostic certainty: 23% confirmed (9/39), 56% probable (22/39), possible 21% (8/39) TB. 46% (18/39) were inpatients at time of diagnosis. All patients were treated with RHZE and none reported prior ATT.

Outcome data: 44% (17/39) completed ATT, 5% (2/39) cured, 21% (8/39) with ongoing ATT, 8% (3/39) transferred out, 8% (3/39) lost to follow up, and 16% (6/39) died. Median time to death after ATT initiation was 14.5 days (3-26d). A total of 87% (34/39) initiated ART, with median time from ATT to ART of 15 days (6-55days). Table 1 compares the immunologic and nutritional characteristics of the cohort.

**Conclusions:** Our cohort of ART-naïve, HIV-infected children with TB disease exhibited TB disease associated

with severe immunosuppression, malnutrition, and inpatient admission, as well as high rates of early mortality and LTFU, highlighting the importance of early disease recognition and treatment. However, early initiation of ATT and ART were associated with good immunologic and nutritional outcomes at 6 and 12 months, supporting the recommendation of early ART initiation following ATT in ART-naïve children.

See **Appendix 1.21** for Table 1

### **TZ3. IMPACT OF GENEXPERT SPUTUM DIAGNOSTICS IN CHILDREN WITH TB DISEASE ON TREATMENT DECISION IN A HIGH BURDEN SETTING**

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**Introduction:** 2014 WHO policy update recommends GeneXpert (GXP) as the initial diagnostic test in children suspected of having TB, leading to countries working on improving access to GXP. However, GXP may have limited impact in children due to pauci-bacillary, culture negative nature of childhood TB and use of clinical diagnosis in children. The added diagnostic value of GXP in children in resource limited settings remains unclear and needs investigation.

**Methods:** Retrospective chart review between March 2013 and December 2014 of patients seen at the Baylor Tanzania Centre of Excellence (COE) in Mbeya, Tanzania. Data on children referred for presumptive TB and diagnosed with TB were captured using a standardized data collection tool and unique data base.

**Results:** Of 504 children (57% HIV-infected) referred for presumptive TB, 35% (176/504) were diagnosed with TB. 70% (355/504) completed GXP testing as part of their evaluation. GXP was completed by 69% (226/328) of children where TB was excluded and 73% (129/176) of children diagnosed with TB. Among children not diagnosed with TB, GXP was negative in >99% (327/328) and not resulted in 1 child. Of those diagnosed with TB disease, GXP was positive in 9% (12/129), negative in 90% (116/129) and not resulted in 1% (1/129). Median time to antituberculosis treatment (ATT) among children with TB disease was 3 days (0-142), and did not vary widely between those with GXP not done (2 days, 0-25d), GXP positive (3 days, 0-28d), or GXP negative (4 days, 0-142d). Older children were more likely to have a positive GXP while younger children were more likely to not complete GXP (ANOVA, P=0.001; Table 1). Hospitalized children were less likely to have done GXP than outpatient referrals (p=0.003). There was no association between HIV status or presence of severe acute malnutrition and GXP result/use (p=0.431 and p=0.306).

**Conclusions:** In our setting, clinicians were less likely to use GXP in hospitalized or younger children and use of GXP testing did not reduce time to ATT. Likely reasons include high rates of empirical treatment in children, as well high severity of illness leading to lower treatment initiation thresholds. In such settings, GXP availability may not have

a large impact on clinicians' decision making. More sensitive pediatric POC testing with lower limits of detection may eventually influence clinician behaviour, leading to less empiric treatment and improved resource allocation.

See **Appendix 1.22** for Table 1

### **TZ4. ADVANCED TB DIAGNOSTICS IN A RESOURCE LIMITED SETTING: FINDINGS FROM THE FIRST TWO YEARS OF THE PEDIATRIC TB CENTRE OF EXCELLENCE IN MBEYA, TANZANIA**

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**Introduction:** In 2013, the Baylor Tanzania Center of Excellence (COE) in Mbeya, NIMR-MMRC and the Mbeya Referral created a centre providing advanced TB diagnostics and treatment for children identified with presumptive TB. The program offers sputum analysis, tuberculin skin testing (TST), fine needle aspiration (FNA), and chest x-ray (CXR) interpretation as well as treatment. This abstract provides a description of robust patient assessments, diagnostic findings and treatment during the first 22 months of the program.

**Methods:** Retrospective chart review at the COE between March 2013 and December 2014. Baseline and outcome data were captured using a standardized data collection tool and unique data base. Diagnostic test performance used clinical diagnosis of "TB disease" as the reference standard, which incorporates both CXR and TST results.

**Results:** Baseline: 504 patients with presumptive TB were referred. 48% female (241/504); age 0.3-19.7 years (median 4.8yr). 57% (288/504) HIV-infected, 4% (20/504) HIV-exposed, HIV-uninfected, and 39% (196/504) HIV-negative. Of HIV-infected, 63% (181/288) were on ART when referred. 20% (103/504) reported a known TB contact, and 3% (16/504) had history of prior TB treatment. Of all evaluated, 70% (355/504) provided sputa (42% induced, 58% spontaneous), 93% (470/504) completed TST, 5% (26/504) FNAs, and only 56% (281/504) had CXR results due to mechanical and logistical challenges.

**Outcomes:** 176 of the 504 (35%) were diagnosed with TB disease and 98% (172/176) initiated TB treatment. 19% (33/176) were bacteriologically-confirmed TB, 62% (109/176) probable TB, and 19% (34/176) possible TB. 14 patients were LTFU or died (1 of which had bacteriologically-confirmed TB results). Of those diagnosed, 86% (152/176) had pulmonary TB, 5% (8/176) lymph node TB, and 9% (16/176) extrapulmonary TB (EPTB). HIV-infected accounted for 60% (91/152) of PTB, 38% (3/8) of LNTB and 44% (7/16) EPTB. Table 1 lists the results and performance of the TB diagnostics. Median time from referral for TB diagnostics to initiation of TB therapy was 3 days (range 0-142 days).

**Conclusions:** Effective pediatric TB diagnosis is possible in our resource-constrained setting and improves TB case finding and prompt initiation of TB treatment. However,

despite access to state of the art diagnostics, performance of GeneXpert and culture are still sub-optimal, regardless of HIV and referral status, stressing the importance of clinical TB diagnosis in children.

See **Appendix 1.23** for Table 1

## **TZ5. TWO-PRONGED INTERVENTION TO IMPROVE REPRODUCTIVE HEALTH EDUCATION AND COUNSELING FOR ADOLESCENTS LIVING WITH HIV IN MBEYA, TANZANIA**

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**Issues:** In Tanzania, 25% of the population is adolescents, with an HIV prevalence of 1% and high rates of child marriage and adolescent pregnancy. Baylor-Mbeya COE staff noted that adolescent clients were uncomfortable talking about reproductive health issues during their visits, and there was increasing number of teen pregnancies in this group. To combat these challenges, the clinical team developed a two-pronged reproductive health intervention targeting adolescents.

**Description:** Two complementary interventions were: "Teen Talk Tuesday" small group education/discussion sessions, and individual counseling with a reproductive health nurse. "Teen Talk Tuesday" started July 2014, conducted every Tuesday (our adolescent clinic) with 10-20 adolescents per session. Sessions follow a standardized curriculum by showing a short video followed by a group discussion. Topics initially covered reproductive health, later expanding to include other topics, such as stigma, nutrition and drug/alcohol use. Building on Teen Talks, individual adolescent counseling on reproductive health was intensified by linking interested teens identified in Teen Talk sessions, as well as formalizing eligibility criteria for referrals. Counseling topics cover pregnancy and STI prevention, changes of puberty, healthy relationships, and contraception.

**Lessons Learned:** 44 Teen Talk sessions involving 515 adolescents have been conducted. Holding sessions on the clinic day are a convenient way to reach many teens, but have faced time and space constraints. During the first five months of the intensified intervention, 47 adolescents have received individual counseling, of which 18 chose to receive a form of contraception, as compared to only 9 in the six months prior. By using a non-judgmental approach, adolescents have been open to discuss personal issues like early sexual intercourse, abortion, drug/alcohol use, and STI history. These programs have been well received, with facilitators viewed as friendly and non-judgmental.

**Next Steps:** Future directions include measuring the outcomes and effectiveness of these programs, making reproductive health counseling universal for all adolescent clients, and introducing a pre-teen talk program that will provide early exposure on reproductive health education and other age-appropriate topics. Best practices will be shared with adolescent partners in Tanzania.

## **TZ6. CASE REPORT: IRIS-LIKE PRESENTATION OF BACILLIARY ANGIOMATOSIS IN A HIV-INFECTED CHILD IN THE SOUTHERN HIGHLANDS ZONE OF TANZANIA**

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**Background:** Bacillary angiomatosis (BA) is an uncommon opportunistic gram-negative infection caused by *Bartonella* spp. that occurs primarily in immunocompromised individuals. It is rarely seen in children infected with HIV, and can often be confused with other conditions such as Kaposi sarcoma (KS). Worsening of BA during immune reconstitution inflammatory syndrome (IRIS) phase of immune restoration after initiation of ART is not well described in children. We report a case of likely BA IRIS in a child infected with HIV.

**Case Report:** A 12 year old HIV-infected boy with severe malnutrition was referred to the Mbeya COE for treatment of widespread disseminated sores and fungating lesions. Seven months prior to referral, he was diagnosed with HIV and started on ART, with baseline CD4 of 76 (5%). Per history, the rash began one month after ART initiation and progressively worsened in the six months following ART. He had multiple admissions and courses of antibiotics without improvement prior to referral, and was referred to Baylor COE for concern of possible KS.

Through Baylor COE, patient was admitted to the pediatric malnutrition ward and skin biopsy was performed. Photos of patient were shared with dermatology and oncology specialists. A clinical diagnosis of BA was favored, and empiric treatment with doxycycline 100mg BD was started. Chemotherapy for KS was withheld while awaiting biopsy results. The patient underwent chest x-ray, abdominal ultrasound, sputa for geneXpert and AFB smear, and liver/renal function tests, all of which were normal. Viral load was undetectable, and complete blood count was notable for severe anemia (Hb of 4.0) requiring blood transfusion. Biopsy results showed histology consistent with BA and bacilli seen with Warthin-Starry staining. Following initiation of doxycycline and standard malnutrition care, the patient made remarkable improvement of his lesions and overall condition (Figure 1).

**Discussion:** We describe a case that supports the diagnosis of BA IRIS in a HIV-infected child that was successfully treated with doxycycline. While a systemic disease, BA frequently presents as lesions in cutaneous or subcutaneous tissues that can mimic KS – as in our patient – and clinicians must keep a high index of suspicion for BA in immunocompromised patients with unusual skin lesions not responding to standard treatments, particularly in the context of immune restoration.

See **Appendix 1.24** for Figure 1

## **TZ7. BARRIERS TO SPECIALTY CARE IN TANZANIA: CASE REPORT DEMONSTRATING CHALLENGES PATIENTS FACE IN OBTAINING SPECIALTY CARE AND POSSIBLE PARADIGMS FOR CHANGE**

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**Issues:** Medically complex patients referred to the Baylor Centres of Excellence (COEs) in Tanzania frequently present with multiple co-morbidities requiring consultation and linkages with other medical specialties. During such cases, patients frequently report challenges and barriers that hinder prompt care and treatment. We present a case of an HIV-infected child from the Mbeya COE diagnosed with osteosarcoma of the femur who faced multiple challenges and barriers to highlight lessons learned and strategies to address these obstacles.

**Case Description:** A 12 year old HIV-infected child on ART well known to the COE presented for swelling of the right thigh, and following imaging done in Mbeya was given a preliminary diagnosis of osteosarcoma of the femur and referred to the pediatric oncology centre at the national hospital in Dar es Salaam. Over the next three months, the patient and caregivers were shuffled between oncology, pediatric surgery and orthopedic surgery teams with the Baylor team acting as the 'medical home' for the patient. During this time, the family encountered multiple barriers and challenges in receiving diagnostic information and treatment options, and eventually after nearly four months of referrals decided on palliative care as a treatment option (Table 1).

**Lessons Learned:** Three major challenges/barriers to care were identified: 1) Treatment decision was not made while patient was at national hospital during initial referral, with no surgical treatment received, and patient returned home without clear treatment plan; 2) Stigma surrounding amputation and its perceived risks caused family to delay and ultimately decline surgical options; 3) Miscommunication and poor sharing of information between family and surgical team caused many delays during pre-operative care and scheduling.

**Next steps:** This case highlights the need for improved communication between specialty teams during referrals of complex cases. Standardized forms ("medical referral passport") are needed and under development. When possible, a 'support team' (e.g. expert volunteer, nurse, patient advocate) will be used in complex cases to accompany the patient to referral visits and act as a liaison with Baylor team to coordinate care. Lastly, the team will investigate methods to educate families about amputation (e.g. videos, brochures, testimonials) to help reduce fears and stigma.

See **Appendix 1.25** for Table 1

## **TZ8. "OUR LITTLE SOLDIERS": BEYOND THE PAGES**

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**Issues:** In 2013, Dr. Bobby Ricketts of BCM, launched an initiative to create an illustrated educational book entitled "Our Little Soldiers" to be used for disclosure/adherence teaching. The project culminated in 2015, with the production and distribution of the books to many BIPAI sites, including the Mbeya COE in Tanzania. The response to the books ("Askari Wetu" in Kiswahili) was overwhelmingly positive, and the Baylor Tanzania team took its success as

an opportunity to use this valuable tool to go beyond the pages through other educational media and peer teaching.

**Description:** Two primary methods were used to expand the reach of the "Askari Wetu" books: creating of a DVD movie, and starting peer reading groups. A DVD video of the book was created using basic movie maker software with a COE translator narrating the text/story in Kiswahili while picture images from the book are shown. The 9 minute video is shown multiple times per day in the COE waiting area. Peer reading groups, led by an expert volunteer, were also incorporated into the COE play therapy activities. The book was read to small groups of children outside on the COE porch, followed by a basic discussion of the lessons. Caregivers were also invited to participate in these reading groups.

**Lessons Learned:** Response to the "Askari Wetu" book, DVD movie and reading groups was positive. Children were actively engaged with the story and activities, and caregivers expressed gratitude for the disclosure and adherence teaching. The activities helped to reduce frustrations with waiting times. Greater sensitization of the book (compared to one-on-one readings) was achieved and optimized clinician encounter times to be more focused on other patient needs. Many children and adolescents had self-initiated peer-to-peer discussions of the book, resulting in many patients inquiring about the book independently during their visits.

**Next steps:** The "Askari Wetu" video will continue daily, and it will be shared with other partners and supported clinics in Tanzania. Peer reading groups will be further refined using feedback collected. The Mbeya team will disseminate a 'how to' guide on creating a DVD to other interested COEs in the BIPAI network.

## **TZ9. INEFFECTIVENESS OF SALICYLIC ACID AS TREATMENT FOR VERRUCA PLANA IN ADOLESCENTS LIVING WITH HIV**

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**Background:** Verruca plana (VP), or flat warts, is commonly observed in adolescents living with HIV/AIDS. While mostly a benign rash, when widespread it is disfiguring and causes significant distress and stigma to a patient. Alpha-hydroxy acids – such as glycolic acid - have demonstrated effectiveness in the treatment of VP, but are often unavailable in resource limited settings. However, salicylic acid, a  $\beta$ -hydroxy acid, is more readily available and may be a suitable alternative as treatment for VP in settings lacking access to alpha-hydroxy acids or other VP treatments.

**Methodology:** Pharmacist at Mbeya Referral Hospital in Mbeya, Tanzania compounded salicylic acid 3% ointment using aspirin powder and petroleum jelly. Starting in August 2014, patients identified with significant VP (>10% BSA) were offered treatment with the salicylic acid ointment. Treatment was initiated at once daily application for one week, followed by twice daily application thereafter if no toxicity occurred. Baseline photos of all VP patients were taken to use for evaluation of treatment success at 1 month, 3 month and 6 months.

**Results:** 25 patients with VP agreed to treatment, median age 17 years (range 7-20 yr). All patients were using ART prior to and during VP treatment, with 32% (8/25) on 2<sup>nd</sup> line regimen. Median CD4 of 408 (range 16-889). All patients tolerated the salicylic acid ointment well and no toxicity or treatment cessation was observed. During the first month, patients expressed subjective improvement and satisfaction with the treatment. However, at 3 and 6 months post-treatment, no patients had noticeable reduction trends in their VP, and treatment was stopped after 4-6 months in all patients due to lack of improvement.

**Conclusion:** In our small cohort of HIV-infected patients with VP, treatment with 3% salicylic acid had no effect on reduction of VP, and was an insufficient treatment option in our setting. Investigating other treatment options available in our setting, such as higher strength salicylic acid or type 2 histamine receptor antagonists (e.g. cimetidine), as well as improving access to treatments such as  $\beta$ -hydroxy acid, retinoids, or immunomodulators are important next steps. Use of 3% salicylic acid ointment for treatment of VP would not be recommended to other sites.

#### **TZ10. SATELLITE TEEN CLUBS IN THE SOUTHERN HIGHLAND ZONE OF TANZANIA**

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**Issues:** Adolescents age 10-19 make up 23% of the Tanzania population, and face unique challenges regarding HIV/AIDS. HIV prevalence is 1% for adolescents age 15-19, with higher prevalence in girls (1.3%) compared to boys (0.8%) at national level, but notably higher in adolescents in the Southern Highlands Zone (SHZ) (e.g. approximately 2% in Mbeya, Iringa and Njombe). These challenges, combined with low availability of youth-friendly sexual reproductive health (SRH) services, place adolescents living with HIV/AIDS (ALHIV) at increased risks, and require development of unique programmatic and educational strategies.

**Methodology:** Since March 2011, SHZ Baylor Centre of Excellence (COE) has operated the USAID-recognized best practice Teen Club, a psychosocial support group for ALHIV, adapting to Tanzania's context with a structured curriculum including Gender Equality, SRH, Adherence, Stigma, Nutrition, Financial Literacy, Safety/Violence Prevention and Life skills. With the successful implementation of the initial Teen Club (as determined by high demand, high turnout, and response from the teens attending), there was increased demand to replicate these services at other sites via Satellite Teen Clubs (STCs). Therefore, in 2013, Baylor COE partnered with UNICEF, local healthcare workers (HCW), CTC staff and community partners from 6 districts in SHZ to launch new STCs.

**Results:** Using the Mbeya Teen Club as a springboard for developing satellite clubs, training sessions were done for HCWs on the basics of starting and operating these clubs, thereafter Baylor provides on-site technical support to the STCs. From September 2013 to December 2014, 12 Satellite teen clubs (1 Teen Club & Pre Teen Club per district) have been established, which have reached 315 teens. STCs have been well received by the adolescents and local staff. Challenges include large turnout leading to

financial challenges in supporting these high numbers, difficulties in motivating local staff to run STCs, and reaching ALHIV living far distances from sites.

**Next steps:** Strategies will be explored on best ways to motivate local staff and to support the increasing numbers of ALHIV coming to STCs. Age-appropriate, adolescent-friendly content should also be integrated into in-service HIV trainings, as an alternative strategy, especially in rural areas where the number of ALHIV may not warrant the establishment of clubs. Effectiveness of STCs needs to be assessed to see the impact on short- and long-term medical outcomes such as clinical outcomes, improved adherence and increased retention in care of the ALHIV reached by the programs.

#### **TZ11. TWICE AS NICE: HIV-INFECTION AND CHARACTERISTICS OF TWIN PAIRS ENROLLED AT THE BAYLOR COE IN MBEYA, TANZANIA**

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**Background:** Data on twins born to mothers living with HIV is limited, but suggests that twin pregnancies involve an increased risk of mother-to-child transmission (MTCT) of HIV, particularly for the twin born first. However effective prevention of MTCT (PMTCT) medications to mother and/or child can reduce such risks. Twin pregnancies have increased risk of complications during delivery, as well as nutritional complications during early infancy. This abstract aims to describe the rates of MTCT and nutritional complications in a cohort of twins at the Baylor COE in Mbeya, Tanzania.

**Methodology:** Retrospective chart review of all twin pairs enrolled at the Baylor COE in Mbeya, Tanzania between March 2011 and June 2015. Baseline and outcomes data were captured through the EMR and unique database. "Infant Feeding Guidelines" is defined as exclusive breastfeeding the first 6 months followed by mixed feeding from 6 to 12 months of age, then stopping breastfeeding at 12 months of age.

**Results:** 28 twin pairs (56 twin children) identified. 19 pairs (68%) were HIV-negative to date, 3 pairs (11%) HIV positive, and 6 pairs (21%) with discordant results. One pair was delivered by c-section; all others by vaginal delivery. Two mothers died during delivery. Data on order of delivery of twins, gestational age and birth weight was not obtainable from our records. Table 1 compares the time to care, PMTCT, nutrition status and outcomes of these twin pairs. PMTCT coverage of the cohort was low at 54% (15/28 pairs), but HIV positivity rates were lower in those receiving maternal PMTCT (8% [2/26] versus 33% [10/30]) and/or infant PMTCT (0% [0/30] versus 46% [12/26]) compared to those not receiving PMTCT. 50% of all twins experienced malnutrition, with 92% of HIV-infected twins being malnourished.

**Conclusion:** Twins who became HIV-infected presented later to care than their HIV-negative counterparts. Those twins who received any form of PMTCT had lower rates of HIV highlighting the importance of PMTCT efforts targeting HIV-exposed twins. Early nutritional interventions targeting twins are needed as high percentages of twins struggled with malnutrition their first year of life, especially those

infected with HIV. Further investigation of discordant twin pairs is needed to determine risks and predictors for HIV-infection.

See **Appendix 1.26** for Table 1

#### **TZ12. AN APPROACH TO FAMILIES IN CRISIS: THE HIGH RISK PROGRAM AT THE BAYLOR CENTER OF EXCELLENCE IN MBEYA, TANZANIA**

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**Issues:** The HIV epidemic has magnified the social challenges of vulnerable children and families. There are few community-based resources for families in crisis in the Southern Highlands Zone of Tanzania, and for many patients the family structure is their most valuable asset. A high social risk program was established at the Baylor Centre of Excellence in Mbeya, Tanzania to empower such families to find solutions through utilization of the family resources.

**Description:** The program targets patients at risk of serious medical complications as a result of their social situation, and referrals into the program can be made by any COE staff. All patients undergo a baseline social assessment and a home visit when possible. The high risk team also conducts family meetings focusing on problem solving through establishing tangible goals. Patients receive weekly telephone follow up to assess their progress and challenges, and are seen by the team during their regular COE visits. High risk patients are eligible for commodity support (e.g. transport funds, clothing, and food) on a case by case basis. Findings from assessments and home visits are shared in bi-weekly multidisciplinary team meetings.

**Lesson Learned:** Since starting the program, 105 patients (7% of total COE patients) have been enrolled in the program, demonstrating the vulnerability and large impact of social determinants of health in our clients. 65 home visits and 22 family meetings were done. All high risk patients received commodities support and an additional 17 patients were re-enrolled in school through the program. Patients reported subjective improvements in self-esteem, reduction in stigma, and improved treatment by caregivers. Challenges encountered included resistance to behavior changes in caregivers, high demands and caseload for the high risk team, and a lack of non-COE economic strengthening opportunities. Stigma against HIV-infected persons and resulting neglect, especially for orphans, and economic insecurity were identified as common root causes of social problems.

**Next Steps:** Economic strengthening activities such as saving and lendings groups are needed to help relieve economic struggles of families. Additionally, the team hopes to increase stigma reduction efforts at the COE and community-level.

#### **TZ13. CHARECTORISTICS AND OUTCOMES OF PEDIATRIC KAPOSI SARCOMA PATIENTS IN THE SOUTHERN HIGHLANDS ZONE OF TANZANIA**

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**Objective:** In 2011, a program to provide comprehensive care for pediatric Kaposi sarcoma (KS) patients was developed at the Baylor Center of Excellence in Mbeya, Tanzania. This study aims to describe characteristics and outcomes of patients in the program.

**Methods:** A retrospective chart review was conducted including HIV positive children diagnosed with KS between 1 March 2011 and 31 December 2014. Demographic, medical data, and treatment outcomes were collected and analyzed.

**Results:** The cohort included 34 patients: 35% female (12/34), median age of 11.5 years (range 2-18 years). Clinical diagnosis supported by biopsy in 50% (17/34) of cases. At time of diagnosis, 59% (20/34) had lymphadenopathy; 56% (19/34) had skin lesions; 50% (17/34) had oral lesions; 38% (13/34) had woody edema; 18% (6/34) had suspected gastrointestinal involvement; and 12% (4/34) had presumed pulmonary involvement. Severe cytopenias (Hgb < 8g/dL and/or platelets < 50,000/mm<sup>3</sup>), were present in 26% (9/34), severe acute malnutrition in 38% (13/34) and 76% (26/34) met criteria for World Health Organization severe immunosuppression. When diagnosed, 71% (24/34) were on antiretroviral (ARV) therapy, median time of 7 months (range 0.5-76 months). For those on ARV  $\geq$  6 months, 62% (8/13) had virologic or immunologic evidence of treatment failure.

Excluding 2 patients who died prior to receiving therapy, all patients were treated with ARV and chemotherapy: 63% (20/32) received bleomycin and vincristine (BV) and 37% (12/32) were given BV + doxorubicin. Complete clinical remission was achieved in 41% (14/34) and 71% (24/34) of patients survived. Median time between diagnosis and end-of-study was 26.5 months (range 4-41 months). Ten patients (29%) died. Severe immunosuppression was present in 80% of those who died (two deaths had no CD4 data) and 90% of deaths occurred in adolescents (age  $\geq$  12 years). Median age of patients who died was 14.5 years (range 4-17 years).

**Conclusions:** Despite the resource limitations existing outside of academic hospital settings in Africa, >70% of HIV positive children with KS achieved survival with chemotherapy and ART in our clinical oncology program. In our cohort, mortality was associated with severe immunosuppression and age.

#### **TZ14. DEVELOPMENT OF A PROGRAM FOR PROVISION OF PEDIATRIC PALLIATIVE CARE SERVICES AT THE BAYLOR CENTER OF EXCELLENCE IN MBEYA, TANZANIA**

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**Objective:** To provide comprehensive care for patients with life limiting sequela of HIV infection and other terminal illnesses, a multi-disciplinary palliative care program was

established at the Mbeya COE. This study describes the characteristics and outcomes of patients enrolled in the program.

**Methods:** Patients enrolled in the program met with a dedicated palliative care nurse who reviewed the patient's expected prognosis and the goals of palliative care. Adolescent patients were given the opportunity to participate in these discussions and to share their hopes and fears surrounding the end of their life. Patients participated in a memory making activities such as having photographs taken or writing letters to family members. Caregivers were taught how to assess and treat their child's pain using a standardized pain scoring tool. COE visits were fast tracked, and patients are also given the option to receive multidisciplinary home visits, rather than traveling to attend clinic visits.

**Results:** Between March to December 2014, 18 patients were enrolled. Ages ranged from 2-17 years (median 13.5). 66% (12/18) of all patients had severe acute malnutrition. 88% (16/18) were HIV positive. All HIV positive patients had WHO stage 4 diagnoses (e.g. visceral Kaposi sarcoma, HIV associated kidney disease, EPTB). 88% of HIV-infected (14/16) had WHO severe immunosuppression: median CD4 of 33.5 cells/mm<sup>3</sup>. 56% of HIV-infected (9/16) had treatment failure. HIV negative patients included 1 patient with acute myeloid leukemia and 1 with hypoxic ischemic encephalopathy.

During the study period, 44% (8/18) patients died, of which 87% (7/18) were adolescents aged 13-19 years. All patients who died reported good pain control prior to death. 50% (4/8) of those who died received additional services such as memory making activities, multidisciplinary home visits or funeral support.

**Conclusions:** While ART availability has dramatically improved life expectancy of HIV infected children and adolescents, patients referred to tertiary centres – such as Baylor COEs – still present with advanced sequelae of HIV infection requiring palliative care. In this cohort, the majority of patients who died were adolescents. Despite resource limitations, a multidisciplinary approach can be successfully implemented at HIV care settings and is an important component of comprehensive pediatric ART care.

#### **TZ15. UPDATE ON HIV-INFECTED CHILDREN AND ADOLESCENTS ON SECOND-LINE THERAPY DUE TO TREATMENT FAILURE IN MBEYA, TANZANIA**

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**Background:** There is little published data describing characteristics and outcomes of HIV-infected children experiencing treatment failure (TF) in Tanzania. This abstract describes characteristics and outcomes of the growing 2<sup>nd</sup> line ART cohort from the Baylor COE in Mbeya, Tanzania.

**Methods:** Retrospective chart review at Mbeya COE from March 2011-December 2014. Inclusion criteria: HIV-infected children ages 5 years and older switched to second-line due to TF.

Baseline data: age, gender, duration on first-line, T-stage,

CD4, and pre-switch VL.

Outcomes data: death, lost to follow-up (LTFU), T-stage at 6 and 12 months, CD4 6-12 months post-switch, and VL  $\geq$  6 months post-switch.

**Results:** N=144, or 11.0% (144/1307) of total active HIV-positive clients on ART at the COE at end 2014. Median age 14.7 years (6.0-19.9). Median duration on first-line before switch= 4.3 years (0.7-9.4). T-stage before switch: T1=52.7% (76/144), T2=11.8% (17/144), T3=12.5% (18/144), T4=22.9% (33/144). 94.4% (136/144) had CD4 data in the year prior to switch: median= 114 cells/uL (4-885). 72.8% (99/136) had CD4 <200. 91.0% (131/144) had pre-switch VL data: median= 76,226 copies/mL (1,247-2,286,815).

**Outcomes:** 79.2% (114/144) had follow-up through end of 2014 at COE, 3.5% (5/144) were LTFU, 12.5% (18/144) transferred care, and 4.9% (7/144) of patients died after switching to second-line ART. The median follow-up time after switch was 15 months. 66.7% (96/144) had follow-up for at least 6 months post-switch, and of these, only 5.2% (5/96) were T3 or T4 at 6 months post-switch. Median CD4 at 6-12 months post-switch was 306 (8-2055, n=68). 67 patients had VL  $\geq$  3 months post-switch: median=152 copies/mL (<20-1,589,831). 31.3% (21/67) had VL>1000, and 23.9% (16/67) had VL >5000.

**Conclusions:** An increasing proportion of active COE clients are now on second-line ART. Standardized protocols at the COE have contributed to more consistent CD4 and VL monitoring pre- and post-switch. The proportion of patients with persistent high VL after switch to second-line ART remains high, which may be partially due to an increase in referrals from outlying facilities for sick patients requiring second-line ART with unclear adherence history and support. Other factors contributing to poor virologic outcomes on second-line ART will be further explored.

#### **TZ16. A SUCCESSFUL APPROACH TO PEDIATRIC PAIN MANAGEMENT: EXTEMPORANEOUS PREPARATION OF TRAMADOL ORAL SUSPENSION AT RESOURCE-LIMITED PHARMACY IN MBEYA, TANZANIA**

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**Issues:** Pain management is a crucial part of comprehensive care packages for many children living with HIV/AIDS, terminal cancers, or other end-of-life illnesses. In September 2014, the Baylor COE in Mbeya, Tanzania experienced regional stock-out of oral morphine – the only previously available oral opioid. To combat this challenge, the team investigated alternate strategies for pediatric pain control using other available adult analgesics in Mbeya.

**Description:** Coordinating with pharmacists from Texas Children's Hospital, the team received instructions on how to extemporaneously prepare tramadol syrup using tramadol tablets. However, the tramadol tablets as well as Ora-Sweet® SF (or mixture of 30 ml Ora-Plus® and 30 ml strawberry syrup) were not available in Mbeya. To accommodate, an alternative method was shared which used tramadol capsules and simple syrup (both available in Mbeya) to create tramadol syrup (10mg/ml). A major difference between the two options is reduced stability from the

capsule-based formulation compared to the tablet-based (30 days versus 90 days in cold chain), due to lack of germ-free syrup-base and cold-chain storage at patients' residence. It was decided that our locally-prepared tramadol syrup would be dispensed for just 10 to 14 days of use by patient.

**Lessons learned:** By using locally-prepared tramadol syrup, we were able to provide adequate pain control to our pediatric patients experiencing severe pain when other opioids (e.g. oral morphine) were not available. Extemporaneous preparation of suspensions from tablets/capsules to improve child-friendly administration of formulation is still a new concept to low-income countries such as Tanzania, and provides a realistic option for pain control in settings lacking other resources.

**Next steps:** The COE will share their strategies with other supported sites, hospitals and pharmacies in Tanzania to raise awareness of this technique of making tramadol syrup for pediatric pain control. Additionally, the pharmacy team will use this success to investigate other published evidence and guidelines on how to prepare medicines that can be easily administered children using readily available adult dosage forms.

#### **TZ17. RECOGNIZING AND EDUCATING ABOUT EXCIPIENT-RELATED SIDE-EFFECTS FROM USE OF ANTIRETROVIRAL THERAPY AT MBEYA, TANZANIA**

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**Issues:** Pharmaceutical formulation is the process in which different chemical substances constituting Active Pharmaceutical Ingredient (API) are combined to produce a final medicinal product. It involves the characterization of a drug's physical, chemical, and mechanical properties in order to choose what other ingredients (excipients) should be used in the preparation. Excipients comprise of colours, flavors, emulsifiers, diluents, bulking agents, sweeteners, and preservatives. Excipient-related reaction to certain ART formulations has been described in the literature, but is often overlooked and under-recognized by ART clinicians.

**Description:** Having noted possibility of excipient-related side-effects for common adult and pediatric ART formulations used at Mbeya COE, we developed a presentation teaching on what excipients are and which pediatric ART could have excipient-related side-effects. During this session, we demonstrated solubility of dispersible tablets compared to non-dispersed tablets and passed formulations for viewing and smelling flavoring agents from available pediatric ART. We also discussed about future of ART formulations with regard to the new WHO recommendations and possibility of adaptation in Tanzania. A unique case reports seen in Mbeya was discussed in which clients using blue colored AZT-3TC-NVP for adults in complained about feeling weaker during working hours as compared to when they used the white colored AZT-3TC-NVP for adults product from another company.

**Lessons learned:** Side-effects and drug interactions are usually attributed to API and little attention is paid to excipients which are regarded as inert/non-reactive ingredients. However, with changing formulations and

availability of better palatable ART formulation in pediatric patients, it will become imperative for clinicians to be aware of excipient reactions in children using ART. Many ART clinicians were unaware of these reactions, and benefited from the session.

**Next steps:** As part of learning curriculum, we intend to integrate this topic into curriculum for pharmacy attachments at our center. We also shared this presentation with our counterpart adult CTC clinic at Mbeya Referral Hospital.

#### **TZ18. EXPERIENCES OF PHARMACEUTICAL TECHNICIAN IN COUNSELLING CHILDREN LIVING WITH HIV/AIDS AT MBEYA, TANZANIA**

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**Issues:** Pharmaceutical counseling can be an important part of the multidisciplinary approach to adherence counseling for children living with HIV/AIDS. Inclusion of pharmaceutical personal in adherence counseling has been part of Tanzanian HIV guidelines since 2013, however implementation and impact of pharmaceutical personal in this process is not well described.

**Description:** "Jitambue" Club was initiated at our centre as a program targeting high risk HIV-infected adolescents with poor adherence. A pharmaceutical technician was selected to participate in this intervention and to use their expertise to teach strategies on proper use, storage and administration of drugs, improve self-esteem, offer positive role modeling and participate in home-visits. A pharmacy technician would participate in the monthly sessions, as well as individual counseling as needed for the group.

**Lessons learned:** Pharmaceutical technician brought unique, non-traditional perspective and advice to adherence counseling sessions, including discussions on swallow-ability of pills, dispersible versus non-dispersible formations, better solubility and palatability of tablets, taste-masking methods, and food administration as means to reduce side effects.

**Next steps:** Utilizing pharmaceutical technicians to complement adherence counseling was well received by clients, and has the potential to strengthen and complement traditional counseling techniques. Adopting such strategies to create a comprehensive adherence support team can assist in managing difficult cases and discovering formulation-related barriers to adherence. Expanding on this early success to incorporate the pharmacy team in novel ways into other methods of adherence counseling and support will be explored at the COE.

#### **TZ19. JITAMBUE ("KNOW YOURSELF") CLUB: IMPROVING ADHERENCE OF HIGH-RISK ADOLESCENT CLIENTS THROUGH PEER-LED GROUP VISITS**

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**Issues:** Poor ART adherence among adolescents was recognized as a challenge at the Mbeya COE, and adherence problems were not improving with the traditional COE interventions of one-on-one counseling and Teen Club.

A new intervention, Jitambue Club, was started in January 2015 with the goal of improving ART adherence through improved self-awareness and peer support.

**Description:** In November 2014, a team of six adolescent volunteers at Baylor COE identified 18 adolescents with poor ART adherence or high-risk for poor adherence based on lack of social support. An adolescent focal group was formed and developed a special program ("Jitambue Club") to build self awareness and improve ART adherence in these high-risk adolescents. Participants were 12-19 years old, and fully disclosed. The club met once monthly for three months. Sessions consisted of peer-led teaching and small group discussions, followed by regular doctor visits. Facilitator guides were developed focusing on three main topics: HIV/ART knowledge and adherence, stigma and social support, and sharing of stories/experiences. All participants took a pre-test and post-test about HIV/ART knowledge and adherence. Viral loads were checked on the first meeting day and will be checked again six months after enrollment.

**Lesson learned:** Jitambue Club has been well-received by the adolescents, and attendance rates have been high. Pill counts were monitored before and after Jitambue Club.

Four of 12 had improved pill counts, 1 of 12 had a worse pill count, and 7 of 12 had a pill count within the same range. HIV/ART knowledge and self-health knowledge (e.g. their CD4 count) improved after participating in Jitambue Club, and participants reported greater confidence and self-awareness after the group. Average change pre/post-test scores was +35%.

**Next steps:** Six-month follow-up viral loads will be checked to assess adherence. Session topics and activities are being modified based on participant and peer leader feedback. For adolescents still struggling with adherence despite attending the club, they will continue with another session. The team plans to start a second Jitambue Club for adolescents and a similar Jitambue Club for caregivers of younger children facing ART adherence challenges.

#### **TZ20. THE POWER OF QUALITY IMPROVEMENT KNOWLEDGE EXCHANGE: AN EXAMPLE FROM THE PARTNERSHIP FOR HIV-FREE SURVIVAL INITIATIVE IN MBEYA, TANZANIA**

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**Issues:** Partnership for HIV-Free Survival (PHFS) is an initiative aiming to eliminate HIV infections in children and reducing deaths among HIV-infected mothers and children in Mbeya, Tanzania. Quality improvement (QI) methodologies are used in PHFS to ensure mother-infant pairs are retained in care, receive nutritional counseling, know their HIV status and receive appropriate ART. To disseminate best practices of PHFS, national and district learning platforms were created.

**Description:** Since the start of PHFS in October 2013, two national and eight district platforms were held to share successes and challenges. All the learning sessions are coordinated by University Research Company (URC), who is the technical assistance partner for QI. Meetings involved all

regional implementing partners, PMTCT unit and regional/district authorities. Reports these platforms were reviewed and the lessons learnt compiled.

**Lessons Learned:** All implementing facilities have established QI teams as well as working improvement teams (WITs). The main function of WIT is to conduct process analysis of the services provided and identify gaps/bottlenecks in achieving PMTCT indicators. The key lessons observed from the platforms were: a) tested changes put in place to address the indicators are working and will be packaged, documented and shared for effective scale up of the initiative; b) Community-to-facility linkages have been strengthened using peer mothers and community health care workers; c) Elaborate patient monitoring and follow up system using the appointment and tracking registers exist at site; d) There is strong stakeholder engagement and partnership between the national and facility level that enhances commitment and ownership of the initiative.

**Next Steps:** QI knowledge exchange is an important strategy to share and documents tested changes that has worked and package it for scale up in other areas. Other programs like care and treatment need to borrow the tested changes in retention into care for the mother baby pair and use it in addressing retention and lost to follow up.

#### **TZ21. NACS SERVICES INTEGRATED INTO ROUTINE PMTCT SERVICES IN MBEYA CITY COUNCIL, TANZANIA**

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**Issues:** Nutritional Assessment Counseling and Support (NACS) services are seen as vertical program to the health system. There is no clear monitoring and evaluation system from facility to national level in Tanzania, and therefore the demand of data at national level not featured in the Health Information Management system. Lack of anthropometric measurement equipment, Ready to Use Therapeutic Food (RUTF), and limited capacity of health care workers (HCWs) are among the challenges at site level. This study aimed to evaluate how NACS services were integrated in the routine PMTCT services through partnership for HIV Free Survival (PHFS) in 10 supported sites.

**Description:** Data from the 10 sites in Mbeya City Council was collected from NACS daily registers, NACS management and report forms, CTC 2 and HEI cards, mother child registers for the April – June 2015 quarter. NACS tools introduced to all sites and district nutritionists/focal person tasked to demand monthly reports from all sites. NACS indicators were developed and introduced. Continuous medical education and onsite coaching on NACS curriculum to different cadres at facility and community level were done.

**Lessons Learned:** All NACS registers were correctly filled and 7,149 pregnant and lactating mothers attended reproductive and child health (RCH) clinics received NACS services. A total of 265 (4%) of mothers were found to be malnourished, of which 3 were severe acute malnutrition (SAM), 40 were moderate acute malnutrition (MAM) and 222 were overweight/obese. A total of 15,824 children under five years assessed for nutrition status of which 592 (4%) are

clinically malnourished, with 67 having SAM and 289 having MAM and 236 overweight/obese. All those with SAM were given RUTF and nutrition education and counseling

**Way Forward:** Through PHFS integration of well-supported NACS services into the routine RCH/PMTCT, more clients are being identified with nutritional problems to receive services. Baylor will advocate with district authorities to strengthen NACS services and increase uptake of best practices to scale out to new sites that have not integrated NACS services in the continuum of care.

## **TZ22. THE EFFECT OF QUALITY IMPROVEMENT METHODOLOGIES ON E-MTCT PROGRAMS IN MBEYA CITY COUNCIL**

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**Issues:** Ministry of Health in Tanzania has changed its focus from coverage scale-up to elimination of new HIV maternal to child transmission (e-MTCT) infections among children and keeping mother-baby pairs (MPB) in care and alive. To reach these goals, quality improvement (QI) initiatives targeting e-MTCT have been piloted in targeted areas of Tanzania. The aim of this study was to evaluate the role of QI methodologies in improving postpartum care to HIV+ clients in Mbeya City Council.

**Description:** QI indicators on post partum care and test changes implemented in 10 Partnership for HIV-Free Survival (PHFS) sites for the April-June 2015 quarter were reviewed. The percentages of postnatal mothers who attended all 4 standard postnatal visits and MBPs who attended PMTCT services in city hospital are presented.

**Lessons Learned:** A total of 492 mothers and their babies were registered for postnatal care, among them 445 (94%) attended all postnatal standard visits. Number MBPs registered for PMTCT services were 321 and 100% (321/321) attended clinic visits throughout the quarter. Cumulative number of pregnant and lactating mother in care were 414, current retention into care 96% (399/414). Tested changes implemented included improving client flow through process mapping, allocating a room for postnatal care after training, providing same day appointment for mother and the baby, stapling mother and baby cards together, linkage of community to facility by peer mothers and community health workers, use of appointment and tracking registers.

**Way Forward:** QI methodologies in the e-MTCT intervention through PHFS initiative encouraged health care workers at various levels to take ownership of the PMTCT services and elaborate linkage between health facility and community level. The QI strategies can help to improve referrals and linkages, create user-friendly services, and retain more MBPs. Successful tested changes will be to the presented to the districts to use and scale up.

## **TANZANIA (MWANZA)**

### **TZ23. EFFECT OF CAMP MATUMAINI ON ADHERENCE LEVELS AT THE LAKE ZONE COE IN MWANZA, TANZANIA**

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- 2- Johns Hopkins University, ACE intern
- 3- Princeton in Africa, Fellow

**Background:** Poor adherence to ARVs reduces positive health outcomes. Baylor Mwanza addresses this challenge by conducting Camp Matumaini for 10-13 year olds, a period of childhood during which the transition into adolescence begins and independent decision-making evolves. This one-week camp is based on Mbeya's Salama Camp and emphasizes adherence, self-esteem, and teamwork through activities focused on life skills, group unity and creativity, HIV education, performance arts, and more.

**Methods :** Criteria for camper selection included CD4 count above 200, age 10 -13 years, full disclosure, negative or not newly diagnosed TB status, and a level of physical fitness adequate for planned activities. Adherence of campers for 5 visits both immediately before and after camp and for 3 visits three months after camp ended was reviewed through a retrospective chart review. "Good" adherence was defined as that falling between 95% and 105% for at least 4 of the 5 visits immediately before or after camp and for at least 2 of the 3 visits at the 3-month mark. Overall adherence at each of the three points was then compared.

**Results:** Two camps (2013 and 2014) involved 60 participants. Four children were not on ARVs and one died before the completion of the study; they were excluded. Of the 55 children included, 26 (47.3%) were females and 29 (52.7%) were males. In the 5 visits directly before camp, 30 children had good adherence and 25 had poor adherence. In the 5 visits immediately after camp, 29 had good adherence and 26 had poor adherence. After three months, 44 had good adherence and 11 had poor adherence.

**Conclusion:** Adherence immediately following camp was essentially unchanged, however, adherence improved by 25.5% 3 months after camp, indicating that camp had a positive long-term effect on adherence in 10-13 year olds. Future efforts focusing solely on those with poor adherence would allow a clearer understanding of positive transitions that are occurring. 11 children still had poor adherence after 3 months, necessitating investigation of factors playing a role in continued difficulties. Improvements in teamwork skills and self-esteem are also major objectives of camp and future studies should include surveys measuring these outcomes.

### **TZ24. OUTCOMES FOR MALNUTRITION MANAGEMENT IN CHILDREN AGED 24 MONTHS TO 59 MONTHS AT THE LAKE ZONE COE IN MWANZA, TANZANIA**

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**Background:** HIV infected and exposed children are at high risk of morbidity and mortality if they do not receive appropriate health services including management of moderate acute malnutrition (MAM) and severe acute malnutrition (SAM). Malnutrition may result from poor

feeding habits, lack of knowledge, food insecurity, early weaning and other diseases like respiratory infections, diarrheal illnesses, and tuberculosis. Malnutrition management with Ready to Use Therapeutic Food (RUTF) remains challenging as some clients cannot adhere to management plans. Possible barriers include being cared for by relatives other than biological parents and lack of transport required for frequent visits. This study considers outcomes of RUTF management for children aged 24 months to 59 months enrolled at the Lake Zone COE in Mwanza, Tanzania.

**Methods:** This is a retrospective study utilizing data extracted from Lake Zone COE malnutrition database. Inclusion criteria: all children enrolled in the malnutrition management program from January 2013 - December 2014, aged 24 months to 59 months, regardless of HIV or TB status.

**Results:** During the study period, 112 children were enrolled in the database for outpatient management of malnutrition. 61.61% (69/112) were male and 38.39% (43/112) were female. 41.96% (47/112) and 58.04% (65/112) were diagnosed with MAM and SAM respectively. Patients who had >5 visits with the nutritionist were more likely to be cured and discharged from malnutrition management 60.71% (68/112) compared to those with fewer visits: 0.89% (1/112) died after a single visit, 37.50% (42/112) were lost to follow up after 3 or fewer visits and 0.89% (1/112) rejected management within 3 visits. 37.50% (42/112) were HIV negative and 62.50% (70/112) HIV positive. 86.61% (97/112) were infected with either TB or HIV while 13.39% (15/112) had TB/HIV co-infection. The majority, 84.82% (95/112), were cared for by biological parents while 15.18% (17/112) were cared for by other relatives.

**Conclusion:** Children attending regular visits with the nutritionist and remaining in care for > 5 visits can recover and do well from a nutritional standpoint. More studies exploring the reasons for early dropout from the program are needed to improve retention and improve outcomes for all malnourished children followed at the Lake Zone COE.

#### **TZ25. EXPERT MOTHERS ARE GATEWAYS TO HEALTHCARE FACILITIES IN RORYA DISTRICT, TANZANIA**

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- 1- Baylor college of Medicine Children's Foundation-Tanzania, Mwanza, Tanzania.
- 2- Terre des Hommes Netherlands, East Africa

**Issues:** Despite efforts to scale up HIV care and treatment, many children infected with HIV remain unidentified and are not receiving life-saving ART. Identifying, training and supporting community-based expert mothers (EMs) could lead to higher rates of health-seeking behavior and increased demand for HIV testing, care and treatment services. EMs can serve as links between communities and the healthcare system.

**Description:** Baylor-Tanzania, in partnership with Terre des Hommes Netherlands, launched the Expert Mothers Program which involves the catchment areas of 3 healthcare facilities (HCF) in the Rorya District, including 8 villages in 3 wards. The ultimate goal is improved survival of HIV

infected and exposed infants and their mothers, by ensuring access to HCFs and specifically to family planning, counseling and testing, and care and treatment services. 60 mothers were chosen by village leaders to receive training, together with 9 HCF workers and other community leaders. In addition to key topics related to pediatric HIV, EMs were taught documentation, presentation skills and the proper conduct of home visits. EMs are supported with small stipends, water bottles, umbrellas, bicycles and bags.

**Lessons learned:** As of December 31, 2014, EMs have conducted health education in the form of 4,886 home visits and 75 community events, with a total of 7,472 people educated about the key topics. As a result of these interventions by EMs during the first year of the program, 759 children were tested for HIV, 18 children were newly diagnosed HIV+, 8 children who had been lost to follow-up returned into care, and 777 women and men are practicing some form of family planning.

**Next steps:** The EM program has demonstrated that a grassroots approach to health education within the household and at community events can effectively mobilize a community to test children for HIV. Healthcare workers report that EMs help many families to access health care, and demand for treatment and HIV testing has increased in the areas covered by the program. The Expert Mothers Program should continue beyond the initial 2 year trial period, since the program is showing the desired result of increased pediatric enrollment in HIV care and treatment services.

#### **TZ26. UTILIZING MOST VULNERABLE CHILDREN'S COMMITTEES TO PERFORM TARGETED SENSITIZATION AND ADVOCATE FOR HIV TESTING OF MOST VULNERABLE CHILDREN (MVC) IN 4 WARDS OF MWANZA CITY, TANZANIA**

S. Makungu<sup>1\*</sup>, S. Shea<sup>1</sup>, M. Minde<sup>1</sup>, L. Mwita<sup>1</sup>.

1- Baylor college of Medicine Children's Foundation-Tanzania, Mwanza, Tanzania.

**Issues:** Enrollment of children into Care and Treatment Centers in Mwanza City, Tanzania remains low despite efforts to scale up pediatric HIV care and treatment. Utilizing the Most Vulnerable Children's Committees (MVCC) in collaboration with local government authorities offers an alternative approach to increasing HIV case identification. MVCCs can serve as a resource in identifying HIV positive Most Vulnerable Children (MVC), getting them tested and linking them to life saving care.

**Description:** Mwanza City has tasked government-supported Most Vulnerable Children's Committees to identify and provide social support to the Most Vulnerable Children of Mwanza, however, they are largely underutilized due to lack of ongoing mentorship and limited funding. Through partnership between Baylor Tanzania and Mwanza City, Baylor trained and mentored 144 MVCC members in the following areas: pediatric HIV case finding, exposed infant care, HIV basics with an emphasis on pediatric HIV, PMTCT including breastfeeding recommendations, and the importance of ongoing follow up at health centers. This is a pilot intervention in 4 wards of Mwanza City. MVCCs were trained on how to use monitoring tools and on how to manage referrals of sick children identified and children referred for testing and quarterly mentoring and follow up meetings were conducted.

**Lessons learned:** MVCCs managed to sensitize 1,933 people about the importance of HIV testing for children. As a result, 287 people were tested with children tested totaling 230. Of the 230 children tested, 39 were HIV positive, which is approximately 17% of those tested. These outcomes illustrate the benefits of a targeted sensitization and testing methodology for MVCs.

**Next steps:** The high prevalence (17%) among MVCs in 4 wards demonstrates that it is beneficial to invest in the mentorship of MVCCs in order to utilize them for targeted sensitization and testing. Greater investment in the development of these committees could prove highly successful in the identification and treatment of HIV positive MVCs. Based on the promising results of the pilot program in 4 wards, Baylor Tanzania plans to promote increased HIV testing, care, and treatment for HIV positive children by educating and mentoring MVCCs in all 21 wards in Mwanza City.

## UGANDA

### UG1. PEER COUNSELING IN AN URBAN ADOLESCENT AND YOUNG PEOPLE'S HIV CLINIC IN UGANDA: THE BAYLOR-UGANDA EXPERIENCE

**Authors:** \*Annet Nassaka, Jacqueline Balungi Kanywa, Esther Kangave, Sandra Amodot, Robert Iriso, Margaret Nalugo, Heather Lukolyo, Grace Paul Kisitu, Vicent Tukei, Sabrina Bakeera Kitaka, David Damba, Adeodata Kekitiinwa  
**Institution:** Baylor College of Medicine Children's Foundation-Uganda

**Issues:** Young people are more likely to identify with and follow the advice given to them by their peers compared to older health care workers. We describe the peer counseling experience among young people living with HIV (LHIV) at Baylor College of Medicine Children's Foundation- Uganda (BCMCF-U).

**Description:** In 2014, there were 2,642 10-19 year-olds and 576 20-24 year-olds LHIV with a male: female ratio of 1:1 enrolled at the BCMF-U clinical center of excellence (COE), with an average of 200 scheduled for routine clinic appointments each week. In 2014, BCMCF-U integrated peer counseling into weekly adolescent clinics. Four perinatally-infected young people who were adherent to medications and virologically suppressed were trained under the psychosocial unit as volunteer peer counselors and until recently were involved only in once-monthly, optional weekend engagement. Integration of peer counseling into clinic days reached 3,600 more young people per quarter compared to the once-monthly, optional engagement. They engaged young people as they waited for clinic appointments through activities including group health talks, individual counseling and referral when needed, question and answer sessions, and recreational activities.

From 22<sup>nd</sup> July 2014 to 30<sup>th</sup> June 2015, peer counselors reached 7,920 young people through various peer counselor-led activities during adolescent clinic days. The most commonly attended activity was the general health talks, where common questions touched on pregnancy and disclosure of serostatus to partners. Peer-counselors provided counseling for 1,540 10-19 year-olds and 220 20-24 year-olds, including counseling on disclosure of serostatus to others, spurring 22 young people to bring their sexual partners for HIV counseling and testing. Peer counselors referred 12 young people to a professional

counselor for complex psychosocial issues.

**Lessons learned:** Peer-to-peer counseling is an effective model that can be integrated into routine HIV care to reach young people LHIV in resource-limited settings. In our setting, peer counselors effectively engaged young people LHIV to open up through various means and supported them to live healthier lives.

**Next steps:** Efforts should be made to engage young people to identify and support their peers to address psychosocial and sexual and reproductive health issues, including among most at-risk young people.

### UG2. EQUIPMENT PERFORMANCE SPECIFICATIONS: EVALUATION OF SAMPLE-TO-SAMPLE CARRYOVER, PRECISION AND LINEARITY IN AN AUTOMATED LABORATORY SETTING ON BD FACS CALIBUR FLOW CYTOMETER AT BAYLOR-UGANDA

**Authors:** \*Bonny Mulindwa<sup>1</sup>, Ben Etonu<sup>1</sup>, Annet Nalugo<sup>1</sup>, Peter Oballah<sup>1</sup>, Margaret Nalugo<sup>1</sup>, Jackie Balungi<sup>1</sup>, Vincent Tukei<sup>1</sup>, Iriso Robert<sup>1</sup>, Adeodata Kekitiinwa<sup>1</sup>.

<sup>1</sup>Baylor College of Medicine Children's Foundation Uganda (Baylor-Uganda).

**Background:** Globally, most modern laboratories are increasingly transitioning from manual to automated sample analysis platforms. This has led to risks of sample-to-sample carryover, imprecision and unlinear instrument platforms causing erroneous results in analytical laboratories using automated platforms. This study was conducted to assess sample-to-sample carryover, precision and linearity on BD FACS Calibur flow cytometer in a College of American Pathologists (CAP) accredited laboratory at Baylor-Uganda.

**Methods:** We conducted a cross sectional study to assess sample-to-sample carryover for CD3+, CD3+CD8+ and CD3+CD4+ analytes where 11 replicates of low sample and 10 replicates of high samples were analyzed using the laboratory carryover protocol. Carryover less than the error limit was considered a pass. Using CD-Chex Normal control, a within run precision study was subjected to 40 samples and a percentage CV greater than 5% considered imprecise. Subsequently a linearity study was conducted using commercial stabilized blood specimens from CAP with a relative concentration of 0-1.

**Results:** Data revealed 0% carryover and error limit of 0.00 for all analytes. Results from the precision study revealed CD3+, CD3+CD8+ and CD3+CD4+ absolute counts %C.V.'s of 4.23%, 4.7% and 4.26% respectively while CD3+, CD3+CD8+ and CD3+CD4+ percentages revealed %C.V.'s of 1.56%, 2.66% and 2.1%. Results from linearity study showed that CD3+, CD3+CD8+ and CD3+CD4+ absolutes were linear from 283 to 4454 cells/dl ( $R^2=0.986$ ), 255 to 2138 cells/dl ( $R^2=0.968$ ) and 12 to 2190 cells/dl ( $R^2=0.997$ ) respectively while CD3+, CD3+CD8+ and CD3+CD4+ percentage were linear from 57 to 75% ( $R^2=0.968$ ), 52 to 36% ( $R^2=0.957$ ) and 2 to 35% ( $R^2=0.991$ ) respectively

**Conclusions:** As new types of analyzers are introduced on the market, it is imperative to conduct extensive equipment specification assessments to avoid risks of errors that may compromise reproducibility, repeatability and linearity.

### UG3. REALITY OF REACHING THE HARD TO REACH CHILDREN WITH PEDIATRIC HIV/AIDS PREVENTION, CARE AND TREATMENT SERVICES. LESSONS LEARNT FROM A REMOTE AND RURAL SUB-REGION, UGANDA.

**Authors:** Calvin Epidu<sup>1</sup>, Jonathan Izudi<sup>1</sup>, Margaret Nalugo<sup>2</sup>, Vincent Tukei<sup>2</sup>, Adeodata Kekitiinwa<sup>2</sup>

1. *Baylor College of Medicine Children's Foundation-Uganda, Karamoja Region*
2. *Baylor College of Medicine Children's Foundation-Uganda, Center of Clinical Excellence, Kampala*

**Location:** Baylor College of Medicine Children's Foundation-Uganda

**Issue:** Karamoja region in North East Uganda is considered a hard-to-reach part of the country. The cattle-keeping communities in this region are largely migratory and have very limited access to health care services. Though with the lowest HIV prevalence in Uganda (5.8%), it faces poor access to HIV/AIDS prevention, care and treatment services, limited technical capacity of human resources for health (HRH) in HIV/AIDS management, low retention of HIV positive clients in care, limited CD4 access, low (16%) access to Early Infant Diagnosis (EID) among HIV exposed infants, high stock out rates of essential HIV/AIDS supplies, weak medical logistics management and immense unmet need for pediatric HIV/AIDS care, treatment and support.

Baylor-Uganda with funding from UNICEF has over the last one and half years established pediatric HIV/AIDS treatment services in the region.

**Program description:** Baylor Uganda's Project objective was to scale up access to Pediatric and adolescent HIV care and treatment services in Karamoja. Interventions encompassed support to MCH outreaches, HRH capacity building, onsite clinical, PMTCT/EID, health records management mentorships, provision of buffer stocks, subsidizing CD4 testing, facilitating CD4/DBS sample transportation, building HRH capacity in using toll free telephones to get DNA/PCR results from CPHL, use of SMS reminders to HRH to timely order HIV/AIDS supplies, timely pediatric ART initiation and conducting campaigns for pediatric HIV counseling and testing.

**Lessons learnt:** Over this period, access to EID within 2 months improved from 16% in December 2009 to 40% in 2012 and later to 64% (766/1190) by June 2015 ( $p < 0.001$ ). 100% of DNA/PCR results were received at health facilities. EID positivity rate fell from 17% in Dec 2012 to 6.5% (66/1008) in June 2015 ( $p < 0.0014$ ). 100% (65/65) HIV positive children were started on ART compared to 58% (15/26) in September 2013  $p < 0.001$ . By June 2015, a two-fold increase in pediatric enrollment in care was realized (599 versus 277 in Dec 2012) and a significant increase in ART access.

**Next steps:** An HIV/AIDS multidimensional approach of service delivery needs to be adopted to significantly enhance access to ART in hard to reach environment.

### UG4. LAMIVUDINE INDUCED PURE RED CELL APLASIA; A CASE REPORT OF A PEDIATRIC PATIENT

**Authors:** \*Dan Kasozi<sup>1</sup>, Vincent Tukei<sup>1</sup>, Adeodata Kekitiinwa<sup>1</sup>

<sup>1</sup> Baylor College of Medicine Children's Foundation-Uganda

**Introduction:** Lamivudine-induced, potentially life-threatening pure red cell aplasia (PRCA), though not frequently encountered, has been reported in HIV-infected adults on HAART. We found no documented report of this infrequent, yet life-threatening condition in children. This case report describes this condition in an HIV-infected child on antiretroviral therapy (ART) attending the Baylor-Uganda clinic.

**Patient and Methods:** A 6 year-old male child receiving ABC/3TC/LPV/r developed severe non-responsive anemia with high blood transfusion requirements after initiating ART.

On 6th June, 2011, ART was initiated with twice daily ABC/3TC/NVP with a baseline HB of 8.4g/dl. Shortly after starting ART, the child developed severe recurrent anemia with high blood transfusion requirements ( $\geq 1$  blood transfusion per week). On 16<sup>th</sup> April, 2012, the child had a single switch from NVP to LPV/r due to virological treatment failure and following the switch, the child suppressed to undetectable viral load. However, despite the virologic suppression, the child continued to have severe recurrent anemia and was subsequently referred to Baylor-Uganda.

At the time of presentation he was found to be stunted, with severe pallor, cervical and submandibular lymphadenopathy no jaundice, no edema, and no dehydration. He had a tachycardia, a hemic murmur, a gallop rhythm and hepatosplenomegaly (Liver=7cm below costal margin (BCM), Spleen=14cm BCM).

He had a reticulocyte count of 1.2% and the bone marrow aspiration report revealed morphological features consistent with pure red cell aplasia with hypoplastic marrow. As part of management, lamivudine was discontinued and the child was maintained on dual therapy (ABC/LPV/r).

After 6 months of withdrawal of lamivudine, the hemoglobin had completely recovered and the patient remains virologically suppressed.

**Conclusion:** Though not common, Lamivudine-induced PRCA, should be suspected in patients with unresponsive severe anemia on ART.

### UG5. IMPROVING CD4 UPTAKE AMONG PAEDIATRIC CLIENTS (0-14 YEARS) IN SERERE HEALTH CENTER LEVEL IV

**Authors:** \*Faridah Akuju<sup>1</sup>, Catherine Anyodi<sup>2</sup>, Daniel Ogwal<sup>2</sup>

*Institutions: 1-Baylor College of Medicine Children's Foundation-Uganda 2-Serere health centre IV (HCIV)*

**Background:** Routine monitoring of CD4 cell count can be used to estimate the degree of immune suppression in people living with HIV. According to the Ministry of Health standards, CD4 cell counts should be measured every six months. In Serere HC IV however, there was a gap which the project set out to fill; as of May 2013, only 36% of children had had CD4 testing done in the past six months. This was a quality improvement project that aimed to increase the proportion of children accessing bi-annual CD4

testing from the baseline of 36% to 95% by the end of October 2013.

**Methods:** The quality improvement team brainstormed on the causes of low CD4 uptake including; some caregivers come without their children; challenge of bleeding very young infants; CD4 results were at times misplaced and therefore not recorded in the clients' files; and long waiting time at the laboratory. Solutions implemented to address the identified gaps included; designation of a "**CD4 Corner**" in the HIV clinic where the children due for CD4 had their blood samples drawn on every clinic day. We assigned a specific staff to draw blood from the children, assigned a one-week appointment for clients that were overdue for CD4 assessment; and a particular staff was identified to receive CD4 results from the laboratory, attach them to the patient HIV care card and update them in the CD4 register.

**Results:**

See **Appendix 1.27** for Figure 1

The percentage of children with a CD4 test done in the past 6 months increased from 36% in June 2013 to 97% at the end of October 2013. **Conclusions:** The interventions enhanced the process of CD4 assessment, improved documentation of CD4 results (this guided clinicians in decision making for client management), and motivated clients to come for their clinic appointments because of the holistic care received from the HIV clinic.

**UG6. OCCURRENCE OF SEVERE LIVER TOXICITY IN HIV INFECTED CHILDREN ON ANTI-TUBERCULOSIS TREATMENT AT A LARGE PEDIATRIC AND ADOLESCENT CENTER IN KAMPALA, UGANDA**

Authors: \*Gerald Agaba<sup>1</sup>, Moses Matovu<sup>1</sup>, Annet Nalugo<sup>1</sup>, Peter Ouma Oballah<sup>1</sup>, Margaret Nalugo<sup>1</sup>, Vincent Tukei<sup>1</sup>, Adeodata Kekitiinwa<sup>1</sup>.

Location: <sup>1</sup>Baylor College of Medicine Children's Foundation Uganda, P.O Box 72052 Kampala Uganda

**Background:** Drug-induced liver injury (DILI) has been a long-standing concern in the treatment of tuberculosis (TB) infection. Understanding of TB DILI has been hampered by differences in study populations, definitions of hepatotoxicity, and monitoring and reporting practices. The purpose of this study was to assess the occurrence of liver toxicity among patients living with HIV/AIDS started on anti-tuberculosis treatment between 2013 and 2014.

**Methods:** Patient data for the period January 2013 to January 2014 was retrospectively reviewed and the mean differences in Alanine aminotransferase (ALT) levels compared between the baseline levels and one month after initiation of anti TB medications to assess for liver toxicity. In this study severe liver toxicity was described as ALT elevation more than three times the upper limit of normal.

**Discussion:** A total of 199 patients were followed up during this period. 84/199(42.2%) had active Tb disease while 115/199 (57.8%) were on isoniazid preventive therapy (IPT). Majority of the participants were males (51.2%). The median age among those with TB disease was 3.96 (0.32-16.7) years. 59/84 (70.2%) were still active in the clinic, 20/84 (23.8%) had died, 2/84 (2.4%) were lost to follow up while 3/84 (3.6%) had transferred out. 70/84 (83.3%) had been on ART for less than a year, 3/84 (3.6%) had been on

ART for 1-3 years while 11/84 (13%) had been on ART for more than 3 years. 9/84 had elevated ALT levels. 2/9 had their ALT levels elevated at baseline. The rest had elevated ALT levels at one month following initiation of anti-TB medication. Among those on IPT prophylaxis, 72/115 (62.6%) were females. The median age was 9.13 (1.51-16.9) years. Only 3 had elevated ALT levels one month after initiation of IPT.

**Conclusion:** This study highlights the occurrence of severe liver toxicity in HIV-infected children on anti-TB treatment.

**UG7. OUTCOMES OF PEDIATRIC SECOND LINE ANTIRETROVIRAL THERAPY IN LOW AND MIDDLE INCOME COUNTRIES: A SYSTEMATIC REVIEW**

Authors: \*Kisitu Grace Paul, Juma Michael, Ross Michael W, Selwyn Beatrice J

**Background:** Access to pediatric antiretroviral therapy (ART) has increased significantly in low and middle income countries (LMIC) over the last ten years. There has also been an increase in the number of HIV-infected children progressing from first line to second line ART. Unlike first line ART, little is known about the long term effectiveness of second line ART in LMIC where challenges of poor drug adherence, inadequate viral load monitoring, and limited viral resistance testing continue to plague pediatric ART care. We conducted a systematic review to describe viral suppression and failure rates in children on second line ART.

**Methods:** Only studies that were conducted in LMIC in HIV-infected children who were on second line ART and were under 18 years were eligible for inclusion. We searched Medline, Pubmed and Embase databases for articles published between 1<sup>st</sup> January 1996 and 31<sup>st</sup> December 2013. The search terms included HIV/AIDS, treatment failure, second line, children and developing countries. Data was collected from the eligible articles and transferred to an evidence table for analysis. The primary outcome variable was virologic suppression measured at the different follow up periods across the different studies.

**Results:** Thirteen articles (from 11 studies) out of 1,155 identified articles were eligible for review. Four studies were from Asia, six from Africa and one from South America. Second line ART regimens included single protease inhibitor (PI), double PI and nucleoside reverse transcriptase inhibitor (NRTI) based ART. The total sample size of HIV+ children in selected studies was 543 and follow up ranged between 6 to 24 months. Viral suppression rates were higher in studies with pre-second line genotype resistance testing (GRT) (80%) and PI based ART (60-80%) compared to studies without GRT (60%), and NRTI based ART (< 30%). There was no significant difference in suppression rates between studies conducted in rural and urban areas.

**Conclusion:** Short-term findings in low-resource settings indicate that PI-based pediatric second line ART is generally effective and viral suppression rates are higher when baseline resistance testing is done. Double PI-based ART can also be used to increase second line ART options for children.

## UG8. CLINICAL AND IMMUNOLOGIC PROFILE OF TB/HIV CO-INFECTED CHILDREN AT A PAEDIATRIC HIV CLINIC IN UGANDA

**Authors:** H. Lukolyo\*, M. Murungi, D. Damba, A. Mandalakas, A. Kekitiinwa

**Location:** Baylor College of Medicine Children's Foundation of Uganda (Baylor-Uganda)

**Background:** Tuberculosis (TB) is one of the most common and deadliest opportunistic infections among people living with HIV in resource-limited settings. However studies describing the clinical characteristics and outcomes of children with TB/HIV co-infection are lacking.

**Methods:** This is a retrospective cohort analysis of all new cases of active TB among children 0-15 years diagnosed in 2013 at Baylor-Uganda. Data were extracted from the electronic medical record and descriptive statistical analysis was performed.

**Results:** There were 4,036 HIV-positive and HIV-exposed children ages 0-15 years active in care at the end of 2013. During 2013, 90 children were diagnosed with TB and started on anti-TB treatment (ATT); three were found to be HIV-negative and excluded from analysis. Of the 87 remaining cases, 43 (49.4%) were male with median age at TB diagnosis of 4.3 years (interquartile range (IQR) 6.5 years). Forty-six (52.9%) cases were diagnosed among children already on antiretroviral therapy (ART) while 41 (47.1%) cases were in ART-naïve patients. There were 82 (94.3%) pulmonary TB (PTB) and five (5.7%) extrapulmonary TB cases. Most PTB cases were diagnosed clinically. For 0-5 year-olds, the mean CD4 percent was 15.1% (IQR 13%) at TB diagnosis and increased to 28.0% (IQR 15%) after completion of ATT. For 5-15 year-olds, the median CD4 was 293/mm<sup>3</sup> (IQR 694/mm<sup>3</sup>) at TB diagnosis and increased to 776/mm<sup>3</sup> (IQR 565/mm<sup>3</sup>) by completion of ATT. The majority (60.8%) of children were malnourished at time of TB diagnosis; by ATT completion 88.7% had adequate nutrition, demonstrating a decreased odds of malnutrition (OR 0.057, 95% CI 0.023-0.14). Sixty-two (71.3%) patients completed ATT, while 21 (24.1%) died, one (1.1%) was lost to follow up and three (3.4%) transferred out prior to ATT completion.

**Conclusions:** In this population, the incidence of new TB cases was 22 per 1,000 children. This study demonstrated a high mortality rate of 24.1% among TB/HIV co-infected children. Most children were immunosuppressed and malnourished at time of TB diagnosis; those completing ATT demonstrated both immunologic and nutritional improvements. The few patients with bacteriologically confirmed TB highlights the challenge of accurate TB diagnosis in children.

## UG9. OUR LITTLE SOLDIERS: A PROSPECTIVE, RANDOMIZED CONTROLLED PILOT STUDY TO ASSESS THE IMPACT OF A CHILDREN'S BOOK INTERVENTION ON ADHERENCE TO ANTIRETROVIRAL THERAPY AMONG HIV-INFECTED CHILDREN AND ADOLESCENTS WITH TREATMENT FAILURE AT THE BAYLOR UGANDA CENTRE OF EXCELLENCE

Heather Lukolyo<sup>1\*</sup>, Jacqueline Balungi<sup>2</sup>, Robert Ricketts<sup>1</sup>, Elizabeth M. Keating<sup>1</sup>, Chris A. Rees<sup>1</sup>, Vincent Tuke<sup>2</sup>, Robert Iriso<sup>2</sup>, David Damba<sup>2</sup>, Adeodata Kekitiinwa<sup>1,2</sup>

1. Baylor College of Medicine, Department of Pediatrics 2. Baylor College of Medicine-Children's Foundation-Uganda

**Location:** Baylor College of Medicine Children's Foundation-Uganda

**Background:** Adherence to antiretroviral therapy is one of the most pressing issues facing children and adolescents living with HIV, yet few studies have assessed the effectiveness of adherence interventions among children. The proposed study will evaluate the impact of the *Our Little Soldiers* children's book on adherence and viral suppression among HIV-infected children and adolescents with virologic failure.

**Methods:** The proposed study is a blinded, prospective, randomized controlled pilot study which will recruit children 7-15 years old enrolled in care at Baylor-Uganda with virologic failure (viral load >1,000 cp/ml). Participants will be randomized to the book intervention plus standard care group or the standard care alone group. Both groups will complete questionnaires with questions addressing self-esteem, self-efficacy, perception of stigma, as well as caregiver attitudes towards medications. Patients in the intervention group will attend a reading class facilitated by counsellors with their caregiver on the day of their routine clinic visit, again one month after the initial visit, and a third time three months later. Counsellors will use a facilitator's handbook to lead an interactive session during which *Our Little Soldiers* will be read aloud and discussion questions will be interspersed throughout the reading. Each child-caregiver pair will be given a copy of *Our Little Soldiers* in their preferred language (English or Luganda) and encouraged to read and further discuss the book at home. Both groups will receive standard clinical care.

**Results:** The study will assess the impact of the reading intervention on virologic suppression, immune status, and adherence rates along with self-esteem and related topics.

**Conclusions:** A children's book delivered as part of a structured reading class for children and adolescents with virologic failure may be an effective tool to promote adherence.

## UG10. ANTIRETROVIRAL THERAPY AND ANAEMIA OCCURRENCE AMONG HIV-INFECTED CHILDREN ATTENDING BAYLOR-UGANDA.

Immaculate Nagawa<sup>1</sup>, Bonny Mulindwa<sup>1</sup>, Enock Muwanguzi<sup>2</sup>, Moses Matovu<sup>1</sup>, Annet Nalugo<sup>1</sup>, Gerald Agaba<sup>1</sup>, Alice Asimwe<sup>1</sup>, Vincent Tuke<sup>1</sup>, Robert Iriso<sup>1</sup>, Adeodata Kekitiinwa<sup>1</sup>.

<sup>1</sup>Baylor College of Medicine Children's Foundation Uganda.

<sup>2</sup>Mbarara University of Science and Technology.

**Background:** Anemia in HIV-infected patients can have serious implications, which vary from functional and quality-of-life decrements to an association with disease progression and decreased survival and it is estimated to be 90% prevalent in children living with HIV/AIDS on antiretroviral therapy (ART). This study aimed to determine the prevalence and morphological types of anemia associated with different ART regimen among HIV-infected children attending the Baylor-Uganda Clinic.

**Methodology:** A cross-sectional study was conducted on 378 HIV-positive children aged one to 12 years on ART. One milliliter of whole blood was collected from the participants in EDTA tubes for complete blood count test using the Beckman Coulter Act 5 Diff machine at Baylor-Uganda. A film comment was done on samples with hemoglobin <11.0g/dl to ascertain the morphology of the RBCs in regard to anemia using light microscope. Data generated was analyzed using SPSS.

**Results:** The prevalence of anemia was 133/378 (35 %). Of the children with anemia, 104/133 (78%) had normocytic, 18/133 (13.5%) had macrocytic while 11/133 (8.7%) had microcytic. 53/133 of the children with anemia were males while 80/133(60%) were females. Among the children with normocytic anemia 87/104(83%) were on AZT based regimen, 7/104(6.7%) were on D4T, 3TC, NVP while 10/104 (9.6%) were on ABC, 3TC, EFV. For microcytic anemia 6/11(54.5%) were on AZT based regimen, 2/11(18.18%) were on D4T, 3TC, NVP while 3/11 (27.27%) were on ABC, 3TC, EFV. For macrocytic anemia, 16/18(88.8%) were on AZT based regimen, 1/18 (5.5%) was on D4T, 3TC, NVP, 1(5.5%) was on ABC, 3TC, EFV.

**Conclusion:** Almost a third of these children had anemia with normocytic picture predominating associated with AZT based regimen.

#### **UG11. OUTCOMES OF THE SPUTUM INDUCTION PROCEDURE AT A LARGE PEDIATRIC AND ADOLESCENT HIV CLINIC IN KAMPALA**

**Authors:** \*Innocent Kasozi<sup>1</sup>, Margaret Nalugo<sup>1</sup>, Heather Lukolyo<sup>2</sup>, Miriam Murungi<sup>1</sup>, Jacqueline Balungi Kanywa<sup>1</sup>, Vincent Tukei<sup>1</sup>, Adeodata Kekitiniwa<sup>1</sup>

<sup>1</sup>Baylor College of Medicine Children's Foundation-Uganda, <sup>2</sup>Baylor College of Medicine, Houston-Texas, USA.

**Location:** Baylor College of Medicine Children's Foundation-Uganda

#### **Background:**

Diagnosis of tuberculosis (TB) is challenging in young children due to many factors including, inability to expectorate and pauci-bacillary disease. Sputum induction (SI) is a sputum collection method used for coughers who cannot expectorate, including young children above 6 months of age who are suspected to have TB. The procedure involves nebulization with salbutamol to dilate the bronchi followed by hypertonic saline to soak sputum, after which oropharyngeal irritation is done with a suction catheter. While Baylor-Uganda previously performed few SIs once weekly using space borrowed from the hospitals TB ward, the Baylor-Uganda recently began to offer SI onsite. Currently SIs are performed every working day all day.

**Methods:** This was a retrospective cross-sectional study to describe experiences with SI at Baylor-Uganda. We reviewed charts from the electronic medical record and lab and sputum induction registers.

**Results:** Between January-June 2015, a total of 186 clients underwent SI for suspected TB, including three (1.6%) exposed infants, 175 (94.1%) HIV-positive clients, and eight HIV-negative clients (4.3%). Nearly half (47.3%) were females. Of the 186 clients who underwent SI, 175 (95.7%) were able to produce an adequate sputum sample. All

participants kept their appointments for the sputum induction process and all results were received from the microbiology laboratory. Gene Xpert results were positive for tuberculosis bacilli in 4 (2.2%) of clients who underwent SI.

#### **Conclusions**

Sputum induction is a well-accepted, feasible procedure that can be effectively carried out within a clinic setting to aid in the diagnosis of TB in young children.

#### **UG12. ACHIEVING ONE-HUNDRED PERCENT EARLY INFANT DIAGNOSIS QUALITY OF CARE INDICATORS BY USE OF A TOLL-FREE LINE IN KARAMOJA**

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**Location:** Baylor College of Medicine Children's Foundation-Uganda

**Issues:** Karamoja region, in North Eastern Uganda has poor early infant diagnosis (EID) indicators evidenced by high proportion of exposed infants turning HIV-positive. There is marked delay in receiving dry blood spot (DBS) results other than delays by healthcare workers in giving DBS results to caregivers. Resultantly, there is a delay in initiation of HIV-positive infants on antiretroviral therapy (ART). DBS results are considered delayed if they took more than two weeks to reach the health facility (HF).

**Description:** Between October 2013 to March 2015, Baylor-Uganda embarked on onsite mentorships and coaching of EID service providers (presently known as Mother Baby Care Point [MBCP] service providers) in using a toll-free line provided by the Central Public Health Laboratories (CPHL) to follow-up DBS results in addition to the Hub system. MBCP focal persons would call CPHL in case of delayed receipt of DBS results at the HF. All calls to CPHL were answered.

**Lessons learned:** Of the 879 DBS samples from 56 HFs sent to CPHL, all the 879 (100%) sample results were received at HFs and 470 (53%) DBS results were given to caregivers. HF DBS result reception improved between January-March 2014 to January-March 2015 (80% versus 100%, p=0.0004). 61 of 897 (6.9%) DBS results were positive. This was a significant drop in positivity rate from 17% in October 2013 to March 2015 (17% versus 6.9%, p=0.003). All HIV-positive infants were initiated on ART. Gradually, Karamoja region is progressing to elimination of mother to child transmission of HIV (6.9% versus <5%). Use of a toll free line by HFs can result in one-hundred percent attainment of all EID quality of care indicators in Karamoja region.

**Next steps:** Baylor-Uganda has added client meetings to improve result giving to caregivers and monthly text messages to remind health workers to give results to caregivers as well as documentation of their actions. HFs in Uganda should use a toll free line to improve EID quality of care indicators.

### UG13. GETTING TO ZERO STOCK OUT RATES OF ESSENTIAL HIV/AIDS SUPPLIES AND LOGISTICS AT BAYLOR-UGANDA SUPPORTED HEALTH FACILITIES IN KARAMOJA REGION

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**Issue:** Health facilities (HFs) all over Uganda continue to report shortages of essential HIV/AIDS supplies and logistics. Shortage of such supplies significantly affect HIV treatment outcomes and exacerbate HIV related mortality and morbidity over time. It is very critical to reduce the unacceptably high rates of stock out of essential supplies and logistics for HIV/AIDS care and treatment at all Baylor-Uganda supported HFs in Karamoja region.

**Description:** Baylor-Uganda conducted didactic training on web based ordering of medical supplies and logistics, created personal identification names/passwords, onsite supplies and logistics management mentorships, monitored monthly levels of essential supplies and logistics, provided reminders to District Health Officers and HFs through short message signals (SMS), provided buffer stocks and redistributed supplies from HFs where they were in excess to those with shortages.

**Lessons learned:** By October 2013, 50% of the 56 supported HFs had no stock out of essential HIV supplies and logistics. Proportion of HFs with no stock out declined to 40% by December 2013 (50% versus 40%,  $p=0.108$ ). After inception of interventions, proportion of HFs reporting no stock out of essential HIV supplies and logistic rose from 40% to 52% ( $p=0.06$ , December 2013-March 2013), 52% to 87% ( $p<0.0001$ , March-June 2014), declined from 87% to 81% ( $p=0.23$ , June -September 2014), rose from 81% to 92% ( $p=0.001$ , Sept-Dec, 2014) and, stagnated at 92% between December 2014 to March 2015. Overall, proportion of HFs reporting stock out of essential HIV/AIDS supplies and logistics significantly dropped over the review period (December 2013-March 2015) from 50% to 8% ( $p=0.0014$ ). Significant reductions in the levels of stock out rates of essential HIV/AIDS supplies and logistics is highly possible with combinations of enhanced health worker skills in information technology, SMS alerts, Web based ordering and onsite mentorships.

**Next steps:** Attainment of zero stock out rates of essential HIV/AIDS supplies and logistics is feasible through a mix of evidence based strategies in Karamoja region.

### UG14. ENHANCING HIV QUALITY OF CARE INDICATORS THROUGH QUALITY IMPROVEMENT IN KARAMOJA REGION. A CASE STUDY OF NADUNGET HC III, MOROTO DISTRICT

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**Issues:** In Uganda, in past decades there was more focus on quantity and neglect of quality of health services. Nadunget Health Center (HC) had poor quality of care indicators (QOCI).

**Description:** Baylor-Uganda supported Nadunget HC through continuous quality improvement (CQI) mentorship, continuing medical education, and formation of CQI teams. CQI actions were formulated and journals developed. Chart reviews were re-conducted after two months. STATA v12 was used to analyze data using two sample test of proportion for significance. Probability values less than 5% ( $P<0.05$ ) were considered statistically significant.

**Lessons learned:** At baseline, among adolescents and adults that are ART Naïve, all HIV QOCI were at 0% with exception of cotrimoxazole coverage and Tuberculosis assessment at 100% respectively. For those on ART, the indicators were; ART adherence assessment (60%), cotrimoxazole coverage (100%), nutritional assessment using weight and height (0%), TB assessment (70%), CD4 assessment (40%), retention in care (50%) and counseling (0%). After two months of active CQI intervention, adolescent and adult ART naïve indicators were; Adherence assessment (0% to 100%,  $p=0.05$ ), cotrimoxazole coverage stagnated (100%), nutritional assessment (0% to 100%,  $p=0.05$ ), TB assessment stagnated at (100%), CD4 assessment (0% to 100%,  $p=0.05$ ) and counseling (0% to 50%,  $p=0.25$ ). However, for ART experienced adolescents and adults; Adherence assessment (60% to 100%,  $p=0.002$ ), cotrimoxazole coverage stagnated (100%), nutritional assessment (0% to 100%,  $p=0.0002$ ), TB assessment (70% to 100%,  $p=0.12$ ), CD4 assessment (40% to 100%,  $p=0.014$ ), retention in care (50% to 80%,  $p=0.24$ ) and counseling (0% to 50%,  $p=0.03$ ). Functional CQI teams and evidenced based CQI approaches can significantly improve all healthcare QOCI at all service delivery points. CQI approach is a powerful intervention in improving all QOCI.

**Next steps:** HIV service providers should adopt CQI approaches to provide quality HIV/AIDS services.

### UG15. EFFECT OF SUBSIDIZED TRANSPORT ON THE UPTAKE OF MATERNAL NEWBORN HEALTH SERVICES: EXPERIENCE OF THE BODA FOR MOTHER VOUCHER IN RWENZORI REGION

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**Location:** Baylor College of Medicine Children's Foundation-Uganda

**Issues:** Lack of transport has been highlighted as a major barrier to skilled birth attendance. The Every Mother Counts program, in partnership with Saving Mothers Giving Life (SMGL), in western Uganda established the Boda for Mother (BFM) community transport voucher system to improve access to maternal newborn health services.

**Description:**The BFM program was initiated in three districts of western Uganda (Kabarole, Kamwenge and Kyenjojo) in 2012. In Phase 1 a single voucher was designed to provide transport for delivery. In Phase 2 a six-in-one voucher pack for four antenatal care (ANC) trips, delivery and a post natal care (PNC) was developed. The vouchers are distributed by midwives and village health teams for ease of access by all pregnant women needing the service. 55 boda associations were registered across the three districts. Motorcycles were branded with BFM stickers and riders were equipped with reflector jackets and voucher registers. Their telephone numbers were displayed at health facilities and in communities.

**Lessons Learnt:**From inception in 2012 to March 2015, approximately 218,000 transport vouchers were distributed in the community. About one-third (32%) were utilized by pregnant women for delivery at health facilities, 44% were for ANC visits and 8% were for PNC visits. This represents a 46%, 60% and 70% increase in health facility deliveries, uptake of ANC and uptake of PNC services, respectively, across the programme districts.

**Next Steps:** Subsidised local transport increases uptake of maternal newborn health services. This model could be applicable in similar settings.

#### **UG16. IMPROVING ADHERENCE TO HIV CARE BY RETRIEVING LOST TO FOLLOW UP CLIENTS AND LINKING CLIENTS TO CARE AT SELECTED HEALTH FACILITIES IN WEST NILE REGION OF UGANDA**

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Location: Baylor College of Medicine Children's Foundation Uganda

**Issues:** In 2012, a baseline survey showed high rates of Loss to follow up (LTFU) and low rates of Linkage to HIV care of 30% and 19% respectively at some ART clinics the West Nile region of Uganda (HMIS 2012). To address LTFU, poor linkage to care and other problems in HIV care, Baylor Uganda designed the project "**Scaling up Comprehensive HIV/AIDS Services Including Provider Initiated Testing and Counseling, TB/HIV, OVC, Care and ART for Adults and Children in Eastern and West Nile Regions in The Republic of Uganda Under the President's Emergency Plan for AIDS Relief (PEPFAR)**"

The project is implemented in 16 districts in the Eastern and west Nile regions of Uganda.

**Program description:** Interventions supported by the project were: assessment of more health units for ART accreditation; capacity building for health workers; recruiting

more staff at health facilities; facilitating village health teams (VHTs), People with HIV/AIDS (PHA) groups and community linkage officers (CLOs) to follow up LTFU; providing desk phones for health facilities; holding regular review meetings with VHTs, PHA groups and District Health Team (DHT) and carrying out monthly/quarterly data collection to track progress.

**Lessons learnt:** After two years of implementation, there was a dramatic improvement in linkage to HIV care at health facilities from an average of 36.4% in 2012 to 119% in September 2014. Proportions of HIV clients LTFU dropped from 30% in 2012 to an average of 1% in September 2014.

The above interventions improved HIV clients' linkage to care and drastically reduced rates of LTFU at ART clinics.

**Next steps:** MOH and districts should consider including Volunteer counselors (RCTs) as part of established staff at ART clinics, especially in upcountry areas.

To utilize VHTs and PHA groups maximally, map every HIV client to a particular VHT or PHA group member.

Regular review meetings should be done by districts at all levels to improve quality of HIV care provided at health facilities.

Ministry of Health (MOH) and District Local Governments will need to prioritize planning for the above proven interventions.

#### **UG17. IMPROVING RETENTION IN CARE OF HIV EXPOSED INFANTS IN UGANDA: THE CONCEPT OF MOTHER-BABY CARE POINT**

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**Background:** In Uganda, efforts to eliminate mother-to-child transmission of HIV have seen a reduction of new paediatric infections from 27,000 (UNAIDS 2009) to 8,000 (UNAIDS 2013). However, with 70% of HIV Exposed Infants (HEIs) either lost to follow-up or without final outcomes at 18 months (National Supervision data, 2013), Ministry of Health recommended the establishment of the Mother-Baby Care Point (MBCP) to provide care for the mother-baby pair together at one service point, through 18 months post-partum. The purpose of this study was to establish early retention and same-day appointment keeping rates after enrollment into MBCP.

**Methods:** This was a cross-sectional assessment done in the setting of the Annual National Paediatric HIV services support supervision. A total of 84 health facilities were visited across the country. The study population included HIV positive mothers and their exposed babies enrolled in MBCP in June and July 2014. Pre-designed chart abstraction forms were used to collect data on HIV positive mothers' care cards and their HEIs for the first three monthly visits from enrolment at MBCP.

**Results:** 164 mother-baby pair records were reviewed, with 104 (63.4%) of these from lower level health facilities (HC III and HC IVs). Only two (1.2%) infants tested HIV+ at 1<sup>st</sup> PCR and the median age at testing was seven weeks. 74.4% of the mother and baby HIV care charts had been paired. A total of 153 (93%), 131 (80%) and 94 (57%) HEIs returned for the first, second and third monthly visits respectively. Of these, 130 (85%), 105 (80%) and 83 (88%) returned the same date with their HIV positive mothers for the first, second and third visits respectively. However, for HEIs that didn't return, 5(45%), 13(39%) and 7(10%) HIV positive mothers returned for the first, second and third monthly visits respectively.

**Conclusions:** Overall 43% of HEIs failed to return for the MBCP for the third monthly visit. At least 80% of those who did present had same-day appointments as their mothers at each visit. Strengthening same day appointments will improve retention of the mother-baby pairs in MBCP.

#### **UG18. INCIDENCE AND PREDICTORS OF TREATMENT FAILURE TO SECOND LINE ANTIRETROVIRAL THERAPY IN AN URBAN PEDIATRIC AND ADOLESCENT HIV CLINIC**

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**Location:** Baylor College of Medicine Children's Foundation-Uganda

**Background:** There are limited options for third line antiretroviral therapy (ART) in resource-limited settings such as Uganda, yet the number of people on second line ART is growing. We used socio-demographic, laboratory and treatment data to determine the incidence and predictors to second line treatment failure among young people living with HIV/AIDS enrolled in care at Baylor-Uganda, a large pediatric and adolescent HIV clinic in Kampala.

**Methods:** A retrospective cohort study was carried out among 298 young people receiving second line care and treatment at Baylor-Uganda between the period 2010 and 2013. Cox proportional Hazard models were used to determine the predictors of second line treatment failure.

**Results:** There were 65 (21.8%) cases of treatment failure (defined as viral load >1,000 cp/ml) among the 298 young people on second line during the follow up time of 12 (5-49.0) months. The incidence rate was 18.2 (14.3-23.2) per 100 person-years and the predictors associated with second line treatment failure were duration on ART medication of 1-2 years (HR=3.485, p=0.009), duration on ART of 3-4 years (HR=4.186, p=0.000), duration on ART of > 5years (HR=7.418, p=0.000), and adherence levels < 95% (HR=2.775, p=0.001).

**Conclusion:** This study found a relatively high rate of treatment failure on second line at a pediatric and adolescent HIV clinic in Kampala. Duration on ART and poor adherence were predictors associated with second line treatment failure.

#### **UG19. USE OF A STANDARDIZED CHECKLIST TO ASSESS PMTCT AND EID OUTCOMES AT 20 ART FACILITIES IN WESTERN UGANDA**

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**Issues:** In April 2013, Baylor-Uganda with support from the Centers for Disease Control and Prevention rolled out the new WHO prevention of mother to child transmission (PMTCT) option B+ treatment strategy in 7 districts of the Rwenzori region. Following two years of implementation of this new PMTCT policy, there was minimal site-specific data to describe recurrent onsite practice of PMTCT option B+ and early infant diagnosis (EID) care. The existing reporting system (District Health Information Software2) was designed to primarily report number of women tested for HIV, number of HIV-infected women initiated on antiretroviral therapy (ART) and proportion retained in care within 12 months of ART initiation; however it lacks information on status of HIV counseling and testing (HCT), PMTCT and EID services within maternal child health (MCH) clinics including client tracking.

**Description:** During routine technical assistance visits with use of a standardized checklist, Baylor-Uganda in partnership with CDC conducted a rapid assessment of PMTCT and EID services at 20 PEPFAR-supported health facilities in four districts in western Uganda. Fifteen (75%) health facilities implemented routine provider-initiated HIV testing and counseling (PITC) within MCH clinics using trained lay counselors, and 18 (90%) provided lifelong ART for PMTCT within antenatal, labour and delivery as well as postnatal clinics. While all facilities had established mother-baby care points (MBCPs), only 30% of HIV exposed babies received DNA PCR testing and initiated cotrimoxazole preventive therapy within the recommended two months of age. Nine (45%) MBCPs had up-to-date appointment registers and standard operating procedures for follow-up of mother-exposed baby pairs. Of the 18 facilities with records of HIV-infected infants, 16 (89%) had evidence of linkage to care and initiation of ART.

**Lessons Learned:** The standardized checklist was useful in identifying best practice PMTCT-EID facilities and in highlighting facilities needing urgent remediation. The tool facilitated quick assessment of site performance and helped in planning for subsequent mentorship to poorly performing health facilities.

**Next Steps:** Use of the standardized checklist should be increased to monitor health facility performance and to graduate facilities from poor performance to good performance. The checklist should be consolidated in implementation of onsite mentorship in comprehensive HIV care.

#### **UG20. IMPACT OF IMPLEMENTING "TEST AND TREAT" POLICY ON PAEDIATRIC ART ENROLMENTS AND COVERAGE IN UGANDA**

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**Background:** In 2013, it was estimated that 193,500 of children under 15 years were living with HIV in Uganda and 83% would be eligible for treatment according to WHO guidelines, which recommended lifelong treatment for all children under 5 years and all older patients based on clinical or immunologic staging. However despite efforts to scale up pediatric treatment, coverage in 2013 remained low at 22%. Programmatic barriers to ART initiation in children include the perception that pediatric ART is complicated, unavailability of CD4 testing and difficulty in accurate clinical staging. In September 2013, Uganda adopted a "test and treat" antiretroviral therapy (ART) policy for all HIV-infected children under 15 years of age to simplify recommendations and remove programmatic barriers to ART initiation in children.

**Methods:** The Ministry of Health launched and disseminated these guidelines to all stakeholders through 3 day health facility-based trainings and mentoring during the period January to December 2014. To evaluate the impact of this new policy a comparison was made between the number of children initiated between June-December 2013 and those initiated between January-June 2014.

**Results:** By December 2014, 1340 (84%) of 1600 ART providing health facilities and 17,238 health workers were trained on the new guidelines. There was 1.4 fold increase in the number of HIV-infected children newly initiated on ART from 5540 in June-Dec 2013 to 9145 in Jan-June 2014. The increase was greater among children aged 5-14 years and 2-4 years (2.4 and 1.4 fold respectively), however there was no change among the under 2 year olds. Pregnant adolescents constituted 2.5% (229/9145) of children less than 15 years of age enrolled on ART in Jan-June 2014. Pediatric ART coverage has increased from 22% (43,481/193,500) in December 2013 to 27% (51,305/193,500) in June 2014.

**Conclusions:** Expanding eligibility criteria increases initiation of older children on ART but to enroll those who are at higher risk of disease progression/mortality, more work needs to be done to improve early infant diagnosis and early case detection.

#### **UG21. SETTING UP A MOTIVATED VILLAGE HEALTH TEAM SYSTEM FOR DEMAND CREATION AND MORTALITY SURVEILLANCE - THE SAVING MOTHERS GIVING LIFE EXPERIENCE**

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**Location:** Baylor College of Medicine Children's Foundation-Uganda

**Issues:** In 2001, the Ministry of Health (MoH) developed the Village Health Team (VHT) strategy to strengthen the delivery of health services at the household level. Until the launch of the Saving Mothers Giving Life (SMGL) initiative in 2012, the system was non-functional in Kabarole, Kamwenge, Kibaale and Kyenjojo districts. In order to mobilize communities for health facility delivery and to accurately measure maternal mortality in the project districts, the system was revitalized.

**Description:** One VHT from each village was selected and trained using the MoH Guide for promotion of MNH services and to be able to perform SMGL M&E functions. Trainings sessions included: Importance of ANC, Importance of HCT during pregnancy, Essential care during labor and delivery, Care of mothers and newborns in the 1<sup>st</sup> week after delivery, Home visits, and VHT register filling. Each was then facilitated with a bicycle, a pair of gumboots, a rain coat, umbrella, phone, pens, counter book and T-shirt, referral books and a VHT register. In addition, they were provided a monthly bicycle maintenance stipend of about 10 USD. VHTs meet regularly to review, share and submit their village reports as well as discuss challenges met in their day-today work and solutions.

**Lessons Learned:** The project has 4,223 VHTs empowered for MNH service delivery. VHTs have mobilized communities for care through availing transport vouchers, drama shows and home visits. VHTs have sold 11,962 vouchers, and visited 450,000 households at least four times in the year. VHTs have referred mothers and newborns with danger signs from the community to health facilities for antenatal, delivery, and post natal care services respectively. VHTs have registered and reported 806 deaths to women of reproductive age.

**Next Steps:** The VHT system established by MoH for health promotion has been instrumental in demand creation and maternal mortality surveillance for the project in Uganda. The model may be applicable in other low-resource settings.

#### **UG22. INTEGRATING EARLY CHILDHOOD DEVELOPMENT IN HIV CARE: EXPERIENCES FROM A PEDIATRIC HIV CLINIC IN UGANDA**

**Authors:** \*Sandra Amodot<sup>1</sup>, Heather Lukolyo<sup>2</sup>, Rita Atugonza<sup>1</sup>, Vincent Tukei<sup>1</sup>, Adeodata Kekitiinwa<sup>1</sup>

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**Location:** Baylor College of Medicine Children's Foundation-Uganda

**Issues:** The impact of human immunodeficiency virus (HIV) on children is complex and multifaceted. Many HIV-infected children are single or double orphans, face material hardships including food insecurity, school drop-out and other problems, or deal with grief or stigma on a daily basis. In addition, a large proportion of HIV-infected children—up to 60-85% in some studies in low-resource settings—have some form of developmental delay, due to chronic malnutrition, HIV encephalopathy or other causes. Children living with HIV thus have unique developmental needs, which can be addressed through early and routine interventions.

**Description:** Baylor College of Medicine Children's Foundation-Uganda (Baylor-Uganda) is a high-volume paediatric HIV clinic in Kampala, Uganda serving over 4,000 HIV-infected and -exposed children and their families. As part of a holistic package of care including antiretroviral therapy, prevention and treatment of opportunistic infections, Baylor-Uganda integrates early childhood development (ECD) services at multiple levels. These include ensuring quality antenatal care; educating teenage parents on self-care, parenting and nutrition; providing routine counselling services for parents and children; leading family support groups; identifying and enrolling malnourished children in nutrition services; supporting caregivers to identify developmental milestones; and routine screening of all children for developmental delay to facilitate early diagnosis and referral for additional services. Moreover, all services are provided in child-friendly spaces with developmentally-appropriate play therapy sessions.

**Lessons Learned:** Provision of ECD services can be integrated into a holistic care package for children living with HIV in resource-limited settings in sub-Saharan Africa, where the burden of HIV is highest.

**Next Steps:** Further research is needed to better understand the prevalence of development delay and effectiveness of ECD interventions in such settings.

### **UG23. HIV/TB PROGRAMMING THROUGH HEALTH SYSTEMS STRENGTHENING**

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Location: **Baylor College of Medicine Children's Foundation Uganda**

**Issues:** With a high burden of HIV and the limited availability of services, there was a need to scale up HIV care and treatment in the eight districts of Teso Sub-region. In 2011 a health systems strengthening approach was adapted to rapidly increase the availability of quality HIV care and treatment services. Baylor Uganda working with the Ministry of Health provided technical and financial support.

**Description:** During the National expansion program, in the initial phases, Baylor Uganda worked directly to operate 5 clinics in three districts to provide HIV care and treatment services. With high regional HIV prevalence of 5.3% it was clear that there was a high unmet need, therefore, indirect implementation was started in 2011 by strengthening the health systems in eight districts so as to enable them provide the services themselves. Due to the weak health systems Baylor devised a cluster model that increased contact with the health facilities. Providing training and mentorships at the health facilities rather than out of station. Over time ownership has been inbuilt through integration of HIV into the health plans and budget and bottom up planning involving the major stakeholders. Scale up from 5 facilities to 123 health facilities providing HIV care and 77 accredited to provide ART. Monitoring of performance has been done

though the national web based DHIS2 system.

**Lessons learned:** Strengthening of government health systems is critical in ownership and sustainability of HIV programming. The local governments appreciate the model Baylor used by directly fixing the weak systems components thus enabling service provision. The challenge is there is reducing grants from central governments to the districts thus hampering supervision by the district leadership. Population pressure that puts pressure on the current health system.

**Next steps:** There is need to extend the project for an additional five years in order to consolidate the gains but also expand to the health facilities not yet reached. Application will be made to CDC and other potential funders for support. A plan for long term sustainability needs to be worked out with the local governments and Ministry of health.

### **UG24. REDUCTION IN NEONATAL MORTALITY IS FEASIBLE: THE FORT PORTAL REGIONAL REFERRAL HOSPITAL NEONATAL INTENSIVE CARE UNIT EXPERIENCE**

**Authors:** \*V.Tumukunde<sup>1</sup>, A.R. Asiimwe<sup>1</sup>, D. Murokora<sup>1</sup>, C. Olaro<sup>2</sup>, E. Katuutu<sup>2</sup>, A. Kekitiinwa<sup>1</sup>, J. Nankunda<sup>3</sup>

**Author Affiliation:** <sup>1</sup>Baylor College of Medicine Children's Foundation-Uganda, SMGL project

<sup>2</sup>Fort Portal Regional Referral Hospital, <sup>3</sup>Makerere School of Medicine, Department of Paediatrics

**Issues:** The Saving Mothers' Giving Life Project with a goal of reducing maternal and newborn mortality by 30% annually for the period 2014 – 2017 is implemented in four districts in western Uganda (Kabarole, Kamwenge, Kyenjojo and Kibaale). Following the pilot phase, maternal mortality significantly reduced by 30% while neonatal mortality increased from 9% to 16%. This was attributed to increased number of facility-based births not complemented by improved newborn care. In 2014, the ELMA Foundation supported an Enhanced Newborn Care Intervention with the goal of increased coverage of essential newborn care services from 50% to 95% over three years in the four districts. A case study of Fort Portal regional referral hospital (FRRH) to demonstrate the reduction in neonatal mortality is presented.

**Description:** In July 2013, FRRH established a 14-bed capacity neonatal intensive care unit (NICU) equipped with 4 incubators, 5 infant warmers with phototherapy lamps, 2 oxygen concentrators, 2 pulse oximeter sensors, 5 baby cots, ambu bags and face masks for resuscitation. Staff included 10 newborn care staff, 3 trained using Helping Babies Breathe-plus curriculum, 5 with advanced skill in care of the sick newborns, and all having been mentored in newborn resuscitation and essential newborn care.

**Lessons Learned:** The number of sick newborns admitted and treated at FRRH NICU increased from 53 in January 2014 to 132 in December 2014. Of the admissions at FRRH 21% (199) were referrals from lower health facilities, of which 62% (n=124) were from health centre IIIs. Indications for admission were birth asphyxia 43%, prematurity 34%, neonatal septicaemia 16% and other complications 7%.

The proportion of admissions that died during the period July-December 2013 n=283, versus July –December 2014 n=580 reduced from 28% to 13%.

**Next steps:** Early neonatal mortality can be reduced with enhanced newborn care intervention.

#### **UG25. DOES SINGLE DOSE ART REGIMEN SIGNIFICANTLY IMPROVE ADHERENCE? A CASE OF ADOLESCENTS ATTENDING A LARGE PEDIATRIC AND ADOLESCENT HIV CLINIC IN KAMPALA, UGANDA**

Authors: \*Victoria Ndyabangi<sup>1</sup>, Margaret Nalugo<sup>1</sup>, Jacqueline Balungi Kanywa<sup>1</sup>, Levi Mugenyi<sup>2</sup>, Vincent Tukei<sup>1</sup>, Adeodata Kekitiinwa<sup>1</sup>

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<sup>2</sup>Infectious Diseases Research Collaboration, Mulago, Kampala, Uganda.

**Location:** Baylor College of Medicine Children's Foundation-Uganda

**Background:** Worldwide adolescents living with HIV have been identified as a high risk group for HIV transmission due to poor adherence to combined antiretroviral therapy (cART). The purpose of this study was to determine whether single dose cART regimen significantly improves adherence among adolescents.

**Methods:** This was a retrospective cohort study. Data was retrieved from the electronic medical record. The participants were adolescents 10-19years enrolled at a pediatric and Adolescent HIV clinic between 1<sup>st</sup> January, 2010 and 31<sup>st</sup> December, 2014. Adherence was assessed using pill count. Single dose was defined as taking once daily, and multiple dose regimen was defined as taking more than once a day. Data was analyzed using STATA 12. Adherence was dichotomized into optimal and sub-optimal categories where the former was defined as adherence of at least 95% and the latter as adherence below 95%.

**Results:** After data cleaning, a total of 205 participants were available for analysis with a number of visits ranging from 1 to 58. The mean age was 13.6 (SD= 2.5) years, median CD4 count was 534.5 (IQR= 412-729), mean CD4 percent was 24.6 (SD=8.7). The majority were females 124 (60.5%). Six percent had poor adherence, 28.3% had good adherence, 8.8% had fair adherence, 29.8% had not brought their pills and 27.3% were not on cART. Participants taking single dose cART regimen were 23 (11.2%). Age, gender and CD4 percent were significantly associated with adherence. Age Odds ratio (OR) = 1.06 (95% CI =1.01-1.11, P =0.027). Females were 29% more likely to adhere to their ART drugs than the males OR=1.29 (95% CI=1.01-1.66, P=0.045), and CD4 percent OR=1.01 (95% CI=1.00 – 1.02, P=0.043). CD4 count was not associated with adherence P=0.570. There was no effect on taking single or multiple dose ART regimen on adherence (unadjusted OR= 1.23, 95%CI= 0.81-1.89, P=0.329) and after adjusting for age, gender and CD4 percent (adjusted OR=1.12, 95% CI=0.73-1.72, P=0.601).

**Conclusion:** Single dose ART regimen does not significantly improve adolescent adherence, however, more studies should be done to characterize other factors that can affect adherence among adolescents.

#### **UG26. ACCURATE MEASUREMENT OF FACILITY MATERNAL MORTALITY; THE PREGNANCY OUTCOMES MONITORING SURVEY METHODOLOGY**

Authors: \*Vincent Kamara<sup>1</sup>, A.R. Asiimwe<sup>1</sup>, B. Kunihiro<sup>1</sup>, G. Opio<sup>2</sup>, A. Nalutaaya<sup>2</sup>, B. Picho<sup>2</sup>, Dan Murokora, Adeodata Kekitiinwa<sup>1</sup> and Frank Kaharuza<sup>3</sup>

<sup>1</sup>Baylor College of Medicine Children's Foundation -Uganda, <sup>2</sup>Infectious Diseases, Institute Makerere University, <sup>3</sup>Makerere College of Health Science School of Public health

**Background :** The Saving Mothers Giving Life project in its second phase aims to reduce maternal mortality by 30% annually. However, during the pilot phase it was realized that the electronic District health information System (DHIS2) did not capture all maternal complications and deaths occurring in health facilities (HFs). A pregnancy outcomes monitoring survey (POMS) was initiated to bridge this gap.

**Methods:** In 2012, midwives and records assistants from supported HFs in Kabarole, Kamwenge, Kibaale and Kyenjojo in western Uganda were trained. Training lasted four days and entailed review of definitions for different complications, the obstetric interventions, survey tools to be used in data extraction and how data was to be triangulated from the various maternal and child registers. Data on individual complications of pregnancy and for deaths was collated from several registers and captured a database that utilizes a line listing format. Complications and deaths identified in other registers were entered into the maternity register for completeness.

**Results:** Between January-December 2014, a total of 4,800 maternal complications were treated representing 63% met-need for obstetric care compared to 1,619 reported in DHIS2. Whereas POMS showed maternal mortality rate at 295 deaths per 100,000 live births, DHIS2 data reported it at 130 per 100,000 live births. Cause-specific death not documented in DHIS2 included obstetric hemorrhage (n=66), obstructed labor (n=70), uterine rupture (n=40), eclampsia/preeclampsia (n=40), postpartum sepsis (n=36), complications of unsafe abortion (n=19).

**Conclusion:** The DHIS2 system did not capture all maternal complications and deaths; however the POMS approach offers a promising solution.

#### **UG27. STRENGTHENING EMTCT & EID PROGRAM PERFORMANCE THROUGH MOBILE TECHNOLOGIES IN UGANDA**

Authors: Willy B. Kafeero<sup>1</sup>, Emmanuel Mugisa<sup>1</sup>, Denise J. Birungi<sup>1</sup>, David Damba <sup>1</sup>, Albert Maganda<sup>1</sup>, Robert Iriso<sup>1</sup>, Adeodata Kekitiinwa<sup>1</sup>

<sup>1</sup>Baylor College of Medicine Children's Foundation-Uganda, P.O Box 72052 Kampala Uganda

**Location:** Baylor College of Medicine Children's Foundation of Uganda (Baylor-Uganda)

**Background:** In Uganda, health facility in-charges submit EMTCT data from health facilities to the Ministry of Health (MOH) operated District Health Information System monthly. The reports do not capture data on pregnant women receiving HIV counseling and testing at their first ANC visit, the proportion of pregnant women with known HIV positive results at the first ANC, the total of missed appointments within the ANC, or adequate ARV and test kit stock out data. In response, the MOH and CDC-funded META project rolled

out a weekly mobile phone text message (SMS) reporting system in February 2013 supported by midwives working at health facility level. Baylor-Uganda is mandated by CDC to coordinate weekly PMTCT SMS reporting at 375 public health facilities in 23 districts and to update a weekly early infant diagnosis (EID) dashboard for real time reporting of infants' DNA PCR results.

**Methods:** Purposive sampling technique was used to select midwives with mobile phone contacts. A total of 1179 midwives from 275 health facilities were trained on how to submit data on 9 PMTCT indicators using their mobile phones. The midwives then submit their health facility PMTCT data for the previous week to a toll free SMS number.

**Results:** Through intensified monitoring and follow up through biweekly SMS and phone call reminders, inclusion of multiple users per facility, engagement of district health

officers, and weekly and monthly feedback to stakeholders (to inform evidence-based decision making), the overall reporting rate increased by over 4%. The average weekly SMS reporting rate for January-March 2014 was 69% and increased to 100% from October-December 2014. The stock out of ARVs and test kits reduced from 47 facilities to 2 and of test kits from 68 to 5. 98% of EID results returned to the facility on time and were provided to caregivers, and all positive infants were stated on ART timely. There was also a significant reduction in mothers missing appointments from 187 in October 2013 to 27 in October 2014.

**Conclusion:** Mobile technologies that enhance the timeliness of data collection and reporting and inform decision making are essential to virtual EMTCT.

## APPENDIX 1.0

### 1.1 CASE REPORT: MAUNCHAUSEN'S SYNDROME BY PROXY IN PEDIATRIC HIV CARE IN THE RESOURCE LIMITED SETTING

Table 1. Infant's Laboratory Findings

	Age (Mo)	Adherence (%)	VL copies/mm3	CD4 Cell/mm3	CD4%	Caregiver
Aug-12	8			739	50	Mother
Dec-12	12	96-102	750 000	560	19	Mother
Feb-13	14	97-99	750 000	380	15	Mother
May-13	17	95-100	750 000	709	13	Mother
Aug-13	20	99-115	750 000	878	10.9	Mother
Dec-13	24	99-106	750 000	952	8	Mother
Feb-14	26	97-105				Admitted
Apr-14	28	100-102	1 400	928	15	Aunt
May-14	29	92-105	740	1093	20	Aunt
Jul-14	31	100-105	<400	1031	20	Aunt
Oct-14	34	100-106	<400			Aunt

### 1.2 THE IMPORTANCE OF BEING CLINICAL: WHY BEING AN EXPERT – DESPITE XPRT - IN CLINICAL DIAGNOSIS OF TB REMAINS CRUCIAL WITHIN THE BIPAI NETWORK

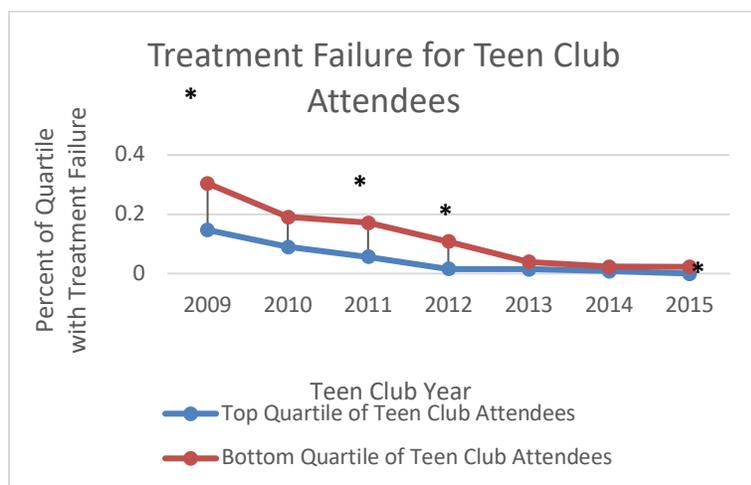
Table 1. Childhood TB Data for COEs in Tanzania, Uganda and Swaziland from 2013 through 2013-2014

Characteristic	Tanzania		Swaziland		Uganda	
	Number	%	Number	%	Number	%
Referred for TB diagnostics	511		562		728	
Diagnosed with TB disease	177	34.6%	79	14.1%	198	27.2%
Diagnosed with TB disease and started ATT	173	97.7%	79	100.0%	198	100.0%
Age range in years with TB disease (median)	0.3-15	(4.5)	0-14	(4.5)	0.2-14.7	(3.0)
Females with TB disease	81	45.8%	40	50.6%	95	48.0%
TB/ HIV co-infected	101	57.1%	68	86.1%	192	97.0%
EPTB	17	9.6%	5	6.3%	25	12.6%
<b>Of those diagnosed with "TB Disease":</b>						
# who performed sputa	123	69.5%	67	84.8%	42	21.2%
-# with smear	123	69.5%	29	36.7%	42	21.2%
-# with culture	110	62.1%	41	51.9%		0.0%
-#with geneXpert	123	69.5%	67	84.8%	23	11.6%
# who had CXR (or imaging)	110	62.1%	44	55.7%	129	65.2%
# who had TST	151	85.3%	0	0.0%	64	32.3%
# who had FNA/biopsy	21	11.9%	0	0.0%	6	3.0%
# with no diagnostic testing/results (i.e. no CXR, no	7	4.0%	16	20.3%	47	23.7%

sputum, no TST, etc)						
# bacteriologic <b>confirmed</b> diagnoses	27	15.3%	10	12.7%	13	6.6%
# <b>probable</b> TB diagnoses	115	65.0%	60	75.9%	136	68.7%
# of <b>possible</b> TB diagnoses	35	19.8%	9	11.4%	49	24.7%

ATT=anti-tuberculosis therapy; EPTB=extrapulmonary TB; CXR=chest x-ray; TST=tuberculin skin testing; FNA=fine needle aspiration

### 1.3 THE IMPACT OF TEEN CLUB ON HIV-POSITIVE ADOLESCENTS

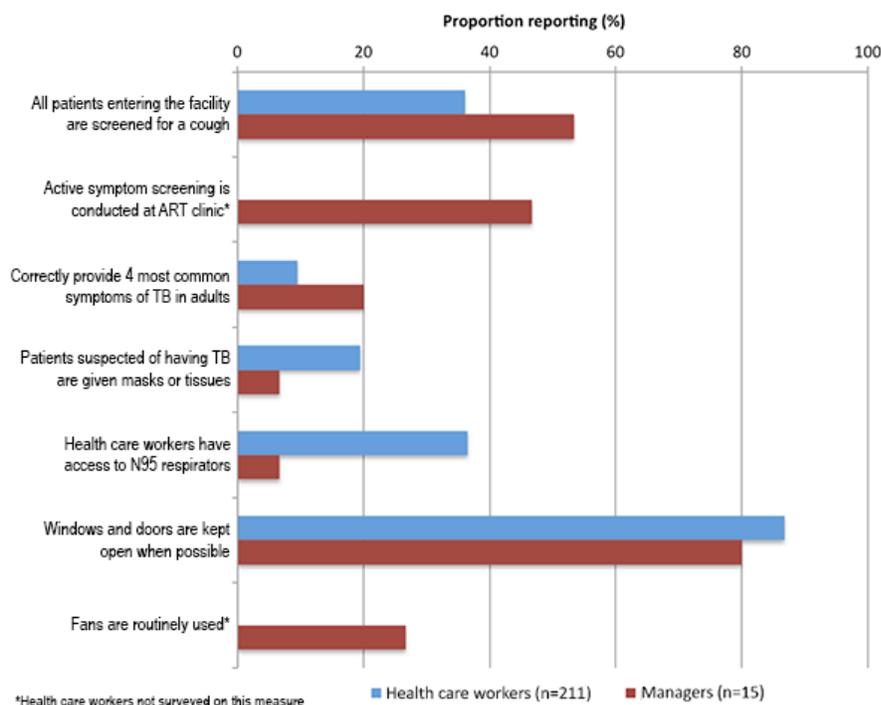


### 1.4 HIV KNOWLEDGE AMONG TEEN CLUB PARTICIPANTS IN LESOTHO

Group	Completed surveys	% Correct	% Incorrect	% Don't Know
Maseru (younger)	201	42%	33%	19%
Maseru (older)	202	63%	25%	10%
Leribe SCOE	100	52%	29%	15%
Botha-Bothe SCOE	74	59%	23%	16%
Qacha's Nek SCOE	52	55%	25%	16%

## 1.5 ASSESSING TUBERCULOSIS INFECTION PREVENTION MEASURES AND BARRIES TO CARE FOR HEALTHCARE WORKERS IN PUBLIC HEALTH FACILITIES IN MALAWI

**Figure 1.** Proportion of health care workers and managers reporting on select infection prevention and control measures

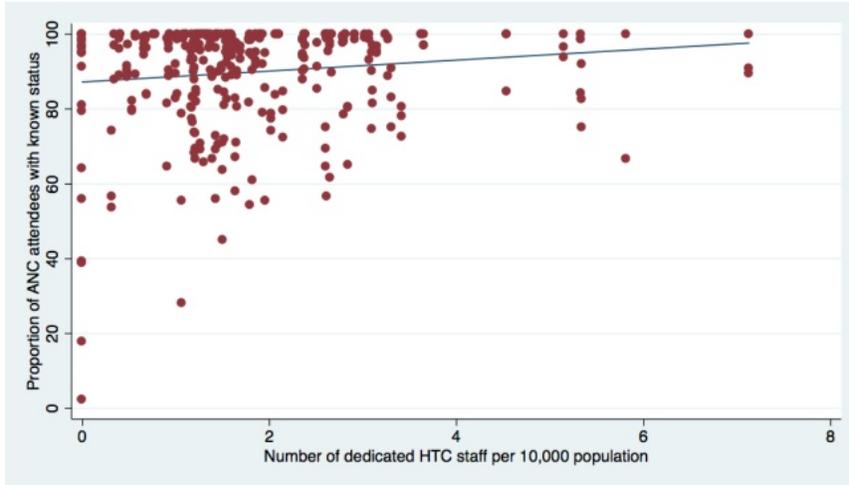


## 1.6 TEEN SUPPORT LINE: BRIDGING THE GAPS IN ACCESS TO QUALITY PSYCOSOCIAL SUPPORT AND CARE SERVICES FOR ADOLESCENTS LIVING WITH HIV (ALHIV) IN MALAWI USING AN HIV-SPECIFIC CELLULAR HOTLINE SERVICE

Total	All Callers N = 444	Female N = 217	Male N= 205	Age 12-15 N=204	Age 16-19 N=151
Clinic inquiries	25% (108)	18% (40)	<b>33% (67)</b> <b>P=0.002</b>	<b>37% (75)</b> <b>p=0.0001</b>	14% (21)
ART/Adherence	21 (91)	22 (46)	22 (44)	23 (46)	21 (31)
Stigma/Discrimination	17 (75)	<b>24 (53)</b> <b>p=0.0001</b>	9 (16)	12 (28)	16 (23)
SRH/Relationships/Disclosure	11 (37)	13 (28)	9 (19)	2 (4)	<b>25 (38)</b> <b>p=0.0001</b>
General Medical	10 (44)	6 (13)	15 (31)	11 (22)	9 (14)
**Other topics	16 (59)	17 (20)	12 (24)	15 (30)	15 (22)

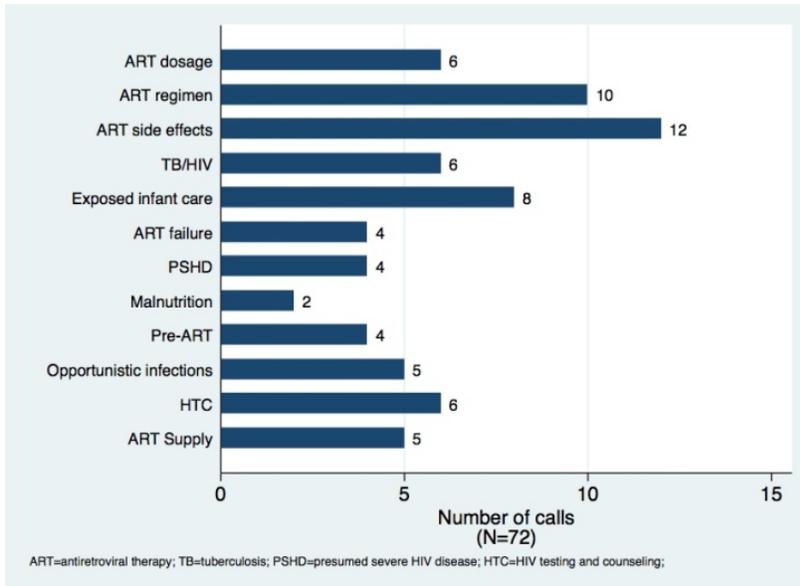
### 1.7 QUANTIFYING FACILITY-LEVEL HUMAN RESOURCES FOR HIV TESTING AND COUNSELING

Figure 1. Linear regression of number of dedicated HTC staff per 10,000 people and ANC testing coverage



### 1.8 UTILIZATION OF A PAEDIATRIC CLINICAL CARE HOTLINE FOR HEALTH CARE WORKERS IN MALAWI

Figure 1. Categories of questions asked by callers of the paediatric hotline



### 1.9 UTILIZATION OF A PAEDIATRIC CLINICAL CARE HOTLINE FOR HEALTH CARE WORKERS IN MALAWI

Table 1. Characteristics of patients

Characteristic	n	(%)
Sex <sup>1</sup>		
Male	36	(65)

Female	19	(35)
Not pregnant/lactating	16	(84)
Pregnant/lactating	3	(16)
Age <sup>2</sup>		
<1 year	10	(16)
1-5 years	13	(20)
6-14 years	9	(14)
15-21 years	7	(11)
22+ years	25	(39)
HIV <sup>3</sup>		
Positive	54	(93)
On ART	46	(85)
Not on ART	8	(15)
Negative	3	(5)
Exposed	1	(2)

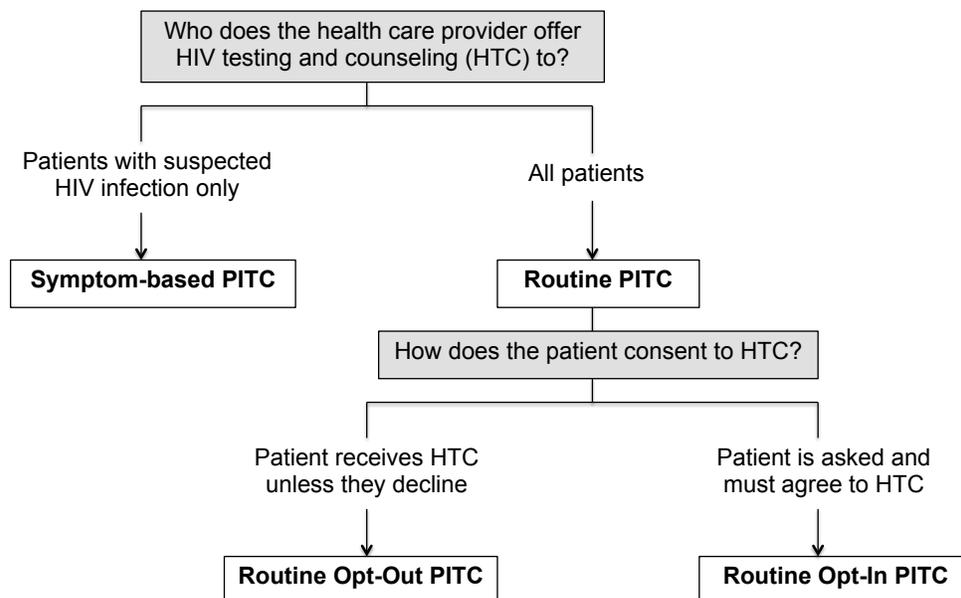
1 Of 55 with available data

2 Of 64 with available data

3 Of 58 with available data

#### 1.10 LOST OPPORTUNITIES TO IDENTIFY AND TREAT HIV-INFECTED PATIENTS: RESULTS FROM A COMPREHENSIVE STUDY OF PROVIDER-INITIATED HIV TESTING AND COUNSELING (PITC) IN MALAWI

**Figure 1: Definitions of provider-initiated testing and counseling models**



### 1.11 LOST OPPORTUNITIES TO IDENTIFY AND TREAT HIV-INFECTED PATIENTS: RESULTS FROM A COMPREHENSIVE STUDY OF PROVIDER-INITIATED HIV TESTING AND COUNSELING (PITC) IN MALAWI

**Table 1.** Reported PITC model and use of PITC register according to department type

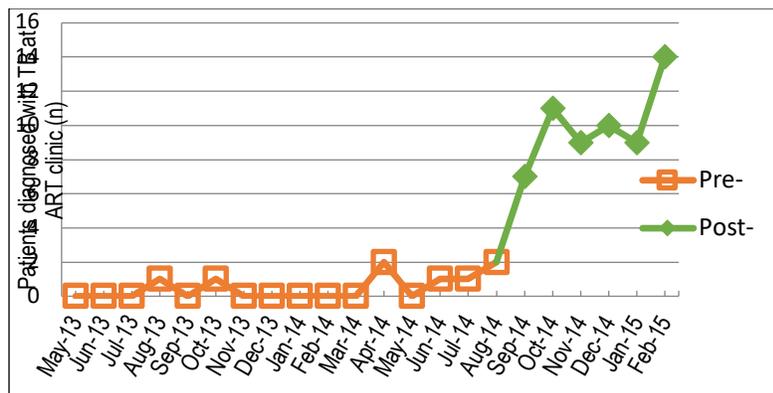
Department type	Type of PITC reported			PITC Register in use n (%)
	Routine opt-out n (%)	Routine opt-in n (%)	Symptom-based n (%)	
TB Clinic	5/12 (42)	7/12 (58)	0/12 (0)	12/12 (100)
Antenatal Clinic & Maternity Ward	20/24 (83)	4/24 (17)	0/24 (0)	24/24 (100)
Family Planning Clinic	1/11 (9)	7/11 (64)	3/11 (27)	8/11 (73)
STI Clinic	3/6 (50)	3/6 (50)	0/6 (0)	6/6 (100)
Outpatient Department & Under-5 Clinic	2/24 (8)	2/24 (8)	20/24 (83)	5/24 (21)
Malnutrition Clinic	7/10 (70)	2/10 (20)	1/10 (10)	5/10 (50)
Immunization Clinic	2/12 (17)	2/12 (17)	8/12 (67)	4/12 (33)
Adult & Pediatric Inpatient Wards	1/19 (5)	3/19 (16)	15/19 (79)	5/19 (26)
Totals	41/118 (35)	30/118 (25)	47/118 (40)	69/118 (59)

### 1.12 A BASELINE ASSESSMENT OF TUBERCULOSIS OUTCOMES AND DIAGNOSTIC PRACTICES TO INFORM DEVELOPMENT OF A COMMUNITY-BASED TB/HIV PROGRAM IN CENTRAL MALAWI

	Cured	Completed Treatment	Died	Failed Treatment	Lost to follow-up	Transfer out
<b>Children</b> (n=299)	20 (7%)	195 (65%)	23 (8%)	0	59 (20%)	2 (<1%)
<b>Adults</b> (n=3416)	1018 (30%)	1214 (36%)	401 (12%)	48 (1%)	637 (19%)	98 (3%)

### 1.13 YIELD OF COMMUNITY HEALTH WORKER-DRIVEN INTENSIFIED CASE FINDING FOR TUBERCULOSIS AMONG HIV-POSITIVE IN RURAL MALAWI

Figure 1. Monthly rate of patients diagnosed with TB at ART clinic pre-/post-intervention

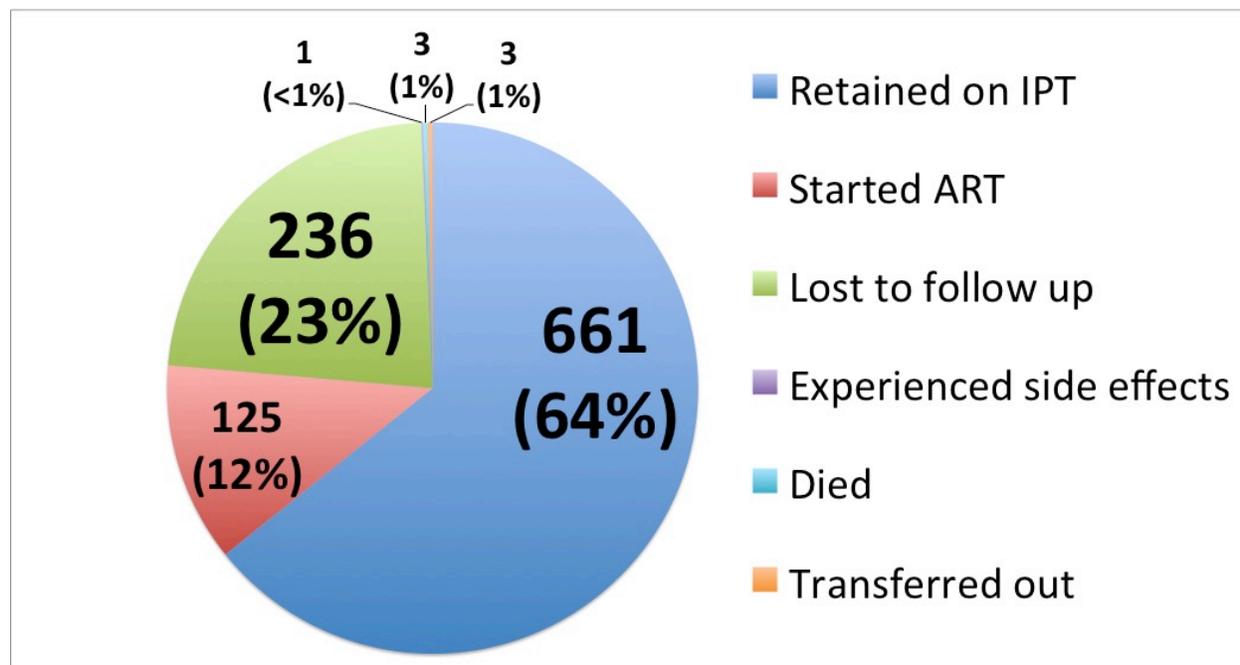


1.14 ISONIAZID PREVENTIVE THERAPY AMONG PRE-ART PATIENTS IN MALAWI: A REPORT ON UPTAKE AND RETENTION

**Table 1.** IPT utilization in the pre-ART program

<b>Total Pre-ART records reviewed</b>	<b>3,038</b>	<b>100.0%</b>
Total never started on IPT	2,009	66.1%
Total started on IPT	1,029	33.9%
No IPT interruption	760	73.9%
≥ 1 IPT interruptions	269	26.1%

1.15 ISONIAZID PREVENTIVE THERAPY AMONG PRE-ART PATIENTS IN MALAWI: A REPORT ON UPTAKE AND RETENTION



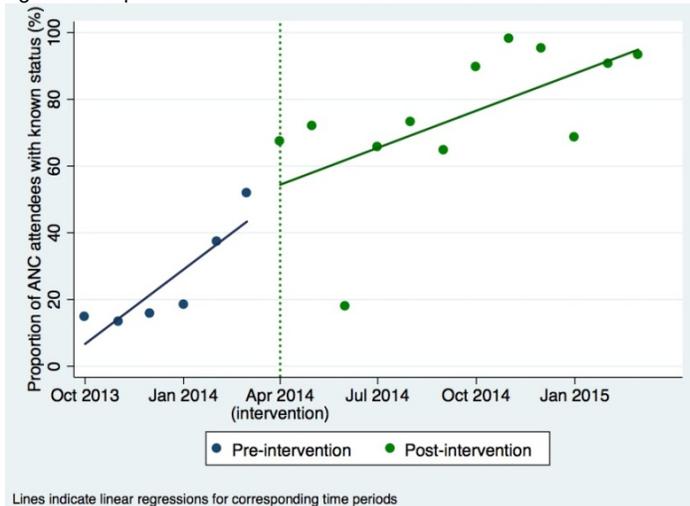
1.16 THE IMPACT OF BRIEF MENTOR-INITIATED DATA REVIEWS ON ANTENATAL AND MATERNITY HIV TESTING AND COUNSELLING SERVICES AT MCHOKA HEALTH CENTRE IN RURAL MALAWI

Table 1. Level and slope change of ANC testing coverage at Mchoka Health Center

Outcome measure	Test for level change		Test for slope change	
	R	p	R	p
Proportion of ANC attendees with known status	0.7750	0.0108	-0.5540	0.0852
Proportion of ANC attendees receiving a new test	0.7650	0.0072	-0.5310	0.0824

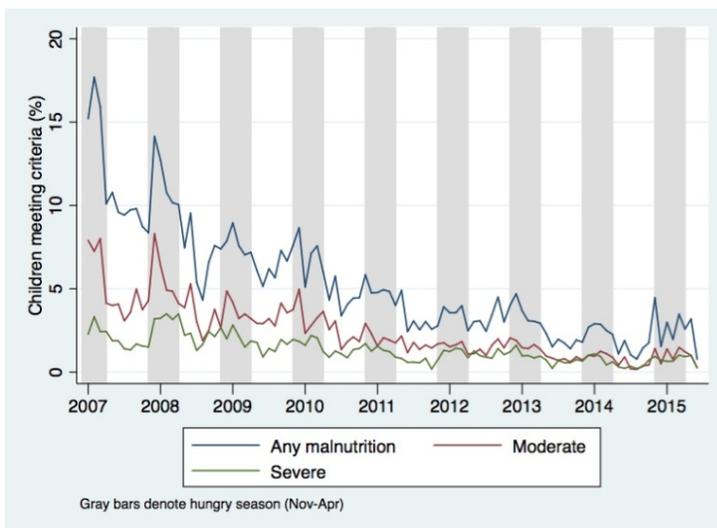
### 1.17 THE IMPACT OF BRIEF MENTOR-INITIATED DATA REVIEWS ON ANTENATAL AND MATERNITY HIV TESTING AND COUNSELLING SERVICES AT MCHOKA HEALTH CENTRE IN RURAL MALAWI

Figure 1. Proportion of ANC attendees at Mchoka Health Center with known status pre-/post-intervention



### 1.18 SEASONAL VARIATION IN MALNUTRITION AMONG CHILDREN IN MALAWI

Figure 1. Proportion of children meeting malnutrition criteria over time



### 1.19 RISK FACOTRS FOR TUBERCULOSIS DISEASE IN PEDIATRIC TB CONTACTS IDENTIFIED DURING A TB REACH CONTACT TRACING PROJECT IN SWAZILAND

Figure 1 Characteristics of Pediatric TB Contacts

Characteristics		Contacts on ATT <15 years of age	Contacts NOT on ATT <15 years of age	Relative Risk [RR(CI)]	P-value
<b>Overall [n(%)]</b>		67(1.5%)	4341(97.8%)	N/A	N/A
<b>Mean Age(years ±SD)</b>		6.08±4.99	7.18±4.23		0.035
<b>Categories of Age [n(%)]</b>	<b>&lt;5 years</b>	37(55.2%)	1562(36.0%)	<b>2.67(1.42-5.00)</b>	<b>0.0014</b>
	<b>5-9.99 years</b>	13(19.4%)	1486(34.2%)	<i>Referent</i>	N/A

	<b>10-14.99 years</b>	17(25.4%)	1293(29.8%)	1.5(0.73-3.07)	0.27
<b>Gender [n(%)]</b>	<b>Female</b>	35(52.2%)	2167(49.9%)		0.71
	<b>Male</b>	32(47.8%)	2174(50.1%)		
<b>Sleep Proximity [n(%)]</b>	<b>Different House</b>	18(26.9%)	1694(39.0%)	<i>Referent</i>	N/A
	<b>Same House</b>	19(28.4%)	1477(34.0%)	1.21(0.64-2.29)	0.56
	<b>Same Room</b>	18(26.7%)	950(21.9%)	1.77(0.92-3.38)	0.081
	<b>Same Bed</b>	12(17.9%)	219(5.0%)	<b>4.94(2.41-10.12)</b>	<b>&lt;0.001</b>
<b>Relationship to IC [n(%)]</b>	<b>Child</b>	34(50.7%)	1514(34.9%)	<b>1.90(1.18-3.06)</b>	<b>0.0069</b>
	<b>Other</b>	33(49.3%)	2827(65.1%)	<i>Referent</i>	
<b>TB Symptom Screen [n(%)]</b>	<b>Positive</b>	56(83.6%)	1671(38.5%)	<b>7.90(4.15-15.04)</b>	<b>&lt;.0001</b>
	<b>Negative</b>	11(16.4%)	2670(61.5%)	<i>Referent</i>	
<b>Reported HIV Status [n(%)]</b>	<b>Positive</b>	17(25.4%)	144(3.3%)	<b>8.97(5.29-15.20)</b>	<b>&lt;.0001</b>
	<b>Negative</b>	32(47.8%)	1905(43.9%)	<i>Referent</i>	
	<b>Unknown</b>	18(26.9%)	2292(52.8%)	<i>Referent</i>	

### 1.20 OUTCOMES OF ISONIAZID PREVENTIVE THERAPY USAGE AMONG CHILDREN < 5 YEARS OLD IN A TB REACH CONTACT TRACING PROJECT IN SWAZILAND

Table 1: Comparison of U5 contacts who did and did not initiate IPT

CHARACTERISTIC		CONTACTS ON IPT	CONTACTS NOT ON IPT	P-VALUE*
<b>OVERALL [n (%)]</b>		162 (10%)	1446 (90%)	N/A
<b>MEAN AGE[years ± SD]</b>		2.26±1.49	2.65±1.44	<b>0.0012</b>
<b>SEX</b>	Male [n (%)]	69 (42.6%)	707 (48.9%)	0.13
	Female [n (%)]	93 (57.4%)	740 (51.1%)	
<b>HIV STATUS</b>	Positive [n (%)]	7 (4.2%)	48 (3.3%)	<b>&lt; 0.001</b>
	Negative [n (%)]	106 (65.4%)	722 (49.9%)	
	Unknown [n (%)]	48 (29.6%)	670 (46.3%)	
<b>DEATH IN HOUSE IN LAST 2 YEARS</b>	Yes [n (%)]	39 (24.1%)	417 (28.8%)	0.22
	No [n (%)]	118 (72.8%)	993 (68.7%)	
<b>SLEEP LOCATIONS</b>	Different House [n (%)]	35 (21.6%)	565 (39.1%)	<b>&lt; 0.001</b>
	Same House [n (%)]	38 (23.5%)	400 (27.7%)	
	Same Room [n (%)]	67 (41.4%)	355 (24.6%)	
	Same Bed [n (%)]	22 (13.6%)	125 (8.64%)	
<b>RELATIONSHIP TO INDEX CASE</b>	Child [n (%)]	94 (58%)	480 (33.2%)	<b>&lt; 0.001</b>
	Other [n (%)]	68 (42%)	966 (66.8%)	
<b>HOME VISIT DONE</b>	Yes [n (%)]	73 (45.1%)	630 (43.6%)	0.72
	No [n (%)]	89 (54.9%)	816 (56.4%)	
<b>FAMILY MEMBER EMPLOYED AS MINER</b>	Yes [n (%)]	48 (29.6%)	404 (27.9%)	0.65
	No [n (%)]	114 (70.4%)	1042 (72.1%)	

### 1.21 CHARACTERISTICS AND OUTCOMES OF HIV-INFECTED, ART-NAÏVE CHILDREN DIAGNOSED WITH TB DISEASE IN MBEYA, TANZANIA

Table 1: Immunologic and Nutritional Characteristics of ART Naïve HIV-infected Children with TB Disease

	Baseline (n=39)	6 Month Outcomes (n=20)	12 Month Outcomes (n=12)
WHO Immunosuppression Severe	n=32 with CD4 data 31% (10/32)	n= 17 w/CD4 18% (3/17)	n=9 w/CD4 0% (0/9)

Advanced	22% (7/32)	12% (2/17)	11% (1/9)
Mild	22% (7/32)	35% (6/17)	44% (4/9)
Not significant	25% (8/32)	35% (6/17)	55% (5/9)
WHO Staging			
Stage 4	72% (28/39)	0 % (0/20)	0 % (0/12)
Stage 3	28% (11/39)	0 % (0/20)	0 % (0/12)
Stage 2	0% (0/39)	0 % (0/20)	0 % (0/12)
Stage 1	0% (0/39)	100% (20/20)	100% (12/12)
Median CD4 rise absolute (CD4 %)	N/A	187 (7%)	60 (4%)
Nutrition Status			
Severe malnutrition	64% (25/39)	0 % (0/20)	0 % (0/12)
Moderate malnutrition	10% (4/39)	0 % (0/20)	0 % (0/12)
Normal nutrition	26% (10/39)	100% (20/20)	100% (12/12)
Anthropometrics (median, range)		Change:	Change:
WHZ score	-1.61 (-5.55 to 1.36)	+1.29	+1.40
BMI	15.0 (10.7 to 23.7)	+1.75	+2.12
Weight-for-age Z-score	-3.73 (-6.60 to 0.36)	+1.03	+1.31

## 1.22 IMPACT OF GENEXPERT SPUTUM DIAGNOSTICS IN CHILDREN WITH TB DISEASE ON TREATMENT DECISION IN A HIGH BURDEN SETTING

**Table 1:** Characteristics of children diagnosed with TB disease based on GXP testing/results

Characteristics	Patients Diagnosed with TB Disease			X <sup>2</sup> (df)	P-value
	GXP Positive (n=12)	GXP Negative (n=116)	GXP Not Done (n=47)		
Median Age (years, range)	12.0 yr (2.3-19.0)	6.2 yr (0.6-18.3)	3.1 yr (0.3-18.3)	9.37 <sup>a</sup> (2)	.001
HIV positive (%)	6 (50%)	69 (60%)	25 (53%)		
HIV exposed (%)	0 (0%)	9 (8%)	2 (4%)	<i>f</i>	.431
Inpatient Status (%)	5 (42%)	41 (35%)	31 (66%)	11.68 (2)	.003
SAM (%)	6 (50%)	31 (27%)	16 (34%)	2.37 (2)	.306
Mean time to ATT (days, range)	4.5 (0-28)	13.5 (0-142)	3.2 (0-25)	5.09 <sup>a</sup> (2)	.007

## 1.23 ADVANCED TB DIAGNOSTICS IN A RESOURCE LIMITED SETTING: FINDINGS FROM THE FIRST TWO YEARS OF THE PEDIATRIC TB CENTRE OF EXCELLENCE INMBEYA, TANZANIA

**Table 1:** TB diagnostic test results and test performance for pediatric patients with presumptive TB (with "TB Disease" diagnosis used as reference standard)

All patients (n=504)					
Diagnostic Test (# Performed)	% Tests with positive result (n)	PPV	NPV	Sensitivity	Specificity
Sputum GeneXpert (n=355)	3% (11/355)	1.00	0.63	0.07	1.00
Sputum smear (n=355)	4% (13/355)	1.00	0.66	0.10	1.00
Sputum culture (n=308)	7% (21/308)	0.95	0.68	0.18	0.99
TST (n=470)	14% (65/470)	0.78	0.71	0.31	0.95
FNA (n= 26)	35% (9/26)	0.89	0.64	0.57	0.92
Chest x-ray (n=281)	31% (87/281)	0.94	0.80	0.68	0.97
HIV-infected patients only (n=288)					
Diagnostic Test (# Performed)	% Tests with positive result (n)	PPV	NPV	Sensitivity	Specificity
Sputum GeneXpert (n=216)	3% (6/216)	1.00	0.67	0.08	1.00
Sputum smear (n=220)	2% (5/220)	1.00	0.67	0.07	1.00

Sputum culture (n=194)	7% (15/194)	0.93	0.69	0.20	0.99
TST (n=250)	11% (27/250)	0.85	0.69	0.25	0.97
FNA (n=16)	38% (6/16)	0.83	0.70	0.63	0.88
Chest x-ray (n=156)	34% (53/166)	0.94	0.82	0.72	0.97
<b>Inpatient Referrals (n=227)</b>					
<b>Diagnostic Test (# Performed)</b>	<b>% Tests with positive result (n)</b>	<b>PPV</b>	<b>NPV</b>	<b>Sensitivity</b>	<b>Specificity</b>
Sputum GeneXpert (n=128)	4% (5/128)	1.00	0.67	0.11	1.00
Sputum smear (n=129)	3% (4/129)	1.00	0.66	0.09	1.00
Sputum culture (n=108)	2% (2/108)	1.00	0.68	0.06	1.00
TST (n=204)	9% (19/204)	0.63	0.68	0.17	0.95
FNA (n= 8)	38% (3/8)	1.00	0.80	0.75	1.00
Chest x-ray (n=111)	28% (31/111)	0.94	0.76	0.60	0.97
<b>Outpatient Referrals (n=277)</b>					
<b>Diagnostic Test (# Performed)</b>	<b>% Tests with positive result (n)</b>	<b>PPV</b>	<b>NPV</b>	<b>Sensitivity</b>	<b>Specificity</b>
Sputum GeneXpert (n=223)	4% (8/223)	1.00	0.66	0.10	1.00
Sputum smear (n=226)	3% (7/226)	1.00	0.65	0.08	1.00
Sputum culture (n=200)	10% (19/200)	0.95	0.67	0.23	0.99
TST (n=245)	19% (46/245)	0.85	0.74	0.43	0.95
FNA (n=18)	33% (6/18)	0.83	0.58	0.50	0.88
Chest x-ray (n=170)	33% (56/170)	0.95	0.83	0.74	0.97

#### 1.24 CASE REPORT: IRIS-LIKE PRESENTATION OF BACILLIARY ANGIOMATOSIS IN A HIV-INFECTED CHILD IN THE SOUTHERN HIGHLANDS ZONE OF TANZANIA

FIGURE 1. INITIAL PRESENTATION AND RESPONSE TO TREATMENT OF BACILLARY ANGIOMATOSIS IN HIV-INFECTED CHILD





**1.25 BARRIERS TO SPECIALTY CARE IN TANZANIA: CASE REPORT DEMONSTRATING CHALLENGES PATIENTS FACE IN OBTAINING SPECIALTY CARE AND POSSIBLE PARADIGMS FOR CHANGE**

Table 1: Timeline demonstrating care and actions taken for patient with osteosarcoma

Date	Clinical Action	Elapsed Time from initial presentation
20-Feb-15	Presented to Mbeya COE with swollen, painful, thigh → given antibiotics for cellulitis/pyomyositis	0 day
2-Mar-15	Returned to COE due to no improvement and increased swelling. X-ray and US of leg done; imaging results shared with BCM specialists and preliminary diagnosis of osteosarcoma given	10 days

9-Mar-15	After counseling, family referred to oncology unit at national referral hospital and travels to Dar es Salaam	17 days
19 <sup>th</sup> March to 17 <sup>th</sup> April 15	Patient admitted at national referral hospital; biopsy confirms diagnosis; chest CT done; chemotherapy unavailable; amputation not pursued; patient returned to Mbeya to meet with extended family to make treatment decisions	2 months
23-Apr-15	Family returns to Mbeya COE, but they are unaware of his results from Dar, and unaware of treatment options. Baylor team shares the treatment option, and family says they need time to discuss with grandfather (head of family).	2 months
27-Apr-15	Family meets with Mbeya team again to discuss amputation, but due to fear and stigma request more time to discuss	2.5 months
Early May	Family decides to explore traditional and faith-based healing (due to fear of amputation based on stories of poor outcomes in their community)	2+ months
13-May-15	Family agrees to meet with surgery team in Mbeya to discuss amputation; visit done together with Baylor nurse, but no decision made by family;	2.9 months
20-May-15	2 <sup>nd</sup> surgery appointment (again together with Baylor nurse); family agrees to amputation and are given pre-op admission date of 31 May	3 months
31-May-15	Patient admitted for pre-op, but discharged same day because the patient did not have pre-op labs done and no blood available in blood bank	3.2 months
First week of June	All pre-op labs done at Baylor and results given to family	3.3 months
7-June-15	Again admitted to surgery ward but told no blood available, so sent home; later that week 4 family members donate blood	3.5 months
14-June-15	Admitted to surgery ward for third time, but told that they arrived too late and surgery was canceled for the week	3.7 months
17-18-June 15	Baylor team directly requests from blood bank, and stores two units of blood at COE to take to OR on date of surgery	4 months
21-June-15	Patient/family no shows their (now 4 <sup>th</sup> ) scheduled admission to surgery ward	4 months
22-June-15	Family comes to Baylor to inform team their chose to forego amputation and proceed with palliative care; meet with Baylor palliative care team and enrolled into program	4 months

### 1.26 TWICE AS NICE: HIV-INFECTION AND CHARECTORISTICS OF TWIN PAIRS ENROLLED AT THE BAYLOR COE IN MBEYA, TANZANIA

Table 1. Characteristics and Outcomes Twin Pairs at COE in Mbeya, Tanzania

Characteristic	All Twin Pairs (N= 28 pairs of twins; 56 children)	HIV Positive (N=12 children)	HIV Negative (N=44 children)
Median age (months) at first visit (range)	4.0 (1.0-105)	14.3 (2.2-105)	3.3 (1.0-27.6)
HIV Status of pair: -HIV negative pairs - HIV positive pairs - HIV discordant pairs	19 pairs (67%) 3 pairs (11%) 6 pairs (22%)	N/A N/A N/A	N/A N/A N/A
Followed infant feeding guidelines	18 pairs (64%) (incl. 5 discordant pairs and 2 of the HIV positive pairs)	8 children (67%)	24 children (55%)
Malnutrition during first year of life	28 children (50%)	11 children (92%)	17 children (38%)
Maternal PMTCT -None -Late (post-partum) -Yes (maternal ART)	-15 pairs (53%) -3 pairs (11%) -10 pairs (36%)	-10 children (83%) -2 children (17%) -0 children (0%)	-20 children (45%) -4 children (9%) -20 children (45%)
Infant PMTCT -None -Yes	-13 pairs (46%) -15 pairs (54%)	-12 children (100%) -0 children (0%)	-14 children (32%) -30 children (68%)
Outcomes -Definitively negative -HIV positive alive -Still active HEI -Died -LTFU -HEI Transferred Out	-33 children (59%) -8 children (14%) -5 children (9%) -1 child (HIV positive) (2%) - 7 children (12%) -2 children (4%)	-N/A -8 children (67%) -N/A -1 child (8%) -3 children (25%) -N/A	-33 children (75%) -N/A -5 children (11%) -0 children (0%) -4 children (9%) -2 children (5%)

1.27 IMPROVING CD4 UPTAKE AMONG PAEDIATRIC CLIENTS (0-14 YEARS) IN SERERE HEALTH CENTER LEVEL IV

