

**11th International Workshop on HIV Treatment,
Pathogenesis and Prevention Research in
Resource Limited Settings
INTEREST**

**Abstracts
Oral Presentations**

Abstract 1

Using human resource and infrastructure costing analysis to determine required investments for scaling up HIV and AIDs services for meeting 90-90-90 prescribed treatment targets

Mark Malema¹, Emma Mabvumbe¹, Takondwa Mwase²

¹Ministry of Health, Lilongwe, Malawi, ²Abt Associates, Lilongwe, Malawi

Background: The HIV epidemic in Malawi has become the major cause of mortality in the country, stretching the capacity of the health system and the economy. In 2014, Malawi launched the 2015–2020 National HIV and AIDS Strategic Plan (NSP), in line with the 90-90-90 Treatment Targets released by UNAIDS in 2014. The U.S. Government, through the President's Emergency Plan for AIDS Relief (PEPFAR), has been supporting Government of Malawi's national response to HIV and AIDS through scale-up of HIV prevention, care and treatment services using the 90-90-90 treatment targets. However there has been no focus study done in Malawi to estimate the resource requirements for meeting the targets to inform planning and investment. Ministry of Health (MOH) in collaboration with USAID in 2016, commissioned the costing study to estimate HRH and infrastructure cost requirements for scaling up HIV and AIDs services in order to meet the key targets for testing, care and treatment as prescribed by UNAIDS.

Methods: The baseline data was collected from the PEPFAR's high-yield HIV service delivery facilities on the current infrastructure and human resources available at facilities using questionnaires based on the WHO Operational Manual for HIV Treatment and Care and the WHO Workforce Indicators of Staffing Need (WISN). The infrastructure assessment focused on seven essential infrastructure requirements as delineated by WHO: 1) space, 2) privacy and confidentiality, 3) water and sanitation, 4) communications, 5) power, 6) fire safety, and 7) waste management.

The Human resources component assessed staff providing HIV services. The results of the HRH baseline assessment provided information on the current number of staff providing HIV services in the

health facilities. In addition to site visits, experts in HIV service delivery at the health centre and hospital facility levels met to develop "activity standards," which denote time required by each cadre to provide HIV and AIDs services. These standards were used to conduct a WISN analysis to determine the number of health workers required to meet PEPFAR COP17 targets which are prescribed based on 90-90-90 targets. The current number of health workers was compared to the number required as per the WISN analysis to determine the gap. The gaps both on human resources and infrastructure requirements were costed to determine their monetary values.

Results: The study found that there are significant infrastructure and human resource gaps that will hinder the scale-up of HIV services, particularly to the levels prescribed by PEPFAR COP17 targets. The 64 facilities designated as high-yield HIV facilities require additional infrastructure, equipment and health workers in order to provide high-quality. The total investments amounted MK 8,135,810,842 (US\$10,847,748) for infrastructure and equipment in the 30 facilities assessed and MK 1,231,678,643 (US \$1,642,238) annually for the additional health workers required in the 64 facilities

Conclusion: There are significant infrastructure and human resource gaps that will hinder the scale-up of HIV services. In order to undo the situation, Government and Development Partners need to invest massively to meet the service level requirements as prescribed by UNAIDS.

Abstract 2

The costs of community based HIV self-test (HIV-ST) kit distribution: Results from three (3) district sites in Zimbabwe

Collin Mangenah¹, Lawrence Mwenge², Linda Sande³,

Euphemia Sibanda¹, Progress Chiwawa¹, Tariro Chigwenah¹, Miriam Mutseta⁷, Nurilign Ahmed⁴, Marc d'Elbée⁴, Pitchaya Indravudh³, Hendy Muralitharan⁵, Melissa Neuman⁴, Cheryl Johnson⁶, Reader Helen Ayles^{2,4}, Elizabeth L Corbett^{3,4}, Karin Hatzold⁷, Professor Frances M Cowan^{1,8}, Fern Terris-Prestholt⁴

¹Centre for Sexual Health and HIV/AIDS Research (CeSHHAR), Harare, Zimbabwe, ²Zambart, Health Economics Unit, Lusaka, Zambia, ³Welcome Trust Malawi, Lilongwe, Malawi, ⁴London School of Hygiene and Tropical Medicine, London, United Kingdom, ⁵Warwick University, London, United Kingdom, ⁶World Health Organization, , , ⁷Population Services International, Harare, Zimbabwe, ⁸Liverpool School of Tropical Medicine, Liverpool, United Kingdom

Introduction: Community-based HIV self-testing (HIV-ST), where community-based distribution agents (CBDA's) distribute HIV self-test kits door to door, can potentially complement existing approaches such as facility and outreach HIV testing services (HTS). Unit costs are assessed for door to door CBDA HIVST distribution with post-test services provided through mobile outreach (for confirmatory HTS for those self-testing HIV positive and other follow-on services in 3 Zimbabwean districts.

Methods: We distributed HIVST kits using CBDAs as outlined in 3 districts, in three consecutive months. We conducted micro-costing (in 2017 US\$) for HIV-ST distribution and facility-based HTS. HIV-ST cost data included capital (CBDA training, equipment and vehicles), and recurrent costs (personnel, supplies, vehicle and building operation and maintenance, and environmental). Costs include both financial and economic costs and were determined based on prevailing local market prices. We obtained data on number of HIV-ST kits distributed, and outreach HTS, from the PSI Zimbabwe Monitoring and Evaluation database. For the same districts facility based HTS data (past 12 months) was collated from facility HTS registers.

Results: Compared to facility-based testing (range US\$3.31-US\$5.95) in the same districts, HIV-ST intervention costs were higher (\$7.69 per HIV-ST kit

distributed) but similar to mobile HTS (\$8.18). More clients were reached and a much higher proportion of men were tested using HIV-ST relative to facility-based HTS. Moreover increasing success at reaching targets as the HIV-ST program rolled-out sequentially across districts (58% to 67%) suggests increasing efficiency over time.

Conclusion: Costs of the HIV-ST model are comparable with mobile HTS, but higher than those of facility-based services. HIV-ST offers an alternative to other models of outreach testing, reaching a higher proportion of men and at similar unit cost. Further cost reductions may result from economies of scale, and lower per unit prices of HIVST kits.

Abstract 3

HIV-positive adolescents most at risk of onwards HIV transmission: quantitative findings from a community-traced sample in South Africa

Elona Toska^{1,2,4}, Lucie Cluver^{1,3,4}, Nontuthuzelo Bungane^{1,4}, Mr Craig Carty^{1,2,4,5}, Ms Zoliswa Marikenj⁴, Ms Amanda Mbiko⁴, Rebecca Hodes^{1,2,4}

¹AIDS and Society Research Unit, University Of Cape Town, Cape Town, South Africa, ²Department of Social Policy and Intervention, University of Oxford, Oxford, United Kingdom, ³Department of Child Psychiatry, University of Cape Town, Cape Town, South Africa, ⁴Mzantsi Wakho Adolescent Health Research, East London, South Africa, ⁵The Relevance Network, Pretoria, South Africa

Background: As anti-retroviral treatment programmes are reaching an increasing number of children living with HIV, a cohort of HIV-positive adolescents is coming of age. Adolescence is a period of enormous physical, neurological, emotional and psychosocial change. Evidence from Sub-Saharan Africa concludes that HIV-positive adolescents report lower rates of ART adherence and similar rates of sexual risk-taking to their non-infected peers. However, HIV-positive adolescents who engage in unprotected sex and have detectable viral load risk passing on HIV to uninfected partners and children. Little is known about transmission risk among HIV-positive adolescents in sub-Saharan Africa.

Methods: In 2014-2015, 1,060 HIV-positive adolescents who received care in 53 governmental health facilities in the Eastern Cape, South Africa were interviewed. Questionnaires with validated scales where available measured socio-demographic, HIV-related factors, sexual risk-taking, and past-week non-adherence to ART. Viral load data from patient files were recorded for a sub-sample (n=678) to validate self-reported non-adherence. Adolescents who reported one high-risk sexual practice and past-week ART non-adherence were included in the "high HIV-transmission risk" group. Analyses used SPSS to identify factors associated with high HIV-transmission risk.

Results: 25% of HIV-positive adolescents reported at least one high-risk sexual practice. 36% reported

past-week non-adherence. Past-week non-adherence was strongly associated with detectable viral load in multivariate analyse (OR2.31, 95%CI1.60-3.32, p<0.001). 11.5% were in the high-risk of HIV-transmission group. Rates of high HIV-transmission risk were higher among adolescents over 15 years old, girls, recent ART-initiated adolescents, those in relationships and adolescents who reported past-week food insecurity. In multivariate analyses controlling for covariates, high HIV-transmission risk adolescents were older (OR1.13, 95%CI 1.03-1.23, p=0.01), female (OR1.81, 95%CI 1.13-2.89, p=0.013), had cognitive issues (OR1.99, 95%CI 1.29-3.04, p=0.002), experienced food insecurity (OR2.11, 95%CI 1.29-1.3.50, p=0.003), were in sexual/ romantic relationships (OR4.18, 95%CI 2.50-7.00, p<0.001) and on ART for less than a year (OR2.19, 95%CI 1.38-3.48, p=0.001). Caregiving arrangement, orphanhood, ethnicity, informal housing, rural residence, poverty, HIV-positive status-awareness, and mode of HIV infection were not associated with high HIV-transmission risk.

Conclusion: Positive prevention efforts for HIV-positive adolescents should be targeted to sub-groups most at risk. The burden of neurocognitive challenges among HIV-positive adolescents is significant, though difficult to document and address in resource-limited settings. Positive prevention efforts to stem the rate of new infections amongst the partners and children of HIV-positive adolescents should focus on adolescents in relationships, those who report food insecurity, and those who have cognitive delays. Adolescents recently initiated on ART should be supported to reach optimal ART adherence and to negotiate safer sexual practices.

Abstract 4

Hepatitis B virus infection in HIV-seronegative and HIV-seropositive MSM in West Africa: prevalence, associated factors, and acceptability of vaccination (CohMSM ANRS 12324 – Expertise France)

Ter Tiero Elias Dah^{1,2}, Clotilde Couderc³, Alou Coulibaly⁴, Malan Jean-Baptiste Kouame⁵, Richard Mawuényéyan Kouamivi Agboyibor⁶, Gwenaëlle Maradan⁷, Adeline Bernier⁸, Ephrem Mensah⁶, Nicolas Meda^{2,9}, Camille Anoma⁵, Bintou Bembele Keita⁴, Bruno Spire⁷, Christian Laurent³

¹Association African Solidarité, Ouagadougou, Burkina Faso, ²Centre Muraz, Bobo Dioulasso, Burkina Faso, ³Unité TransVIHMI, IRD UMI 233, INSERM U 1175, Université de Montpellier, Montpellier, France, ⁴ARCAD-SIDA, Bamako, Mali, ⁵Espace Confiance, Abidjan, Côte d'Ivoire, ⁶Espoir Vie Togo, Lomé, Togo, ⁷SESSTIM UMR 912, INSERM/IRD/Université Aix-Marseille, Marseille, France, ⁸Coalition Internationale Sida, Pantin, France, ⁹Centre de Recherche Internationale pour la Santé, Ouagadougou, Burkina Faso

Background: Risk of exposure to hepatitis B virus (HBV) is higher in men who have sex with men (MSM) than in the general population. In West Africa where HBV infection is frequent, data on HBV infection in MSM are lacking. Moreover, MSM have a limited access to HBV care including vaccination. The aim of this study was to investigate the prevalence of HBV infection, its associated factors and the acceptability of vaccination in HIV-seronegative and HIV-seropositive MSM in 4 West African countries.

Materials and Methods: CohMSM is a prospective cohort study of MSM, which has been conducted since June 2015 in community-based clinics in Bamako (Mali), Abidjan (Côte d'Ivoire), Ouagadougou (Burkina Faso), and Lomé (Togo). Men aged 18 years or older, having reported at least one episode of anal intercourse with another man within the previous 3 months, and either HIV-seronegative or having discovered their HIV infection at enrolment were eligible. At enrolment, MSM were offered a clinical examination as well as testing for HIV, syphilis, and hepatitis B. All MSM negative for HBsAg and anti-HBs were offered HBV vaccination. Those who were positive for HBsAg

were referred to specialized care services. Data on sociodemographic characteristics and sexual behaviors were collected using standardized face-to-face questionnaires. Factors associated with HBV infection (HBsAg+) were identified using a multivariate logistic regression analysis.

Results: As of January 8, 2017, 674 MSM (557 HIV-negative and 117 HIV-positive) were enrolled and tested for HBV infection: 284 (42.1%) in Bamako, 144 (21.4%) in Abidjan, 125 (18.6%) in Ouagadougou and 121 (18.0%) in Lomé. The median age was 23.9 years (interquartile range 21.4–27.4). The prevalence of HBV infection was 18.1% (95% confidence interval [CI] 12.1–25.3) in Abidjan, 12.3% (95% CI 8.7–16.7) in Bamako, 12.0% (95% CI 6.9–19.0) in Ouagadougou and 2.5% (95% CI 0.5–7.0) in Lomé. As compared to Abidjan, HBV infection was significantly less frequent in Lomé (adjusted odds ratio [aOR] 0.09, 95% CI 0.02–0.32, $p < 0.001$) and tended to be less frequent in Bamako (aOR 0.52, 95% CI 0.26–1.04, $p = 0.064$) and Ouagadougou (aOR 0.46, 95% CI 0.19–1.08, $p = 0.074$). There was no significant difference in HBV prevalence according to HIV status (17.1% in HIV-seropositive MSM versus 10.6% in HIV-seronegative MSM, aOR 1.63, 95% CI 0.84–3.16, $p = 0.146$). By contrast, HBV infection was significantly associated with undergraduate education (aOR 2.34, 95% CI 1.21–4.54, $p = 0.012$), being single, divorced or separated (aOR 1.32, 95% CI 1.06–1.64, $p = 0.012$) and having received something for transactional sex with male partners in the previous 6 months (aOR 1.43, 95% CI 1.08–1.89, $p = 0.011$). Finally, of the 424 MSM eligible for HBV vaccination, 393 (92.7%) received at least one dose of HBV vaccine.

Conclusions: The prevalence of HBV infection was high, especially in MSM living in Abidjan, Bamako and Ouagadougou. Programs tailored to MSM should include HBV testing and vaccination. Importantly, vaccination was well accepted by MSM.

Abstract 5

One year outcomes following availability of community-based HIV self-testing: uptake, accuracy and linkage into care in a prospective study in Blantyre, Malawi

Augustine Choko^{1,3}, Peter MacPherson², Emily Webb³, Helena Ball³, Rodrick Sambakunsi¹, Aaron Mdolo¹, Simon Makombe⁴, Nicola Desmond^{1,2}, Richard Hayes³, Elizabeth Corbett^{1,3}

¹TB/HIV, Malawi Liverpool Wellcome Trust Clinical Research Programme, Blantyre, Malawi, ²Liverpool School of Tropical Medicine, Liverpool, UK, ³London School of Hygiene and Tropical Medicine, London, UK, ⁴HIV Unit, Ministry of Health, Lilongwe, Malawi

Background : HIV testing and counselling (HTC) is the entry point to care and prevention, but only ~25% of adults in sub-Saharan Africa have tested for HIV in last 12 months. HIV self-testing (HIVST) is a novel approach that could promote increase HTC coverage and frequency. We investigated HIVST including subsequent linkage into care.

Methods: 16,660 adult (≥16 years) residents of 14 high-density neighbourhoods (HIV prevalence 18.5%) were included in a cluster randomised trial. Two residents were trained in each neighbourhood to provide HIVST from their homes (one test per resident per year). Clients received written and verbal information to promote linkage into HIV care coupled with home-initiation of HIV care if requested. Population-level uptake was estimated from enumeration denominators. Accuracy of HIVST was assessed through quality assurance (QA) re-testing (2 parallel rapid tests) with a 10% random sample of self-testing clients asked to retest. A strong community-based reporting system was in place for monitoring adverse events. Data were analysed using summary statistics and logistic regression adjusted for clustering.

Results: Overall, 13,966 self-test kits were distributed with 89% returned as used kits with feedback forms, and uptake by 12,658/16,660 (76%) residents, including 5,840 (67%) of all men. The highest uptake was in the youngest age group (16-19 years: 2,360/2,539, 93%) falling to 41% (298/733 in men ≥50 years. Early adopters (2,658

in 1st month) were significantly more likely to be female, adjusted odds ratio (aOR) 1.20 (95% CI 1.06-1.36); younger $P_{trend} < 0.001$, and not in a couple aOR 2.22 (95% CI 1.54-3.16). In total, 851/16660 (9%) residents confided positive HIVST results with 25% already on ART and 500/638 (78%) accessing HIV care (preART or ART). QA showed 99.1% agreement with self-reported HIVST results (sensitivity 93.8% [95% CI 85.0-98.3%], specificity 100% [95% CI 100-100%]). No suicides or assaults were reported, but 287 (2.9%) of 10,007 feedback respondents reported coercion, mainly from partners, and most commonly reported by men 147/266 (3.7%); p -value < 0.001.

Conclusions: Uptake of HIVST, subsequent linkage into care, and accuracy were high with this strategy. Coercive testing and retesting on ART are concerning aspects of HIVST that need to be anticipated and discouraged. Community-based HIVST offers high potential to increase knowledge of HIV status, assisting with increasing access to HIV care and prevention when combined with proactive linkage strategies.

Abstract 6

Using Community-Based HIV Testing Campaigns by Lay Health Workers to Identify Signs and Symptoms of Tuberculosis in the Botswana Combination Prevention Project

Lisa A. Mills¹, Mary Grace Alwano¹, William Bapati², Refeletswe Lebelonyane³, Lisa Block⁴, Janet Moore⁵, Tafireyi Marukutira^{1,6,7}, Elliot Raizes⁵, Tendani Gaolathe⁸, Shahin Lockman⁹, Pamela Bachanas⁵

¹Centers For Disease Control And Prevention, Gaborone, Botswana, ²Tebelopele Counseling and Testing Center, Gaborone, Botswana, ³Botswana Ministry of Health, Gaborone, Botswana, ⁴Intellectual Concepts, Atlanta, USA, ⁵Centers for Disease Control and Prevention, Atlanta, USA, ⁶Monash University, Melbourne, Australia, ⁷Burnet Institute, Melbourne, Australia, ⁸Botswana Harvard Partnership, Gaborone, Botswana, ⁹Harvard T. H. Chan School of Public Health, Boston, USA

Background: Community detection of tuberculosis and HIV are important public health opportunities for earlier and more complete identification of both diseases. We analyzed the frequency and correlates of positive TB screening (PTS) in the community HIV Testing and Counseling (HTC) campaigns for the Botswana Combination Prevention Project (BCPP), an ongoing community-randomized trial of HIV prevention strategies and their impact.

Method: Community-based HTC programs were implemented in 15 rural/peri-urban intervention communities throughout Botswana October 2013 through February 2016. Mobile HIV testing was offered for full- or part-time community residents ages 16-64, and 80% of residential compounds were approached for home-based HTC, while a 20% random sample of compounds was approached through the Baseline Household Survey, described elsewhere and excluded here. Lay counselors performed HIV testing and administered electronic questionnaires which included TB screening questions in English or Setswana, after obtaining verbal consent. Variables captured included selected demographic and clinical characteristics, history of TB in family members, and six self-reported signs/symptoms of TB (SSTB): cough or fever >2 week duration,

lymphadenopathy, hemoptysis, night sweats, or unexplained weight loss. Participants with any SSTB (whether HIV positive or not) as well as all PLHIVs not on antiretroviral therapy (ART) were referred to community clinics. Linkage to care (LTC) support was provided for PLHIVs not on ART, including home visits, follow-up phone calls, and phone airtime provision. We assessed LTC outcomes among the subset of PLHIV who were not on ART.

Results: HTC activities were completed for 33,075 community residents ages 16-64. Seven thousand three hundred fifty six (7,356) PLHIV were identified; 1,239 (17%) were newly-identified. Overall, 256/25,716 (1%) of HIV-negative participants reported 1 or more SSTB, versus 374/7356 (5%) of PLHIV ($p<0.0001$), and 77/25,716 (0.3%) of HIV-negative participants reported 2 or more SSTB, versus 163/7356 (2.2%) of PLHIV ($p<0.0001$). The most common SSTB was unexplained weight loss for PLHIV (225/256), and was cough >2 weeks duration (184/374) for HIV negatives. Seven percent (7%) of persons with a family history of TB had SSTB, versus 1% of those without ($p<0.0001$). Among PLHIV, SSTB were more common among those with new vs. known HIV status (16% vs. 3%; $p<0.0001$), those not on ART (13% vs. 2%; $p<0.0001$), and those with TB in a family member (17% vs. 4%; $p<0.0001$). For those not on ART, TB symptoms occurred across the CD4 distribution (22% of those with CD4<200 had SSTB, 15% with CD4 201-350, 11% with CD4 351-500 and 12% with CD4>500). Among PLHIV not on ART, 82% (231/281) of PLHIV with SSTB linked to care, versus 74% (1374/1849) of PLHIV without SSTB ($p<0.005$).

Conclusions: Community-based HIV and TB case identification by lay health workers was feasible and acceptable in Botswana. Community combined TB/HIV screening activities identified presumptive TB cases, were associated with higher LTC among PLHIV not on ART who had SSTB identified, and provided an important opportunity to focus on family/household burden of both diseases. Future analysis will explore the definitive diagnoses and clinical outcomes for PLHIV with presumptive TB.

Abstract 7

Increased risk of treatment failure after low-level viremia in a large cohort of South African HIV-positive patients treated according to WHO guidelines

Lucas Hermans^{1,2,3}, Michelle Moorhouse², Sergio Carmona⁴, Rick Grobbee^{1,5,6}, Marije Hofstra³, Douglas Richman^{7,8}, Hugo Tempelman^{1,9}, Francois Venter^{1,2}, Annemarie Wensing^{1,3}

¹Ndlovu Research Consortium, Groblersdal, South Africa, ²Wits Reproductive Health and HIV Institute, Johannesburg, South Africa, ³Virology, Dept of Medical Microbiology, University Medical Center Utrecht, Utrecht, The Netherlands, ⁴National Health Laboratory Service (NHLS), Johannesburg, South Africa, ⁵Clinical Epidemiology, University Medical Center Utrecht (UMCU), Utrecht, The Netherlands, ⁶Julius Center for Health Sciences and Primary Care, Utrecht, The Netherlands, ⁷Center for AIDS Research, University of California San Diego, San Diego, USA, ⁸VA San Diego Healthcare System, San Diego, USA, ⁹Ndlovu Care Group, Groblersdal, South Africa

Introduction: Current WHO guidelines for antiretroviral therapy (ART) in HIV-1 infected patients define virological failure as viremia above 1000 copies/mL during therapy. Detectable viral loads (VL) below 1000 copies/mL during ART (low-level viremia; LLV) have been linked to subsequent failure of ART in studies performed in high-income settings, where more stringent VL cut-off values for virological failure are used. We report the prevalence of LLV and its impact on subsequent failure of ART in a large South African cohort managed according to WHO guidelines.

Methods: HIV-positive patients from 19 urban and 38 rural South African HIV treatment sites were studied. Adult patients were included if they were taking ART for ≥ 20 weeks and if they had received virological monitoring. LLV was stratified according to level (51-199, 200-399, and 400-999 copies/mL) and duration. Studied outcomes were failure of ART (VL ≥ 1000 copies/mL) and switch to second line ART. In the subset of patients who completed ≥ 52 weeks of first line ART without virological failure, the association between LLV and subsequent virological failure was estimated using Cox proportional hazard models corrected for sex, age and baseline CD4.

Results: 71,056 patients met inclusion criteria, of whom 67,380 were treated with first line ART, 1,602 with second line ART and 2,074 with both. Virological failure during ART occurred in 21.6% of patients on first line ART. 35.0% of these patients subsequently resuppressed < 1000 copies/mL on the same regimen. Incidence of LLV was 12.8 per 100 patient years of follow-up. *23.1% of patients experienced LLV at any time during follow-up. Low-level viremia was persistent in 21.2% of these cases. LLV between 51 and 199 copies/mL (LLV51-199) was most commonly encountered (59.0%). LLV was associated with increased hazard of failure of first line ART (HR 3.0; CI-95% 2.8-3.3), failure of ART without resuppression on the same regimen (HR 3.2; CI-95% 3.0-3.5) and switching to second line ART (HR 2.9; CI-95% 2.4-3.4) when compared to patients with suppression < 50 copies/mL. Risk of failure increased further in case of higher ranges and persistency of LLV.

Conclusion: In this large cohort of patients managed according to WHO guidelines, LLV occurred frequently and patients with LLV were at increased risk of subsequent failure and switch to second line ART. These risks increased further with higher ranges and longer duration of LLV. Despite these clear risks, current WHO guidelines do not advise clinical intervention in case of (repeated) measurements of low-level viremia below the cut-off of 1000 copies/mL. This poses concerns for long term virological suppression in WHO-guided treatment programmes.

After review correction:

*23.3% of patients experienced LLV at any time during follow-up. Low-level viremia was persistent in 21.3% of these cases

Abstract 8

Implementation of the HIV “test-and-treat” strategy in Malawi prisons: experience, challenges, and effectiveness

Simon Mendelsohn¹, Caroline Aluda¹, Reinaldo Ortuno¹, Altynay Shigayeva¹, Katherine Hilderbrand¹, Eric Goemaere¹

¹*Médecins Sans Frontières, Brussels, Belgium*

Background: The Malawi prison system is massively overcrowded, has crumbling infrastructure and insufficient healthcare services. Maula and Chichiri prisons currently hold 2,757 and 1,936 inmates respectively, over 240% of their intended capacities. Prior to any interventions, a limited antiretroviral therapy (ART) programme was the only healthcare service provided by minimally-trained prison staff. A 2011 study estimated HIV point prevalence in central Malawi prisons at 41%. In 2014 Médecins Sans Frontières’ (MSF) introduced a comprehensive package of interventions to prevent, screen, treat, and monitor HIV and treat opportunistic infections in these prisons according to the Southern African Development Community minimum standards for prisons. Auxiliary care includes a TB screening and treatment programme, nutrition programme, hepatitis B vaccination, mental health screening, outpatient care and referral, health promotion, and advocacy. This research outlines the experience, challenges, and effectiveness of implementing the universal “test-and-treat” strategy in Malawi prisons to achieve the UNAIDS 90-90-90 goal.

Methods: An overview of the programmatic interventions introduced by MSF between June 2014 and December 2016 in Maula and Chichiri. Data were captured in TIER.Net, analysed using Stata 12.1, and results reported until 31/12/2016.

Results: A universal HIV “test-and-treat” strategy was implemented in Maula and Chichiri prisons in 2016, with prisoners tested for HIV at entry, during their stay (6 monthly), and at exit from the prisons. The HIV point prevalence at Maula prison on 31 December 2016 was 13.7% (95% CI: 12.4–15.1%), which mirrors the surrounding population of Lilongwe (11.8%; 95% CI: 10.4–13.1%). The HIV point prevalence at Chichiri prison of 20.6% (95% CI: 18.8–22.5%) was similar to the surrounding population of Blantyre (18.2%; 95% CI: 16.4–

19.9%). There have been no confirmed cases of HIV transmission in the prisons since the “test-and-treat” strategy was implemented.

With regard to the UNAIDS 90-90-90 HIV cascade indicators, the number of prisoners screened for HIV in the prior 6 months was 2334/2359 (98.9%; 95% CI: 98.4–99.3%) and 1780/1807 (98.5%; 95% CI: 97.8–99%) at Maula and Chichiri prisons respectively. Of the HIV positive prisoners, 363/378 (96.0%; 95% CI: 93.5–97.8%) at Maula and 397/399 (99.5%; 95% CI: 98.2–99.9%) at Chichiri were on ART. Of the prisoners who were on ART and eligible for viral load monitoring in 2016, 180/241 (74.7%; 95% CI: 68.7–80.1%) at Maula, and 244/281 (86.8%; 95% CI: 82.3–90.6%) at Chichiri were taken. Of those with viral loads reported, suppression of viral load (<1000 copies/ml) was 165/180 (91.7%; 95% CI: 86.6–96.2%) and 229/244 (93.9%; 95% CI: 90.1–96.5%) at Maula and Chichiri prisons respectively.

Conclusions: The universal “test-and-treat” strategy and comprehensive package of care implemented in the challenging prison environment has been effective in helping to achieve the UNAIDS 90-90-90 goal. The near universal coverage of ART and absence of confirmed cases of HIV acquired in the prisons suggest that this approach may be an effective measure to prevent HIV transmission in this setting. This model of care can be replicated in similar prison contexts in the region.

**11th International Workshop on HIV Treatment,
Pathogenesis and Prevention Research in
Resource Limited Settings
INTEREST**

**Abstracts
Mini- Orals**

Abstract 9

"The drug will help protect my tomorrow": Awareness, willingness, and preferences to use pre-exposure prophylaxis (PrEP) among female sex workers in Lilongwe, Malawi

Kathryn E. Lancaster, Jaclyn Shea, A.Bula, D.Davis, W.Dunda, RE.Kohler, SB.Wheeler, M. Hosseinipour, W.Miller, V. Go,

Lunqu T¹

¹Unc Project, Lilongwe, Malawi

Background: Malawian female sex workers (FSW) have one of the highest HIV prevalences worldwide. HIV acquisition among HIV-uninfected Malawian FSW might be reduced with pre-exposure prophylaxis (PrEP). PrEP is an effective HIV prevention method, yet implementation strategies for improving PrEP uptake and adherence among FSW are lacking. We explored the awareness, willingness, and preferences for PrEP delivery modalities among FSW in Lilongwe, Malawi.

Methods: In November-December 2016, we conducted 8 focus group discussions (FGDs) with 44 FSW recruited during venue-based HIV testing. FSW were purposively selected as HIV negative and either 18-24 or >24 years of age and reported living at the venue or a private residence. We asked about their awareness, willingness, and preferences for PrEP delivery modalities, including daily-oral, event-driven, vaginal ring, and long-acting injectable antiretroviral medications. Translated and transcribed FGDs were thematically coded and analyzed using NVivo.

Results: Awareness of PrEP was low, however most FSW expressed willingness to use PrEP. The majority of FSW identified the need for additional protection against STIs and pregnancy, but felt PrEP would be useful when clients refused to wear condoms. After explaining PrEP delivery modalities, injectable PrEP was preferred over other modalities. Event-driven PrEP was seen as not feasible due to the nature of their work. FSW were concerned a vaginal ring would be uncomfortable during insertion and detected by clients during sex. FSW felt daily PrEP would be logistically challenging, particularly remaining adherent when drinking while engaging in sex work. Most FSW preferred to receive PrEP from government health

facilities in family planning or HIV testing clinics. Several FSW suggested including cervical cancer screening along with HIV/STI prevention counseling and testing when initiating PrEP.

Conclusions: The success of PrEP as a HIV prevention strategy in Africa will depend on FSWs' PrEP uptake and adherence. Despite a lack of awareness, FSW were willing to use PrEP, especially an injectable form. Integrating the provision of PrEP and other prevention services within family planning and HIV testing clinics could reach FSW at great risk for acquiring HIV.

Abstract 10

Sexual network testing as a strategy to reach the first 90; so much promise despite the barriers

Edward Adekola Oladele¹, Simon Cartier¹, Christopher Obanubi¹, Kunle Kakanfo¹, Pamela Gado², Patrick Ikani¹, Abel Abu¹, Adeyemi Shoboyejo¹, Barinaadaa Afirima¹, Philip Imohi¹, Olukunle Atofarati¹, Julie Yemi-Jonathan¹, Adegbenga Olarinoye¹, Chibuzor Ofoibuike¹, Oluwasanmi Adedokun¹, Kelly Badiane², Hadiza Khamofu¹, Satish Raj Pandey¹

¹FHI 360, Abuja, Nigeria, ²USAID Nigeria, Abuja, Nigeria

Background: The first of the three UNAIDS fast-track targets aimed at reaching the end of AIDS is to diagnose at least 90% of persons living with HIV by 2020. Strengthening Integrated Delivery of HIV/AIDS Services (SIDHAS) with funding from PEPFAR through USAID adopted a number of strategies to enhance identification of previously undiagnosed persons. In different settings, HIV Testing within the sexual networks has been shown to lead to increased yield relative to other testing strategies. In order to take this strategy to the desired scale, we analyzed and, here, describe successes with sexual network testing (SNT) and highlight some barriers that may limit scale-up.

Materials & Methods: SIDHAS is a large comprehensive HIV program with a mandate to support 14 local government areas (LGAs/districts) to achieve the 90-90-90 target within two years. In these LGAs, SNT is provided following identification of a HIV positive individual (index) in a series of steps - offer SNT, if accepted, elicit sexual partners with contact addresses, screen for social issues, agree on notification method, notify partners, test partners, link positives to care and treatment while maintaining utmost confidentiality. We conducted a retrospective analysis of seven months (July 2016 to December 2017) program data using a SNT cascade approach and triangulated findings among service providers through inquiries.

Results: Over the seven months' period, 8,238 persons (35.2% males, 64.8% females) were identified as HIV positive. Of these, 6,649 were offered SNT and only 19.9% (1,321; 32.9% males, 67.1% females) agreed to partner notification. Altogether 1,416 (66.3% males, 44.7% resident in LGA of testing and 59% in formal relationships)

partners were elicited at a ratio of 1.1 partners to each index client (similar for both sexes). Of those elicited, 561 partners (39.6% of all partners elicited; where 88.6% of these were resident within LGA of program jurisdiction) were tested, with 171 (30.5%) of them newly diagnosed as HIV positive. Altogether, 88.9% of those diagnosed were linked to treatment. Provider inquiry revealed that the drop offs along each step of the cascade were due to inadequate counselor skills in partner notification, time too short after diagnosis for client-provider trust building and successful partner elicitation, gender norms which accept multiple partners for men but not for women, fear of violence and/or stigmatization, partner residence outside LGA of testing, casual partners with unknown address, incorrect cell phone numbers provided, absence of specific policy supporting sexual network testing, religious beliefs, and cultural norms that frown on having multiple sexual partners.

Conclusions: With >30% HIV concordance and even higher yields reported in other settings, our findings demonstrate high potential of SNT for contributing to increased case identification. Identified structural and systemic barriers will be addressed as we bring SNT to scale in resource constrained settings.

Abstract 11

HIV, blame and shame: Pathways of risk to internalized HIV stigma among South African HIV-positive adolescents

Marija Pantelic¹, Mark Boyes^{1,2}, Lucie Cluver^{1,3}, Franziska Meinck^{1,4}

¹University Of Oxford, Oxford, United Kingdom, ²Curtin University, Perth, Australia, ³University of Cape Town, Cape Town, South Africa, ⁴North West University, Vanderbeijlpark, South Africa

Introduction: Internalised HIV-stigma is a key risk factor for negative outcomes amongst HIV-positive adolescents, including non-adherence to anti-retroviral treatment, loss-to-follow-up and morbidity. However, no quantitative studies have investigated the prevalence or drivers of internalised HIV stigma in this high-risk group. This study tested a model of multi-level risk pathways to internalized HIV within the world's largest sample of HIV-positive adolescents.

Methods: Total population sampling of HIV-positive adolescents who had ever initiated anti-retroviral treatment in 53 public health facilities in the Eastern Cape, South Africa was used. 90.1% of eligible HIV-positive adolescents were interviewed (n=1060, 55% female, mean age = 13.8, 21% living in rural locations). HIV stigma mechanisms (internalized, enacted, and anticipated) were measured via the adolescents living with HIV stigma scale (ALHIV-SS), which was developed in collaboration with South African HIV-positive adolescents. HIV-related disability was measured via a two-item scale asking about physical and cognitive disability adapted from The International Classification of Functioning, Disability and Health. Physical abuse (2 items) and emotional abuse (10 items) were measured using items from the UNICEF Measures for National-level Monitoring of Orphans and Other Vulnerable Children. Contact sexual abuse was measured using three items from the Juvenile Victimization Questionnaire. Bullying victimisation was measured with the 9-item Social and Health Assessment Peer Victimization Scale. Depressive symptoms were measured via the Child Depression Inventory short form. All analyses were conducted in MPlus. Structural equation modelling was used to test a theoretically-informed model of risk pathways from HIV-related disability to internalized HIV-

stigma. The model controlled for age, gender and urban/rural address.

Results: Prevalence of internalized HIV stigma was 26.5%. As hypothesised, significant associations between internalized stigma and anticipated stigma, as well as depression were obtained. Unexpectedly, HIV-related disability, violence victimization, and enacted stigma were not directly associated with internalized stigma. Instead significant pathways were identified via anticipated HIV stigma and depression. The model fitted the data well (RMSEA=.023; CFI=.94; TLI=.95; WRMR=1.070).

Conclusions: These findings highlight the complicated nature of internalized HIV stigma. Whilst it is seemingly a psychological process, indirect pathways suggest both social and psychological mechanisms from HIV-related disability to internalized HIV stigma. Findings suggest that a multi-level, inter-sectoral approach to addressing internalized HIV stigma is needed. Namely, improved health access, violence prevention within schools, families and communities, and mental health support could play important roles in stigma reduction strategies.

Abstract 12

Prevalence and factors associated with unknown HIV status among HIV positive female sex workers: Rwanda behavioral and biological surveillance survey (BBSS) 2015

Eric Remera¹, Antoine Rwegu Gasasira², Lisa A. Mills², Catherine Kayitesi¹, Augustin Mulindabigwi¹, Andre Mbayiha², Mutagoma Mwuvaneza¹, Dieudonne Sebuho¹, Sabin Nsazimana¹, **Samuel S. Malamba²**

¹Ministry of Health - Rwanda Biomedical Center, Kigali, Rwanda, ²Centers for Disease Control and Prevention, Kigali, Rwanda

Background: Identification of HIV cases ('the first 90') is critical to HIV epidemic control efforts, particularly in key populations such as Female Sex Workers (FSWs). We investigated the proportion of HIV-positive FSW aged 15+ years who did not know their HIV status at the time of the survey, and sought to determine factors associated with undiagnosed HIV.

Methods: A secondary data analysis was undertaken from a cross-sectional behavioral and biological surveillance survey of self-reported FSWs which was conducted in Rwanda in 2015. Self-reported demographic and behavioral data was collected using a structured questionnaire translated into Kinyarwanda and administered to all consenting participants. Each participant provided a blood specimen. Rapid tests for HIV and other sexually transmitted infections were performed and results given to participants at the survey site. Specimens were transported to the National Reference Laboratory for HIV ELISA testing; these results were used to estimate HIV prevalence. Multivariable logistic regression analyses adjusted using survey sampling weights were done to identify factors associated with HIV-positive FSWs unaware of their HIV-positive status.

Results: A total of 1,967 FSWs participated in the interview and received HIV testing. Almost all (95.0%) of the FSWs in this survey reported that they had previously been tested for HIV. However, only 72.9% reported being tested in the 12 months preceding the survey. Almost all participants (98.2%) had received the results of their most

recent HIV test. HIV prevalence was estimated at 45.8% (95%CI: 43.6, 48.0). Among the 819 FSWs who tested and were HIV-positive during the survey, 47.8% had self-reported an HIV-positive sero-status from previous testing. Slightly more than three quarters (78.5%) of those who knew that they were HIV-positive reported regularly taking antiretroviral therapy (ART). The odds of HIV-positive FSWs not knowing their positive status decreased with each year increase in age (OR=0.951, 95%CI:0.918-0.985) but increased with the level of education attained (primary compared to no education: OR=1.774, CI: 1.036-3.040 and secondary vs no education: OR=3.109, CI:1.501-6.441), each 1,000 Rwanda Francs (approximately \$1.25) increase in average monthly income earned from sex work (OR=1.013, CI:1.003-1.024), and each year increase in age at first sex work (OR=1.001, CI:1.000-1.003). HIV-positive FSWs who did not know their status were more likely not to have been tested for HIV in the last 12 months (OR=2.358, CI:1.629-3.425); to have not heard or watched education information/messages during the last six months (OR=2.463, CI:1.595-3.817); to have not benefited from any HIV program assistance provided by an institution/association (OR=4.395, CI:2.866-6.739); and were less likely to be hairdressers (OR=0.026, CI: 0.003-0.215).

Conclusions: Half of HIV-positive FSWs were not aware of their HIV-positive status in this national survey from Rwanda. Programs need to improve collaboration between health facilities and communities to increase HIV testing and linkage to care and to increase initiation of ART among infected FSW not yet on treatment. Rwanda should bolster efforts to reach younger FSWs, and those newly entering sex work, with HIV prevention, education, and testing. Additional strategies such as pre-exposure prophylaxis (PrEP) for high risk populations should be considered.

Abstract 13

HIV Incidence patterns and sexual behaviour in the era of ART, Karonga Prevention Study 2007 – 2011

Chifundo Kanjala^{1,2}, Estelle McLean^{1,2}, Alison Price^{1,2}, Emma Slaymaker¹, Albert Dube², Mia Crampin^{1,2}

¹London School Of Hygiene And Tropical Medicine, Lilongwe, Malawi, ²Malawi Epidemiology Intervention and Research Unit, Lilongwe, Malawi

Introduction: Antiretroviral treatment (ART) reduces HIV transmission, however new infections continue to occur despite widespread roll out, and concurrent sexual partners and early sexual debut are associated with increased risk for HIV transmission. We investigate HIV incidence and the association between sexual behaviour and risk for HIV sero-conversion in adults in northern rural Malawi during widespread ART roll out, to understand better the determinants of continuing HIV transmission in this setting.

Methods: We used socio-demographic, HIV sero-survey test results and self-reported sexual behaviour survey data from the Karonga demographic surveillance site (population 38,000) for the period from 2007 to 2011 to estimate HIV incidence rates and trends for participants aged 15 – 60 years. Multiple imputation methods were used to estimate sero-conversion dates. Duration of marital and extra-marital partnerships were determined by using dates reported in multiple sexual behaviour surveys. Piecewise exponential regression was used to investigate the association between socio-demographic and sexual behaviour factors and risk for seroconversion, adjusting for confounders.

Results: HIV incidence was 4 per 1000 person-years in 2007, falling to 1 per 1000 person-years in 2011. The Hazard Ratio (HR) for HIV transmission was (3.0; 95% CI 1.2-7.2) in men who had first sex before age 15, compared to those with later first sex. Compared to never married men, the HR for seroconversion in previously married (divorced or widowed) men was 6.2 (95%CI 1.2-32.7). In women, the HR for seroconversion was 2.6 (95% CI 1.5 – 4.5) in those who were in the first six months of a new sexual partnership, compared with those in longer-term partnerships. For both men and

women, the HR for seroconversion was 3.3 times higher, 95% CI (men 1 – 10.5 and women 1.4 – 7.4) for those who acquired a new partner in the year before the survey compared to those who did not.

Conclusion or Interpretation: During a period of wide spread ART roll out, HIV incidence declined in both men and women in northern rural Malawi. Our findings show high risk for HIV seroconversion in men with earlier sexual debut and those who were formerly married. For women the first 6 months of a relationship is a high risk period. Our findings are consistent with reports from elsewhere and highlight the importance of improving knowledge in young people and those exiting and entering new partnerships on risk factors and prevention of HIV transmission.

Abstract 14

Disclosure of Sexual Practices to Family and Healthcare Providers by Men who have sex with Men in Nigeria.

Senate Amusu¹, Stefan Baral², Rebecca Nowak³, Sylvia Adebajo⁴, Merlin Robb^{5,6}, Julie Ake⁵, Manhattan Charurat⁴, Trevor Crowell^{5,6}

¹Walter Reed Program- Nigeria, , Nigeria, ²Johns Hopkins Bloomberg School of Public Health, Baltimore, USA, ³Institute of Human Virology, University of Maryland, Baltimore, USA, ⁴Population Council Nigeria, Abuja, Nigeria, ⁵U.S. Military HIV Research Program, Walter Reed Army Institute of Research, Silver Spring, USA, ⁶Henry M. Jackson Foundation for the Advancement of Military Medicine, Bethesda, USA

Background: Non-disclosure of same-sex practices by men who have sex with men (MSM) may hinder access to appropriate screening and care for HIV and sexually transmitted infections (STIs). However, disclosure may also be associated with stigma and discrimination. The objective of these analyses was to characterize disclosure of sexual orientation among Nigerian MSM, their sexual behaviors, and their experience of stigma and discrimination.

Methods: The TRUST/RV368 cohort recruits MSM in Abuja and Lagos, Nigeria, using respondent-driven sampling. In addition to HIV and STI screening, participants undergo a structured interview to collect detailed data on demographics, behaviors, experiences, healthcare engagement and other factors. Participants were categorized based on their responses to two questions: (1) "Have you told any member of your family that you have sex with other men or that you are attracted to other men?" and (2) "Have you told any health care worker that you have sex with other men or that you are attracted to other men?" Comparisons were made between groups who had and had not disclosed to family and/or healthcare providers (HCPs) using Pearson's chi-squared test and t-test. Multivariable Poisson regression models with robust error variance were used to estimate relative risk (RR) of disclosure and 95% confidence intervals (CIs) associated with factors such as age, gender identity, sexual orientation, religion, education, occupation, marital status, and city.

Results: Between March 2013 and October 2016, 1738 men (1067 in Abuja; 671 in Lagos) answered baseline questions about disclosure of sexual practices. Of these, 293 (16.8%) had disclosed their sexual orientation to a family member and 557 (32.0%) had disclosed to an HCP, including 156 (9.0%) who had disclosed to both family and HCPs. Men who disclosed their sexual orientation were more likely to use condoms always or almost always during receptive anal sex (40.4% vs. 28.1%, $p < 0.001$) and insertive anal sex (44.7% vs. 37.0%, $p < 0.001$). They were also more likely to express fear of seeking healthcare (38.6% vs. 28.1%, $p < 0.001$), have avoided healthcare (31.1% vs. 18.5%, $p < 0.001$), been assaulted (37.0% vs. 17.4%, $p < 0.001$), and been victims of sexual violence (29.5% vs. 24.9%, $p = 0.035$) because they had sex with men.

After adjusting for other factors, participants in Lagos were more likely than those in Abuja to disclose their sexual orientation (RR 1.18 [95% CI 1.14-1.22]). Compared to participants aged 21 years or younger, disclosure was more common among participants aged 22-30 years (RR 1.06 [95% CI 1.02-1.10]) and >30 years (RR 1.11 [95% CI 1.05-1.19]). Compared to participants with less than high school education, those with greater than high school education were more likely to disclose (RR 1.12 [95% CI 1.06-1.19]).

Conclusion: While disclosure of same-sex practices was associated with improved levels of condom use, it was also associated with increased reports of assault and sexual violence. Sensitizing family members and HCPs with the aim to create safe spaces for disclosure of sexual orientation could facilitate the use of specific interventions to address the healthcare needs of MSM, including routine screening for HIV and rectal STIs.

Abstract 15

Transactional sex among men who have sex with men (MSM) in Rwanda: Behavioral and Biological Surveillance Survey 2015

Eric Remera¹, **Andre Mbayiha**², Mutagoma Mwumvaneza¹, Dieudonne Sebuho¹, Antoine Rwego Gasasira², Samuel S. Malamba², Catherine Kayitesi¹, Lisa A. Mills², Sabin Nsazimana¹

¹Ministry of Health - Rwanda Biomedical Center, Kigali, Rwanda, ²Centers for Disease Control and Prevention, Kigali, Rwanda

Background: Transactional sex is one of the risk factors for HIV acquisition and transmission, however there is minimal information available in Rwanda on transactional sex among networks of men having sex with men (MSM). We here report findings about transactional sex in MSM from a behavioral and biological survey conducted in 2015 among MSM in Rwanda.

Methods: Participants were recruited using Respondent Driven Sampling (RDS) whereby four seeds were recruited to then recruit MSM peers in multiple waves through their networks nationally. Confidential interviews were conducted and data collected on portable electronic devices. All respondents gave their consent after being informed about the aims of the survey and their rights as participants. HIV testing was done using ELISA and Western Blot. RDS-Analyst and RDS package in STATA were used to analyze the data. Cluster survey multivariable logistic regression analysis that allowed for inter-cluster correlations was done using RDS-Analyst and weighted to account for the sampling method used.

Results: A total of 501 MSM were interviewed, and 41% (206) reported having had any anal or oral sex with a man in the 3 months preceding the survey. Of those recently sexually active with men, 96.3% reported being paid with money, goods or services, and 16.8% reported more than three men who had paid them for sex. Among 148 MSM who reported the number of times they were paid for sex, 93% [95% CI: 89.2 - 96.9] reported that they were paid between 1 and 12 times in the prior 3 months, with 6.9% reporting being paid more than 12 times. Men

paid for sex were mostly receptive and men paying for sex were mostly insertive. Approximately one third (30.6% [95% CI: 22.9 - 38.2]) of MSM never used condoms for transactional sex, while 50.8% reported having used a condom every time. In multivariate analysis, HIV prevalence was not significantly associated with reported transactional sex; HIV prevalence was 2.6% (95% CI 0.3-4.9) in those reporting transactional sex compared to 5.0% (95% CI 2.4-7.7) in those who did not report transactional sex [p= 0.571]. Although HIV prevalence was three times higher among MSM who reported transactional sex for more than 2 years at 4.5% (95% CI: 0.0 - 9.1) compared to 1.4% for those who reported transactional sex for less than 2 years (95% CI: 0.8 - 3.7), there was no significant association in multivariate analysis [p=0.372].

Conclusion: Transactional sex was extremely common among sexually active MSM, and was associated with multiple sexual partners and low condom use. The findings highlight the importance of investing more in HIV prevention strategies associated with behavior and harm reduction among the MSM community. In addition, further research is needed to understand factors associated with transactional sex and subsequent HIV risk among MSM in Rwanda.

Abstract 16

HIV and AIDS Stigma: What Drives the Gender HIV/AIDS Accepting Attitudes Gap in Malawi?

Margaret Chilongo¹, Gowokani Chijere Chirwa¹, Lonjezo Sithole²

¹*Economics Department, Chancellor College, Zomba, Malawi,*

²*National AIDS Commission, Lilongwe, Malawi*

Study Objectives: The main objective of this study is to investigate the socioeconomic factors that influence the gap in accepting attitudes towards people living with HIV and AIDS in Malawi. We do a gender-based analysis in view of the differential impact of the HIV and AIDS epidemic on the basis of gender. Statistics from the Malawi Demographic Health Surveys thus far reveal that the HIV and AIDS burden is heavily skewed against females, in terms of prevalence, incidence as well as socio-economic impact. In a bid to holistically combat the HIV and AIDS epidemic in line with the third Sustainable Development Goal (SDG3), there is need to take into account the gender dimension in respect of HIV and AIDS stigma policies. Our principal motivation in this study is therefore to demonstrate the relevance of this gender aspect, particularly with regard to stigma and discrimination.

Methodology: To explain the factors contributing to the attitude gap, we use the Blinder Oaxaca method for non-linear regression models, since our variables are binary in nature. Secondary data from the Malawi Demographic Health Survey of 2010 is used for analysis. STATA 13 is used to run the regressions. The analysis method quantifies how many people have HIV accepting attitudes between groups of male and female. It then decomposes (calculates) how much a specific explanatory variable, contributes towards the difference in accepting attitudes between males and females.

Main Results: Results, in terms of determinants, indicate that education, wealth, religion, age, residence type, and community prevalence rate are all significant in determining the accepting attitudes gap (difference) between men and women. However, employment status, wealth, religion, residence, listening to the radio, watching TV, HIV testing, residence in an average HIV prevalence

area, and HIV comprehensive knowledge are insignificant in explaining the HIV accepting attitudes gap. The decomposition analysis shows that accepting attitudes are 34% for men and 21% for women. The gap difference is around 13%, and the explained part is 13.22%. A large part of the gap remains unexplained. This implies that the message on HIV stigma, is yet to reach a large audience. Furthermore, it can be observed that the gap is being reduced by attaining at least primary education, going for HIV testing, being Muslim, being a Protestant and age by -1.66%, -1.4%, -0.75%, -0.08%, -0.53% respectively. However, watching TV, attaining higher education, and attaining secondary education level increases the gap by 2.79%, 2.49% and 7.85% respectively.

Conclusion: The acceptance of people living with HIV and AIDS is quite sub-optimal. Whilst there is a constant stream of information on HIV and AIDS, the results of our study suggest that we are shooting in the dark. Men are much more receptive than women. Given that the factors that contribute to this difference are not the same, there is a case for a more differentiated approach to HIV and AIDS message packaging and dissemination to narrow this accepting attitudes gap, thereby more effectively grappling with stigma and discrimination.

Abstract 17

Evaluating Different Linkage to HIV Treatment Implementation Models for Key Populations living with HIV in Cameroon.

liassou Mfochive Njindam¹, Ubald Tamoufe⁵, Yssouf Ouattara⁶, Dr. Mireille Mpoudi Ngole⁸, Celestin Ayangma⁸, Anna Abelson⁷, Carrie Lyons¹, Sosthenes Ketende¹, Michele Decker⁷, Ghislaine Fouda⁶, Falvien Ndonko⁶, Honnorat Gbais⁶, Daniel Levitts⁶, Anne Cecile Bissek², Serge Billong³, Oudou Njoya⁴, Stefan Baral¹, Guy Fako⁵, Victorine Toguem⁵

¹Johns Hopkins University - Cameroon Office, Yaounde, Cameroon, ²Department of Operational Research, MOH, Yaounde, Cameroon, ³National AIDS Control Committee, Yaounde, Cameroon, ⁴University Hospital Center, Yaounde, Cameroon, ⁵Metabiota Cameroun, Yaounde, Cameroon, ⁶CARE - Cameroon, Yaounde, Cameroon, ⁷DRFRH, Johns Hopkins Bloomberg School of Public Health, Baltimore, USA, ⁸Military Hospital Region No 1 Yaounde, Yaounde, Cameroon

Background: Consistent data have highlighted that though Cameroon has a generalized HIV epidemic with prevalence among adults of about 4%, HIV risks are not evenly distributed with burdens of over 30% among both female sex workers(FSW) and men who have sex with men(MSM). Moreover, there are suboptimal treatment outcomes among key populations due to limited awareness of status and stigma within the community and health system. Here, we examined three different implementation models for linking MSM and FSW living with HIV to existing treatment facilities in Cameroon to improve enrollment and retention in HIV care and treatment for key populations.

Methods: From December/2015-December/2016, 2262 FSW and 1323 MSM were recruited via respondent-driven-sampling(RDS) across five cities in Cameroon. The survey included HIV and syphilis testing and a structured instrument measuring determinants of engagement in care, stigma, and comprehensive risk assessment for HIV. Linkage strategy-1 consisted of referring newly diagnosed HIV-positive participants from an HIV testing site to a community-based organization for psychosocial support, and providing an appointment for enrollment at an HIV care and treatment facility. In linkage strategy-2, newly diagnosed HIV-positive participants were provided access to psychosocial counselors and clinicians at the study sites to increase access to therapeutic

counseling, referral, and linkage to care. Newly diagnosed participants in linkage strategy-3 are immediately put on treatment onsite and passively referred to treatment centers for continuing follow-up.

Results: At the early stage of data analysis, percentage of MSM living with HIV ranged from 4% in Bamenda to 45% in Yaoundé. Among FSW, HIV prevalence ranged from 15% in Kribi to 33% in Bamenda. Around 55% of participants living with HIV were newly diagnosed. 26% of those participants in Yaoundé were linked to treatment using strategy-1. While using strategy-2 in Douala, 61% were enrolled into treatment. Strategy-3 used in Kribi, Bertoua and Bamenda, allowed close to 100% participants were linked to treatment.

Conclusion: Results revealed high HIV prevalence among FSW and MSM with strong disparities between cities. Using different referral models, linkage to treatment improve significantly to closed to 100%. With national ultimate goal of enrolling 320,000 people living with HIV into treatment by 2017, effort to use linkage model 3 could play a major role in achieving this goal. RDS methodology is very powerful tools to recruit hidden key populations.

Abstract 18

Burden of HIV and Sexually Transmitted Co-Infections among the Most-At-Risk Populations in East Africa: A Review of The Echo Study.

Josphat Kosgei¹, Hannah Kibuuka³, Lucas Maganga², Sorachai Nitayaphan Nitayaphan⁴, Ignatius Ngetich¹, Elizabeth Ngetich¹, Deborah Langat¹, Christina Polyak⁵, Fredrick Sawe¹, Merlin Robb⁵

¹KEMRI Walter Reed Project Kericho, Kericho, Kenya,

²National Institute of Medical Research - Mbeya Medical

Research Center, Mbeya, Tanzania, ³Makerere University

Walter Reed Project, Kampala, Uganda, ⁴Armed Forces

Research Institute of Medical Sciences (AFRIMS), Bangkok,

Thailand, ⁵United States Military HIV Research Program

(MHRP), Bethesda, MD, USA

INTRODUCTION: Sex work remains an important contributor to the transmission dynamics of HIV within early, advanced and regressing epidemics in sub-Saharan Africa. Sexually transmitted infections (STIs) are among the most well-established risk factors for acquiring HIV. Moreover, HIV infection can increase susceptibility to STIs as individuals who are immune compromised are less able to mount a protective response.

MATERIALS AND METHODS: Between 2009 and 2013, most-at-risk populations (MARPs) were screened and enrolled into a prospective cohort study, the Echo Study, in Kenya, Uganda and Tanzania. Audio-Computer Administered Self Interview (ACASI) was used to assess behavioral risk to determine eligibility for participation. All consenting eligible MARPs were screened at baseline for HIV-1 (ELISA and Western Blot), Syphilis (Rapid Plasma Reagin test; confirmed with Treponemal Pallidum Haem-agglutination Antigen test), Herpes Simplex virus type-2, HSV-2 (HerpeSelect 2 ELISA IgG) and Hepatitis B (HBsAg EIA and HBsAg Confirmatory Assay). Bivariate analysis of results was done.

RESULTS: A total of 1621 participants were assessed to be at high risk for HIV infection with majority of the participants reported receiving goods for sex (80.3%), having had unprotected sex with three or more partners (61.0%) and having had symptoms of sexually transmitted infections in the

past three months (56.5%). One in ten (10.4%) participants reported having had sex with a known HIV positive partner. Majority of the participants (70.7%) reported a combination of more than one risk factor, with 4.5% of the participants having all the four HIV risk factors. Of all the participants, 1459 (90.0%) were females and all the 162 (10.0%) male participants were from the Uganda site. The overall HIV-1 prevalence in this population was 27.33%. The prevalence was significantly higher among females (28.7% and 14.7%, respectively, $p < 0.0001$). Of those screened, 7.9% tested positive for syphilis, with a risk difference of 22.8% between the HIV positive and HIV negative volunteers ($p < 0.0001$, 95% CI: 13.8 to 31.8). About two-thirds (61.0%) tested positive for HSV-2 infection, with the risk of being HIV positive among the HSV-2 positive higher than the HSV-2 negative (RR=3.99). A total of 76 (4.7%) participants tested positive for hepatitis B infection with no significant difference in prevalence among the HIV positive and negative (32.9% and 27.1% respectively; $p = 0.1335$).

CONCLUSION: Despite HIV prevention efforts in the last two decades targeting MARPs, the prevalence of HIV is still high, with about one in every three being HIV infected in our cohort. This prevalence is about five times that of the general population in East Africa. In contrast to many studies worldwide, the prevalence of HIV among the MSMs in our cohort was about two times lower than that of the female sex workers, and this calls for more research. The MARPs also had a high burden of syphilis and HSV-2 infection that increased their risk for HIV infection, with HSV-2 infection associated with four-fold increased risk. Together with HIV prevention strategies, screening and management of sexually transmitted infections need to be enhanced for this population.

Abstract 19

Early experiences in integrating Cervical Cancer Screening and Treatment into HIV services in Zomba Central Hospital, Malawi

Colin Pfaff^{1,2}, Victor Singano¹, Harriet Akello¹, Alemayehu Amberbir¹, Josh Berman¹, Aunex Kwekwesa¹, Alfred Matengeni¹, Victor Banda¹, Jack Msonko¹, Colin Speight³, Biselele Kabeya⁴, Joep Van Oosterhout⁵

¹*Dignitas International, Zomba, Malawi*, ²*Department of Department of Family Medicine, College of Medicine, University of Malawi, Blantyre, Malawi*, ³*Lighthouse Trust, Lilongwe, Malawi*, ⁴*Department of Obstetrics and Gynaecology, Zomba Central Hospital, Zomba, Malawi*, ⁵*Department of Medicine, College of Medicine, University of Malawi, Blantyre, Malawi*

Introduction: Malawi has the highest rate of cervical cancer globally and cervical cancer is six to eight times more common in women with HIV. HIV programmes provide an ideal setting to integrate cervical cancer screening.

Methods: Tisungane HIV clinic at Zomba Central Hospital has around 3700 adult women receiving treatment. In October 2015 a model of integrated cervical cancer screening using visual inspection with acetic acid (VIA) was adopted. Training of providers was conducted and referral protocols established. All women age 20 and above in the HIV clinic were asked if they had cervical cancer screening in the past three years and if not, were referred for screening. Expert Clients, patients on ART who have shown exemplary adherence, accompanied the women who accepted screening. Screening was done daily by nurses in a room adjacent to the HIV clinic. Cold coagulation was used to treat pre-cancerous lesions as experience elsewhere in Malawi had shown the difficulties in maintaining cryotherapy equipment and the relative robustness of cold coagulation equipment. Data collection was initially collected using the existing cervical cancer screening register.

Results: During implementation between October 2015 and April 2016 several challenges became apparent: a small minority of women being referred for VIA were accessing the service. In addition some women with pre-cancerous lesions elected to defer treatment with cold coagulation but did not return for care. As a response to the above two challenges, a modification to the existing HIV

programme Electronic Medical Record (EMR), was developed to incorporate VIA. This modification reminds clinicians about when VIA is due, limits daily numbers of referrals to match capacity, asks clinicians to check if women went to VIA when referred and alerts clinicians to women who had a positive VIA but did not receive same day treatment. Subsequent cervical cancer screening from May 2016 to January 2017 was performed in 769 patients from the HIV clinic. For 561 women, this was the first cervical cancer screening they had undergone. Of those who went for initial screening, 17 (3%) were found to have aceto-white lesions suggestive of pre cancer. Of these women, 5 had a cold coagulation procedure performed the same day, 3 had cold coagulation on a later date, 4 were referred due to having a lesion that was too large and data were unavailable for 5 patients.

Conclusions / Recommendations: Screening within an HIV clinic seems feasible, although it required additional inputs of staff to run a daily service in Zomba. A structured approach to screening in the HIV clinic was important and this was facilitated by a modification of the EMR. 15% of all women on ART were screened for VIA in 9 months which is close to the target of screening all eligible women in three years. The rate of testing positive for VIA of 3% is lower than expected and may be due to the provider's experience in cervical cancer screening and the immune status of many long term and new patients in the clinic.

Abstract 20

Meeting the contraceptive needs of HIV + individuals with a “one Stop Shop” Model in Antiretroviral (ART) clinics in northern part of Zambia

Thierry Malebe^{1,2}, Prisca Kasonde¹, Esther Sakala¹, Catherine Mwale¹, Mushota Kabaso¹, Mr. Gift Sitenge¹, Michael Welsh¹

¹Family Health International (FHI360), Lusaka, Zambia,

²University of Witwatersrand, Johannesburg, South Africa

Background: Addressing the family planning needs of HIV+ men and women remains an important public health challenge. HIV infected individuals or couples face the same choices regarding the number, the timing and the spacing of their children. However, too often their needs are constrained by an overemphasis on issues that are not directly related to their desire to plan their families. However, their need for family Planning is usually neglected due to a number of factors including medical and social needs, inadequate provider time and support due to work overload in ART clinic settings, and lack of community awareness and support for family planning information and services for People Living with HIV and AIDS (PLHIV). In some instances, ART patients are referred to Maternal Newborn and child health (MNCH) clinics where FP is provided but are lost to follow up before their contraceptive needs can be met. We tested the feasibility of “one stop shop” model of providing FP services within ART clinics.

Description: We implemented a “one stop shop” model and in each of the 6 purposely selected districts, we selected, 2 busy ART clinics for easy monitoring. After engaging district leadership, we trained 300 ART providers in FP, developed an orientation package and standard operating procedures on FP integration. We provided onsite monthly mentorship and focused technical support to ART providers emphasizing the importance of finding out during counseling the unmet needs for family planning of all women, men and young people in the reproductive age group who pass through ART clinic so that clients can be provided with opportunity to access FP method of their choice. We mobilized the community and key stakeholders around those ART clinics and oriented

ART providers and lay counselors on FP/ART integration. We procured FP equipment for insertions and removals of implants and intra-uterine copper device (IUCD) for ART clinics.

Lessons learned: During this period, out of 42, 350 patients who received ART services, 31,333 received an FP method representing 74% of clients received FP and HIV integrated services. Of the 31, 333 who received FP services in within ART, 15,101 received injectable method; 11,800 received Jadelle implants; 2,690 received oral contraceptives and 1, 742 IUCDs

Conclusions: Despite the fear to integrating FP services into ART clinics due to various factors that include provider work overload, it is feasible to integrate FP services within ART clinics using a “one stop shop” model with very high acceptability by both providers and PLHIV. This approach is being replicated in 120 more ART sites to improve access to FP services for PLHIV.

Abstract 21

The persistence of violence and discrimination against MSM in Senegal aggravates their vulnerability. The experience of the association ADAMA

Khaly Diaw^{1,3}, Gabrièle Laborde-Balen², Mr Ibrahim Diagne^{1,3}, Mr Malick Fall^{1,3}, Mr Ndene Sylla³, Mr Ibrahim Ba³, Mr Diouma Ba³

¹Association Adama, Dakar, Senegal, ²CRCF/Site ANRS/Expertise France, Dakar, Senegal, ³Association RNP+, Dakar, Senegal

Background: Senegal is a country where homosexuality is penalized. In 2015, eight homosexuals were sentenced to prison terms. In addition to the threat of deprivation of liberty, MSM face discrimination in everyday life. However, they form a vulnerable population with an HIV prevalence of 21.8%, compared to 0.7% in the general population.

The ADAMA association exists since 2003. It is one of the oldest associations openly claiming the sexual orientation of MSM of its members. It works with other associations, including the National Network of People Living with HIV (RNP +) on different aspects: HIV prevention and testing, medical support and guidance, support and advocacy for MSM. It includes 132 active members, 46 of whom are people living with HIV. It is fighting for recognition of the rights of MSM and denounces the cases of discrimination they face.

Methods: Systematic testimonials were collected during the years 2015 and 2016, classified according to different categories. Actions are then undertaken to support MSM, mediate in families, refer people to care facilities, report violence and human rights abuses.

Results: Various forms of violence and violated rights have been identified in 2015 and 2016 in Dakar. 27 cases of verbal and physical violence. They concerned individuals and groups of MSM, with the home intrusion of neighbors who were beaten by young MSM, aggression in a public park of young MSM by a homophobic group. People generally did not want to file a complaint, fearing to aggravate their situation. When complaints have

been filed, they have been dismissed. 14 cases of discrimination in access to care: in some health facilities, MSM are faced with attitudes of rejection by healthcare workers, which sometimes led patients to stop their follow-up and thus their antiretroviral treatment. 20 cases of discrimination in access to work or housing: people testified against the refusal to rent a dwelling or to grant work for the sole reason of their sexual orientation, which had been disclosed by third parties. A young MSM was evicted from his home following the denunciation of his neighbors.

Conclusion: Despite the attention of health authorities and AIDS NGOs, for whom MSM are among the "key populations", MSM are confronted daily with physical, verbal and discrimination. This situation aggravates their precariousness and their sense of insecurity and increases their vulnerability, especially to HIV, because they are forced to hide. Associations such as ADAMA and RNP + are struggling for the recognition of rights and support victims of violence, but in the repressive context of Senegal, and despite the support of health authorities, their scope is limited.

Abstract 22

Partnership duration and HIV serostatus disclosure among People Living with HIV/AIDS in Lilongwe, Malawi

Tinkhani Mbichila¹, Maganizo Chagomerana¹, Jennifer Tang², Lisa Haddad³, Mina Hosseinipour¹, Hannock Tweya⁴, Samuel Phiri⁴

¹UNC Project, Lilongwe, Malawi, ²UNC Chapel Hill, , USA, ³Emory University, Atlanta, USA , ⁴Light House Clinic, Lilongwe, Malawi

Introduction: HIV serostatus disclosure to sexual partners is an important aspect of HIV prevention, treatment and care. Disclosure may reduce HIV transmission by raising awareness, reducing risky behavior and increasing adherence to Antiretroviral Therapy (ART) and acquisition of support. The association between duration with sexual partner and serostatus disclosure has not been well described in the literature. The objective of this study was to determine the association between partnership duration and serostatus disclosure among people living with HIV/AIDS.

Materials and Methods: In this study, we used data from a cross-sectional study evaluating knowledge, attitude and practices towards reproductive health for HIV-infected men and women attending the two Lighthouse Trust clinics (Lighthouse Clinic and Martin Preuss Center) in Lilongwe, Malawi from September 2013 to December 2013. All clients registered with the ART clinic aged 18 – 45 years and sexually active within the past 6 months were eligible for the survey. The primary exposure variable was partnership duration and the outcome was disclosure. Partnership duration was categorized as 1 year or less versus more than 1 year. Covariates in the study were age, gender, education, residence, marital status, number of sexual partners in the past month, time since HIV diagnosis, ART duration and knowledge of partner HIV status. In univariate analysis, we used Fisher's exact test to test differences in the distribution of categorical variables and Wilcoxon rank sum test to test differences in medians for continuous variables. Logistical regression was used to estimate the odds ratio (OR) and the corresponding 95% confidence interval (CI) of the association between partnership duration and

serostatus disclosure, controlling for other variables.

Results: There were 562 participants in the survey and 308 females (54.8%). The median age was 35 years (IQR 30 - 40). The majority of the participants were married (n=498, 90.7%), on ART (n=495, 88%) and had disclosed their serostatus to their partner (n=552, 95.3%) at the time of the survey. Marital status (p <0.001), knowledge of all sexual partners' HIV serostatus (p <0.001) and being on ART (p = 0.023) were positively associated with serostatus disclosure. Participants who were in a relationship for ≤ 1 year were significantly less likely to disclose their serostatus to their sexual partners compared to those who were in a relationship for > 1 year (OR = 0.18, 95% CI: 0.06, 0.59)

Conclusion: This study indicates that HIV- infected individuals who have been in partnership for more than 1 year are more likely to disclose their serostatus to their partners. Public health experts should focus on couple-based interventions that encourage dialogue and openness among partners within their first relationship year to decrease HIV transmission and encourage treatment and support.

Abstract 23

Cross sectional trend analysis of characteristics and management of presumptive TB patients in integrated TB/HIV facilities in Malawi: 2014-2016

Wingston Felix Ng'ambi^{1,2}, Salem Gugsa^{2,3}, Henry Kanyerere⁴, Isaiah Dambe⁴, Belaineh Girma^{1,4}, Hannock Tweya^{2,5}, Sam Phiri²

¹International Training and Education Center for Health (I-TECH), Lilongwe, Malawi, ²Lighthouse Trust, Kamuzu Central Hospital, , Malawi, ³International Training and Education Center for Health (I-TECH), Seattle, USA, ⁴National Tuberculosis Control Programme, Lilongwe, Malawi, ⁵International Union Against Tuberculosis and Lung Disease, Paris, France

Introduction: In 2014, the National Tuberculosis Control Programme (NTP), in collaboration with Lighthouse Trust, revised and implemented the use of presumptive TB case register. The revision of the register included the incorporation of HIV-related variables. While there has been publication on characterization and management of confirmed TB cases, there is minimal amount of information on the management of presumptive TB cases in Malawi and other sub-Saharan countries. Further, no formal evaluations of provider-initiated testing and counselling (PITC) amongst presumptive TB cases has been undertaken despite the implementation of PITC for HIV in 2011 in Malawi. The aim of this study was to characterize the trends in HIV-related health management of presumptive TB cases that were provided services at selected health facilities in Malawi from April 2014 to March 2016.

Study design: We conducted a cross-sectional evaluation of presumptive TB cases registered for routine health services at 21 selected facilities from April 2014 to June 2016. We generated frequencies, proportions and odds ratios. We used logistic regression to generate the odds ratios while controlling for the effect of facility differences on the odds of developing pulmonary tuberculosis (PTB). We considered a statistical difference to be significant at $P < 0.05$. We excluded missing data from logistic regression analysis and calculation of prevalence of PTB and HIV. All the analyses were done using STATA v13.1.

Results: There were 28567 presumptive TB cases in the observation period. Of those patients 15541(54%) were males, 14681(51%) were aged 25-44 years of age and 23198(81%) had known HIV status. Of those with known HIV status, 11307(49%) were HIV positive. 8216(73%) of the HIV positive presumptive TB patients were on ART while 1297(11%) of the HIV positive TB cases were documented as being on TB treatment. Patients sent for sputum examination from OPD, SCP, HTC and walk-in had consistently high proportions diagnosed of PTB regardless of HIV status. We excluded from analysis 8563(30%) records due to missing data. PTB was detected in 14%(2886/20004) of the patients. Compared to HIV negative patients, adjusted odds ratios for PTB were 1.29(1.13-1.47), 1.48(1.35-1.64) and 1.95(1.48-2.55) with p -values < 0.001 in patients newly diagnosed HIV positive, on ART and those not yet on ART respectively. There were 7829 patients that accessed gene-Xpert. Of these, 5357(68%) were HIV positive. Of the HIV positive patients that accessed gene-Xpert, 3959(74%) were on ART, 1237(23%) were newly diagnosed HIV positive while 161(3%) were HIV positive but not yet on ART ($P < 0.001$).

Conclusion: HIV ascertainment among patients with presumptive TB was high. HIV prevalence among patients with presumptive TB was high. Gene-Xpert was not done in 32% of the HIV positive presumptive TB patients. Programmatic data documentation should be improved in TB/HIV integrated facilities through refresher training on completing paper-based patient registry system. The NTP and HIV program should ensure that gene-Xpert is used in all HIV positive presumptive TB patients. Provider initiated HIV testing and counselling should be enforced in TB/HIV integrated clinics in order to achieve the first 90 of the UNAIDS 90-90-90 HIV strategy.

Abstract 24

Burden of HIV pretreatment Drug Resistance in Cameroon

Gaëlle Francine Tchouwa¹, Jenny Domyeum¹, Sabrina Eymard-Duvernay², Amandine Cournil², Martine Peeters², Eric Delaporte², Elliot Raizes³, Eitel Mpoudi-Ngole¹, Avelin Aghokeng Fobang^{1,2}

¹CREMER, Virology laboratory IMPM-IRD, Yaoundé, Cameroon, ²IRD UMI-233, INSERM U1175, Université de Montpellier, Unité TransVIHMI, Montpellier, France, ³Centers for Disease Control and Prevention, Atlanta, USA

Background: The ongoing scale-up of antiretroviral treatment (ART) in sub-Saharan Africa has now moved to a new era with the recent WHO recommendations to test and immediately treat HIV-positive individuals. Pre-treatment drug resistance (PDR) may significantly compromise ART efficacy if high PDR frequency is found for common first-line antiretrovirals (ARVs). We present here the first nationally-representative PDR study conducted in Cameroon.

Methods: HIV-infected individuals eligible for first-line ART initiation as per national recommendations were recruited from 24 clinics that were randomly selected in urban and rural regions. Recruitments were conducted during a period of six months, from February to July 2015, and the dried blood spot specimens (DBS) collected were centralized in a WHO-accredited laboratory in Yaoundé, Cameroon, for genotyping and sequencing. HIV drug resistance (HIVDR) mutations were identified using the Stanford algorithm.

Results: Overall, 379 participants were recruited and 335 pol sequences were successfully obtained. Two hundred and eighteen sequences were from patients attending urban ART sites and 117 from patients seen at rural facilities. Ten percent (32/335) were from participants with reported previous exposure to ARVs, through PMTCT intervention or ART. PDR frequency among all initiators was 9.7% (95% CI: 6.6-14.2%) overall, 13.3% (8.3-20.4%) in urban regions and 4.1% (1.7-9.5%) in rural regions. Among participants with no prior exposure to ARVs, PDR frequency was 9.8% (6.2-15.1%) overall, and 12.9% (7.5-21.2%) and 5.1% (2.1-11.7%) in urban and rural regions, respectively. Ninety-three percent of major PDR mutations were NNRTI mutations, essentially

K103N and Y181C, and only a few (<3%) major NRTI and PI mutations were found.

Conclusions: Our study is the first nationwide evaluation of PDR in Cameroon and indicates that 10% of patients initiating the first-line ART carry a mutated virus and may be at risk of premature treatment failure. Before implementing the test and treat strategy in Cameroon as recommended by WHO, interventions to prevent HIVDR must be urgently implemented, especially in urban regions where higher levels of PDR prevalence were observed.

Abstract 25

Linkage to treatment and retention amongst adolescents and young adults in a large antiretroviral treatment program in Nigeria

Hadiza Khamofu¹, Ochanya Idoko¹, Titilope Badru¹, Emeka Okechukwu², Ezekiel James², Joana Nwosu², Emeka Asadu³, Edward Oladele¹, Oluwasanmi Adedokun¹, Kwasi Torpey⁴, Kelly Badiane², Han Kang², Satish Raj Pandey¹

¹FHI 360, Abuja, Nigeria, ²United States Agency for International Development (USAID) Nigeria, Abuja, Nigeria, ³Federal Ministry of Health (FMOH) Nigeria, Abuja, Nigeria, ⁴FHI 360, Accra, Ghana

Background: Nigeria has the second highest number of persons living with HIV in Africa with high rates of new infections and deaths each year. PEPFAR through the United States Agency for International Development (USAID) has supported the Strengthening Integrated Delivery of HIV/AIDS Services (SIDHAS) project implemented by an FHI 360-led consortium in Nigeria from 2011 till date. Globally, adolescent focused programming has not been given adequate attention. This paper seeks to describe the linkage to treatment and retention amongst adolescents and young adults on the SIDHAS project over a one-year period.

Methods: We analyzed aggregate data from the District Health Information System (DHIS) for clients age groups 15–19 years and 20–24 years who were tested for HIV, to determine those who tested HIV positive and those initiated on ART between October 2014 and September 2015 from 248 health facilities in 13 states. Further analysis of the duration on treatment before default was done using client level data collected using the Retention and Audit Determination Tool (RADET), an excel-based tool developed by PEPFAR Nigeria to validate clients currently on ART. The current status of all patients as at March 2016 was assessed from their hospital records and patients were defined as “alive”, “lost to follow-up”, “transferred-out”, “stopped treatment” and “dead”.

Results: Of the 1,652,394 patients reviewed 16% were in the 15 to 24 age group. The total number of patients tested for HIV were 80,603 (M=32,589, F=48,014) and 176,462 (M=84,019, F=92,443) for

the 15-19 years and 20-24 years age groups respectively. Of these, 2% (1,748: M=400, F=1348) and 4% (7,080: M=1,587, F=5,493) tested HIV positive and 66% (1,158: M=181, F=977) and 63% (4,440: M=678, F=3,762) were initiated on ART (based on WHO 2013 guidelines) in the respective age groups. Overall retention rates in each age group as at March 2016 was 54% and 58% for 15-19 years and 20-24 years respectively. A total of 486 (42%) and 1,690 (38%) were lost to follow up (LTFU) in each age group. Amongst the 15-19 year old LTFU, majority (332: 68%) did not return after the initial enrollment visit, 24% (115) defaulted within 1 to 3 months on ART, 4%(19) within 4 to 6 months and 4% (20) within 6 to 12 months on ART. For the 20-24 years age group 63% (1,060) did not return after the initial enrollment visit, 26% (435) defaulted within 1 to 3 months on ART, 5% (92) within 4 to 6 months and 6% (103) within 6 to 12 months on ART.

Conclusion: The analysis reveals significant gaps in linkage to treatment and retention among adolescent and young adults living with HIV. Comprehensive adolescent/youth focused programming is urgently needed in Nigeria to reduce adolescent, young male and female vulnerabilities.

Abstract 27

Loss to follow up among newly diagnosed HIV positive pregnant women in the option B+ program in Malawi.

Mathias John¹, Bryan Mthiko¹, Maganizo Chagomerana¹, Caroline Melhado¹, Bryna Harrington¹, Austin Wesevich¹, Jacob Phulusa¹, Robert Flick¹, chimwemwe Baluwa¹, Allan Jumbe¹, Mina Hosseinipour^{1,2}

¹UNC Project, Lilongwe, Malawi, ²Department of Medicine, University of North Carolina, , USA

Background: Option B+ program offers immediate antiretroviral therapy (ART) to all pregnant women diagnosed with HIV, with an expectation of life long treatment for improved maternal health. Although Option B+ has expanded treatment access in pregnant women, retention in the program remains a challenge. We evaluated factors associated with loss to follow-up in the program.

Methods: 299 newly diagnosed HIV infected, ART naive women were enrolled into a prospective observational cohort study from May 2015-Nov 2016 at Bwaila district hospital; a large government Antenatal Clinic (ANC) in Lilongwe, Malawi. At enrollment, we collected baseline demographic data, tracing information and laboratory evaluations. A trained community liaison was informed of all missed visits and would perform phone tracing and physical tracing to locate participants until found or three attempts were made to contact the missing participant. We defined loss to follow up (LTFU) as missing after 90 days from their last documented visit, excluding those known to have died. We used Cox Proportional regression model to estimate hazard ratios of LTFU and identify the predictors of LTFU.

Results: Among the 299 women enrolled, 3 died during the study. The median age at enrolment was 26 years (IQR 22-30) and the median follow-up time was 11 months (IQR: 8-14). 35/299 women (12%) were LTFU; including 9/35 (26%) before delivery. Of the 35 LTFU, 6/35 (17%) were brought back to care after tracing. Overall incidence of LTFU per month was 1% (95% C.I.=0.8%-1.5%). Reasons given for LTFU were: Relocated =15 (43%), Not interested =7(20%, 3 were not interested because they had lost the pregnancy), Travelled=1 (2%).We could not establish reasons for LTFU for 12

participants. Being married (HR= 0.40, 95% C.I = 0.18 -0.88) and staying longer in a relationship (HR = 0.43, 95% C.I =0.22 -0.84) was associated with lower hazard of LTFU.

Conclusion: LTFU among pregnant or breastfeeding women newly initiated on ART will affect the success of implementation of the Option B+ program. The risk factors for LTFU include pregnancies of newer relationships and pregnancies to unmarried mothers, however this is not exhaustive. There is need to identify women facing socio-economic as well as treatment related risk factors for LTFU and develop mechanisms to ensure that all women are retained on ART during pregnancy and beyond.

Abstract 28

Six month retention among patients initiated under Treat All learning phase in Zimbabwe: implications for national scale up in high prevalence, resource limited settings

Karen Webb¹, Vivian Chitiyo¹, Sara Page-Mtongwiza¹, Diana Patel¹, Talent Maphosa¹, Barbara Engelsmann¹

¹Organisation For Public Health Interventions And Development, Harare, Zimbabwe

Background: Following ART initiation, adherence and retention in care are recognized as central to achieving viral suppression and the 3rd 90. Little is known about the retention rates of patients initiated under WHO 2015 Test and Treat (Treat All) guidelines in sub-Saharan Africa. This presentation will provide data on 3 and 6 month retention rates among the first cohort of patients to be initiated on ART during the Treat All learning phase in Bulilima (a cross-border, high incidence area) and Mutare Districts (a high prevalence area) of Zimbabwe.

Methods: We conducted a retrospective cohort analysis of routinely collected patient-level data among all clients initiated on ART from Jun-July 2016 at 22 purposively selected health facilities in Bulilima and Mutare Districts, Matebeleland South Province. All selected sites were PEPFAR prioritised facilities based upon high volume of clients on ART. Client characteristics and access to HIV care from Jun-Dec 2016 were abstracted from facility-held patient charts.

Results: A total of 446 patients were initiated on ART from Jun-July 2016, the majority were: female (56.8%), median age 32 (IQR 25-43), initiated the same day of HIV diagnosis (68%) without baseline CD4 (69.2%). From day of initiation, we document significant geographical variation by District in retention in HIV care within 0-3 months ranging from 42.4% (n=95) in Bulilima, to 92% (n=211) in Mutare ($p < 0.0001$). Overall, 33% of clients (n=74) were lost to follow up (no HIV care within 6 months of ART initiation) in Bulilima versus 7% (n=15) in Mutare.

Conclusions: Our findings show large, significant geographical variation in documented retention in

HIV care following ART initiation under Treat All. Findings indicate differentiated models of care to increase population-specific retention that accommodate to geographical and population-specific needs will be required to maintain retention and adherence to reach the 3rd 90 in Zimbabwe. Future research should seek to trace a sample of clients identified as LTFU to determine true outcomes.

Abstract 29

Evaluation of a Community Defaulter tracing program focused on mothers who accessed the PMTCT option B+ program in Malawi

Haswel Jere¹, Paola Germano¹, Darlington Thole¹, Isaac Mkandawire¹, Victor Tolno¹, Giuseppe Liotta²

¹Dream Program, Lilongwe , Malawi, ²University of Rome , Tor Vergata, Italy

Introduction: Malawi pioneered and adopted the Option B plus approach in 2012 in which all pregnant women are put on ART regardless of baseline Cd4 count. In 2016, Malawi adopted test and treat approach where all patients diagnosed with HIV are put on therapy regardless of the immune status. One of the major challenges with this approach for both PMTCT and General ART, is the potential for people who are relatively healthy when starting therapy not to adhere to treatment. For example, the national 24 months default rate for women in Option B plus is about 21% on average. With support from UNAIDS , DREAM program carried out project to trace and bring back to care Women who had been lost to follow up in 26 health facilities in four districts in the southern region .

Objective: The objective of the study is to evaluate the effectiveness of the defaulter tracing program in the 26 health facilities in the four districts of Mangochi, Machinga, Balaka and Blantyre

Method: The program encompasses the training of mentor mothers who are involved in tracing the patients. The patients are requested to give their address details in the framework of the routine procedure of the National Program in order to allow the tracing in case of need. The activity of the mentor mothers is reported in a dedicated register. Patients that defaulted treatment were identified on weekly basis by the ART clerk who then generated a list of the names with physical address as indicated on the personal data space on the master card. The list was then given to a trained mentor mother resident within catchment area of the defaulters for tracing. Data from the registers was analyzed using excel.

Results: Out of 1513 women who classified as defaulters, 87.9(1330/1513) were traced and found with 12 % not being traced due to wrong maps , wrong names and poor documentation. Among those who were found and traced, 78.6% (1083/1330) were brought back to care. Balaka had the highest return to care (82%) while Machinga had the lowest return to care (64%). About 10% (135/1330) classified as defaulters were noted to have self-transferred to other sites while the death rate was 2.6% (35/1330). Comparison between Urban and rural setting showed that Patients in urban were more likely not to be traced (75.7% vs. 89.9%).

Conclusion /Recommendation: The project was successful in bringing back to care a significant percentage of patients who had defaulted. However there were variations among the districts .Comparison between urban setting and rural /semi-rural setting showed that defaulters in rural areas are more likely to be brought back to care than in the urban areas. Defaulter tracing interventions are effective, but the issues of sustainability remain a challenge in the absence of financial support.

Abstract 30

CrAg positivity rates reported from a national CD4-reflexed screening programme identify high-risk regions of co-existent HIV/Cryptococcal disease, requiring urgent programmatic focus into care

Lindi Coetzee^{1,2}, Naseem Cassim^{1,2}, Glodean Mokone¹, Deborah, K. Glencross^{1,2}

¹National Health Laboratory Service, Johannesburg, South Africa, ²University of the Witwatersrand, Johannesburg, South Africa

Introduction: Cryptococcal disease continues to be a major co-infection in HIV positive patients with low CD4 counts. Local South African and International HIV guidelines have included screening for Cryptococcal antigenaemia (CrAg) in patients with a CD4<100cells/µl, either through clinician initiated testing or more recently in South Africa, through reflexed testing against a confirmed CD4 count<100cells/µl. This is coordinated through a network of 49 CD4 testing facilities of the National Health Laboratory Service (NHLS), where a national reflex program was initiated in July 2017 with national implementation from September 2017. The aim of this study was to assess whether the percentage and absolute number of positively identified patients, grouped according to decreasing CD4 count, could be used to highlight areas with higher burden of disease for intensified programmatic support.

Method: Corporate Data Warehouse (CDW) CrAg specimen level data was extracted for the period July to December 2016. The data extract included the episode number, date of testing, health-facility, and province, health district, testing laboratory, CD4 count and CrAg result (positive, negative or equivocal). Microsoft Excel was used to assess the CrAg positivity rate (PR) for defined CD4 test ranges at the national, provincial and district level.

Results: Over the 6-month period, 129 073 CD4 samples were tested for CrAg. Of these, 5.4% tested positive (n=6951) and 94.6% negative (n=122 121) overall with a national CrAg positivity rate of 4.8 to 5.9 over the period. Results confirmed that the highest positivity rate of 8.7% was

associated with an average CD4 count <10cells/µl. Provincial positivity mean (n=9) was 4.8±1.2% with the highest % reported for the KwaZulu-Natal province (6.9%) followed by Eastern Cape (5.7%), Gauteng (5.7%) and Mpumalanga (5.2%). Positivity rates for the 52 health districts ranged between 1.7% (Pixley ka Seme) to 8.7% (Umkhanyakude). In total, 25/52 districts had a PR of 5% or more, with 5 districts exceeding 8%. Three of these districts were in the KwaZulu-Natal province and one in the Eastern Cape and Northern Cape provinces each. Of all patients tested, 36% were hospitalized (mean PR of 7.8%) while the majority were referred from clinics (64%) with a mean 4% PR. 7% of these patients presented with an extremely low CD4 count of <10cells/µl. 98% of all CD4's with a count<100cells/µl had a corresponding CrAg result.

Discussion: CrAg positivity data can be used to identify health districts/health facilities with a high burden of cryptococcal disease for better intervention and patient management. Previously reported data could only estimate the number of patients qualifying for a reflex CrAg test based on a CD4<100cells/µl per province and district, while this is the first report on positivity rates since the initiation of the reflex CrAg screening program. This work also suggests that CrAg positive patients identified with exceptionally low CD4 counts be regarded as a medical emergency, requiring algorithms and systems to immediately fast track these patients into care with attention paid to careful monitoring of linked IRIS-type syndrome during the course of treating their co-existing HIV infection and Cryptococcal disease.

Abstract 31

Validation of a screening tool to improve HIV case finding in pediatric wards in Malawi

Dennis Chasweka¹, Mike Nyirenda¹, Risa Hoffman^{1,2}, Rachel Thomas^{1,2}, Alan Schooley^{1,2}, Marjan Javanbakht³, Anteneh Worku⁴

¹Partners in Hope-EQUIP, Lilongwe, Malawi, ²University of California, Los Angeles, David Geffen School of Medicine, Division of Infectious Diseases, Los Angeles, United States of America, ³University of California Los Angeles School of Public Health, Department of Epidemiology, Los Angeles, United States of America, ⁴United States Agency for International Development, Lilongwe, Malawi

Background: In Malawi, Provider Initiated Counselling and Testing for children often targets patients based on a set of common symptoms. This poses a risk for delayed diagnosis in infants and children with less typical presentations and may result in unfavorable outcomes. Efficient methods to identify HIV+ children could help to prioritize resources in settings like Malawi. In Zimbabwe, a pediatric HIV screening tool was shown to reduce the number of children needing to be tested to find one HIV+ child by 56%. We adapted the Zimbabwean screening tool for the Malawi setting and sought to validate its performance in pediatric wards.

Methodology: Between July-September 2016, we validated the tool in pediatric wards at seven sites in Central Malawi: 5 district and 2 mission hospitals. HIV Diagnostic Assistants (HDAs) were trained on the use of the screening tool. All children admitted to the ward between 1-15 years were included if they were HIV status unknown. Guardians were offered HIV testing for the child and asked to respond to six questions: Has the child previously been admitted to the hospital? Is the child sick more often than other children? Is the child shorter/smaller than others in the same age group? Does the child had recurring skin problems? Does the child has frequent ear discharge? Have one or both of the natural parents died? Responses and HIV test results were recorded within the HDA workbook. STATA (version 11) was used to summarize sociodemographic data. Positive and negative predictive value (PPV and NPV) and sensitivity and specificity were calculated using different score cut-offs (≥ 1 up to ≥ 4).

Results: A total of 1815 children were screened including 994 males (55.2%) and 807 females (44.8%) with median age of 3 years (Interquartile range (IQR) 1-6). HIV prevalence was 1.5 % (N=27). The median score on the screening tool was 1 (IQR 0-2). The screening tool had high NPV regardless of cut-off used (highest NPV 99.7% with cutoff of ≥ 1). There was low PPV regardless of score (2%-18%). High sensitivity was achieved with a score of ≥ 1 (92.6%) and high specificity with a score of ≥ 4 (97.7%) (Table). Two of the 27 children who tested HIV+ (7.4%) had scores < 1 (no positive responses). Applying the performance of the screening tool in our sample to a sample of 100,000 children with similar HIV prevalence (1.5%), the screening tool would accurately identify 1500 HIV+ children for screening but miss ~5 children who would "screen out" as being low risk by having no positive responses to the questions.

Conclusion: Our data indicate a brief screening tool to assess risk of HIV may be useful in pediatric wards to identify children with lowest risk who may not require testing. However, more data are needed to achieve an optimal statistical validation of the tool. Despite high NPV, a small number of HIV+ children would be missed by employing a screening process. Future analyses will include cost-effectiveness and analysis of predictive values with a larger sample size.

Abstract 32

Moderate to high antiretroviral therapy adherence is optimal for virologic suppression in HIV-positive pregnant and breastfeeding Cameroonian women initiating “Option B+”: A prospective cohort study.

Pascal Atanga^{1,2,3}, Harrison T Ndetan⁴, Ndefon Peter², Tih Muffih¹, Henry Meriki⁶, Eric Achidi⁵, Michael Hoelscher², Arne Kroidl²

¹Cameroon Baptist Convention Health Services (CBCHS), Buea, Cameroon, ²Department of Public Health and Hygiene, Faculty of Health Sciences, University of Buea, P.O. Box 63, Buea, Cameroon, ³Centre for International Health (CIH), University of Munich (LMU), Munich, Germany, ⁴Department of Biostatistics and Epidemiology, School of Public Health, University of North Texas Health Science Center, Fort Worth, TX, USA, ⁵Dallas, USA, ⁶Faculty of Sciences, University of Buea, P.O. Box 63, Buea, Cameroon, ⁷Buea, Cameroon, ⁸Department of Microbiology and Parasitology, Faculty of Sciences, University of Buea P.O. Box 63, Buea, Cameroon, ⁹Buea, Cameroon

Background: Optimal adherence to antiretroviral therapy (ART) in preventing mother-to-child transmission of HIV and risk factors of poor adherence in the Cameroon's Option B+ programme are poorly understood. We determined the optimal adherence level required for adequate viral suppression in HIV-positive pregnant and breastfeeding women initiating Option B+ from five sites within the Kumba Health District, Cameroon.

Methods: Prospectively we determined adherence after Option B+ initiation between October 2013 and December 2014. Adherence at 6 and 12 months was measured for each woman retained in care using a composite adherence score (CAS) comprising a six month medication refill review, a four-item self-reported adherence questionnaire and a thirty days visual analogue scale. Adherence was defined as the sum scores from the three measures and classified as high, moderate and poor. Maternal viral load was measured at ≥ 12 months after ART initiation and virologic suppression between women with different adherence levels was compared and a threshold for optimal adherence defined. Moderate to high

adherence was deemed optimal for virological suppression.

Results: Of the 268 women initiated on lifelong ART under option B+, 253 (94.4%) initiated ART in pregnancy and labour and 15 (5.6%) during breastfeeding. All women were followed-up until December 31st, 2015 with a median follow-up of 16.9 (IQR 11.1-23.3) months. The median age at ART initiation was 27 (IQR 24-31) years. At 12 months adherence was assessed as optimal in 88.6% of women retained in care after comparing viral suppression with the different levels of adherence. Of the 165 (90.7%) retained who received viral load testing, 153 (92.7%) were virologically suppressed. After adjusting for demographics and other confounders, younger women [OR (95%CI); 4.3 (1.2,15.3)] and those with just a primary level of education [OR (95%CI); 2.7 (1.9, 3.9)] were more likely not to adhere to lifelong ART treatment. On the other hand women attending Pentecostal churches [OR (95% CI); 65.8 (3.5, 16.2)] and women employed in the informal sector [OR(95%CI); 3.5 (2.7-4.7)] were more likely to be non-adherent to their treatment than women who attended traditional christian churches and those unemployed. Forgetfulness 43 (35.5%), travel away from home 29 (24.0%) and lack of transport to the clinic 28 (23.1%) were the main reasons for missing doses while use of cell phone alarms 64 (37.2%), routine 63 (36.6%) and the use of alarm clocks 22 (18.8%) were the main means of reminder of drug taking. However, 13 (7.6%) women declared that they were being reminded by their husbands.

Conclusion and recommendations: After 12 months of ART initiation, women retained in the Option B+ pilot project generally adhered well to their treatment. Regular adherence evaluations with targeted virologic monitoring of women with poor adherence are necessary to reduce the risk of treatment failure and drug resistance development. Innovative adherence interventions need to be developed and employed to target young, less educated, Pentecostal church attendees and informal sector women.

Abstract 33

Prevalence and factors associated with antenatal depression among women enrolled in Option B+ PMTCT in Malawi

Bryna Harrington^{1,2}, Brian Pence², Jacob Phulusa¹, Bryan Mthiko¹, Mathias John¹, Caroline Melhado¹, Austin Wesevich¹, Bradley Gaynes², Joanna Maselko², William Miller¹, Mina Hosseinipour¹

¹UNC Project Malawi, Lilongwe, Malawi, ²University of North Carolina at Chapel Hill, Chapel Hill, USA

Background: Antenatal depression may impact retention in HIV care through the Option B+ prevention of maternal to child transmission of HIV program. In Malawi, while Option B+ has greatly increased the number of pregnant women initiating ART, little data exist on the prevalence of antenatal depression or its associated factors in this population.

Methods: Participants were recruited at their first antenatal care visit from a government clinic in 2015-2016 in Lilongwe, Malawi into a prospective cohort study. Women included in this baseline analysis (n=729) were initiating triple ART for the first time through Option B+ or had been on triple ART ≥6 months. Depressive symptoms were assessed with the Edinburgh Postnatal Depression Scale (EPDS). In Malawi, a score of ≥6 has been shown to indicate probable major depression, and was considered a positive screen. Univariable logistic regression identified items associated with antenatal depression (p<0.25). All qualifying factors were included in a multivariable model; manual backward elimination was used to reach a more parsimonious model.

Results: The majority of women were currently married (90%), unemployed (62%), and had not intended their pregnancy (68%). Nine percent (n=68) of women screened positive for depression, and 46% (n=328) self-reported a history of depression or anxiety. Women who self-reported a history of depression or anxiety (adjusted OR [aOR]=2.83, 95%CI =1.63-4.92), had ever experienced verbal intimate partner violence (aOR=2.01, 95%CI=1.12-3.60), had not intended their current pregnancy (aOR=1.97, 95%CI=1.02-

3.80), or were unmarried (aOR=2.13, 95%CI=1.07-4.35) were more likely to screen positive for depression.

Conclusions: Depressive symptoms affect a notable proportion of HIV positive women in antenatal care on ART in Malawi, and nearly half of the women self-reported a history of depression or anxiety. Clinicians in facilities without routine depression screening should consider further evaluation of antenatal depression among clients that endorse a history of depression or anxiety, intimate partner violence, unintended pregnancy, or are unmarried.

Abstract 34

Inclusive Education for HIV-positive Learners in Primary Schools

Onick Gwayi¹, Moir Theu²

¹Vonken CDSS; Ministry Of Education, Science And Technology, Blantyre, Malawi, ²University of Livingstonia-Laws Campus, Department of Basic Sciences, Mzuzu, Malawi

The concept of inclusive education aims at creating a conducive classroom environment where pupils with disabilities can learn together with those without disabilities. The same concept can be applied when dealing with HIV-positive learners. This study was conducted to assess whether HIV-positive learners are properly identified and included in delivery of lessons in classrooms. Five primary schools were randomly sampled in Mulanje district from which samples of 110 learners and 10 teachers were obtained systematically and purposively, respectively. Data was collected through questionnaires and then statistically analysed by chi-square test.

Findings showed that 80% of teachers had difficulties in identifying HIV-positive learners because they regarded the activity as confidential and illegal. Teachers who managed to identify HIV-positive learners reported to have done that by sourcing information from individual learners and VCT personnel. The study established that 20% of the learner population in primary schools was HIV-positive. These learners expressed a feeling of being unrecognised and segregated by their fellow learners which in turn contributed to their frequent absenteeism. This was supported by response from 48% of the learner population which indicated that they do not socialize with HIV-positive learners in a classroom. This was in spite of 70% of them being aware of HIV/AIDs issues through school, communities, youth clubs, families and hospital. In addition, the Chi-square test value of 1.5 at $\alpha=0.05$ implied that HIV-positive learners are not fully and actively included in delivery of lessons in the classroom.

The study has shown that there are challenges in identifying and including HIV-positive learners in a learning environment which may result in the victims performing poorly in class. Concerted effort involving government, learners, parents and

teachers should be put in place to address issues of legality, confidentiality and know-how for effective inclusive learning for HIV-positive learners.

Abstract 35

Rate of antiretroviral drug substitution before and after the introduction of tenofovir based regimen in Malawi

Ben Chavula¹, Adamson Muula², Bagrey Ngwira³

¹Baylor College Of Medicine Children's Foundation Malawi, Lilongwe, Malawi, ²College of Medicine, University of Malawi, Blantyre, Malawi, ³Polytechnic, University of Malawi, Blantyre, Malawi

Background: Antiretroviral therapy (ART) has improved the survival of people living with HIV (PLHIV), transforming HIV from a fatal disease into a potentially treatable chronic condition. In July 2013, Tenofovir (TDF) replaced Stavudine (d4T) in public-sector first line ART in Malawi. Patients got initiated on ART after meeting the WHO (World Health Organization) immunologic and clinical criteria. This study describes the rates and patterns of drug substitution between TDF and d4T based ART regimens in Malawi, where drug substitution means replacing either d4T (d4T based regimen) or TDF (TDF based regimen). Patients may have a drug substitution due to adverse drug reactions related to the drug been substituted. Specifically, comparing TDF to d4T based regimens we evaluated the following; (1) Rates of drug substitution, (2) Time to first drug substitution, (3) Predictors of drug substitution and (4) Clinical indications for drug substitution.

Methods: This was a retrospective cohort analysis of treatment-naïve adult patients initiated on ART at Queen Elizabeth Central Hospital (QECH) and the Lighthouse Unit ART clinic between January 2009 and June 2015. Exposure variables in the study were sex, age at ART initiation, baseline CD4 count, ART regimen initiated on and WHO clinical stage at initiation. Data were cleaned and analyzed using Stata version 14.0 (Stata Corp, Texas, USA) and R Software. Overall, 24,004 patients were included in the analysis with 12,550 (52.3%) from QECH and 11,454 (47.7%) from the Lighthouse clinic. Ethical and scientific approval was obtained from the College of Medicine Research and Ethics Committee (COMREC).

Results: Overall, the proportion of patients who had a drug substitution was 2.6% (95% CI: 2.4-2.8%), 632/24,004. The percentage of drug change

was higher in the d4T category 392/14375 (2.7%) than TDF 175/8049 (2.2%); $p < 0.001$. Overall, patients were substituted within the first year of starting ART with patients on d4T having significantly higher probability of substitution compared to patients on TDF. Multivariate analysis showed a 19% reduced odds of drug change for patients initiated on TDF compared to d4T based regimen [adjusted odds ratio (aOR) 0.81 (95% CI: 0.67-0.98)] and every additional year (age) on ART was associated with 2% increased odds of drug change [aOR 1.02 (95% CI: 1.01-1.03)]. Patients at QECH had 4.4 times increased odds of drug change compared to patients at Lighthouse Clinic [aOR 4.36 (95% CI: 3.51-5.47)]. Adjusted Cox proportion model showed TDF exposure was associated with a substantial lower risk of drug change [adjusted hazard ratio (aHR) 0.15 (95% CI: 0.12-0.19)].

Conclusion: TDF was better tolerated with a lower rate of drug substitution due to adverse drug reactions. The study supports the use of TDF regimen as first line public sector ART regimen in Malawi.

Abstract 36

Short and Long term Virological Failure and HIV drug Resistance in cameroon

Gaëlle Tchouwa¹, Jenny Domyeum¹, Sabrina Eymard-Duvernay², Amandine Cournil², Eric Delaporte², Martine Peeters², Elliot Raizes³, Eitel Mpoudi-Ngole¹, **Avelin Aghokeng Fobang**^{1,2}

¹CREMER, Virology laboratory IMPM-IRD, Yaoundé, Cameroon, ²IRD UMI-233, INSERM U1175, Université de Montpellier, Unité TransVIHMI, Montpellier, France, ³Centers for Disease Control and Prevention, Atlanta, USA

Background: Acquired HIV drug resistance (ADR) can significantly compromise antiretroviral treatment (ART) efficacy. In resource-limited countries where decision to treat or to switch treatment is mostly based on clinical assessment and access to virological monitoring is still limited, population-based studies on viral load suppression and HIV drug resistance (HIVDR) rates could inform programs. We present here the first nationally-representative ADR study in Cameroon.

Methods: Eligible participants were patients on ART for 12 to 24 months (ADR1) or 48 to 60 months (ADR2). ADR1 participants were recruited in 25 clinics that were randomly selected in urban and rural regions. ADR2 participants were from 7 urban clinics. Recruitment was from February to August 2015 and collected dried blood spots (DBS) and plasma specimens were sent to a WHO accredited laboratory in Yaoundé, Cameroon for viral load (VL) testing and genotyping. Specimens with VL \geq 1000 copies/ml were considered for HIVDR genotyping and drug resistance mutations were identified using the Stanford algorithm.

Results: Overall, 1052 ADR1 and 387 ADR2 participants were recruited. Women predominated, representing 76% and 74% of patients in each group, respectively. Median ages were 39 (32-47) years and 42 (35-51) years in the ADR1 and ADR2 groups, respectively. Almost all participants were on first-line ART, predominantly TDF+3TC+EFV/NVP, and only 2% of ADR1 and 6% of ADR2 were receiving PI-based drugs. Viral suppression in the ADR1 group was 72.0% (95% CI: 70.3-73.7) overall, 74.9% (73.2-76.6) in urban sites and 67.7% (63.3-71.7) in rural sites. In the ADR2 group, viral suppression was 67.5% (62.9-

71.7). HIVDR was identified in 66.6% (60.6-72.1) of ADR1 patients with VL \geq 1000 copies/ml, 63.1% (56.3-69.4) and 72.5% (58.1-83.4) in urban and rural sites, respectively. In the ADR2 group, HIVDR frequency was 83.6% (67.3-92.6) in participants with VL \geq 1000 copies/ml.

Conclusions: This study represents the first nationwide assessment of virological failure and HIVDR frequency in West Africa. Results indicates that important efforts will be required to achieve the 2020 UNAIDS target of 90% viral suppression. Better ART management is urgently needed, and should focus on preventing drug stock-outs, reduction in lost to follow-up, improved access to VL testing and clinical use of the VL results.

Abstract 38

Early ART in the Community: Experiences from Support Groups in Hhohho, Swaziland

Sibongile Mnisi¹, Gavin Khumalo¹, Buyisile Shongwe¹, Dumsani Simelane¹, Ian Kaayo¹, Ms Saima Jiwan², Velephi Okello³

¹Swaziland National Network of People Living with HIV and Aids, Mbabane, Swaziland, ²Global Network of People Living with HIV, Amsterdam, Netherlands, ³Ministry of Health, Mbabane, Swaziland

Background: The Ministry of Health together with MaxART consortium partners have been conducting pilot studies on the feasibility of implementing Early Access to ART for All (EAAA also referred to as Test & Start) in Swaziland since September 2014. As part of community sensitization and mobilization efforts in study communities, support groups for people living with HIV were oriented on the study and educated on the benefits of early ART and general HIV treatment literacy through trainings facilitated by the Swaziland National Network of People living with HIV and AIDS. This abstract describes the support groups and their mechanisms of disseminating health information in communities and also highlights the key challenges that hinder effective implementation of early ART as described by support group members.

Materials & Methods: In order to better understand the characteristics of existing support groups in the study communities, a mapping exercise was conducted in 10 Tinkhundlas in the . Orientation sessions on the EAAA study and the benefits of starting ART early were conducted with support group members. In addition to the orientations, interpersonal communication skills trainings were conducted.. Every 4 months, feedback sessions were held with trained members in order to better understand the specific activities conducted by support groups in communities; identify EAAA benefits as perceived by community support groups; understand support group members' EAAA experiences in communities and identify challenges at community level that hinder EAAA acceptability.

Result: A total of 84 support groups (1983 members) were identified through the mapping exercise and of those, 1201 (61%) were trained on

EAAA and equipped with the skills to provide further support and disseminate information in their communities. The main support group activities identified include; psychosocial support, encouraging treatment adherence, promoting HTC, door to door visits providing health education, nutritional gardens and savings schemes.

The benefits of early ART for communities as identified by support group members in communities included improvement in disclosure, decline in funerals in the community and improved productivity, high acceptability of the EAAA approach to care. Challenges mentioned by community members as barriers to accessing early treatment included health care worker attitudes when accessing care in facilities, lack of confidentiality by community based health workers, fear of drug shortages, stigma and discrimination, food insecurity, long distances to health facilities, inadequate treatment literacy and cultural & religious beliefs.

Conclusions: In the context of introducing an early access to ART approach to HIV care in communities, support group members have shown to be a sustainable resource and partner in providing support and disseminating HIV treatment information. The valuable direct feedback from communities on the challenges that hinder accessing early ART can assist programs in designing implementation approaches to ensure successful roll-out of universal treatment in HIV care.

Abstract 129

Comparison of HIV-1 viral titre measurements using Plasma and Dried Blood Spots on Cobas AmpliPrep/TaqMan viral load assay Version 2.0 in western Kenya

Fredrick Ogumbo¹, Maureen Adhiambo¹, Joy Ndunda¹, Joshua Agengo¹, Catherine Akinyi¹, Matilu Mwau¹

¹Kenya Medical Research Institute, Alupe-Busia, Kenya

Costly, stringent storage requirements and transportation of plasma, often limit the availability of HIV viral load quantification in resource-limited parts of western Kenya. Dried blood spots (DBS) forms a better method of sample collection that does not involve many technical and logistical limitations because of its ambient temperature storage, less biohazardous, and non cold chain shipment compared to plasma. The study aimed to assess the performance of the CAP/CTM assay for quantitation of HIV-1 RNA in DBS specimens using plasma as gold standard test for comparison. One hundred and fifty paired Plasma and DBS specimens were collected from HIV infected adult patients enrolled for routine viral load testing during their visits to Nambale and Alupe Sub-County Hospitals in Western Kenya.

METHOD: HIV patients on ART and met the eligibility criteria from Nambale and ALupe Sub-County Hospitals in Western Kenya, were consented and 4ml of blood sample collected. Dried Blood Spots were prepared by dropping 50µl of blood using pipette in each circle (five spots per card) of filter paper (Munktell TFN; Labmate, South Africa) and were left to dry overnight at room temperature. Plasma aliquots were obtained by centrifugation of the whole blood, and the supernatant was stored at 20°C until use viral load testing. Using methods comparison study design, paired plasma and DBS samples from the same patient were tested side by side in KEMRI ALupe HIV Laboratory on CAPCTM according to the manufacturer's instructions (COBAS AmpliPrep/COBAS Taqman HIV-1 Test, version 2.0).

RESULT: Plasma Viral load showed Target Not Detected, 40.7%; Viral load < 20 copies/ml 17.3%

and ≥20 copies/ml 58%. DBS Viral load showed Target Not Detected 27.3 %; < 400copies/ml 43.3%; ≥400copies/ml 29.4%. Using t test, the study showed no statistically significance difference between the means of Plasma and DBS ($p=0.001$, 0.006) at $p= 0.001$. The mean for plasma and DBS viral loads were 2456 and 2837 Copies/ml respectively. CAP/CTM on Plasma Viral load showed a precision of 2.60 while DBS Viral load showed a CV of 2.49. Plasma Viral load Correlated significantly with DBS Viral titre ($r=0.680$; $P<0.01$).

CONCLUSION: The study showed concordance in RNA viral titre between Plasma and DBS. Additionally, there was no statistically significance difference between the viral load mean for both DBS and plasma and therefore the use of DBS specimens should therefore still be considered for ART monitoring to confirm continuous viral suppression in resource-limited parts of western Kenya.

Abstract 130

Usability characteristics of HIV self- tests in Kenya

Lydia Ochieng¹, Priska Bwana¹, Silvester Phillip¹, Matilu Mwau¹

¹KENYA MEDICAL RESEARCH INSTITUTE, Nairobi, Kenya

Background: Self-testing has the potential to circumvent constraints associated with approaches such as lack of confidentiality, stigma and discrimination, shortage of counselors and long distances to testing sites. Kenya's HIV testing service guidelines revised in 2015 recognize the potential of HIV self-testing to catalyze improved access to and coverage of HIV testing. However, there is no HIV self-test currently in approved for use in Kenya, and the usability of the tests available in other markets has not been determined. Thus, we sought to evaluate the usability characteristics of HIV self-test in Kenya.

Method: This was a cross sectional study conducted amongst participants from both urban and rural settings in Busia, Western Kenya. After being consented and enrolled in the study, a simple questionnaire was administered. The open ended questionnaires contained usability characteristics of interest such as steps to result, sample type, time to results, waste generated and perception.

Results: A combined total of 279 participants were enrolled into usability studies for one OMT and one capillary test. For the capillary test, 210 participants were recruited; 82% (172) of participants found it easy to prick the finger and to collect the sample. Ninety three percent (195) of the participants found result interpretation to be easy. There were six steps to the final result; the median period to test results was 20 minutes. Perception of test varied across the study population.-85% (179) of the participants perceived the test as good and 93 % (195) recommended it for use. For the oral mucosal transudation test, the study recruited 69 participants. Of those, 97% (67) found it easy to understand the instructions for use while 92% (63) found it easy to collect the oral mucosal transudation with the swabs. 93%, (64) of the participants found result interpretation to be easy. There were seven steps to the final result; the median period to test results was 20 minutes. Perception of test varied across the study

population - 75%(52) of the participants preferred the test due to its ease of use, short time of test, portability, confidentiality, use of oral brush, lack of pricking, pain and blood. In both studies, 83 % (232) of the participants had no problem with the absence of a counselor. After testing, the amount of waste generated was perceived to be little by 60 % (167) of the participants; 28 % (78) thought it moderate. If the tests were to be sold, 84 % (234) of the participants would consider purchasing them at various prices between 1-5USD.

Conclusion: A majority of study participants find self tests highly usable without assistance. For this reason, self tests might be highly acceptable when introduced in the market.

**11th International Workshop on HIV Treatment,
Pathogenesis and Prevention Research in
Resource Limited Settings
INTEREST**

**Abstracts
Poster Presentation**

Abstract 26

Barriers to ART uptake experienced by healthy clients in Malawi under Test and Treat

Kathryn Dovel^{1,2}, Khumbo Phiri¹, Alan Schooley^{1,2}, McDaphton Bellos¹, Esnat Sanudi¹, Denis Chasweka¹, Risa Hoffman^{1,2}

¹University Of California Los Angeles, Los Angeles, United States, ²Partners in Hope, Lilongwe, Malawi

Background: Malawi is one of the first countries in sub-Saharan Africa to implement antiretroviral therapy (ART) regardless of clinical stage or CD4 cell count (Test and Treat). We evaluated barriers and facilitators to ART uptake from the perspective of both asymptomatic newly HIV+ clients and HIV service providers during the first 6 weeks of program implementation.

Methods: Routine data from 5 ART clinics were reviewed to identify clients >18 years of age testing HIV+ between July 14-September 23, 2016. Individuals were screened to determine if they were asymptomatic at time of testing. In-depth interviews were conducted with asymptomatic clients. Twelve focus group discussions were completed with ART providers (n=31), HIV counselors (n=19), and community-based support staff (n=29).

Results: One hundred and fifty-three clients tested HIV+ and of those 22% (n=33) were asymptomatic. Ninety-one percent of clients identified as asymptomatic completed in-depth interviews (n=30). The most common barriers to ART uptake identified by clients were fear of disclosure (63%, n=19), fear of experiencing side effects while healthy (57%, n=17), work schedules or other commitments that conflict with clinic hours (33%, n=10), and needing time to accept their diagnosis before initiating ART (30%, n=9). Dominant facilitators to ART initiation included the desire to stay healthy to provide and/or care for family members (70%, n=21), motivation to prevent unwanted disclosure by becoming sick (23%, n=7), the desire to extend one's life (43%, n=13), and personal knowledge of others who died from AIDS due to delayed treatment (37%, n=11). Providers identified fear of disclosure, lack of privacy at ART clinics, and poor knowledge about benefits of early ART as primary barriers to uptake among asymptomatic clients. Additionally, providers raised

concern that asymptomatic men may not engage in HIV care.

Conclusions: Concern about HIV disclosure, lack of privacy, fear of side effects, and facility hours may limit ART uptake among asymptomatic clients. Patient- and provider-reported barriers closely align. Interventions that improve privacy, support disclosure, increase patient knowledge, and improve access to ART may facilitate ART uptake among asymptomatic HIV+ individuals under Test and Treat.

Abstract 37

Examining Malawi's Rollout of Universal Treatment: Policy Implementation and Provider Perceptions

Misheck Mphande¹, Khumbo Phiri¹, Mackenzie Chivwara¹, Mike Nyirenda¹, Alan Schooley^{1,2}, Rachel Thomas¹, Risa Hoffman^{1,2}, Kathryn Dovel^{1,2}

¹Partners in Hope, Lilongwe, Malawi, ²University of California Los Angeles, Los Angeles, United States

Background: In July 2016, Malawi implemented universal treatment for all adults (Test and Treat) with no baseline CD4 cell count. We summarize early experiences with the rapid implementation of Test and Treat in 4 districts in Malawi 3 months after the policy change. Provider perceptions of successes and challenges are shared.

Methods: A facility-level survey was conducted at 53 mid- and large-level health facilities across central and southern Malawi. The facility in-charge, lead HIV testing and counseling (HTC) provider, and lead antiretroviral therapy (ART) provider at each site completed a survey. Twelve focus group discussions were completed with providers across 6 health facilities (n=79).

Results: The majority of providers were informed about Test and Treat through a Ministry memo and briefings by facility supervisors. Three months after policy implementation, 96% (n=51) of facilities offered Test and Treat. Two sites had not started because providers felt they had inadequate training. Ninety-one percent (n=48) of Test and Treat sites offered same-day initiation for adult clients. Seventy-seven percent (n=41) of providers reported improved client flow due to the elimination

of CD4 count; however, 68% (n=36) experienced heavy workloads due to the increase in ART initiates. Forty-percent (n=21) believed asymptomatic HIV+ clients were not ready to initiate ART. Only 15% (n=8) felt the policy was confusing for clients because it contradicted previous messaging about ART eligibility.

In focus group discussions, providers reported that the policy was easy to implement because it simplified initiation protocols. Providers were concerned that healthy clients were not ready to start ART due to fear of stigma, the burden of taking ART for life, and being unaware of the new policy before testing. While same-day start was believed to be critical for initiation, providers raised concern about increased defaulter rates among healthy clients who initiated ART before feeling ready.

Conclusion: Three months after national rollout, nearly all facilities surveyed provided Test and Treat, with most offering same-day initiation. Data indicate that minimal training and supervision are needed to implement this new policy. Monitoring of provider workload will be needed as patient numbers increase. More research is needed to understand barriers to engaging healthy clients

Abstract 39

An Analysis of the Extent of Social Inclusion and Equity Consideration in Malawi's National HIV and AIDS Policy Review Process

Mathews Chinyama^{1,2}, Malcolm MacLachlan², Sylvester Gawamadzi¹

¹Department Of Nutrition, HIV And AIDS, Lilongwe, Malawi,

²Trinity College Dublin, Dublin, Ireland

Background: Equity and social inclusion for vulnerable groups in policy development processes and resulting documents remain a challenge globally. Most often, the marginalization of vulnerable groups is overlooked in both the planning and practice of health service delivery. Such marginalization may occur because authorities deem the targeting of those who already have better access to health care a cheaper and easier way to achieve short-term health gains. The Government of Malawi wishes to achieve an

equitable and inclusive HIV and AIDS Policy. The aim of this study is to assess the extent to which the Malawi Policy review process addressed regional and international health priorities of equity and social inclusion for vulnerable groups in the policy content and policy revision process.

Methods: This research design comprised two phases. First, the content of the Malawi HIV and AIDS Policy was assessed using EquiFrame regarding its coverage of 21 Core Concepts of human rights and inclusion of 12 Vulnerable Groups. Second, the engagement of vulnerable groups in the policy process was assessed using the EquiPP matrix. For the latter, 10 interviews were conducted with a purposive sample of representatives of public sector, civil society organizations and development partners who participated in the policy revision process. Data was also collected from documented information of the policy processes.

Results: Our analyses indicated that the Malawi HIV and AIDS Policy had a relatively high coverage of Core Concepts of human rights and Vulnerable Groups; although with some notable omissions. The analyses also found that reasonable steps were taken to engage and promote participation of vulnerable groups in the planning, development, implementation, monitoring and evaluation processes of the HIV and AIDS Policy, although again, with some notable exceptions. This is the first study to use both EquiFrame and EquiPP as complimentary tools to assess the content and process of policy.

Conclusion: While the findings indicate inclusive processes, commitment to Core Concepts of human rights and inclusion of Vulnerable Groups in relation to the Malawi HIV and AIDS Policy, the results also point to areas in which social inclusion and equity could be further strengthened.

Abstract 40

A Gender Analysis of User Costs for HIV Testing among Rural Communities in Malawi

Linda Sande¹, Collin Mangenah², Lawrence Mwenge³, Hendramoorthy Maheswaran⁴, Melissa Neuman⁵, Cheryl Johnson⁶, Pitchaya Indravudh¹, Marc d'Elbée⁵, Karin Hatzold⁷, Liz Corbett^{1,5}, Fern Terris-Prestholt⁵

¹Malawi Liverpool Wellcome Trust Clinical Research Programme, Blantyre, Malawi, ²Centre for Sexual Health and HIV AIDS Research Zimbabwe, Harare, Zimbabwe, ³ZAMBART, Lusaka, Zambia, ⁴The University of Warwick, Coventry, England, ⁵London School of Hygiene and Tropical Medicine, London, England, ⁶World Health Organisation, Geneva, Switzerland, ⁷Population Services International, Harare, Zimbabwe

Introduction: Women have higher rates of demand and use of preventive care/treatment than men. Most of such analyses have made use of Andersen's behavioral model which proposes that an individual's health care utilization is dependent on individual, environmental and provider factors. In line with this, we sought to evaluate the interaction between sex and user costs in determining HIV testing demand in rural Malawi. We estimated user costs in terms of direct costs, such as transport and consultation fees, and indirect costs such as lost income and child care costs of accessing HIV testing in rural Malawi as part of the HIV Self-Test Africa (STAR) project.

Methods: A baseline household survey was conducted in southern Malawi as part of a cluster randomized trial of HIV self-testing. The questionnaire was administered to adults (15-49 years) of randomly selected households (n=5,556), of which 25% were randomly allocated an extended HIV testing questionnaire (n=1,387). Furthermore, the respondents who reported having at least one HIV test in the preceding 12 months (14%), completed a module on costs associated with their last test (n=749) and comprised of 237 males and 512 females. To estimate the extent of cost differences between genders, a Tobit model was applied.

Results: Fifty-nine percent (n=) of respondents had previously accessed HIV testing at a health facility with 29% (n=) reporting no user costs. Of those reporting costs, the median cost was \$2.08: \$2.98 for men and \$1.39 for women demonstrating the

gender difference in user costs. These costs approximately equal the average daily earnings for women and approximate to 154% of average daily earnings for men. The Tobit analysis further affirmed that gender is a key determinant of user costs at $\alpha=0.05$; men likely to spend 70% more than women in accessing HIV testing services. Lost income was the largest cost contributor for men accounting for 85% of their average user costs signaling a high opportunity cost for accessing care.

Conclusion: There is a clear gender disparity in reported user costs for HIV testing services in rural Malawi. These costs likely pose an access burden to men. There is need therefore, to reduce this burden by providing such services to men within their communities in order to improve their uptake.

Abstract 41

Assessing the Prospects for Fiscal Space for HIV and AIDS in Malawi

Birungi M¹, Manthala G², Phangaphanga M³

¹Unaid/s/University College London, ²Director of Budgeting, Department of Planning and Policy Development, ³Department of Economics, Chancellor College, University of Malawi

Malawi has achieved remarkable progress in the national response to HIV and AIDS over the last 30 years. Nonetheless, the country faces the challenge of financial sustainability of the AIDS response. This study answers the policy question: can fiscal space for HIV and AIDS be expanded and sustained in Malawi?

We employ epidemiologic and economic analysis to assess financial requirements for the response and potential options of expanding fiscal space. We find that there is some potential for generating additional fiscal space but it is far from meeting the requirement. The options that offer additional fiscal space include taxing the informal sector, taxing remittances, issuing a diaspora bond and improving efficiency of health care delivery.

Taxing the informal sector would, however, be challenging owing to a lack of an enabling environment. Taxing remittances would require careful consideration of potential disincentives. In

order to issue a diaspora bond, there would be need for effective mobilisation of Malawians abroad.

Efficiency gains hinge upon successful implementation of requisite reforms. Development assistance therefore still remains as the main source of financing for the AIDS response. However, given its unpredictability, the Government should strive to increase the overall allocation towards HIV and AIDS

Abstract 42

Coping with the challenge of long-term liabilities of HIV financing: a fiscal analysis of the national HIV program in Uganda

Charles Birungi¹

¹Unaid/s/University College London, Lilongwe, Malawi

Globally, HIV/AIDS remain a profound economic development challenge. In Uganda, in fiscal terms, its significance is projected to increase over the next several decades with policy decisions made – to end the AIDS epidemic - having intergenerational fiscal consequences. These fiscal consequences, however, are seldom considered in policy making. To gain a deeper understanding of the long-term fiscal consequences of the HIV and AIDS epidemic and response, this paper uses public finance tools to undertake a fiscal analysis of the costs of the national response to HIV/AIDS. The costs of the national response to HIV/AIDS (which also take in fiscal costs not administered by the national HIV/AIDS program) up to 2030 are presented.

The expected spending commitments towards all people living with HIV/AIDS as of 2030 (US\$ 14.7 bn in the baseline scenario, US\$ 19.0 bn in the investment framework, and US\$ 17.0 bn under the “enhanced efficiency” scenario) are narrower than the differences in costs through 2030. In terms of how the national response to HIV/AIDS absorbs fiscal resources in the long-run, using a “government perspective”, we present how changes in HIV incidence today affect these long-term spending commitments. This paper illustrates how fiscal analysis could contribute to informing fiscal sustainability analysis of national AIDS responses and cost-effectiveness analysis of HIV

interventions and, in turn, inform the design of HIV/AIDS programs.

Abstract 43

The indirect impact of health expenditure on life expectancy through coverage of antiretroviral therapy in Malawi.

Felix Khembo¹

¹Research, M&E Associates, Blantyre, Malawi

Background: Several propositions have been made that the provision of antiretroviral therapy (ART) services improves the life expectancy of HIV infected persons and ultimately, the life expectancy of general public. This lengthens the duration of time that countries may maximize and exploit the human resource expertise of their citizenry. Sustainable provision of the ART services in low income countries like Malawi is therefore key in paving way for adequate resource pooling to enable the Country to reap development advantages stemming from elongated lifespans of its people. Published evidence of the impact of health expenditure on the life expectancy of people in Malawi through provision of ART services is however limited. This renders it difficult for players in the health sector to build a case for policy makers to prioritize and pump in more resources towards the coverage of ART services. In this paper, the Author sets out to investigate the relationship between health expenditure on the life expectancy, at birth, of Malawians through the mediation effects of ART coverage.

Method: The Author employed PROCESS Version 2.16 as an add-on feature in SPSS to assess the statistical mediation effect of ART coverage on the relationship between expenditure on health and the life expectancy of the population in Malawi. The model had three variables: expenditure on health per capita as a proxy for HIV expenditure, life expectancy at birth, total (years), and ART coverage (percentage of people living with HIV). The author used an 11 year longitudinal health, nutrition and population data from the World Bank dating back to 2004.

Results: The results showed that there was a significant indirect effect of health expenditure on

the life expectancy of Malawians through ART coverage, $b = 0.430$, BCa CI [0.047, 0.773]. This represented a relatively strong sobel effect, $b = 0.43$, $p < 0.05$

Conclusion: The relationship between health expenditure and life expectancy of Malawians is mediated or explained by the coverage of ART services.

Abstract 44

Evaluation of HIV and AIDS Workplace Policy at Nkhotakota District Council, Malawi

Patrick Mbulaje¹, Adamson Muula²

¹Ministry Of Health, Lilongwe, Malawi, ²University of Malawi, College of Medicine, Blantyre, Malawi

Introduction: HIV and AIDS workplace policy enables employers and employees to actively contribute towards organisation's efforts to prevent and manage HIV pandemic. The policy ensures that there's coordination in the response to HIV and AIDS in society and consistency in the application and enforcement of rules, regulations and practices with regard to HIV and AIDS. At Nkhotakota District Council, the policy was adopted in 2010 with the support from the Malawi Government through the Ministry of Labour to address the HIV pandemic.

Objectives: The main objective of this study was to evaluate the HIV and AIDS workplace Policy at Nkhotakota District Council.

Methodology: The study adopted the qualitative cross-sectional study design. Data was collected through in-depth interviews, key informant interviews and focus group discussions. Purposive sampling was used to select the study participants. A total of 33 participants consented to take part in the study; all the participants were the employees at the District Council. The employees were selected because they are the ones utilising the policy. Ethical clearance for this study was obtained from COMREC.

Data analysis was done at the same time of data collection using content analysis. Data from field notes were transcribed verbatim and transcription were read and re-read carefully to get general

sense of the information and to reflect on the overall meaning. Themes were then generated and presented in narrative form.

Results: Seven (7) themes were identified; knowledge on policy, limited stakeholder involvement, poor HIV and AIDS programming, ethical issues, future perspective of the policy, Other Recurrent Transaction (ORT) allocation, and availability of HIV and AIDS Committee. On each theme, sub-themes were identified. On knowledge on policy, the sub-themes included; objectives well outlined, and poor updates on the policy. On limited stakeholder involvement, the sub-themes were; lack of ownership, ignorance of involvement, and not involved/limited involvement. On the Poor HIV and AIDS programming theme, sub-themes identified were; exclusion of activities in the District Implementation Plan and lack of funds. There was one sub-theme each on ethical issues and future perspective.

Study limitation: The main limitation was the interruption of interviews due to persistent commitments by some officers, but the study was completed successfully.

Conclusion: The study found that at Nkhotakota District Council the HIV and AIDS workplace policy is not functioning properly. This is due to poor coordination and lack of funding. But still more, there are some positives identified such as existence of the coordinating committee and allocation of funds through Other Recurrent Transaction. Although the system has been functional for some years in well-established structures, lack of participation by some stakeholders, non-inclusion of HIV and AIDS activities in the DIPs underpin its sustainability.

Recommendations: The Council needs to strengthen the policy for it to start achieving its objectives. Firstly, the council needs to make the policy document accessible to all staff. Secondly, there is need to conduct induction programmes for its staff on the policy. Finally, there is need for policy review to adopt the new ideas.

Abstract 45

Truckers Health Survey. A cross sectional study of long distance truck drivers to provide insight into the risk factors and diseases which impact the health of African men.

Alinda Vos^{1,2}, Samanta Lalla-Edwards¹, Michelle Moorhouse¹, Gabriela Gomez³, Kerstin Klipstein-Grobusch², Paul Matthew⁴, Francois Venter¹

¹Wits RHI, University of the Witwatersrand, Johannesburg, South Africa, ²Julius Center for Health Sciences and Primary Care, University Medical Center Utrecht, Utrecht, The Netherlands, ³Amsterdam Institute for Global Health and Development, AMC, University of Amsterdam, Amsterdam, The Netherlands, ⁴North Star Alliance, Durban, South Africa

Background: Truck drivers are facing various occupation-related health challenges, including both communicable and non-communicable diseases (NCDs). The risk of acquiring an HIV infection is increased due to the mobility and long hours spent away from their families. NCD risk is increased by virtue of their sedentary lifestyle, limited access to healthy food and stress related to irregular working hours and roadside accidents. The Trucker Health Survey was developed to establish a baseline of major health issues and their determinants in male truck drivers in South Africa.

Methods: A cross sectional survey was conducted from October 2016 to March 2017 to recruit 800 male long-distance truck drivers aged 18 and above at truck stops in South Africa. The survey included questions assessing work conditions, eating and sleeping behaviour, sexual behaviour, medical history and risk factors for diseases and assessment of mental health (i.e. PHQ-9). Medical assessment focussed on screening of both communicable and non-communicable diseases, and included HIV counseling and testing; an assessment of their cardiac functions with ultrasound; an electrocardiogram and a carotid intima-media thickness measurement. Hypertension was defined as a blood pressure of >140/90mmHg or the use of antihypertensive medication. Being overweight as a body mass index (BMI) >25kg/m², obesity as a BMI >30kg/m² and impaired glucose tolerance as a random glucose between 7.8-11.0mmol/L.

Results: 521 truckers were recruited from 13 October 2016 to 11 February 2017, mainly Zimbabweans (65.5%), followed by South Africans (13.4%). Recruitment took mainly place in Johannesburg. Median age was 35 years (interquartile range (IQR) 30-40), median years of employment as truck driver was 9 years (IQR 5-14) and almost 90% crossed borders regularly. Truckers visited community health centers and hospitals at a rate of 37.6% and 8.6%, but none reported the use of any counseling or mental health service. Most drivers had a regular sexual partner. Condom use varied between regular partners, casual partners and sex workers, with the highest coverage during sex worker visits (70%). 48 (9.2%) drivers were HIV positive, of which 14 were newly diagnosed in the survey. Almost 50% of the known HIV positive drivers used antiretroviral treatment. The most prominent risk factors for NCDs like cardiovascular diseases were obesity/ being overweight (66.8%), hypertension (14%), smoking (11.1%) and impaired glucose tolerance (3.8%). Less than one percent was diagnosed with diabetes mellitus. Screening for depression showed a moderate to moderate/severe depression in 8.6% of the drivers.

Conclusion: This survey established a baseline of common health problems in truck drivers in South Africa. HIV counseling and testing is still an area that needs to be prioritized given the relatively low condom use and antiretroviral treatment coverage of only 50%. Risk factors for NCDs and mental health problems are other areas in which both screening and linkage to care needs to be prioritized.

Abstract 46

HIV viral suppression trends among patients on antiretroviral treatment in Western Kenya in 2016

Fredrick Ogumbo¹, Maureen Adhiambo¹, Anita Amond¹, Innocent Mandela¹, Matilu Mwau¹

¹Centre for Infectious and Parasitic Disease Control Research, KEMRI, Alupe, Busia, Kenya

Background: According to WHO's strategy for the surveillance and monitoring of HIV in low and middle income countries, a viral load of < 1000 RNA

copies per ml should be taken as evidence of viral suppression. Achieving “viral suppression” is the end goal for people living with HIV who are receiving anti-HIV medications. Over the past decade, the proportion of individuals on highly active antiretroviral therapy (HAART) who achieve HIV RNA suppression has increased dramatically in Kenya. Keeping HIV at this low level improves longevity, reduces morbidity and greatly reduces HIV transmission. The success of HAART has been attributed to improved medication adherence because of decreased HAART toxicity, fixed-dose combination pills, and simplified dosing strategies. Viral load is recommended as the preferred monitoring approach to diagnose and confirm HIV viral suppression.

Objective: The objective of the study was to evaluate the twelve months HIV viral load suppression trends in the four counties of western Kenya in 2016.

Methods: Using 2016 viral load data from the HIV NASCOP database for Western Kenya, a multi-site cross sectional study of HIV-infected patients receiving HAART was analyzed. Total number of patients who had attained suppression was analyzed using sociodemographic characteristics and test outcomes.

Results: Between January to December 2016 a total of 82882 viral load tests were conducted for individual HIV positive patients in Western Kenya. Overall 65866 (79.63%) patients had results indicating viral copies below 1000copies/ml and were considered to have achieved viral suppression. 17,016 (20.37%) had not achieved viral suppression. Where data on gender was available 24507 (76.9%) males and 56613 (80.85%) females were virally suppressed. Suppression rates by county showed Kakamega 79.64%, Busia 79.18%, Vihiga 80.84% and Bungoma 78.85%.

Conclusion: An overall suppression of 79.63% showed impressive results towards achieving the desired 90-90-90 treatment target by 2020 in Western Kenya, which is an a positive indicator to treatment adherence. ART program managers in Western Kenya could use these findings to provide a powerful monitoring tool for strengthening HIV programmes in western Kenya.

Abstract 47

Factors associated with acquisition of HIV during 2005-2014 among men and women in 5 African cohorts

Albert L N Dube^{1,2}, Emma Slaymaker⁴, Milly Marston⁴, Clara Calvert⁴, Basia Zaba⁴, Jessica Nakiyingi³

¹Malawi Epidemiology and Intervention Research Unit, P.O. Box 46, Chilumba, Karonga, Karonga, Malawi, ²Public Health Department, College of medicine, University of Malawi, Blantyre, Malawi, ³Medical Research Council, , Uganda, ⁴Faculty of Epidemiology and Population Health, London School of Hygiene & Tropical Medicine, , United Kingdom

Introduction: As HIV/AIDS epidemics mature, treatment becomes widespread, and behaviour changes, correlates of incident HIV infection may change. We examined factors associated with HIV incidence during 2005-2014 among men and women aged 15 to 49 in order to implement targeted interventions

Methods: We analysed longitudinal data from five population-based cohorts from Kenya, Malawi, South Africa, Tanzania, Uganda and Zimbabwe with regular HIV testing to ascertain social and demographic factors associated with incident infection subsequent to ART rollout (2005-2014). We fitted piecewise exponential models to survival time to estimate hazard ratios (HR) for HIV incidence. Analysis time begins at the first negative HIV test and ends at sero-conversion or is right censored by death, out migration or the end of data collection

Results: We found that current marriage, compared to never married, is associated with elevated hazard for young men aged 15 to 24 years (HR of 1.94, $p < 0.05$), but a reduced hazard for the older women (Hazard ratio of 0.52, $P < 0.05$). Having left a marriage was a risk for older men aged 25-49 year (HR of 1.86, $p < 0.05$) and young women (HR of 2.61, $p < 0.05$). For young men, having one partner was associated with the Hazard ratio of 2.48, $p < 0.05$ compared to the Hazard ratio of 7.09, $p < 0.001$ for young men with four plus partners. Having a new partner increased women's hazard of sero-conversion (1.53, $P < 0.05$).

Conclusion or Interpretation: For younger women, risk increases as time since first sex increases, could be due to male partner

seroconverting or due to acquisition from older already infected male partner. Factors associated with incidence vary between men and women and by age calling for the need to design and implement targeted interventions

Abstract 48

HIV sero-discordance and dual method use among HIV-affected couples in Lilongwe, Malawi

Blessings Gausi¹, Maganizo Chagomerana¹, Jen Tang^{1,2}, Prof Mina Hosseinipour¹, Lisa Haddad³, Hannock Tweya⁴, Sam Phiri⁴

¹Unc Project Lilongwe, Malawi, Lilongwe, Malawi, ²University of North Carolina at Chapel Hill, North Carolina, USA, ³Emory University, Atlanta, USA, ⁴Lighthouse Clinic, Lilongwe, Malawi

Background: HIV sero-discordant couples are faced with two challenges: preventing transmission of the virus between them and preventing unintended pregnancy, which may result into subsequent mother to child transmission. Couples are encouraged to use contraception to prevent unintended pregnancy and condoms to prevent partner transmission. Dual method use entails use of a condom together with another birth control method. Little is known if sero-discordance is associated with dual method use in HIV-1 sero-discordant couples in sub-Saharan Africa, a population at high risk for HIV-1 transmission. We hypothesized that sero-discordance is associated with dual method use at last sex.

Methods: We analyzed data from a cross-sectional survey evaluating knowledge, attitudes and practices towards reproductive health for HIV infected men and women aged 18-45 years receiving HIV care at 2 HIV care clinics in Lilongwe, Malawi from September 2013 to December 2013. Participants must have had sex within the past 6 months to be eligible for the survey. Our primary outcome was dual method use and the main exposure of interest was sero-discordance. Other covariates included age, education, marital status, partnership duration, number of partners in the past month, desire for more children, HIV diagnosis duration, ART use, ART duration, socioeconomic status, and ability to refuse sex without condoms. We used Fisher's exact test and Wilcoxon rank sum test to test associations between sero-discordance

and the other covariates and dual method use as appropriate. Logistic regression was used to estimate the odds ratio of dual method use at last sex, comparing sero-discordant to sero-concordant sexual partnerships. Separate analyses were conducted for men and women.

Results: We surveyed 254 HIV infected men, of which 44 (17.3%) were in known a sero-discordant relationship at last sex, and 63 (24.8%) were utilizing dual methods. Likewise, among 308 HIV infected women surveyed, 58 (18.8%) were in a known sero-discordant relationship at last sex, and 80 (26.0%) were utilizing dual method. The odds ratio of dual method use at last sex, comparing sero-discordant sexual partnerships to sero-concordant sexual partnerships, were 0.67 (95% CI: 0.25-1.53) and 1.40 (95% CI: 0.68-2.89) among men and women, respectively.

Conclusion: Less than 20% of our participants reported that they were in a known sero-discordant relationship at last sex, and less than 30% reported dual method use. Sero-discordance was not associated with dual method use at last sex among either men or women. Given the low rate of dual method use in our HIV-infected population, we recommend greater efforts to encourage HIV providers to counsel their patients about the importance of dual method use to prevent both unintended pregnancy and sexually transmitted infections.

Abstract 49

Burden of Hepatitis B infection among high risk populations in Western Kenya

Mercy Karoney¹, Fatuma Some^{1,2}, Ms Hellen Lukhaka², Eric Wang'welo², Laban Murgor², Adrian Gardner^{1,2,3}

¹Moi University, Eldoret, Kenya, ²Academic Model Providing Access to Health care (AMPATH), Eldoret, Kenya, ³Indiana University School of Medicine, Indianapolis, USA

Background: Hepatitis B infection causes significant morbidity and mortality worldwide. Chronic hepatitis B infection has been on the rise since 1990 with the highest prevalence reported in sub-Saharan Africa. Health care workers, intravenous drug users (IDU), commercial sex workers and men who have sex with men (MSM)

are high risk groups for Hepatitis B. Due to similar routes of transmission, Human Immunodeficiency Virus (HIV) infected individuals are also at high risk for Hepatitis B infection.

Objectives: The present study was retrospective analysis of a care program effort to screen individuals for viral hepatitis.

Methods: This cross sectional study was carried out on high risk populations within western Kenya. Hepatitis B infection was defined as presence of Hepatitis B surface antigen (HBsAg) in persons who were screened. Populations included in this analysis include HIV infected persons, substance users, MSM, female sex workers and patients presenting with signs of liver disease. Data analysis was carried out using Stata version 13. Logistic regression was used to model the association between variables and HBV infection.

Results: The overall prevalence of Hepatitis B across all risk groups from this study was 10.7% (95% CI 8.6 to 12.8%) out of 860 persons screened. The MSM population had the highest HBV prevalence of 17.4% (95% CI 10.2 to 24.7%). Hepatitis B prevalence in the HIV infected population was 10.2% (95% CI 7.2 to 13.2%). Reported contact with jaundiced persons showed independent association with Hepatitis B infection after adjusting for other factors OR 1.98 (95% CI 1.25 to 3.14).

Conclusion: There is a high prevalence of HBV infection amongst high-risk population in western Kenya.

Abstract 50

The end of AIDS: a possibility or pipedream? Modelling the future trajectory of the HIV epidemic in Uganda

Charles Birungi¹

¹Unaid/s/University College London, Lilongwe, Malawi

Little is known about the future trajectory of the AIDS epidemic in Uganda. Mathematical models have potential to better our understanding of the epidemiology of HIV/AIDS through studying the transmission dynamics of HIV.

To study the future course of the AIDS epidemic in Uganda, we use Goals - a suite within Spectrum model – to provide forecasts that can help better our understanding of the epidemiological patterns of HIV. This chapter aims to inform planning and policy for effective HIV/AIDS responses.

Compared to status quo, it presents an analysis of the impact of the Fast-Track approach that is intended to provide a roadmap to the actions required to achieve the UNAIDS goal of ending AIDS by 2030 – as applied to the Ugandan context. Compared to a counterfactual scenario of constant coverage for all services at early-2015 levels, the Fast-Track approach would avert over 4 million HIV infections and 1.2 million deaths from 2015 to 2030.

This chapter indicates that it is possible to achieve dramatic gains in epidemic control with a significant push to achieve rapid scale-up of key interventions between now and 2020. The findings suggest a risk of recrudescence if efficacious interventions are not scale-up. Also, in the absence of a functional cure and/or vaccine, it is not possible to “end” the AIDS epidemic within a generation

Abstract 51

Facility-level barriers to antiretroviral therapy experienced by men in Malawi

Kathryn Dovel^{1,2}, Khumbo Phiri¹, Alan Schooley^{1,2}, Misheck Mphande¹, Mackenzie Chivwara¹, Risa Hoffman^{1,2}

¹University Of California Los Angeles, Costa Mesa, United States, ²Partners in Hope, Lilongwe, Malawi

Background: Men are underrepresented in antiretroviral therapy (ART) programs. In particular, facility-based services have failed to attract men. We examined the organization of ART services in Malawi to understand factors that may influence male participation and explored provider perceptions of facility-based barriers and facilitators to engaging men in ART programs.

Methods: A facility-level survey was conducted at 53 mid- and large-level health facilities across 4 districts in central and southern Malawi to assess the organization of ART programs within health facilities. Twelve focus group discussions were

conducted with ART providers (n=31), HIV counselors (n=19), and community-based staff (n=29) from 6 facilities to understand provider perceptions of barriers to ART care for men and strategies to improve male participation.

Results: Forty-three percent (n=23) of 53 ART sites were located in stand-alone buildings separate from other health services. Thirty-two present (n=17) lacked privacy, with ART waiting areas easily seen by general clients or community members. Twenty-one percent (n=11) of ART sites were located in female-focused sections of the facility, such as antenatal, family planning, and/or children's clinics. Nine percent (n=5) of health facilities only offered ART on clinic days when family planning and/or antenatal services were offered. None of the sites offered male-friendly or tailored ART services.

In focus group discussions, providers believed the structure of ART programs increased men's risk of unwanted disclosure due to the location of ART sites, days of ART services that coincided with female-specific services, and health seeking behavior. Men are generally expected to attend health facilities during times of illness; therefore, men who seek regular facility-based care are assumed to be HIV+. Providers identified three strategies to address male-specific barriers to care: (1) improve privacy in ART waiting spaces; (2) integrate ART with other health services such as care for non-communicable diseases; and (3) promote primary health care for men to reduce the assumption that men who regularly visit health facilities are HIV+.

Conclusions: Lack of privacy and male-friendly services are important barriers to increasing men's use of ART. Additional studies are needed to explore strategies to decrease male-specific barriers to care within health facilities.

Abstract 52

Integration of HIV testing and counseling services in national immunization program: Experience from Kasama District in Northern Zambia

Patrick Makelele¹, K. Chisenga², Harriet Phiri², Janet Lubingu¹, Fred Kabengele¹, Fred Simwinji¹, Namakau Nyambe¹, Prisca Kasonde¹, Michael Welsh¹

¹Fhi360/ZPCTIIB Zambia, Kasama, Zambia, ²Ministry of Health Zambia, Kasama, Zambia

Background: HIV Testing and counseling Services (HTS) serve as a key entry point to HIV care. There are many ways in which HTS are provided including Voluntary Counselling and Testing, Provider Initiated HIV Testing, mobile HTS at health facility and community level and CT integration in other health services. In Kasama District, the Zambia Prevention Care and Treatment partnership (ZPCT IIB) with support from the PEPFAR, through USAID, supports HTS. To further increase access to HTS for both children and adults, the project collaborated with Kasama District Medical Office to integrate HTS with immunization services during the child health week campaign, which is held bi - annually in Zambia.

Descriptions: Before this initiative, the district monthly average HTS uptake was 3,939 in 2015. Child health week preparatory meetings with health care workers were held with community gate keepers (head teachers, religious leaders, ward counsellors), Community Based Volunteers (CBV) and other stakeholders. Logistics for HTS, immunization and other related services were defined and commodities procured. Additional CBVs were recruited to meet CT demand. HTS services were offered alongside immunization services. Quality assurance for HIV testing was conducted using the 10th sample method.

Lessons learned: Through these integrated activities 16,115 clients (4,389 males, 11,726 female) were reached with HTS in one week. 273 (2%) tested HIV positive (58 male including 9 children and 215 female including 11 children). All HIV positive clients were enrolled into HIV care at the nearest ART sites where 13/20 children and 186/253 adults were initiated on ART. This achievement represents about 400% of the district monthly HTS average uptake of 2015 prior to this initiative.

Conclusion: Integrating HTS services into Child Health week activities increased HTS uptake in the district, and seems to be an efficient way of facilitating the progress towards the first 90 of the 90/90/90 goal.

Abstract 53

“For just one HIV test, I have to fill 121 things...”: Experiences of primary healthcare workers with using HIV/AIDS program documentation tools in Nigeria.

Chukwuebuka Ugwu¹

¹Centre For Clinical Care And Clinical Research, Nigeria (CCCRN), Enugu State, Nigeria

Background: In Nigeria, the primary health care (PHC) system is responsible for providing communities with the 'Basic healthcare services' package as it is the tier of healthcare closest and most easily accessible to the people. Thus, in 2010 some aspects of vertically-funded HIV/AIDS service provision were decentralised to PHCs to help ensure community access to essential services. However, the human resource constraints at PHC level in Nigeria are well known. This study therefore sought to understand the experiences of PHC workers with the various HIV program checklists, and data capturing tools and to highlight possible implications for the health system.

Materials and Methods: Conceived from an interpretivist epistemological standpoint, this qualitative study utilised in-depth interviews to understand primary healthcare workers' lived experiences in documenting HIV services. Interviews were conducted for a purposively selected sample of 21 PHC workers from three Local Government Areas of Enugu State south-east Nigeria. Being a phenomenological study, a naturalised method of transcription was used to transcribe the audio-recorded interviews. The transcripts underwent iterative minimal reduction to enhance readability.

Using a thematic data analysis, recurrent ideas within the data were labelled as codes and the transcripts were coded in sections generating a list of about 36 codes. Thereafter, codes addressing a similar underlying idea (or meaning) were grouped together as themes. Four major themes were thus abstracted from all the interviews as a result.

Results: The emerging themes from the data include: (i) the very high volume (and detail) of documentation required for HIV services, (ii) the reasons behind choices of documentation

behaviour that PHC workers adopt at their clinics, (iii) ensuring documentation capacity at the health centres through regular mentorship, and (iv) the role of incentives in sustaining documentation behaviour. Other minor themes such as the frequent change in documentation tools also emerged from the data.

Although PHC workers understood the importance of documentation to the services they render, they made implicit choices about documentation practices in their facilities. They made couched decisions about: which tools to document, the regularity and completeness of the documentation, and the kind of staff to be assigned to it. Those choices were underpinned by a complex interplay of factors such as human resource issues, and the presence (or absence) of material and non-material incentives.

Conclusion: The healthcare worker's documentation behaviour has serious implications in terms of data trustworthiness at local, national and international levels. Also, the quality of care received by clients such as mother-baby pairs in PMTCT can also be severely affected. However, it also has far reaching implications for wider health system issues such as sustainability of the HIV services and motivation of the human resource for health at the PHC level. A simplified approach to HIV service implementation at the primary level of care is favoured by health workers at this level. Further, integration of HIV/AIDS services into the basic minimum care package for PHCs will portend better health system strengthening.

Abstract 54

Progress towards achievement of the UNAIDS 3rd 90 in Zimbabwe: Capacity and functionality of viral load monitoring in 22 Districts

Talent Maphosa¹, **Karen Webb¹**, Vivian Chitiyo¹, Sara Page-Mtongwiza¹, Paul Nesara¹, Diana Patel¹, Barbara Engelsmann¹

¹Organisation For Public Health Interventions And Development, Harare, Zimbabwe

Background: Zimbabwe is one of the 22 high burden countries that adopted the UNAIDS targets, and launched a viral load (VL) scale up plan in 2015. The plan provides a road map to scale up VL

monitoring from 3% in 2015 to 70% by the end of 2017 and 90% by 2018. To aid the Ministry of Health and Child Care in its efforts, the Organization of Public Health Interventions and Development (OPHID) conducted an assessment establishing existing capacity and functionality of VL monitoring in Zimbabwe.

Methods: In May 2016 data on the current availability of VL monitoring, functionality of equipment human resource capacity and existing bottlenecks was collected in 22 purposively sampled districts. Stata V12 was used to conduct the descriptive analysis.

Results: At time of survey, 50% (11/22) of districts were not collecting samples for VL monitoring. High variability across districts was observed in VL sample transportation and result notification systems, mostly being partner dependent. None of the districts implementing VL had standard operating procedures on who can interpret VL results and initiate switch to second line regimens. Less than 5% of the health workers in post were trained in VL sample collection and result interpretation. No district indicated health care workers are “confident at interpretation of VL results”. Only 18% (4/22) districts and 33% (1/3) of the labs surveyed were aware of their annual viral load target.

Conclusions: Our assessment revealed limited availability and capacity to conduct VL monitoring in 22 districts serving 367,399 people on ART. There is an urgent need to support MOHCC to make VL testing available, accessible and affordable for PLHIV on ART to reach the 3rd 90 in Zimbabwe. Standardization of VL sample transportation must be prioritized. We recommend viral load machine capacity utilization analysis be conducted to improve optimization. Improved communication of national policies and targets to provincial, district and site level is needed to achieve VL scale up. Expansion of VL monitoring and capacity building health workers should be simultaneously.

Abstract 55

Treat All and the 1st 90: exploring changes in HIV test rates and yields among adults following implementation of test and treat in Bulilima District, Zimbabwe

Webb K¹, Chitiyo V¹, Page-Mtongwiza S¹, Mbetu P¹, Maphosa T¹, Engelsmann B¹

¹Organisation For Public Health Interventions And Development

Background: At 22.3%, Matebeleland South Province has the highest HIV prevalence in Zimbabwe. The impact of test and treat strategies on demand and uptake for HIV testing are unknown in high prevalence, resource-limited settings. Our objective was to explore changes to HIV test rates and test yields among clients accessing facility-based care in Bulilima District, Matebeleland South Province, following start of Treat All.

Methods:

We conducted a retrospective cohort analysis of clients accessing HIV testing services after Treat All implementation. All clients accessing HIV testing services at 11 purposively selected health facilities in Treat All inception district, Bulilima, from May 2016 (month 0) and 1, 3 and 6 months after Treat All implementation were traced through multiple registers to document HIV test results disaggregated by age, sex and entry point.

Results: Among 3,101 individuals tested for HIV over the period of interest, the majority tested were women (68%). A significant 290% increase in HIV test uptake was observed from pre-Treat All to Month 6. While HIV test yields decreased (19-11%), the absolute number of new positives identified increased by 68% due to increased test rates. Within age groups, young women aged 15-19yrs and 20-24yrs had significantly higher test yields than men of the same age (8% vs 2.2%; $p=0.02$ and 14.5% vs 8%; $p=0.04$ respectively). Adult men aged 25-49 had the highest test yield (23.2%).

Conclusions: We observed increased HIV test rates and number of new positives identified following implementation of Treat All. Tests rates remained low among men compared to women. In high prevalence settings such as Zimbabwe, our findings highlight the value of offering HIV testing to all individuals with unknown HIV status presenting to health facilities. Evidence-based differentiated models of care to increase testing uptake among high yield groups (young women, older men) are required to reach the 1st 90.

Abstract 56

Recommendations for requirements gathering to effect an efficient data harmonization program to promote South-to-South HIV cohort collaborations

Lance Weyer¹, Maria Picone¹, Michael D'Eredita¹, Jason Long¹, Nobubele Monqo¹, Craig Carty¹

¹The Relevance Network, Johannesburg, South Africa

Background: The digital revolution in healthcare has resulted in demonstrable successes with large cohort monitoring, thus enabling more informed public health responses. In contrast, the emergence of multiple electronic systems in resource-limited settings has resulted in a complex landscape of non-convergent data pools, making broad-reach analyses cumbersome or altogether impossible. Data harmonization has become a key strategy within the HIV field, whereby non-intersecting data sets from multiple sites are linked in order to provide a single, unified access point to large-scale data. Harmonizing existing data sets poses a challenge due to both the high costs of such projects and limited number of experts in the field. In order to mitigate these issues and build HIV monitoring capacity within the New Horizons Advancing Pediatric HIV Care Collaborative (Kenya, Lesotho, Swaziland, Uganda & Zambia), a data harmonizing platform, OASIS – Outcomes + Access = Shared Information Spaces, which specifically targets priority country settings was proposed.

Methods: To maximize the reach and impact of the OASIS platform, the team developed implementation science protocols that sought to improve the requirements-gathering process to maintain efficiency and maximize limited resources. The team's approach has been fine-tuned over a period of 2 years, and applied in real world contexts across six Sub-Saharan African countries. Initial site visits exposed the team to the complexities of the multiple data management platforms in use and enabled them to determine key differences and similarities across sites, yielding a consolidated landscape analysis. Extensive consultation, in order to determine best practices and efficient protocols, was undertaken with multiple roll-players including key informants from Ministries of Health, information technology and clinical management.

Results: Knowledge gained from these initial investigations have allowed the team to develop a standard protocol for on-boarding new sites into the OASIS cohort.

A short form, 23-point prospective site requirements document captures all essential information needed for a swift and smooth site inclusion. From an administrative perspective this includes variables such as national e-health legislation requirements as well as gate-keeper and stakeholder details. From a technical perspective this includes the various technical specifications of the eMR and data management system, standard operating procedures, current report generation capacity and technical support requirements. This – coupled with targeted in-country consultations – allows for rapid and agile on-boarding of new cohorts into the south-to-south collaborative.

Conclusion: The steps taken by the team to fine-tune a simple standard operating procedure and reduce the need for extensive requirements gathering have resulted in a model with extremely efficient and lean resource management. Savings in set-up costs can now be redirected to further other programmatic objectives, including capacity training for emerging researchers and cross-country working group support.

Abstract 57

Will HIV Test and Start be the end of baseline CD4 monitoring? CD4 functionality and impact of transition in a Resource Limited Setting, Zimbabwe

Maphosa T¹, Webb K¹, Chitiyo V¹, Page-Mtongwiza S¹, Nesara P¹, Engelsmann B¹

¹Organisation For Public Health Interventions And Development

Background: In 2015, World Health Organization (WHO) released new HIV treatment and care guidelines recommending starting antiretroviral therapy (ART) in all people living with HIV (PLHIV) regardless of CD4 count or clinical stage. In June 2016, Zimbabwe started implementing the new HIV treatment guidelines which still recommend baseline CD4 monitoring. The objectives of the assessment were to describe the availability of CD4 monitoring and identify existing bottlenecks to

effective and efficient use of CD4 monitoring equipment.

Methods: Qualitative and quantitative data was collected in 22 purposively sampled districts (5 provinces). Health care staff was interviewed in March 2016 using a structured questionnaire. After Treat All roll out; CD4 utilization pattern was recorded pre- and post-TREAT ALL implementation in June and July 2016 respectively. Stata V12 was used to conduct the data analysis.

Results: At the time of the assessment; 50% (15/30) of conventional and 34% (42/124) CD4 POC machines were not functioning. Average length of break down was 118 days, with most frequently cited reasons for breakdown being error messages, no cartridges or reagents, and results printer down. In the previous 6 months, 81% of all CD4 machines had experienced a reagent stock out, breakdown or both. The proportion of patients initiated on ART that received baseline CD4 monitoring significantly reduced the month after Treat All began (47% vs. 26%, $p < 0.001$). Disaggregated analysis demonstrated significant variation in CD4 utilization and functionality between sites and Districts.

Conclusions: We report frequent breakdown of both POC and conventional CD4 machines and a significant decline in documented baseline CD4 in newlyinitiated patients following the start of Treat All in Zimbabwe. As national scale up of VL monitoring continues, we recommend cost-effectiveness analyses to determine optimal investment for improving functionality of existing CD4 equipment to support baseline monitoring of patients on ART as recommended in Zimbabwean national guidelines.

Abstract 58

Monitoring Stock Level of HIV Treatment drugs in South-Eastern Nigeria – The case for Stock Tracking Tool

Omena Mimi Eghaghara¹, Prince Obinna Anyanwu, okezie Onyedinachi, Andy Eyo

¹Excellence Community Education Welfare Scheme, Enugu, Nigeria, ²Excellence Community Education Welfare Scheme, Abuja, Nigeria, ³Excellence Community Education Welfare Scheme, Abuja, Nigeria, ⁴Excellence Community Education Welfare Scheme, Uyo, Nigeria

Background: HIV Commodity logistics management system allows orders to be placed bimonthly by the responsible person at the facility level; using consumption data. The facilities logistic teams were not monitoring stock level and the expiry dates of available Anti-Retroviral drugs; thus, creating artificial stock-outs and emergency orders. Excellence Community Education Welfare Scheme in 2015, strengthened stock levels monitoring by developing Monthly Stock Status Tracker, a pharmacy reporting tool that quantifies available antiretroviral and opportunistic Infection drugs as well as their expiry dates. This study assesses the outcome of using the stock level tracking tool in the facility one year post introduction.

Methods: Facility Pharmacy staff were trained and supported to use the tracker tool for reporting. The effect of the tool in reducing stock-outs and commodity expiry was assessed one year post introduction.

Findings: Expiries reduced drastically to less than 1%; while the facility logistic teams now conduct monthly stock taking for available commodities; thus, using the tracking tool data to report low stock level.

Conclusion & Recommendations: The use of the tracker tool reduced commodity loss due to expiry and rate of emergency orders significantly. Facility logistic team should be supported to conduct monthly stock taking to avoid expiries.

Abstract 59

Operational Implementation of Provider Initiated Testing and Counselling: The Effect on HIV Testing Rates among Adult Outpatients in Zimbabwe

Vivian Chitivo¹, Karen Webb¹, Diana Patel¹, Talent Maphosa¹, Sara Page-Mtongwiza¹, Barbara Engelsmann¹

¹Organisation for Public Health Interventions and Development, Harare, Zimbabwe

Background: Provider-initiated testing and counselling (PITC) is a key strategy in the diagnosis of HIV in high burden countries like Zimbabwe with adult prevalence of 14.6%. Numbers testing for HIV have increased over the years but evidence is mainly based on antenatal and TB settings. Despite national testing and counselling guidelines, implementation of PITC varies across healthcare types and entry-points. We examined HIV testing rates among clients in outpatients department (OPD) across healthcare levels with the aim to quantify and understand the underlying reasons of outcomes.

Methods: Data on OPD attendance and HTC services (July-September 2016) were collected retrospectively from 8 health care sites (including one tertiary, one district hospital, six clinics) for the cross-sectional evaluation. The facilities were selected using modified sampling approach for conducting enhanced monitoring activities of high burdened priority facilities in three Families and Communities for Elimination of HIV (FACE HIV) supported districts namely Bulawayo, Kwekwe and Makoni. Healthcare worker qualitative interviews were conducted to identify the main influences of implementation processes.

Results: For the data collection period, 11 268 clients (adults >15 years, 44% males and 56% females) with unknown or undocumented HIV status received health care in OPD. Only 22% (n=2464) were tested for HIV and 16% (n=392) of the tested received HIV positive results. Provision of HIV testing services varied per healthcare level, with district hospital testing 55% of eligible clients, and clinics and tertiary hospital testing 27% and 8%, respectively. The proportion of people testing HIV positive did not vary by health facility level, range 14%-16%, indicating population accessing

health services at the different levels is relatively similar. Factors that influence higher HIV test rates include service delivery within the department, innovative integration of data systems and human resources capacity.

Conclusions: Implementation of PITC in OPD is suboptimal, resulting in large numbers of missed opportunities. Higher testing rates attained at district level despite multiple entry points and high patient volumes indicates the feasibility of increasing testing coverage across healthcare levels. Every contact with healthcare system should offer an opportunity for HIV diagnosis as recommended in global and national guidelines specifically at primary care level where the majority of patients receive services before referral to a higher level facility. Future research to achieving the first 90 should explore the transferability of strategies employed by higher performing health facilities in operational implementation of PITC.

Abstract 60

Provider perspectives on barriers to reproductive health services for HIV-infected clients in Central Malawi

Khumbo Nyirenda¹, Margaret Caplan², Ann Phoya³, Alan Schooley^{1,2}, Risa M. Hoffman²

¹Partners In Hope, Lilongwe, Malawi, ²university of california and Los Angeles, , United states of America, ³Malawi Ministry of Health, ,

Background: Despite the availability of Depo-Provera in HIV clinics in Malawi, coverage of family planning (FP) remains low. We sought to understand provider perspectives about the challenges of providing reproductive health services to HIV+ clients in ART clinics in central Malawi.

Methods: In September 2015, we conducted surveys and semi structured in-depth interviews with ART providers who were ≥18years. Interview questions focused on HIV clinical experience, reproductive health training, providers' knowledge about FP, and barriers to the provision of FP. Interviews were performed in English, audio recorded and analyzed with ATLAS.ti. Inductive content analysis was used to identify themes from

interviews and proportions of themes were calculated.

Results: Thirty-one interviews were conducted at 16 ART clinics. Fifty-eight percent of providers (N=18) were female and 65% (N=20) were nurses, 10% (N=3) clinical officers, and 25% (N=8) medical assistants. The median age of providers was 35 years (range 24-65) and providers had a median of 4 years of HIV clinical experience. All sites had stocks of hormonal FP, including combination oral contraception, Depo-Provera, and implants. Nearly half stocked intrauterine devices. Fifty-two percent of providers (N=16) reported Depo-Provera as the best method of contraception for HIV-infected clients. Twenty-six percent (N=8) commented on the importance of dual protection with Depo-Provera and condoms for preventing pregnancy and sexually transmitted infections. None of the providers voiced concern regarding Depo-Provera and risk of HIV transmission. Major barriers to the provision of FP in ART clinics were lack of available staff in clinic (35%, N=11), lack of provider training (26%, N=8), inadequate time to counsel on FP (10%, N=3), and lack of private space for the provision of FP services (10%, N=3). Providers also raised concerns about patient-level barriers, including misconceptions in the community about FP (48%, N=15) and patient concern about side effects (42%, N=13).

Conclusions: Direct delivery of FP in ART clinics may be limited by lack of provider training, time for counseling on FP, and space limitations. Strategies to co-locate FP services and task shifting FP service provision to non-ART providers should be explored in Malawi as a means to improve coverage of services to HIV-infected clients.

Abstract 61

Screening index clients attending ART clinic to identify untested children at risk of HIV in Balaka, Malawi

Tapiwa Tembo¹, Maria Kim^{1,2}, Katie Simon^{1,2}, Duncan Phiri¹, Advemus Nga'mbi¹, Michele Montandon^{1,2}, Nelson Chitsonga³, Kitty Mpama¹, Mwelura Harawa¹, Samuel Chilala¹, Elijah Kavuta¹, Peter Kazembe^{1,2}, Saeed Ahmed^{1,2}

¹Baylor Children's Foundation Centre of Excellence, Lilongwe, Malawi, ²Baylor International Pediatric AIDS Initiative at Texas Children's Hospital, Baylor College of Medicine, Houston, United States, , United States of America, ³Ministry of Health, Lilongwe, Malawi

Background: Early identification and diagnosis of HIV-infected children is essential for timely access to life-saving treatment and care. Children of HIV-infected clients are at high risk of having HIV, but many parents do not bring their clinically well children to health facilities for HIV testing and counseling (HTC) services. We aimed to assess a screening and referral strategy to encourage HIV testing for children of adult ART clients at Balaka District Hospital in Southern Malawi.

Materials and Methods: An index client testing initiative was conducted from May to December 2016 at Balaka District Hospital, a district referral hospital in Southeastern Malawi, in order to identify adults with untested biological children and refer them for testing. HIV Diagnostic Assistants (HDAs) provided health talks at the ART clinic waiting area to educate patients about the importance of testing family members for HIV. Participants aged ≥18 years were screened to determine the HIV status of any biological children <15 years. HIV status of each child was recorded and a family referral slip (FRS) provided to those who agreed to bring untested children for HTC services. Only 1 FRS was given to a parent regardless of the number of untested children. A tracking form was used to record the age and status of children who returned for HTC with a Family Referral Slip (FRS). HTC was conducted by trained HTC counselors according to Ministry of Health (MOH) guidelines.

Results: There were 930 index clients screened. Of these clients, 24% were male and 76% were female. From these 930 individuals, 1933 children were identified representing an average of 2 at-risk children for every index case. Of these children, 37% were untested and 63% had known HIV status. Of the 1209 children with known HIV status, 12% were HIV positive and 10% were HIV-exposed. Of the 724 untested children, 16% were 2 to 5, 40% were 6 to 10 and 44% were 11 to 15 years respectively. Of 724 untested children, 10 (1%) reported to the health facility with a FRS. All 10 tested negative.

Conclusion: A significant proportion of biological children of adults already on ART remain untested. Although untested children were identified through this screening process and referred for testing, they did not present for HTC services. This could have

been due to many factors for example far distance from home to the hospital or perhaps children were brought to another facility for testing. Additional efforts are required to ensure children at risk of potentially having HIV infection receive testing.

Abstract 62

TREAT ALL in Zimbabwe: 6 month trend in ART initiation rates after learning phase implementation

Engelsmann B¹, Maphosa T¹, Nesara P¹, Page-Mtongwiza S¹, Webb K¹

¹Organisation For Public Health Interventions And Development

Background: Increasing the number of PLHIV on treatment is critical for the attainment of the 90-90-90 goals in Zimbabwe. With 62% of PLHIV receiving ART in 2015, the country began a learning phase roll-out of TREAT ALL in June 2016. This presentation reviews the impact of TREAT ALL implementation on the uptake of HIV services in Zimbabwe.

Materials and Methods: In June 2016, 92 health facilities in 7 Districts of Zimbabwe were prepared for learning phase implementation of HIV test and treat 'Treat All'. Routine program data for patients newly identified as HIV positive and ART initiation were compiled and cleaned from April 2016 to January 2017. Program performance per district was compared pre- and post TREAT ALL implementation using paired t-tests.

Results: From April to December 2016, the learning sites initiated 9875 patients on ART. Before TREAT ALL was implemented, the numbers of patients initiated on ART were 30% lower than the number of patients newly identified as HIV positive. During the first three months of TREAT ALL, the mean number of ART initiations increased by 130% ($p=0.0013$) from May to August 2016. During this period more patients were initiated on ART than newly identified as HIV positive. This reflects the efforts of clinics to follow up on previously not eligible patients recorded in pre-ART registers. Six months following introduction of TREAT ALL, initiation rates had declined and stabilized at a level 78% higher than pre TREAT ALL ($p=0.0051$).

Conclusion: Prior to Treat All, the lower proportion of patients initiated on ART as compared to those identified as HIV positive represents patients either not eligible by CD4 or WHO Clinical stage, or lost to follow-up that limit 90-90-90 efforts. Our dataset shows that with the start of TREAT ALL, ART initiation increases sharply initially, to stabilize at numbers only slightly lower (<10%) than the patients newly identified as HIV positive. Continued data collection will provide evidence whether the attainment of the second "90" can be sustained, whilst upholding the quality of service provision.

Abstract 63

Should non-pregnant adults be offered antiretroviral therapy immediately after HIV diagnosis? The views of HIV patients in Swaziland.

Cebele Wong¹, Emma Mafara¹, Shaukat Khan¹, Pascal Geldsezer², Thomas How¹, Velephi Okello³, Till Baernighausen⁴

¹Clinton Health Access Initiative, Mbabane, Swaziland,

²Harvard School of Public Health, , USA, ³Swaziland Ministry of Health, , Swaziland, ⁴University of Heidelberg, , Germany

Background: Little is known about patients' perceptions in relation to early antiretroviral therapy (ART) in public-sector health systems in sub-Saharan Africa. The 2015 WHO HIV guidelines recommend early access to ART for all HIV positive patients (EAAA) regardless of CD4 cell count or disease stage, and many countries expanded their HIV treatment eligibility accordingly. Additionally, countries have adopted the UNAIDS (90-90-90) targets and there is a need to understand barriers to ART initiation to reach the second target; 90% of patients with diagnosed HIV receive ART. This study aims to understand patient perceptions of benefits of EAAA in Swaziland.

Materials & Methods: This is a randomized study conducted in 14 government managed health facilities in Swaziland's Hhohho Region. Data was collected from September 2014 to January 2017. The study participants were all consenting patients 18 years of age or older, accessing HIV care in study facilities. A 2-stage sampling approach was

used, first selecting a random sample of days a facility will be visited with probability proportional to facility size, and then consecutively interviewing every eighth client on exit in Siswati.

All participants were presented with the scenario of an individual ("Muzi") who tested HIV positive, has a high CD4 count and is feeling well, and asked whether the individual should receive ART now, at a later time or never. The participants were also asked follow-up prompted and non-prompted questions to understand their perception of benefits of EAAA.

Results: The questionnaire was administered to a total of 547 clients with median age of 36 years old (IQR: 30-46) and of whom 71% were female. 81% (445/547) of respondents thought that it was best for Muzi to be offered ART immediately. When asked about their reasoning, 97% (400/412) said "yes" to "ARVs will keep Muzi healthy" and 56% (225/399) said "yes" to "ARVs will prevent Muzi from infecting a sexual partner". Only 9% (47/547) of clients indicated that Muzi should be offered ART at a later time and 8% (46/547) answered "it depends". 2% (9/547) indicated that Muzi should never be offered ART.

Of the 8% of clients who responded "it depends" for the initiation of treatment for Muzi, the most commonly cited unprompted factor was CD4 count is high or Muzi is healthy (48%, 22/46). 20% (9/46) indicated the healthcare workers should advise.

Conclusions: HIV patients in our study appear to be in favor of ART initiation immediately upon diagnosis regardless of a person's CD4 or health status. However, many patients did not identify prevention of partner infection as a reason for initiating ART. There is still work to be done in reinforcing EAAA messaging and reorienting patients to think about health of their partner as well as their own health. This study suggests that a rollout of EAAA in Swaziland will likely experience a high degree of acceptability but a strong messaging component will be essential in order to ensure full understanding of the benefits of EAAA and help realize the second 90 of the WHO 90-90-90 targets.

Abstract 64

An evaluation of the depth of non-communicable diseases among patients on ART in Malawi

Darlington Thole¹, Victor Tolno¹, Jean Baptist Sangno¹, Marco Carbonaro¹, Piero Musca², Giuseppe Liotta², Gianni Guidotti², Ulemu Sopa¹

¹Dream Program, Lilongwe, Malawi, ²University of Rome 'Tor Vergata, Biomedicine and Prevention Dept, Rome, Italy.

The National HIV program has registered big success as evidenced by the large number of patient alive and on Antiretroviral drugs (ART). Since the introduction of free ART in 2004, there has been a steady decline in HIV related infectious morbidities as well as mortality among people living with HIV and AIDS. However, related to the improving of HIV patients survival, there is an increase in morbidity related to non-communicable disease (NCDs) among people living with HIV.

Objective: The objective of the study was to evaluate the burden of non-communicable diseases among patient taking ART in Malawi.

Methods: This is a Cohort analysis using quantitative approach in a setting where all HIV+ patients on ART are routinely screened for hypertension, diabetes and chronic kidney disease (CKD) as part of the routine follow up (BP and body max index 4/y; glycaemia 1/y; creatinine and proteinuria 2/y). For this study we analyzed only patients with age >18 year. Hypertension screening is done with blood pressure (BP) measurement using the standard sphygmomanometer (systolic BP > 140 mmHg or diastolic BP > 90 mmHg in 2 or more subsequent visits). CKD with calculated GFR (Cockcroft-Gault formula) less than 50 ml/min and/or proteinuria (>27 mg/dL spot sample). Data are derived from the Balaka DREM center..

Results: The analysis showed a global prevalence of hypertension of 9% (679/7469) among the three sites with Blantyre having highest at 12% (536/4169). The impact of a combination of creatinine and GFR to diagnose CKD. We found 178 patients fulfilling criteria (148 only proteinuria, 13 only GFR, 17 both).

In the same site was analyzed the relationship between BMI and hypertension. Prevalence of BMI > 25 in our general population is 16%, in our hypertensive population is 33%.

Conclusion /Recommendation

Usual DREAM approach to patients with HIV/AIDS can diagnose the most prevalent NCDs, thus strengthening the importance of an integrated approach to both conditions.

Abstract 65

Entry Point Analysis of Provider Initiated HIV Testing Services: Progress Towards Achieving the First 90 in Zimbabwe

Chitoyo V¹, Webb K¹, Patel D¹, Maphosa T¹, Page-Mtongwiza S¹, Engelsmann B¹

¹Organisation for Public Health Interventions and Development

Background: An estimated 74% of adults >15 years living with HIV in Zimbabwe know their status. Although remarkable progress, there is need to scale up efforts towards reaching undiagnosed individuals considering prevalence remains disproportionately high, 14.6%. Provider initiated testing and counselling (PITC) at every health service entry points has been a key strategy for HIV diagnosis. The evaluation objective was to estimate and compare PITC coverage and yield by entry point.

Methods: Modified sampling approach for conducting enhanced monitoring was used to select eight health facilities in three Families and Communities for Elimination of HIV supported districts namely Bulawayo, Kwekwe and Makoni. Data on attendances and HTC services among adults >15 years were retrospectively abstracted for July to September 2016 from the outpatients (with TB and STI as subentry points) and inpatients (medical and surgical wards as subentry points) departments. Descriptive and inferential analyses were conducted using STATA V12.

Results: Overall, 12050 adults accessed health services through the outpatients department and 3581 adults accessed services through inpatients department. The majority of the clients, 94% had unknown HIV status at presentation at the health facilities. A low proportion, 3% of the clients presented with a known HIV positive status. Clients presenting with TB related symptoms had the highest proportion tested for HIV, 60% while the outpatients department had the lowest proportion tested, 22% of the clients eligible for testing. Presumptive TB clients had the highest proportion testing HIV positive compared to other entry points, STI clients 27%, OPD patients 16% and inpatients 12%. However, the majority of new HIV positive cases as 76% were diagnosed through the OPD. While medical inpatients were more likely to be tested than surgical inpatients, 73% vs 36% ($p <$

0.05), a higher proportion of medical inpatients tested positive when compared with surgical inpatients, 17% vs 8% ($p < 0.05$).

Conclusions: High yield entry points present an opportunity for early diagnosis and treatment subsequently reducing HIV transmission, morbidity, and mortality. The high patients volume presenting with unknown HIV status reflect opportunities for offering HIV testing services to identify the PLHIV as some of them will be coming to the health facilities for diagnosis of opportunistic infections which are associated with HIV. Findings demonstrate that to achieve UNAIDS first 90 we need to strengthen PITC in OPD, with large patient volumes substantially contributing to our epidemic. High HIV testing rates among medical inpatients demonstrate feasibility of increased testing and should be replicated in other entry points. Further investigation is required on reasons for opting out of PITC.

Abstract 66

Evaluation of Strategies for Improving Subject Retention in The Option B+: ART Safety and Durability during First and Subsequent Pregnancies Study

Brenna Stanczyk¹, Austin Wesevich³, Jacob Phulusa², Mathias John², Bryna Harrington¹, Allan Jumbe², Irving Hoffman^{1,2}, Mina Hosseinipour^{1,2}

¹University Of North Carolina School of Medicine, Chapel Hill, United States, ²UNC Project-Malawi, Lilongwe, Malawi, ³Washington University School of Medicine, St. Louis, United States

Introduction: A variety of factors influence research subject retention in the developing world setting, including financial barriers, transportation barriers, structural barriers and clinic wait times. Strategies to improve retention are necessary. The Option B+: ART Safety and Durability during First and Subsequent Pregnancies research study at Bwaila District Hospital in Lilongwe, Malawi has several goals. These include characterizing the long-term safety, drug resistance patterns and clinical outcomes among women and their infants enrolled in the Malawi Option B+ program using TDF/3TC/EFV, critically evaluating women with

subsequent pregnancies after initial engagement in the Option B+ Program, and exploring rates of adverse pregnancy and birth outcomes among women, presence of birth defects, and infant developmental delay among infants exposed to EFV-based ART after the first trimester. Study enrollment did not meet targets in the first year due to physical constraints including a shortage of clinic space and clinic crowding. We hypothesized that the addition of a Saturday clinic would reduce crowding and visit duration during the week and would improve subject retention and study enrollment.

Methods: Mixed methods included an observational study of subject visit duration pre and post Saturday clinic introduction and an anonymous Likert-type scale subject acceptability survey.

Results: A total of 77 visits were observed (28 pre and 49 post Saturday). Follow-up visit duration was significantly effected by the addition of a Saturday clinic. The average time spent with a nurse during a follow-up visit went down from 78 minutes prior to the addition of Saturday clinics to 57 minutes after the addition ($p=.0337$). The average time spent with a clinician was not significantly effected ($p=.270$). The majority of subjects surveyed on both weekdays and Saturdays reported that time spent in clinic was acceptable. 6 subjects out of the 46 surveyed stated that Saturday was their preferred day. The effect of adding the Saturday clinic to overall retention is yet to be determined.

Conclusion: The addition of a Saturday clinic is a feasible way to reduce visit duration and accommodate retention. Subject surveys indicate this is an acceptable way to decrease crowding and improve subject satisfaction.

Abstract 67

Challenges of implementing a point-of-care test for early infant diagnosis of HIV infection in rural Zambia

Catherine Sutcliffe¹, Nkumbula Moyo², Sylvia Maunga², Simon Mutembo³, Philip Thuma^{1,2}, William Moss¹

¹Johns Hopkins Bloomberg School Of Public Health, Baltimore, United States, ²Macha Research Trust, Choma, Zambia,

³Ministry of Health, Choma, Zambia

Background: An affordable and simple point-of-care test would increase access to early infant diagnosis of HIV infection and improve the long-term health and well-being of HIV-infected infants. Point-of-care tests would also decrease inequities in early testing between urban and rural areas. This study was conducted to understand the challenges of implementing a point-of-care test for early infant diagnosis in rural Zambia.

Methods: A prospective study of early infant diagnosis was conducted at five health facilities in rural southern Zambia from February-December 2016, including a district-level referral hospital and four rural health centers (RHC). All healthcare workers involved in infant testing at the hospital and two from each RHC were trained to use a point-of-care test based on p24 antigen detection, which was implemented with routine HIV DNA testing.

Results: Thirteen healthcare workers were trained, including five psychosocial counselors at the hospital and a clinical officer, five nurses and two lay counselors at the RHCs. On average, 4.7 infants per week were evaluated for early infant diagnosis at the hospital. As the counselors were designated to work on early infant diagnosis, they were able to incorporate testing into their daily activities and were available to test all infants. At the RHCs, the number of infants to be tested ranged from 0.5 to 1.8 per week and implementing the point-of-care test was challenging. The trained healthcare workers, particularly the nurses, were frequently not available at the RHC (14-78% of days), primarily for vacation leave and workshops. At the smaller RHCs, shortages of staff were particularly challenging. This was addressed by using lay counselors but they required more supervision and training to perform the test adequately. At the larger RHC, more staff were involved in infant testing than were trained in the point-of-care test, leading to missed testing (29%).

Conclusions: When implementing a point-of-care test, the number and type of healthcare workers trained should be considered for each level of health facility. Strategies for ongoing supervision, training and quality control will be critical for successful implementation.

Abstract 68

Using compartmental model simulations to determine the effect of antiretroviral therapy(ART) default and non-adherence rates on HIV mortality.

Humphrey Misiri¹

¹formerly of COM, Blantyre, Malawi

Background: The aim of the study was to find out the effect of changes in ART default and non-adherence rates on HIV mortality

Materials and Methods: We formulated a compartmental model with 7 compartments for people aged 15-49 years namely the susceptible (X1), infected(X2), on ART(X3), defaulters(X4), ART non-adherents(X5), HIV –related mortality(Y1) and natural deaths(Y2). The parameters of the model were is the rate of HIV infection, the rate of natural increase via births, the rate of natural mortality , the rate at which HIV positives are registered for ART provision, the factor by which ART reduces mortality, the rate of mortality for persons on ART, the rate at which persons on ART become non-adherents and the ART default rate.. We assumed that HIV is in endemic equilibrium in Malawi. The model has two unknowns namely the ART default and non-adherence rates. Initial values for the rest of the parameters for 2015 were extracted from various sources. The following values of the ART default and non-adherence rates were plugged into the model : 10%, 20%, 30%, 40% and 50%. The corresponding number of HIV deaths noted.

Results: When the default rate was kept constant and non-adherence rate was changed gradually mortality which was high initially started decreasing. Furthermore, when the non-adherence rate was kept constant and the default rate was changed gradually HIV mortality also started increasing greatly. When both default and non-adherence rates were changing gradually HIV mortality increased far much higher.

Conclusion: Our simulation study shows that the biggest contributin to HIV mortality is from deaths of defaulters and those who do not adhere to ART. Therefore, reduction of HIV mortality can not be achieved by ART provision alone. It is necessary to

reduce both the ART default rate and the ART non-adherence rate to very low levels.

Abstract 69

Reasons for not linking to HIV care in newly diagnosed HIV positive adults in rural Malawi

Alison Price¹, Albert Dube², Judith Glynn¹, Menard Chihana², Ndoliwe Kayuni², Fredrick Kalobekamo², Elenaus Mwaiyeghele², Amelia Crampin¹

¹London School of Hygiene and Tropical Medicine, London, UK, ²Malawi Epidemiology and Interventions Unit, Chilumba, Malawi

Background: Malawi has implemented a test-and-treat model of HIV care, requiring an understanding of existing barriers to accessing care. We describe reasons for failure to link to care.

Methods: Demographic surveillance data (rural Karonga; population 37,000), multiple HIV sero-surveys and links to ART clinic data (for consenting attenders) were combined for 2007-2011. During screening, HIV-positive individuals were referred for assessment and care. In subsequent survey rounds individuals who disclosed their status but had not accessed HIV services self-reported reasons (using pre-coded Yes/No questions) for failure to link to care. Data on adults (15+ years) with newly diagnosed infection are presented.

Results: During three annual sero-surveys 58% of men and 66% of women tested. Of 710 new HIV diagnoses (281 men, 429 women), 622(88%) were re-interviewed at least once (63 were not available; 25 refused interview). Of the 622 (230 men, 392 women), 256(41%) withheld their status at all follow-ups, 134(22%) reported ART use and 232(37%) disclosed but reported not taking up care. Of those not available, not consenting or not disclosing, 33% were on ART (and had consented to be identified at clinic).

Of 232 not in care, 222(96%) recalled at least one referral to HIV services by our study team; 110(50%) had attended. In 122 (38 men, 84 women) not linked to care the most frequent reasons given were: a decision to attend only when symptomatic (58%); fear of discovery by family/others (26%); clinic distance, accessibility or

travel cost (23%); and concern about confidentiality (19%).

Conclusions: Our findings relate to a period when ART initiation was dependent on eligibility criteria but clinical assessment, prophylaxis and monitoring was recommended for all. In this setting, where HIV services follow a public health model, we delivered community counselling and referral with a highly motivated and trusted team. Nonetheless, low testing consent rates, reticence to disclose, low referral uptake and reluctance to seek care until symptomatic, population screening and test-and-treat strategies will not achieve UNAIDS 90-90-90 targets until there is a major perception shift. Understanding and reshaping current views on HIV care is key to designing programmes to maximise the benefits of ART as treatment and prevention.

Abstract 70

Risk factors associated with HIV infection among MSM in Rwanda: Behavioral and Biological Surveillance Survey 2015

Augustin Mulindabigwi¹, Dieudonne Sebuho¹, Samuel S. Malamba², Eric Remera¹, Andre Mbayiha², [Lisa A. Mills](#)², Antoine Rwego Gasasira², Catherine Kayitesi¹, Jean Pierre Ayingoma¹, Sabin Nsazimana¹

¹Ministry of Health - Rwanda Biomedical Center, Kigali, Rwanda, ²Centers for Disease Control and Prevention, Kigali, Rwanda

Introduction: Limited information is available to characterize risk factors associated with HIV infection in Sub-Saharan Africa in key populations (KPs) such as Men who have Sex with Men (MSM), yet such information is vital for epidemic control efforts. We report results from a national survey of MSM in Rwanda.

Methods: Respondent Driven Sampling (RDS) was used to sample and recruit participants between Jan-May 2015. In collaboration with organizations serving MSMs, the study team initially recruited four MSM to work as “seeds.” These men used coupons to recruit their MSM peers in waves from the whole country based on their social networks. Information was collected using a standardized structured questionnaire programmed in tablets and administered face-to-face by Nurse Counselors.

HIV testing was done using ELISA and Western Blot. A Dried Blood Spot (DBS) card was also shipped to the National Reference Laboratory along with whole blood specimens, which were used for HIV RNA PCR testing. Syphilis screening was done by rapid plasma reagin (RPR) test with *Treponema pallidum* hemagglutination assay (TPHA) for confirmation. Participants testing positive for any infection were referred to health facilities after post-test counselling. Cluster survey multivariable logistic regression analysis that allowed for inter-cluster correlations was done using RDS-Analyst and STATA weighted to account for the sampling method used, and 95% confidence intervals were calculated.

Results: In total 501 MSM were recruited, of whom 452 (90%) provided a blood sample. HIV prevalence was estimated to be 4.0% (CI: 1.4-6.6). The majority (65%) of respondents were aged 18-25 years, resided in the city of Kigali (71%), were single (98%), had completed primary or secondary school (83%), reported using alcohol (81%), and were circumcised (74%). The majority (82%) reported 2+ male partners in past 12 months. Transactional sex was acknowledged by 41.5% of the participants; 51.4% had ever had sex with a woman and 19.7% had used drugs for pleasure. More than one third (6/17; 35%) of HIV-positive respondents had never had an HIV test. In the multivariable model, having lived with a male partner was significantly associated with HIV infection (OR= 4.950 [CI: 1.318-18.519], p=0.018). Having experienced violence or abuse because of having sex with other men increased the odds of HIV-infection by 4.6 times (OR=4.566 [CI: 1.163-17.857], p=0.03). Finally, not being circumcised increased the odds of HIV infection three times (OR=3.084 [CI: 1.070-8.888], p=0.037).

Conclusion: The survey recognizes MSM as a key population in Rwanda, with HIV prevalence similar to overall national prevalence, but higher burden of disease associated with cohabitation with a male partner, experiences of abuse, and being uncircumcised. It highlights the importance of understanding the networks of MSM in Rwanda, both in Kigali and beyond, including the interrelationship with heterosexual networks. Programs should focus on improving MSM access to HIV services including testing, circumcision and safer sex commodities.

Abstract 71

Should HIV self-testing be offered as an additional approach to delivering HIV testing services? A systematic review and meta-analysis

Cheryl Johnson¹, Caitlin Kennedy², Virginia Fonner³, Nandi Siegfried⁴, Carmen Figueora¹, Shona Dalal¹, Anita Sands¹, Rachel Baggaley¹

¹World Health Organization, Geneva, Switzerland, ²Johns Hopkins University, Baltimore, United States, ³Medical University of South Carolina, Charleston, United States, ⁴Independent Clinical Epidemiologist, Cape Town, South Africa

Introduction: HIV self-testing (HIVST) is a discreet and convenient way to reach people with HIV who do not know their status, including many who may not otherwise test. To inform World Health Organization (WHO) guidance, we assessed the impact of HIVST on uptake and frequency of testing, as well as HIV positivity, linkage to care, social harm, and risk behaviour.

Methods: We systematically searched for studies comparing HIVST to standard HIV testing until 1 June 2016. Meta-analyses of studies reporting comparable outcomes were conducted using a random-effects model for relative risks (RR) and 95% confidence intervals. The quality of evidence was evaluated using GRADE.

Results: After screening 638 citations, we identified five randomized controlled trials (RCTs) with 4,126 total participants from four countries. All offered free oral-fluid rapid tests for HIVST. Meta-analysis of three RCTs showed HIVST doubled uptake of testing among men (RR= 2.12; 95% CI: 1.51, 2.98). Meta-analysis of two RCTs among men who have sex with men showed frequency of testing nearly doubled (Rate ratio = 1.88; 95% CI: 1.17; 3.01), resulting in two more tests in a 12-15 month period (Mean difference = 2.13; 95% CI: 1.59, 2.66). Across all RCTs there was no indication of harm or risk behaviour attributable to HIVST. Increased uptake and frequency of HIV testing due to HIVST was demonstrated among men in sub-Saharan Africa and high-risk MSM, including those not testing in the past six-months to three years and younger MSM (18-25 years of age). It is well documented that these populations of men have poor testing coverage and a high risk of acquiring

HIV, and higher HIV-related mortality than their female peers.

Conclusions: HIVST is associated with increased uptake and frequency of testing in RCTs. Such increases, particularly among those at-risk who may not otherwise test, will likely identify more HIV-positive individuals and contribute to closing the testing gap. WHO now recommends HIVST as an additional HIV testing approach.

Abstract 73

It is possible: Lessons learned in a home-based couples intervention among pregnant women and their male partners in Southwestern Kenya

George Owino¹, Pamela Musoke², Zachary Kwena¹, Anna Helova², Fatimah Bello², Anna Joy Rogers², Abigail Hatcher³, Patrick Oyaro¹, Lynae Darbes⁴, Elizabeth Bukusi¹, Janet Turan²

¹Centre for Microbiology Research, Kenya Medical Research Institute, Nairobi, Kenya, ²Department of Health Care Organization and Policy, School of Public Health, University of Alabama at Birmingham, Birmingham, United States, ³Wits School of Public Health, Faculty of Health Sciences, University of the Witwatersrand, Johannesburg, South Africa, ⁴Department of Health Behavior and Biological Sciences, School of Nursing, University of Michigan, Ann Arbor, United States

Background: Prevention of mother-to-child transmission (PMTCT) among pregnant women in areas with relatively high HIV prevalence requires a series of interventions throughout pregnancy and postpartum. Lack of male partner engagement--including low rates of couple HIV testing and counseling (CHTC) during pregnancy--remains a challenge to sustained family health in these settings. Couple-based interventions may enhance utilization of PMTCT and other health services, but they need to be assessed for feasibility and acceptability.

Methods: We enrolled 233 participants (137 pregnant HIV-positive and HIV-negative women and 96 male partners) from five antenatal clinics in Southwestern Kenya in a pilot randomized trial of a home-based couple intervention during 2015-2016. Eligibility criteria for pregnant women included gestational age of ≤ 36 weeks, living with a male

partner in a stable relationship, and no prior CHTC or mutual serostatus disclosure. A total of 64 women were randomized to intervention (2 home visits during pregnancy and 1 postpartum home visit) and 63 women were randomized to standard care (invitation to return to the clinic with their male partner). Male partners were asked to participate after researchers received permission to contact them from the enrolled women. Home visits included health education, couple communication skill-building, CHTC, and linkage to health services. Intervention impact is being assessed through comparing baseline questionnaire data with follow-up questionnaire data collected 3 months post-delivery.

Results: Several important lessons emerged during implementation. Of the 52 couples randomized to the intervention arm, 49 completed at least one couple home visit. CHTC was more often conducted during subsequent visits (11 at 1st visit, 14 at 2nd visit and 8 at 3rd), mainly due to fears regarding sero-discordant results. Although male engagement continued to be a challenge for some couples (76% of male partners participated in the study), home-based CHTC was feasible and acceptable for most. The main reasons that male partners could not be enrolled included relocation, disinterest in participation by male partner or woman herself, adverse event, and not being able to reach male partner despite several attempts. We found that most men participating in the study wished to support and engage in pregnancy health, but lacked the capacity, knowledge, and skills. A higher proportion of home-based couples (62%) participated in CHTC compared to couples in the standard care arm (3.8%) ($p < 0.001$). In some cases, participants who already knew their HIV status used the home-based CHTC experience as a way to disclose their HIV status to their partner. Over 97% of participants receiving couple home visits reported being satisfied or very satisfied with the home visits and no adverse social consequences of the visits were reported. We learned that pairing male and female counselors to visit homes helps participants feel comfortable during couple visits. Scheduling of home visits requires flexibility to meet participants' needs. Participants newly testing HIV-positive during home visits were successfully linked to HIV care.

Conclusion: A home-based couples intervention targeting pregnant women and male partners appears feasible and acceptable and may improve health service utilization and health outcomes in resource-limited settings.

Abstract 74

Circumcision intentions and actual circumcision status of men from a traditionally non-circumcising Kenyan community: results from two rounds of a longitudinal bio-behavioural survey in Western Kenya, 2012-2014

Barbara Burmen¹, Kennedy Mutai¹

¹Kenya Medical Research Institute Center For Global Health Research, Kisumu, Kenya

Background: Kenya was targeted for VMMC for HIV prevention due to its high HIV prevalence and low prevalence of male circumcision MC especially among traditionally non-circumcising communities.

Methods: A large cross-sectional bio-behavioural survey was conducted in Siaya County, Western Kenya between March 2011 and September 2012 (Round 1, R1), and November 2012 and February 2014 (R2). Men who took part in both surveys and answered MC questions were included in this analysis. Men were categorized into age-groups I (13-17 years), II (18-24 years), III (25-34 years), IV (35-49 years), and V (50+ years). Logistic regression was used to describe factors associated with 'circumcision status' and 'circumcision intentions' in both rounds.

Results: In R1, 601/2938 (20%) were circumcised; these men were more likely to be in age-groups I, II, III and IV compared to age group V (OR 6.5, 95% CI 3.0-13.9, OR 5.4 95% CI 3.3-8.7, OR 5.2 95% CI 3.6-7.4 and OR 4.0 95% CI 2.8-5.6 respectively, $p < 0.05$), to have ever asked their partner to use a condom (OR 1.8, 95% CI 1.4-2.4; $p < 0.05$) and, less likely to be currently or previously married compared to single men (OR 0.6 95% CI 0.4-0.8 and 0.9 95% CI 0.5-2.2 $p < 0.05$ respectively). Uncircumcised men in R1 who desired circumcision, (40%) were more likely to, be in age-groups I, II, III and IV compared to age-group V (OR 10.9, 95% CI 3.8-31.4, OR 6.3 95% CI 3.8-10.3, OR 4.9 95% CI 3.2-7.7 and OR 3.9 95% CI 2.6-5.9 respectively, $p < 0.05$), and to have ever asked a partner to use a condom (OR 1.7 95% CI 1.1-2.5, $p < 0.05$). However, by R2, only a minority (28%), of all men who desired MC were circumcised. Of the

remainder (72%) who had not undergone MC, the majority (59%) who still desired MC, were also significantly more to be of similar age-groups to those of R1.

Of uncircumcised men in R1 (1388; 60%) who did not desire MC 107 (8%) had undergone MC in R2; they were circumcised were more likely to be in age groups I, II, III and IV compared to those in age group V (OR 4.9, 95% CI 2.0-12.1, OR 1.8 95% 0.9-3.9, OR 1.3 95% CI 0.6-2.7 and OR 1.3 95% CI 0.6-2.5 respectively, $p < 0.05$). Of the remaining 1279 who had not undergone MC, 145 (11%) wished to undergo MC; they were more likely to be in age groups I, II, III and IV compared to those in age group V (OR 3.7, 95% CI 0.8-16.9, OR 3.6 95% 1.4-9.0, OR 3.9 95% CI 1.9-7.7 and OR 2.0 95% CI 0.9-1.2 respectively, $p < 0.05$) and less likely to be currently or previously married compared to single men (OR 0.4 95% CI 0.2-0.8 and 0.4 95% CI 2.2 $p < 0.04$ respectively).

Conclusion: Older married men who are unlikely to use condoms in this non-circumcising community are not undergoing or willing to undergo MC. Low MC uptake should be investigated and VMMC program efforts monitored through longitudinal surveys.

Abstract 75

A clinical utility risk-benefit analysis for HIV self-testing

Cheryl Johnson¹, Carmen Figueroa¹, Valentina Cambiano², Andrew Phillips², Anita Sands¹, Robyn Meurant¹, Willy Urassa¹, Mercedes Perez Gonzalez, Irena Prat¹, Fern Terris-Prestholt³, Elizabeth Corbett³, Karin Hatzold⁴, Miriam Taegtmeier⁵, Rachel Baggaley¹

¹World Health Organization, Geneva, Switzerland, ²University College London, London, United Kingdom, ³London School of Hygiene and Tropical Medicine, London, United Kingdom,

⁴Population Services International, Harare, Zimbabwe,

⁵Miriam Taegtmeier, Liverpool, United Kingdom

Background: Interest in HIV self-testing (HIVST) is increasing as countries pursue the UN “90-90-90” targets and consider adopting WHO’s recommendation to offer HIVST. While many self-testers can achieve results similar to trained testers, performance can vary based on context and approach. Among other important considerations is

the minimum performance by self-testers at which public health benefit is achieved; defined here as “clinical utility”.

Methods: To assess HIVST’s clinical utility and weigh performance-related risks and benefits: sensitivity (65-99.8%), specificity (6-100%), HIV prevalence (0.01-15%), linkage to care (50-85%) and linkage to prevention (0-35%) were considered. Different scenarios characterized by varying levels of the factors listed above were simulated. A net benefit score was derived from Total Benefit (true reactive linked to care; true nonreactive linked to prevention) minus Total Risk (false reactive; false nonreactive). False non-reactives and true reactives linked to care were weighted based on expert consultation. The proportion of scenarios with positive net benefit was calculated. Sub-analysis of high (5-10%) and low (0.1-1%) prevalence scenarios, high (20-30%) and low (0-10%) linkage to prevention; and high (70-80%) and low (50-60%) linkage to care was conducted.

Results: 61% of scenarios with $\geq 70\%$ sensitivity and $\geq 90\%$ specificity yielded greater benefit than risk. In high prevalence scenarios, positive net benefit was observed at $\geq 80\%$ specificity and $\geq 70\%$ sensitivity. For low prevalence scenarios, net benefit marginally increased when sensitivity increased from 70% to 90%. Linkage to prevention drove net benefit; when high, benefit was achieved at $\geq 80\%$ specificity but when low $\geq 90\%$ specificity was needed. Linkage to care had modest impact except in very high prevalence settings, e.g. net benefit in all scenarios was not observed among female sex workers in Johannesburg until linkage to care was $\geq 50\%$.

Conclusions: In all scenarios, there were some false non-reactive and false reactive results; but in most, risks were exceeded by the benefits of diagnosis and linkage to prevention and treatment. While HIVST’s clinical utility is greatest when performance is greatest, this analysis suggests $\geq 90\%$ specificity and $\geq 70\%$ sensitivity is needed to achieve a net benefit. For very high prevalence settings with very low linkage, $\geq 90\%$ sensitivity and specificity would be needed.

Abstract 76

Rates of condom use among HIV positive patients on ART in Nasarawa Eggon, North central Nigeria

Joseph Enegeta¹, Ochanya Iyaji-Paul¹, Olanrewaju Olaiya¹, Edward Ugba¹, Patrick Okoh¹, Olufunmilayo Ogundeko¹, Ayodele Fagbemi¹, Oladipo Akinmade¹, Nora Oselebe¹, Iko Ibang¹, Amana Effiong¹

¹Pro-health International, Abuja, Nigeria

Introduction: Consistent condom use still remains a key strategy in HIV prevention. It is essential in prevention of new and re-infections with HIV as well as preventing transmission of other sexually transmitted infections [STI] and unplanned pregnancies. Some studies have demonstrated declining condom use among HIV positive patients on ART despite continuous messaging. There is paucity of such information among HIV positive individuals on ART in Nigeria. We report here condom use rate among a cohort of PLHIV as part of a program-wide patient review mechanism.

Methods: In July of 2015 Pro-Health International's USG/CDC funded IPSAN comprehensive HIV treatment program carried out a patient review exercise to determine current clinical and immunological status and establish a baseline for ongoing treatment support at General Hospital Nasarawa Eggon. Trained adherence counselors and nurses administered a checklist to collect information on age, sex, marital status, number of sexual partners in the previous three months, condom use in the previous three months and occurrence of sexually transmitted infection in the preceding 12 months. To be included, patients must be a minimum of 16 years old of either sex and be on ART for a minimum of 9 months. Pearson's Chi square test was used to test association of condom use with gender, number sexual partners, STI, marital status and age at $p < 0.05$ significance level. Data analysis was carried out using IBM SPSS statistics for Windows, version 21.0. Armonk, NY:IBM Corp.

Results: Final analysis included 391 of the 392 sampled from the 995 eligible clients. Average age was 36.32 years and 71.6% were female. Most respondents (62.7%) were married while 14.1% were single. About one-third, 30.7% (120) of respondents had a history of STI, while 57% (223)

had only one sexual partner. Only 18.4% (72) used condom consistently and 36.3% (142) never used condoms. Gender differences in condom use showed a 22% and 28% consistent condom use in female and male respectively. Condom use rate was significantly associated with marital status [$X^2 = 1.196$, $p = 0.000$, $df = 9$], number of sexual partners [$X^2 = 1.719$, $p = 0.000$, $df = 9$] and gender [$X^2 = 15.380$, $p = 0.002$, $df = 3$] while no association was observed with age or history of STI.

Conclusion: Consistent use of condoms during sexual intercourse was low in the cohort. There is strong association between marital status, gender as well as number of sexual partners. Despite the added advantage of ART in HIV prevention, it is important for program managers to continually evolve strategies that support correct and consistent condom use.

Abstract 77

The Factors influencing reporting of HIV Occupational exposure and adherence to HIV post exposure prophylaxis

Getrude Tembo¹

¹University of Stellenbosch, Stellenbosch, South Africa

Namibia is one of the countries in the world with high Human Immunodeficiency Virus (HIV) prevalence rate thereby increasing the chances of exposing health workers to HIV infection. It is therefore necessary to effectively manage HIV occupational exposure with the aim of minimizing HIV occupational sero-conversion. Effective management involves reporting of HIV occupational exposure and adhering to HIV Post Exposure Prophylaxis (PEP).

The main goal of the study was to determine the factors which influence theater health workers at Windhoek Central Hospital to report or not to report HIV occupational exposure and to adhere or not to adhere to PEP when necessary to take PEP.

The study utilized a qualitative research approach to enable the researcher to express the subjective perceptions, opinions, emotions, attitudes and knowledge of the research participants. A quota sampling method was used to select fourteen

participants, concentrating on health workers who had been in employment for at least a year by the time of the study. The sample quotas were decided focusing on characteristics of participants which the researcher thought had an insight into the research topic and had experiences related to the research topic. Data was collected through semi-structured individual interviews and qualitative data analysis was employed using MAXQDA program designed for analyzing qualitative data. The data was imported into a document system, coded then retrieved in segments. The researcher read through the data many times in order to get sense of the information before coding the data. The coded system helped to display the data in a form which was easy to analyse and interpret.

The findings revealed that most of the health workers do not report HIV occupational exposure because they lack knowledge of the hospital's guidelines and protocol following HIV occupational exposure. Other reasons were low risk perception, lack of confidentiality and fear of victimization. On the other hand adherence to HIV post-exposure prophylaxis (PEP) is hampered mainly by severe side effects of the anti-retro viral treatment that is used in Namibia as PEP.

It was concluded that the institution plays a big role in ensuring effective management of HIV occupational exposure by encouraging reporting of exposures and encouraging taking of PEP. Recommendations include encouraging the institution to make theater health workers be aware of HIV occupational exposure guidelines and improve on risk perceptions. The institution should provide protective clothing and if possible provide PEP with tolerable side effects

Abstract 78

Strategic Advocacy: A key element in increasing uptake of HIV testing & counselling (HTC) services in multi-disease outreaches in Nigeria

Uduak Essen¹, Sabastine Wakdok¹, Rosemary Adu¹, Ibrahim Mamadu¹, Daniel Ndukwe¹, Gideon Okorie¹, Jumai Danuk¹, Kadahaene Eyo¹, Francis Agbo¹, Emmanuel Alhassan¹, Akudo Ikpeazu¹

¹National Agency for the Control of AIDS, Abuja, Nigeria

Background: Advocacy, social and community mobilization have in various ways increased uptake of HIV testing and counselling services (HTC) through strategic meetings, lobbying and campaigns with community specific advocacy tools. With the global HIV cliché of test-and-treat, strategic advocacy to achieve optimal uptake of HTC services is key. We assessed the advocacy strategies in multi-diseases outreaches across 24 states in Nigeria.

Materials & Methods: Two sets of outreaches were carried out between November 2014 and December 2015. The first set of these outreaches were preceded by well-planned strategic advocacy. However, the second set of outreaches, carried out from 1st to 31st December 2015 across 24 states, were not preceded by strategic advocacy. The outreaches preceded by strategic advocacy each had a session of focus-group discussion (FGD) addressing innovative community specific strategies that would yield maximal attendances at the outreaches. This involved FGD with 20 stakeholders and 5 community-based organizations (CBO) and 10 gatekeepers in selected communities in the local government areas across 24 states conducted between November 2014 and June 2015. Some of the community based organizations had women as leads and this further made reaching the women easy. The FGD revealed the appropriate method and advocacy tool suitable for each of the communities. However, cascading the advocacy messages to the communities was achieved using community specific advocacy tool. All interviews were recorded, transcribed and arranged in common themes.

The advocacy campaign tools used for different communities included but not limited to newspaper adverts in English and local languages, radio/television jingles in local languages, letters to religious bodies, social media, mobile technology, distribution of flyers at markets, town hall meetings, bill board adverts, strategic positioning of flex with apt messages, town criers, word of mouth, mobile jingle, road shows and also ferrying persons to the multi-disease outreach sites on motor bikes, tricycles and bicycles.

Results: In the year 2014, a total of 154,414 persons (63,382 males and 91,032 females) were counselled, tested and received results (CTRR) following strategic advocacy. Total number of persons found to be HIV positive in the same year

was 2,141 (582 males and 1,559 females) with a positivity rate of 1.4%.

However, in the year 2015, a total of 110,115 persons (47,200 males and 62,915 females) were also counselled, tested and received results. Total number of persons tested positive for HIV was 1,185 (360 males and 825 females) with a positivity rate of 1.1%. These results showed a 28.7% decrease in uptake of HTC services during the outreaches not preceded by strategic advocacy compared to the year 2014 when advocacy was done. More women than men attended the outreaches constituting 60% (91,032) in 2014 and 57% (62,915) in 2015.

Conclusion: Results showed that targeted community specific strategic advocacy, social and community mobilization are integral in ensuring maximal uptake of HTC services during multi disease outreaches.

Abstract 79

Accelerating the achievement of 90-90-90 Nigeria: A model of sub-population, prevalence-guided HIV testing in high transmission hotspots

Greg Abiaziem¹, Adetayo Towolawi², Kayode Amusan³, Olawale Salami⁴

¹Aids Healthcare Foundation, Makurdi, Nigeria, ²AIDS Healthcare Foundation, Abuja, Nigeria, ³Obafemi Awolowo Univeristy, Ile-Ife, Nigeria, ⁴Neglected disease Institute, Nairobi, Kenya

Background: Identifying key populations within which to implement HIV prevention interventions has been shown to improve the efficiency and effectiveness of these interventions. Key transmission hotspots in North Central Nigeria have been identified, with HIV transmission rates of between 9.3% to 15.4% in previous surveys. Our study aims to evaluate a model of sub population prevalence guided HIV testing in high transmission hotspots.

Methods: We developed a model of targeted HIV testing, driven by sub-population HIV prevalence. HIV transmission hotspots were identified using

information from previous HIV testing surveys. Cross sectional study using multistage sampling to identify participants who are 18 years and above from September to October 2015. Information on demographics characteristics, knowledge, attitude and perception of HIV and stigma associated with uptake of HCT were asked. Data was compared with HCT from “non-hotspots” in the same region. Data was analyzed using descriptive, chi square and odds ratio on SPSS version 20.0

Results: A total of 4 high transmission hotspots in the region were identified, 422 individuals from these hotspots were tested. 52.4% male, 48.1% farmers, single individuals (OR=0.634; 95%CI: 0.178-2.263), Age <30 years (OR=1.459;95%CI:0.114-1.843) and participants with tertiary education are more likely to assess HCT. Static model of HCT was preferred by individual 18 years and above with P>0.05, there is evidence of significant association between facility testing and community HCT uptake (p=0.000). 77 % (326) of those have been tested for HIV, 65% will not be ashamed if tested positive to HIV (P=0.094).

Conclusion: With HIV/AIDS continuing to be a major public health concern in Benue state, the issues surrounding acceptance and use of HCT need to be addressed. Combination approach of prevention is the norm which will help stem the tide of the epidemic in the state and Nigeria at large. Community awareness, sensitization and benefits of early HIV diagnosis, increasing access to HCT and treatment sites for general population, with focus on key population like adolescent and young person and most at risk populations (MARPS) need to be explored. Strategies to target women in churches, markets, integrated community outreaches should be implemented. Further research is needed, possibly qualitative, to explore motivation for testing or not testing in rural populations.

Abstract 80

Cultural impediments in the uptake of HIV testing & Counselling (HTC) services in Nigeria.

Uduak Essen¹, Sabastine Wakdok¹, Ibrahim Mamadu¹, Rosemary Adu¹

¹National Agency for the Control of AIDS, Abuja, Nigeria

Background: Certain peculiar beliefs, lifestyles and cultural practices across Nigeria could be barriers to uptake of HTC services in multi-disease outreaches. Nigeria has diverse ethnic groups and cultural practices. This study sought to assess the cultural factors that could impede uptake of HTC services in Nigeria.

Methods: A session of focus group discussion (FGD) and one-on-one interpersonal communication (IPC) with 12 key formal gatekeepers were conducted between November 2014 and December 2015 in 6 states across different cultural contexts representing the 6 geopolitical zones in Nigeria. All the FGDs were recorded, transcribed and arranged in themes across geo-political zones. Also documented were the experiences of the volunteers and conveners before and during the HTC outreaches.

Results: The FGD unravelled the cultural impediments and constraints militating against positive health seeking behaviour across these states. The results showed existence of informal gatekeepers like area boys in certain parts of Nigeria. These area boys appeared and barricaded the HTC site entrances, prevented access to, and delayed the commencements of outreaches. They are culturally acceptable in these areas, though not formally recognised as gatekeepers. It was observed that during the HTC in areas where they are found, they made demands for settlement (payment) before and after the outreaches. Their presence deterred people from accessing HTC services. Only revered elders in the communities where area boys operate could pacify them.

Traditional rulers stalled a certain FGD when they realised a touch of black in the attire of the conveners and volunteers. Black was perceived as being culturally appalling and unacceptable in the chief's palace. Since the conveners could neither enter the palace nor hold the FGD, a middle-man

was chosen to mediate between the conveners and the chiefs. The middle-man conveyed the intent and plans of the conveners to and from the chiefs. The content of the messages may have been misinterpreted or misunderstood either way, thereby affecting the turnout and consequently the uptake of HTC at the outreaches.

In another setting, spousal consent was a prerequisite for women in purdah to access care or uptake of HTC services. Also the fear of sterility was expressed by spouses. When the benefits of the outreach were explained in detail, the services were embraced.

Other cultural impediments included conflicts between attending traditional events (marriages, coronations, festivals and burials) and multi-disease outreaches whenever the timing of these events coincided. However, even when these activities did not coincide, breaking the wall of other cultural beliefs against orthodox medicine was a huge task.

Conclusion: Identifying and understanding the different cultural practices across states is important in planning successful outreaches. It is also important to identify and train ethnic group volunteers who understand the culture, to work with outreach conveners and volunteers to create awareness about health and health interventions before and after outreaches to debunk unhealthy cultural practices. This would break cultural impediments and make the HIV 90:90:90 plan as well as the test-and-treat strategy achievable.

Abstract 81

Behaviour change interventions among young people

Goerge Mangwe¹, Francis Kachere¹

¹Youth Arm Organisation, Blantyre, Malawi

Preamble: Youth Arm organization is a reproductive health Youth organization that advocates for children's rights to reproductive healthy and positive behavior change among young people. Strategically Youth Arm has been carrying out behavior change programs among its targeted group of young people 13-26 years old in the thematic area of prevention. The organization has

got satellite clubs surrounding the city of Blantyre both rural and urban, this clubs are divided into Anti-aids clubs and Youth Arm community clubs. About 20 clubs in 20 secondary schools were formed in the past which is patronized by 1,260 patronages of 1500 young people.

Brief description: HIV/Aids behavior change program has been one of the challenging tasks due to a lot of misconception that were created that ironing out before leveling the ground. There have been culture obstacles especially when we are dealing with the rural young people and resistance to HIV information from urban young people.

Intervention and Methodologies: The main strategies intervention that is used is advocacy with the following tactical operation:

- i. Discussion forum
- ii. In door games
- iii. Experience sharing/IEC distribution
- iv. Debates
- v. Sport activities
- vi. Recreation and education visits

Outcomes: We managed to reach out to the population of 300 young people last year. 52% of them were willing to go for blood testing(acceptance level). 20%had already gone for testing(oral self revealing). 98% heard about HIV/AIDS (it was noted).

Recommendation: For program sustainability satellite clubs empowered in terms of self governance. Continual supply of I.E.C material, has strengthened links among clubs. Willingness of village head in attending some of these meeting created confidence in rural youth. Patrons from school conduct continuous assessment for club continuity. Bi monthly visits are conducted to strengthen the clubs.

Abstract 82

Social adversities of HIV-positive adolescents in rural Uganda: a qualitative study

Scholastic Ashaba¹, Christine Cooper-Vince Cooper-Vince^{2,3}, Dagmar Vofechovská², Alexander C Tsai^{1,2,3}

¹Mbarara University Of Science And Technology , Mbarara , Uganda, ²Massachusetts General Hospital, Boston,, United states , ³Harvard Medical School, Boston,, United sates

Background: Availability of and increased access to antiretroviral therapy has significantly reduced morbidity and mortality associated with HIV. As a result, perinatally HIV infected children are able to grow into adolescents and young adults. In Uganda approximately 100,000-150,000 children and adolescents aged between 10-19 years of age are living with HIV. Although major strides have been made in the biomedical management of HIV among children and adolescents, there is limited information on the social challenges of HIV-positive adolescents in rural settings in sub-Saharan Africa. Previous work about the social challenges of HIV-positive adolescents has been limited to studies done in high-income countries and/or urban areas in low-income countries. The purpose of this study was to explore social challenges facing adolescents living with HIV in rural Uganda.

Methods: We collected qualitative data using focus group discussions and one-on-one in-depth interviews between February and May 2016. Participants in the focus group discussions included 26 adolescents aged 13-17 years, 14 of whom were HIV-positive and 12 of whom were of unknown serostatus. We conducted a total of 42 in-depth interviews, including 5 interviews with HIV-positive adolescents, 5 interviews with adolescents of unknown HIV status, and 32 interviews with adult caregivers (10 of whom were themselves HIV-positive). HIV-positive participants were recruited from the Mbarara Immune Suppression Syndrome clinic. Participants of unknown serostatus were recruited from Nyakabare Parish, a rural site 20 km from Mbarara town. All interviews were audio-recorded, translated and transcribed into English, and coded using thematic analysis to identify themes related to social challenges.

Results: Social challenges faced by adolescents were categorized under 7 themes: 1) stigma and discrimination; 2) fear of unintended disclosure of HIV status; 3) poverty associated with lack of basic needs and missed schooling; 4) ART adherence challenges; 5) food insecurity; 6) loss of parents; and 7) maltreatment. Stigma/discrimination and poverty were the most frequently mentioned challenges. Data generated from focus group discussions were rich in content than in depth interview data.

Conclusion: HIV-positive adolescents face numerous important challenges that could compromise their engagement in HIV care.

Abstract 83

The potential of advanced mHealth interventions for youth populations: insights from mobile phone use in a mixed rural-urban sub district in South Africa

Craig Carty^{1,2,3}, Eda He³, Elona Toska^{1,2,3}, Lucie Cluver^{1,3}, Dr. Rebecca Hodes^{1,3}

¹University of Oxford, Department of Social Policy and Intervention, Oxford, United Kingdom, ²University of Cape Town, AIDS and Society Research Unit, Cape Town, South Africa, ³Mzantsi Wakho Research Study, East London, South Africa

Background: The ubiquity of mobile phone use in Sub-Saharan Africa is well documented in adult populations. Measures of access to - and utilisation of - mobile phones among adolescents are lacking. Mobile health (mHealth) interventions have begun to explore the potential of using more advanced methods to engage young people in sexual and reproductive health messaging. These include mobile sites, social media, and applications (“apps”). To assess the potential effectiveness of advanced mHealth technologies in adolescent populations, we must first understand how this group engages with mobile phones, and across which platforms.

Methods: To describe mobile phone uptake and user behaviours amongst adolescents residing within a mixed rural-urban health sub district, data were gathered from 1286 participants (10 – 22 years) enrolled in a prospective longitudinal cohort study (Mzantsi Wakho) in the Eastern Cape Province, South Africa. The tablet-based questionnaire collected optional quantitative information regarding: 1) access to and personal ownership of a mobile phone; 2) SIM card ownership; 3) kind of device and operating system; 4) purposes of engagements (e.g. health-seeking); and 5) general usage characteristics (e.g. messaging preferences). Analyses were conducted using SPSS.

Results: Given that responses to all questions were not mandatory, there were variances in response rates (range 1006 – 1229, 78.2% - 95.6%). When disaggregated by indicator, self-reported data show that: 54.4% have access to a mobile device; 47.7% own a SIM card; 34.8% have access to a smart phone; and 25.3%, a basic phone. Possession of a personal phone (not shared) within the sample counted smartphone ownership as higher than basic phones: 33.8% versus 29.2%. Further, 21.1% reported owning a “brand name” phone, such as an iPhone or Blackberry device.

Usage statistics demonstrated that 14.9% of mobile phone engagement was for the purposes of gathering health information (including HIV-specific materials) and job-seeking. 40%, 39.2%, 37.3%, and 31.2% reported using their phones for music, WhatsApp messaging, games, and Facebook, respectively. SMS's remained the dominant mode of communicating, as reported by 44.7% of the sample.

Females reported having more access to mobile phones (61.8%) compared with males (44.7%) ($p \leq 0.001$). Of note, access to cell phones increased with age ($\chi^2 = 129.9678$ α 0.5, $df=4$ $p \leq 0.00001$): 29% of those under 12; 42.9% 13-15 years; 66.6% 16-18 years; 78.5% 19-21 years; and 80% 22+ years. Smart phone access also increased accordingly with the exception of those aged 22+, perhaps owing to small sample size ($n=5$).

Conclusions: These results demonstrate a tangible shift away from basic cell phone use to more sophisticated, smart phone devices. It also highlights gender disparities in terms of access to mobile technologies. Thus, the potential to introduce novel mHealth interventions that target young people, particularly females – who are also most at risk of HIV infection, shows promise. However, these methods should be balanced with existing evidence-based programming to ensure a broader reach. Interventions that do not rely on mobile platforms should be retained with a view to potentially translate them to digital spaces as smartphones become less expensive, and thus more accessible to young people.

Abstract 84

Treatment failure in Cameroon : problems and current limitations of the health care system

Gabrièle Laborde-balen^{1,2,3}, Odile Elad⁴

¹CRCF, Dakar, Senegal, ²Site ANRS , Dakar, Senegal,

³Expertise France, Dakar, Sénégal, ⁴Site ANRS , Yaoundé, Cameroon

Background: Although the WHO public health strategy aimed at eliminating the epidemic by 2030 has led to widespread access to antiretroviral therapy in countries in the global South, the emergence of viral resistance related to treatment failures poses a growing threat to individuals and the general public. In Cameroon, various constraints hinder the prevention, detection and case management of treatment failures. The aim of our study was to describe and analyze the context, determinants and modalities related to case management of treatment failure.

Methods: Between 2010 and 2012, we conducted a survey in four urban sites: the Central Hospital in Yaounde; Laquintinie Hospital in Douala; Nylon District Hospital where an NGO (Médecins Sans Frontières) is involved; and the study site of the 2 Lady research project (ANRS 12169). Semi-structured interviews and observations were conducted at the sites with 85 patients and 53 health and psychosocial care professionals.

Results: Treatment failure was often detected very late due to lack of routine viral load monitoring. Notification of the failure is often associated with placing blame on patients, who are seen as bearing sole responsibility for it. Capacities for prevention, detection and case management are limited by a lack of procedures. Medical and psychosocial care is focused on starting first-line treatment and switching from first- to second-line treatment, but long-term follow-up does not exist. Treatment failure redefines relationships between caregivers and patients. Caregivers' attitudes vacillate between compassion and condemnation, while the failure reinforces the patients' dependence. Current inaccessibility to third-line treatment makes the possibility of a new failure all the more dramatic.

Conclusion: Treatment failures are a powerful indicator of the current limitations affecting the health care system. Our observations reflect the

health system's current inability to adequately deliver adapted case management of treatment failures due to: unpreparedness of health care professionals and unavailability of diagnostic tools and treatments.

Abstract 85

Examining Heterogeneity in HIV Comprehensive Knowledge among Men and Women in Malawi

Gowokani Chijere Chirwa^{1,2}, Chimwemwe Esther Banda¹, Collins Tayan Mhango³, Thokozani Maxin Saulosi¹, Lonjezo Sithole⁴

¹University Of Malawi, Chancellor College, Economics Department, Zomba, Malawi, ²University of York, Center for Health Economics, , United Kingdom, ³USAID Malawi, Lilongwe, Malawi, ⁴National AIDS Commission Malawi, Lilongwe, Malawi

Background: There are few studies around socioeconomic determinants of comprehensive HIV knowledge, which provide crucial insights from social and behavioral aspects of HIV and AIDS. These provide insights on inter alia, the distribution and more importantly suggest potential mechanisms through which such knowledge, or lack thereof, ultimately conditions sexual behavior which in turn affect the HIV epidemic. However, there is an evident paucity of empirical literature examining in a more detailed what factors contribute to the gap(difference) in HIV and AIDS comprehensive knowledge. With this in mind,the main objective of this study is to empirically decompose the comprehensive HIV knowledge gap (difference in proportion of people having HIV and AIDS knowledge), between male and female in Malawi. To achieve this, the study first identifies the determinants of comprehensive HIV and AIDS knowledge. Secondly we undertake a decomposition analysis to identify how separate social economic factors contribute to the gap(difference) in comprehensive HIV and AIDS knowledge. The study is important as it combines, a gender, behavior dimension into the social aspects of HIV and AIDS. Not only that, it is a first application of labour economics method in the local context to understand the phenomenon.

Methods: Data for the study was obtained from the 2010 Malawi Demographic Health Survey (MDHS). A logit regression was used to assess factors associated with attainment of comprehensive HIV knowledge. On account of some binary nature and non-linearity of the variable of interest, the study utilized the Fairlie method to decompose the HIV and AIDS knowledge gap into its contributions. The decomposition method divides the rural-urban gap between males and females in attainment of comprehensive HIV knowledge into a part that is “explained” and “unexplained” (a residual part that cannot be accounted for by explanatory variables). This part is often used as a measure for discrimination among groups, but it also subsumes the effects of group differences in unobserved predictors. The Fairlie’s decomposition allows a detailed decomposition of the separate contribution of each variable to comprehensive HIV knowledge gap.

Results: Findings from this study indicate 39% of women have HIV and AIDS comprehensive knowledge and 52% of men have comprehensive HIV and AIDS knowledge. This entails a difference of 14%. Of the difference, 75% is explained by the differences in social economic factors and behavior of men and women, where by 25% still remain unexplained. Having an HIV test reduces the gap as well as leaving in a high HIV and AIDS prevalence areas. Religion doesn’t explain the gap. Exposure to radio and TV reduces the difference in HIV and AIDS knowledge. Being rich explains 25.1% of the difference where as being poorer reduces the gap (2.3%)

Recommendations: The results point to the need for a differentiated approach to HIV awareness taking into account the differences in the factors that mediate attainment of comprehensive HIV knowledge among men and women. Also need for development or review of strategic documents with respect to HIV communication and advocacy.

Abstract 86

Discordance, Disclosure and Normative gender roles: A triad of barrier to couples HIV self-testing provided through a community-based approach in urban Blantyre, Malawi

Moses Kumwenda^{1,2}, Elizabeth Lucy Corbett^{1,3}, Jeremiah Chikovore⁴, Mackwellings Phiri¹, Daniel Mwale², Augustine Talumba Choko^{1,3}, Marriot Muliwasa^{2,3}, Rodrick Sambakunsi¹, Miriam Taegtmeier⁵, Tore Gutteberg^{6,7}, Alister Munthali⁸, Nicola Desmond^{1,5}

¹Malawi Liverpool Wellcome Trust, Blantyre, Malawi, ²Helse Nord TB Initiative, College of Medicine, Blantyre, Malawi, ³London School of Hygiene and Tropical Medicine, London, United Kingdom, ⁴Human Sciences Research Council, Durban, Republic of South Africa, ⁵Liverpool School of Tropical Medicine, Liverpool, United Kingdom, ⁶Department of Medical Biology, University of Tromsø, Department of Medical Biology, University of Tromsø, Tromsø, Norway, ⁷Department of Microbiology and Infection Control, University Hospital, Tromsø, Norway, ⁸Centre for Social Research, Chancellor College, Zomba, Malawi

Background: Most individuals living in established heterosexual relationships are unaware of their partner’s HIV status, and most people with an HIV infected partner are unaware of their own status. Early results from a community-based HIV self-testing study in Malawi demonstrated that not all individuals living in established sexual relationships who self-tested for HIV tested did so their partner, despite an option of getting two test-kits. We describe factors that dissuade individuals living in established heterosexual relationships from self-testing for HIV with a sexual partner.

Method: Data were drawn from a 12-month qualitative longitudinal cohort study exploring the long-term consequences of semi-supervised HIV self-testing within couples in Blantyre Malawi. In-depth interviews were conducted within a month of self-testing with 33 individuals living in established heterosexual relationships who tested without a sexual partner were analysed.

Results: Both men and women who tested alone did so expressed fear of dealing with HIV discordant results within a trusting relationship when given a chance to self-test as couples. The failure to self-test with a partner was gendered with more men overtly declining or unconsciously unable to have joint HIV self-testing than women. Men feared blame and exposure of previous or current infidelity. Men were also often not available at home for economic or work reasons and were usually missed by the HIVST community-based approach.

Conclusions: The socio-structural landscape prohibited men differently from having a joint HIVST when compared to women owing to the normative

notions of gender. To contribute towards achieving the UNAIDS 90:90:90 goals, it is important to overcome the structural barriers to couples testing that constrain the realisation of HIVST full potential in couples.

Abstract 87

Contraceptive Failure and Pregnancy Intentions Among ART-Naive and ART-Adherent HIV-Infected Pregnant Women Enrolled in Option B+

Caroline Melhado¹, Jennifer Tang¹, Jacob Phulusa¹, Mathias John¹, Bryna Harrington¹, Allan Jumbe¹, Mina Hosseinipour¹

¹Unc Project Malawi, Lilongwe, Malawi

Background: Among the countries that adopted Option B+ by 2015, all have high fertility rates and underutilization of family planning. The adoption of Option B+ potentially expands health care access to reproductive age women, however contraceptive use and pregnancy intention among enrolled women is not well characterized. We compared pregnancy intentions and contraceptive use at the time of conception between HIV-infected antiretroviral (ART)-naïve and ART-adherent pregnant women.

Methods: We analyzed baseline data from two prospective cohorts of pregnant women: 299 HIV-infected ART-naïve women (NEW) and 426 women who have been on ART (TDF/3TC/EFV) for ≥ 6 months (ART). Participants were recruited at a government antenatal clinic in Lilongwe, Malawi. Adjusted logistic regression was used to evaluate the association between cohort and pregnancy intention. Mistimed or unwanted pregnancies were considered unintended.

Results: The majority of women reported their current pregnancy was unintended, 165 (55.1%) among NEW participants and 323 (76%) among ART participants (Figure 1, $p < 0.05$). 17 (5.7%) of NEW participants reported using contraception at the time of conception (1 natural method, 2 condoms, 4 pill, 5 injection, 6 implant), and 59 (13.9%) ART participants reported using contraception at the time of conception (9 condoms, 5 pill, 28 injection, 16 implant, 1 IUD, 1 tubal-

ligation). Women in the ART group were more likely to have an unintended pregnancy (OR=1.59, 95%CI 1.1-2.4) and to have used contraception at the time of conception (OR=2.27, 95%CI 1.3-4.1).

Conclusion: HIV-infected women have significant unmet need for family planning, suggesting shortfalls in the integration of HIV and family planning services, particularly among women already accessing HIV and ART care. HIV providers should assess the pregnancy intentions of clients and ensure all have access to their preferred contraceptive method. Dual method use should be encouraged given the possibility of contraceptive failure among women who are ART-naïve or on ART.

Abstract 88

Maternal health and ART use at 4-26 weeks postpartum in Option B+ in Malawi

Megan Landes¹, Monique van Lettow¹, Schouten², Happy Phiri², Joep van Oosterhout¹, Andreas Jahn³

¹Dignitas International, Zomba, Malawi, ²Management Sciences for Health, Malawi, ³Department for HIV/AIDS, Ministry of Health, Malawi

Background: The PMTCT Option B+ rationale proposed that lifelong ART reduces mortality and morbidity in pregnant/breastfeeding HIV-infected women. We report factors associated with maternal health of a cohort of HIV-infected women at 4-26wks postpartum at enrollment in the National Evaluation of the Malawi PMTCT Programme (NEMAPP).

Methods: In a cross-sectional study, structured interviews collected socio-demographics, ART use, and self-reported health data. We measured functional health status (ie.Karnofsky scale), BMI, CD4 and HIV1 RNA for intensified clinical monitoring in a nested cohort.

Results: Of 1307 Option B+ women, most were 6-12wks postpartum (n=879;67.3%) and on ART (n=1151;88.1%).

For self-reported health status at ART initiation, 171 (13.1%) women had minor illness and 51 (3.9%) major illness; most reported improved health status

at study enrollment (155/171 (90.6%) and 47/52 (90.4%), respectively).

Of the 580 in the nested cohort, the following functional health status was measured at enrollment: 545 (94.0%) normal, 21 (3.6%) minor illness not affecting normal activities and 4 (0.7%) major illness requiring daily assistance. In the 3 months before enrollment, women reported the following conditions: malaria (n=53;9.1%), pneumonia (n=32;5.5%), diarrhea (n=40;6.9%), TB (n=11;1.9%) and hospitalizations (n=7;1.2%). Twenty-six(4.5%) women had BMI<18.5, 326 (56.2%) had a CD4>500 and 417 (71.9%) had undetectable viral loads.

More women on ART reported normal functional health than women who stopped ART (95.6% vs 87.5%, p<0.001), and more women with CD4 >500 reported normal functional health than those with CD4 <500 (97.2% vs 92.8%, p=0.02). No associations were seen between ART status or CD4 count and recent malaria, TB, pneumonia, diarrhea or hospitalization.

In multivariable analysis, poor functional health was associated with CD4<500 (aOR2.6,p=0.03) when controlled for ART status and duration of known HIV-status.

Conclusions: Overall, women had low mortality and morbidity at 4-26 weeks postpartum consistent with increased ART uptake in asymptomatic women via Option B+. ART use was high amongst this cohort and ART was associated with improved maternal health measures, affirming the rationale for implementing Option B+ in Malawi. Further research should explore maternal health and ART use over time to inform long-term benefits of Option B+.

Abstract 89

Perceptions of adolescent girls about their ability to offer HIV self-test kits to their sexual partners: a pilot study in Siaya County, western Kenya

Kawango Agot¹, Gift-Noelle Wango¹, Lennah Oluoch¹, Millicent Omoya¹, Nancy Ounda¹, Risper Bosire¹, Julie Ambia¹, Rose Oyoo¹, Samwel Masters², Spala Ohaga¹, Harsha Thirumurthy²

¹Impact Research & Development Organization, Kisumu, Kenya, ²University of North Carolina at Chapel Hill, Chapel Hill, United States of America

Introduction: Four studies in Kenya with pregnant and postpartum women, female sex workers, and healthcare workers, have demonstrated that individuals who are given multiple HIV self-test (HIVST) kits can distribute them to their sexual partners and that this approach promotes partner and couple testing while resulting in minimal adverse events. No studies to date have assessed whether this approach is feasible among adolescent girls, a group that is highly susceptible to HIV infection. To prepare for a randomized controlled trial to assess the impact of giving adolescent girls (AG) multiple self-test kits to promote partner and couples testing, we conducted a pilot study to explore their perception of their ability to initiate HIVST with their partners.

Methods: The study occurred in Siaya County, a region in western Kenya with HIV prevalence in the general population of 23.7%. We conducted a survey of AG aged 15-19 years who reported having ≥1 sexual partner with whom they intended to continue having sex. AG were referred to the study by a program offering HIV counselling and testing services in the county, and were screened for eligibility. Participants were provided basic information about HIVST and then administered a structured questionnaire. We qualitatively explored issues AGs anticipated as a result of offering self-tests to their partners.

Results: Between December 2016 and February 2017, 101 AG were enrolled in the study, 52% of whom were aged 15-17 years. All had attended some school and 12% reported completing secondary school. Twenty percent were married or divorced, 38% had ≥1 child, and first sexual intercourse before age 15 years was reported by 56%. Younger age at first sex was protective against having multiple partners (OR: 0.33, 95% CI 0.15-0.74). All participants except one had not heard of HIVST prior to the study, but all of them reported being willing to use the self-tests themselves. Additionally, 98% believed they could offer HIVST kits to their partners, with 17% of these AG believing this could raise tension in their relationship.

Conclusion: This pilot study demonstrated that adolescent girls in Kenya believe they are capable of offering HIVST kits to their sexual partners. This finding supports the testing of interventions in which AG are offered self-tests for own use as well as for

partner and couples testing. However, such interventions must address concerns expressed by AG over the effect of this strategy of partner/couple testing on stability of their relationship.

Abstract 90

Assessing Pregnancy Rates in HIV-positive Women using Contraceptives and First line Antiretroviral Therapy in Zambia: A Retrospective Study.

Thierry Malebe^{1,3}, Prisca Kasonde¹, Gift Sitenge¹, Mushota Kabaso¹, Patrick Katayamoyo¹, Namakau Nyambe¹, Angel Mwiche², Catherine Mwale¹, Catherine N'guni¹, Michael Welsh¹

¹Fhi360, Lusaka, Zambia, ²Ministry of Health, LUSAKA, Zambia, ³University of Witwatersrand, Johannesburg, South Africa

The Zambia National Consolidated HIV Prevention and Treatment Guidelines recommend the use of cART, a combination of tenofovir and emtricitabine with either efavirenz or Nevirapine as the first line therapy for eligible HIV positive individuals. However, studies have raised questions about non-nucleoside reverse transcriptase inhibitors (NNRTIs) reducing the effectiveness of hormonal based contraceptives. The Zambian national Family Planning (FP) program relies on progestogen based contraceptives. Combined with a high HIV burden in Zambia, this interaction has important programmatic implications. We assessed the pregnancy rates between women who used Jadelle or Depot Medroxyprogesterone Acetate (DMPA) injectable with an NNRTI-based ART regimen and those not on cART but using the same contraceptives to investigate potential impact of the ART regimen on contraceptive efficacy.

Methods: We conducted a retrospective study of 153 patients aged 15 – 49 years on cART and started on either Jadelle or DMPA during a 15 months period in 12 ART/FP integration sites in six provinces of Zambia. A control group of 162 HIV negative women aged 15 – 49 years from the FP register who had been on Jadelle or DMPA for at least 15 months was selected. Only observations without missing values were subjected to statistical tests by analyzing the relative risk in the two groups.

Results: In the cART group, 4 pregnancies were reported (32 pregnancies per 1000 women on

cART) as compared to 1 pregnancy (10 pregnancies per 1000 women in the control group). The pregnancy rate among women on cART was 3.387 (95% CI: 0.384 – 29.839) compared to women not on cART.

Conclusion: Women on NNRTI-based cART using hormonal contraceptives were found to have a higher risk of getting pregnant compared to those not on cART. The sample size is small to draw any definitive conclusions. Larger prospective studies are urgently needed to further investigate this relationship given the significant potential impact on women's health.

Abstract 91

Targeted Demand Creation an Effective Methodology for Case Finding of HIV positive cases

Mandisa Zwane-machakata¹, Nozipho Mahlalela¹, Lois Chingandu², Rouzeh Eghtessadi², Phindile Dlamini¹

¹SAfAIDS, Manzini, Swaziland, ²SAfAIDS, Harare, Zimbabwe

Introduction: The Early Access to ART (EAAA) implementation study is being implemented in 14 health facilities in the Hhohho Region in Swaziland, requiring intensive social mobilisation, advocacy and community sensitisation activities in the communities surrounding health facilities.

Methods: The general Demand Creation approach was applied in the first half (September 2014-February 2016) of the study, through community mobilisation strategies generating mass sensitisation of communities and ensuring HIV testing services were provided onsite. Learning during this period led to improving the approach to integrate Intensified Demand Creation Community Dialogues (DCCD). The intensified DCCD strategy transitioned from targeting the general community to targeting special groups including Women of reproductive (aged 18 -24), Men (aged 30 and older), Sex workers, Mobile transport workers, Uniformed forces and Construction workers. The intensified DCCD strategy used “doses” to target the same groups repeatedly, and with each dose the messaging for social behaviour change evolved, from messages on Know Your HIV status, the benefits of early ART and importance of treatment adherence. The Targeted approach

reached out to target groups in their areas of comfort.

Results: The general community sensitization within 16 months resulted in identification of 13 HIV positive cases (4.39%) out of 364 people who accessed HTS. The Intensified Targeted DCCD approach resulted in 54 HIV positive cases identified (6.34 % positivity rate) from the 852 people who accessed HTS within 10 months. The benefits of the targeted approach is confirmed through its contribution to increased access to services (27.68% of people reached accessed HTS), compared to 12% of people reached through the general approach.

Conclusion: For effective roll out of early ART there is a need to intensify HIV case finding through community mobilisation efforts, targeting of people not already linked into care may be better achieved through targeting at risk groups and finding them in their areas of comfort.

Abstract 92

Leveraging social media to raise awareness of gender-based violence and sexual health services: initial observations of use from a national assessment in South Africa

Elizabeth Bosh¹, Nobubele Monqo¹, Shulami Majambe¹, Sandisiwe Mzilikazi¹, Lulama Sidloyi¹, Aidan Connolly¹, Ria Schoeman², Craig Carty¹

¹The Relevance Network, East London, South Africa,

²Foundation for Professional Development, Pretoria, South Africa

Background: Social media plays an increasingly important role in everyday life. Making use of various social media platforms allows for organisations positioned to address sexual health to reach wider audiences. It also supports capacity to target messaging based upon potential beneficiaries.

The real world effectiveness of interventions has grown reliant on savvy communications, and gaps in Civil Society Organisations' capacities to leverage various media outlets warrant exploration.

From a beneficiary perspective, CSOs that engage women and girls via social media – particularly around sensitive topics such as sexual and reproductive health and gender-based violence (GBV) – allow for anonymous engagements. This mitigates the risks for violence and stigma when compared with more public modes of information-seeking (e.g. visiting a clinic or asking a friend or relative). Donors, networks and multisector partnerships can realise benefit by accessing social media “blasts” as a more consistent way of monitoring progress, measurable in terms of “post clicks”, “likes”, and/or “follows”.

Methods: We present findings related to the pilot and implementation phases of a CSO assessment tool dubbed “CARinG: Civic Aptitude Resulting in Growth”, viewed through a lens of social media leveraging within the GBV sector. The overarching aim of the project was to develop a scientifically grounded, web-based survey that gathers critical indicators from non-profits to inform core performance gaps that may threaten GBV CSO sustainability. The tool's data points were extrapolated from extensive reviews of literature and evidence-based assessment tools (e.g. NGO Scorecard, FANIKISHA, and the National AIDS Council of South Africa's evaluation measures). Finance management, advocacy, partnership and monitoring and evaluation were considered, and questions were weighted to determine overall functionality within a given performance area for each participating organisation. A total of 452 variables were collected, including data around social media use.

Results: Capacity assessments were conducted with 24 GBV CSOs representing all nine provinces across South Africa. A web-based, self-reported quantitative data collection survey was used. The results demonstrate that two urban and three rural CSOs (n=5, 20.8%) do not use social media at all. Thus, the remaining organisations (n=19, 79.2%) use at least 1 social media tool for empowerment messaging. Six urban CSOs reported using multiple social media tools, compared with one rural (n=7, 29.2%). 50% of the sample reported having an active website with GBV-assistance advice and contact information.

Conclusions: Using social media and web-based platforms allows CSOs to reach out to vulnerable populations at risk for GBV. While this research does not explore the relationships between social media and uptake of GBV services (e.g. reporting of rape, intimate partner violence, post-exposure prophylaxis, or advice-seeking), the results this demonstrate that majority of the CSOs use at least

1 social media for communication. To heighten the impacts of electronic networking and communicate more broadly, it is imperative that social media campaigns become part of mainstream CSO objectives. To achieve this, mentorship programmes and fundamental trainings on social media use within the sector may prove beneficial.

Abstract 93

Teen Voice: What do the Sustainable Development Goals mean for HIV-positive adolescents in Southern Africa?

Rebecca Hodes¹, Lucie Cluver², Elona Toska¹, Beth Vale⁴, Marija Pantelic², Jenny Doubt²

¹*AIDS and Society Research Unit, University Of Cape Town, Cape Town, South Africa*, ²*Department of Social Policy and Intervention, University of Oxford, Oxford, United Kingdom*, ³*Department of Child Psychiatry, University of Cape Town, Cape Town, South Africa*, ⁴*Local Histories, Present Realities, University of the Witwatersrand, Johannesburg, South Africa*

BACKGROUND: The Sustainable Development Goals (SDGs) provide an ambitious programme for global transformation, aiming to address key social challenges for the most vulnerable populations, including young people. The goals broaden the conceptualization of developmental partners, emphasizing the imperatives of including ‘recipient populations’ as partners in the design and implementation of programmes, including healthcare services. While many research studies and healthcare programmes commit in principle to ensuring that ‘target populations’ are consulted in how programmes are designed, delivered and evaluated, adolescents are rarely included as the principal partners in these processes. The ethical and methodological difficulties of conducting participant-led research with this population, with its overlapping ‘frames of vulnerability’, is one of the primary reasons for the lack of research with this critical ‘recipient population’.

METHODS: This research positioned HIV-positive adolescents as its principal informants, using multidisciplinary and participatory approaches to investigate interconnections between the developmental objectives captured in the SDGs, and to propel adolescents into the forefront of policy-oriented social science using ethically

rigorous and youth-friendly methods. Novel participatory exercises engaged adolescents (N=87, F=58, M=29) through visual and performance-based media, providing new tools for capturing and conveying their aspirations for development. These methods included body mapping, ‘dream’ clinic and ‘dream’ consultations, clinic scorecards, ‘Yummy or Crummy’ (a game on the multisensory dimensions of medicines-taking), and activities on future wishes and worries – designed to position adolescents as leaders in the research, rather than impassive respondents.

RESULTS: Through adapting research tools based on the insights of adolescents, and in tailoring these to their specific requirements and preferences, this research positioned young people as the principal authorities on their own health behaviours and other developmental needs. Conducting rigorous participant-led research with adolescents in resource-constrained settings is possible. Successful research activities combined structured guidance, space for innovation and creativity, many breaks and assistance from peers and trained research assistants. When provided with these engaging spaces, young people can contribute thoughtful and crucial information on the services and programmes they need for good health outcomes, growth and development.

Findings capture inter-connections between poverty, hunger, health and inequality among adolescents. Structural, contextual and social factors, including hunger, economic vulnerability, violence, victimisation, social isolation and harmful gender norms, may both promote or obstruct health and wellbeing among adolescents. However, adolescents also had positive aspirations for their future despite growing up with adversity. Supporting adolescents to identify and access support structures and services – alone or in combination – is key to their long-term resilience.

CONCLUSION: Health programming alone will not necessarily guarantee improved health among adolescents and young people. Reforms across different social and economic spheres are crucial to realise the goals of health and longevity for all. Participatory research with adolescents leverages the experiences of adolescents in conducting research, and provides powerful potential for co-design and implementation of developmental initiatives.

Abstract 94

Linkage to Care: What Role does Community Referral Coordination Platforms Play?

Prince Obinna Anyanwu¹, Okezie Onyednachi, Charles Onyegbado, George Ikaraocha, George Odutuga, Andy Eyo

¹Excellence Community Education Welfare Scheme, Gudu, , Nigeria, ²Excellence Community Education Welfare Scheme, Abuja, Nigeria, ³Excellence Community Education Welfare Scheme, Enugu, Nigeria, ⁴Excellence Community Education Welfare Scheme, Owerri, Nigeria, ⁵Excellence Community Education Welfare Scheme, Enugu, Nigeria, ⁶Excellence Community Education Welfare Scheme, Uyo, Nigeria

Background: Community outreaches ranked high among the strategies adopted in Nigeria to ensure universal access to HIV Counseling and Testing (HCT). Despite increased access to HCT, the low number of health facilities providing HIV treatment services as well as the concentration of these treatment centres in the urban areas made it difficult to link Persons Living with HIV identified in the communities to comprehensive care and treatment. High stigma and crippling poverty hampered the ability of HIV positive person identified during community outreaches to reach treatment centres without assistance. Comprehensive HIV services implemented in rural South-East Nigeria in 2016 involved strengthening community-facility referral linkages.

Methods: Referral coordination teams made up of facility staff, Government Monitoring and Evaluation officers and community volunteers were set up. The Referral coordination teams conducted monthly meetings to harmonize referrals and identify referred clients who were yet to reach treatment sites for follow up. Community-Based organizations were also engaged to follow-up identified HIV positive client in the community and strengthen the community-facility referral linkages. Completed referrals were documented in the referral registers domiciled at the treatment centres. Data captured in the facility referral registers from October 2015 to September 2016 were reviewed.

Results: 59,766 individuals were reached with HTC services from October 2015 to September 2016; out of which 932 persons were found to be HIV Positive. 899 (97%) of the identified patients were successfully enrolled into care.

Conclusions: The referral coordination review meetings ensured linkage of high proportion of identified HIV Positive patients to care.

Abstract 95

Community perspectives on parental/caregiver communication on reproductive health and HIV with adolescent orphans and non-orphans in rural Karonga

Mr Chiukepo Phiri¹

¹People Action For Change (pafo), Karonga, Malawi

Introduction: This study aimed to understand the nature of parents and caregivers in the context of parenting, sexuality talks with non-orphans and orphans under their care in order to contribute to the knowledge base to inform adolescent and orphan sexual and reproductive health (SRH) and HIV prevention and interventions

Methodology: We held 14 focus group discussions with 78 adolescents aged 14-17 and 68 parents and caregivers of children aged 10-17. Thirteen key informant interviews were also held with individuals knowledgeable of issues affecting adolescents and orphans

Results: The parent/caregiver FGD sample of 69 participants comprised of 35% male and 65% female, in two age groups of 30-49 (48%) and 50-72 (52%). Overall, sixty one percent were married and 39% widowed with the majority having either primary (39%) or secondary education (36%). Of the 78 adolescent FGD participants, 47% were female and 53% male, all unmarried, aged 14-17 years and in-school with 62% and 38% in primary and secondary schools respectively. Of the 13 key informants two were in-school male and female adolescents aged 15 and 16 years respectively.

Conclusions: The study found that attempts at parental/caregiver sexuality talks with adolescent are made; but, in form of warnings, lectures or threats without dialogue that are often unpopular with adolescents limits the usefulness of such talks. Interventions should aim at equipping parents/caregivers with sexuality knowledge and communication skills.

Recommendations: Develop standard parent-child communication guidelines for parents and caregivers, address generation gap, cultural inhibitions to sexuality talks, capacity building for both male and female parents and caregivers on SRH and HIV.

Abstract 96

Experiences of the MaxART Early Access to ART for All community advisory board (CAB) in Swaziland

Gavin Khumalo¹, Sonto Magagula², David Maseko³, Sibongile Mnisi¹, Buyisile Shongwe¹, Dumsani Simelane¹, Saima Jiwan⁴, Velephi Okello⁵

¹Swaziland National Network of People Living with HIV and Aids, Mbabane, Swaziland, ²Traditional Healers Association, Buhleni, Swaziland, ³Health Communication Capacity Collaborative, Mbabane, Swaziland, ⁴Global Network of People Living with HIV, Amsterdam, Netherlands, ⁵Ministry of Health, Mbabane, Swaziland

Background: Community advisory boards are essential in health research in order to facilitate meaningful community participation and to ensure that all aspects of the research are conducted in accordance with human rights and ethical standards. The functioning of CABs however is not standard across studies and can vary to cater for targeted populations and study context. CABs are a novel concept in research in Swaziland and we describe the experiences of the MaxART Early Access to ART for All community advisory board (CAB) in Swaziland.

Materials & Methods: The Community Advisory Board (CAB) has 24 members of whom 13 are core members, and 11 members represent health committees in the participating 14 facilities. Its composition is made up of people from diverse backgrounds, such as networks of people living with HIV, women's groups, young people's groups, faith-based organizations, key populations, traditional leaders and representatives of community-based service providers, amongst others. The CAB plays a significant role within the MaxART project in an effort to build and foster partnerships between the EAAA study research team and communities in the study implementation areas, helping them to understand the EAAA study objectives. The board

is led by the CAB chairperson and co-chairperson, who are supported by the Swaziland National Network of People Living with HIV (SWANNEPHA) as the secretariat, which provide administrative and coordination support. Feedback from communities is obtained using a variety of methods including: health facility visits, community event visits, toll-free line, tear-off feedback slips that are dropped into boxes, and informal engagements with community members.

Results: Proper introduction of CAB members to community leadership and health facility staff is essential to enable members to work effectively. Continuous capacity building is required, including HIV treatment literacy and interpersonal communication skills to provide the knowledge and skills required for community engagement. Refresher trainings and discussions on CAB roles is essential to ensure all CAB members understand their scope in communities and role in relation to the study team. Reintroduction of the CAB members to the health care workers during feedback sessions is necessary for those who have been deployed to the EAAA facilities from non EAAA clinics.

Conclusions: The MaxART EAAA CAB model is a good example for other CABs in Swaziland health research. The methods used in engaging communities could have potential beyond the research, as an efficient feedback mechanism for linking the Ministry of Health programs (e.g. HIV, SRH, TB, VMMC) with communities.

Abstract 97

Peer-led delivery model for HIV self-testing in female sex workers: Designing the model based on research and participatory strategies in urban Blantyre, Malawi

Moses Kumwenda^{1,2}, Elizabeth Lucy Corbett^{1,3}, Mwiza Sambo¹, Wakumanya Sibande¹, Wezzie Lora⁴, Lusungu Kaira¹, Macdonald Nazimera⁵, Richard Chilongosi⁶, Pitchaya Indravudh¹, Nicola Desmond^{1,4}

¹Malawi Liverpool Wellcome Trust, Blantyre, Malawi, ²Helse Nord TB Initiative, College of Medicine, Blantyre, Malawi, ³London School of Hygiene and Tropical Medicine, London, United Kingdom, ⁴Liverpool School of Tropical Medicine, Liverpool, United Kingdom, ⁵Pakachere Institute for Health and Development Communication, Blantyre, Malawi, ⁶Population Services International, Blantyre, Malawi

Background: Provision of targeted HIV services is required amongst female sex workers considering a substantially high prevalence of HIV in this group. A growing body of evidence proves that HIV self-testing is an attractive addition for increasing uptake of testing in underserved populations. We describe a process of developing a peer-led model for providing HIV self-testing in female sex workers in Blantyre, Malawi.

Methods: A synthesis of qualitative results from a formative rapid ethnographic assessment was conducted to inform the design of a draft peer-led model for providing HIVST amongst sex workers. A follow-up three-day stakeholder participatory workshop with 16 participants including 14 sex workers was conducted to enhance the draft model. Two meetings with implementing stakeholders were done to authenticate the model.

Results: Information from stakeholders provided valuable insights for designing the model. Participants highlighted essential features to consider including attributes of the peer-distributor, demand creation, testing procedure and healthcare linkage. Desirable attributes of a peer-distributor included familiarity to HIV testing process, command of influence/respect among peers. Flexibility in demand creation approaches and actual distribution of kits was emphasised. Sex workers valued incentivising demand for self-testing using lubricants and condoms and safeguarding client privacy. Non-disclosure of test-results to a distributor was preferred to avoid breach of confidentiality. Providing specific information to foster linkage to care such as names of a referral facility/focal person were preferred.

Conclusions: Formative participatory methods proved vital in providing useful context specific ingredient in the design of the model for optimising outcomes following implementation.

Abstract 98

Care and Support for HIV positive children and adolescents

Chrissie Botomani¹, Peter Nangalembe¹

¹Tigwirane Manja CBO, Blantyre, Malawi

Background: Tigwirane Manja CBO provides care, support and treatment to adults and children in form of ARV's STI's and Family Plan. With the ever increasing number of people infected with HIV. Tigwirane Manja Community Based Organisation is among other stakeholders it is striving hard to assists people of all sorts including children and adolescents. Currently, there are over 150 children and adolescents who are accessing clinical services as mentioned above. The aims for this service are to shift from diagnosing and managing opportunity infection to prevention them by restoring and maintaining cellular immunity.

Objective of the paper: To highlight on how HIV positive children and adolescent are supported and care for. To share with other stakeholders on how to effectively improve the provision of care and support to HIV positive children and adolescents.

Target Group: HIV positive children and adolescents receiving care and support at health facility and in the family setting.

Methodology: Direct contact with HIV positive children and adolescents who get their treatment at Makheta Health Centre and Machinjiri Health Centre.

Key findings: There is an increased number of HIV positive children and adolescents. Some (5%) children take medication without knowing why they do so. Acceptance in using the medication is manifested in children and adolescents who were counseled. They usually come on their own to collect their medicine. Guardians who live far away from health facility collect medication intermittently. Poor nutrition in is impacting negatively on some children who are on ARV's(lack of plumpy nuts is also contributing to nutritional problems)

Recommendations: Provision of adequate resources to all health facilities assisting children and adolescents in care and support. Child counseling training should be introduced and conducted to existing counselors/providers (and

future providers) so that they can best break the ice to children at an appropriate age. Guardians should take full responsibilities for their sick children (on ARV). Communities need to be trained on how to prepare food suitable for children who are HIV positive in particular and for all the children in general.

Abstract 99

Puberty and sexual activity among perinatally infected adolescents in rural Zambia

Catherine Sutcliffe¹, Francis Hamangaba², Bornface Munsanje², Jeridy Munsanje², Philip Thuma^{1,2}, William Moss¹

¹Johns Hopkins Bloomberg School Of Public Health, Baltimore, United States, ²Macha Research Trust, Choma, Zambia

Background: With the availability of effective treatment, HIV-infected children are living longer. Many children are aging into adolescence and encountering puberty, sexual debut and sexual relationships in the context of HIV infection. Understanding these issues will be important for caregivers and healthcare workers so that adolescents can be provided appropriate support and services. The objective of this study was to evaluate the timing of puberty and sexual debut and the level of sexual activity and contraceptive use among HIV-infected adolescents in rural Zambia.

Methods: A cross-sectional study was conducted from March 2015 to February 2017 at Macha Hospital in Southern Province, Zambia. All adolescents 12-23 years of age who were enrolled in an ongoing cohort of perinatally infected children receiving care at the HIV clinic were eligible to participate. After obtaining written informed consent, adolescents were administered a questionnaire to collect information on self-reported Tanner pubertal staging, sexual activity and contraceptive use.

Results: 105 adolescents (59% female) were enrolled in the study. Among girls (median age: 14.9 years), 35% started menstruating and 29% were in Tanner stages 4 or 5 for both breast size and pubic hair. The median age of first menstruation was 15 years (IQR: 14, 16; range: 12, 19). 37% of girls were sexually active with a median age at first sex of 15 years (IQR: 14, 16). Among

sexually active girls, 94% had sex for the first time with a boyfriend and 33% had disclosed their status to their first partner. While 61% had used a condom the first time they had sex, only 22% had used a condom the last time they had sex. 11% of sexually active girls had ever used any other form of contraceptives and 44% had ever been pregnant at a median age of 17.5 years (IQR: 15, 18; range: 15, 20). Among girls who were not yet sexually active, 97% intended to wait until marriage. Among boys (median age: 14.8 years), 11% were in Tanner stages 4 or 5 for both penis/scrotum size and pubic hair. 23% of boys were sexually active with a median age at first sex of 15 years (IQR: 14, 16). Among sexually active boys, 100% had sex for the first time with a girlfriend and 40% had disclosed their status to their first partner. 80% had used a condom the first time they had sex and 60% had used a condom the last time they had sex. No boys had a partner who became pregnant. Among boys who were not yet sexually active, all intended to wait until marriage.

Conclusions: In this rural area, perinatally infected adolescents were initiating sexual activity by the age of 15 years. While the majority of sexually active adolescents had experience with condoms, use was not consistent and fewer than half had disclosed their status to their partners. Perinatally infected adolescents have family planning and reproductive health needs that should be considered as they receive care.

Abstract 100

Invisible or Ignored: Most At Risk Adolescents

Eric Gitau¹, Lilian Otiso², Helgar Musyoki³

¹Unicef, Nairobi, Kenya, ²LVCT Health, Nairobi, Kenya, ³National AIDS and STIs Control Programme (NAS COP), Nairobi, Kenya

Background: UNICEF supported and partnered with LVCT Health and the Ministry of Health through the National AIDS and STIs Control Program (NAS COP) to conduct a situational analysis and gather evidence on most at risk adolescents (understood in this analysis as girls engaging in sex work, boys engaging in same-sex relations and adolescents injecting drugs) to document lessons, best practices in service provision, gaps and

opportunities in policy and programming. The project was conducted between October 2015 and May 2016 and involved data collection from national level and three counties: Kisumu, Nairobi and Mombasa.

Methodology: The study utilized a mixed methods design involving a review of literature, quantitative and qualitative data collection and analysis methods. The literature search involved a review of globally and locally published and grey literature on adolescents' HIV and key populations programming. Secondary analysis of data from Kenya AIDS Indicator Survey (KAIS) 2012 and Kenya Demographic and Health Survey (KDHS) 2014 data for epidemiological and behavioural characteristics and trends among adolescents was done. A total of 9 focus group discussions and 18 in-depth interviews were conducted with 108 most at risk adolescents' participants. Fifty one (51) key informant interviews were conducted with different stakeholders. Ethical approval was obtained from the AMREF Ethics and Scientific Review Committee (ESRC P212/2015).

Findings: (7%) of all clients accessing services in Key Population services between April 2014 and March 2015 were adolescents less than 19 years. KAIS 2012 reported that 6.88% (n=57) adolescents have ever been given money/gifts for sex and the majority were from rural setting n=44 (77.19%). The most at risk adolescents reported these factors as driving forces to their risky sexual behaviour: to escape poverty and meet financial responsibilities, such as supporting their families, parental care for their siblings and children born to teenage mothers and limited access to education.

Most at risk adolescents desire to receive these services from health care providers: HIV testing, counseling and treatment, STI screening and treatment, health education, family planning, preventive measures such as VMMC and condoms, lubricants, referrals. Health providers report reservations about providing these services to adolescents due to lack of clear guidelines and possible legal implications.

Recommendations: HIV and SRH programmes for adolescents and minors ought to be informed by the Convention on Child Rights and should be evidence based. Address legal and policy environment that limit the most at risk adolescents human rights and access to services. Increase access to most at risk adolescents programs, ensuring their accessibility and affordability. 4. Strengthen analysis and use of strategic information and research around most at risk adolescents. Invest and adequately resource

most at risk adolescents programs and research. Address cross-cutting issues including peer-led advocacy, the genuine involvement of adolescents, and multi-sectoral engagement.

Abstract 101

ANRS 12334 CoDISEN - Cohort study on people who inject drugs in Senegal

El Hadji Bara Diop^{1,2,5}, Gabrièle Laborde-Balen,^{1,3,4} Mme Séphora Tamégnon^{1,3}, Idrissa Ba^{2,5,6,7,9}, Ibrahima Ndiaye,^{2,5,6,7,9} Viviane Marie Pierre Cissé^{5,6,8,9}, Ndéye Aissatou Lakhe^{5,6,8,9}, Tidiane Ndoye⁹, Mouhamet Diop^{1,9}, Rose André Yandé Faye^{1,9}, Karim Diop^{1,5,6,10}, Mamadou Habib Thiam^{2,5,6,7,9}, Karine Lacombe¹¹, Alice Desclaux¹², Annie Leprêtre¹³, Moussa Seydj^{5,6,8,9}

¹CRCF, Dakar, Senegal, ²CEPIAD, Dakar, Sénégal, ³Site ANRS, Dakar, Sénégal, ⁴Expertise France, Dakar, Sénégal, ⁵CHNU de Fann, Dakar, Sénégal, ⁶Ministère de la Santé et de l'Action Sociale, Dakar, Sénégal, ⁷Service de psychiatrie, Dakar, Sénégal, ⁸Service des Maladies Infectieuses et Tropicales, Dakar, Sénégal, ⁹Université Cheikh Anta Diop, Dakar, Sénégal, ¹⁰Division de Lutte contre le Sida et les IST, Dakar, Sénégal, ¹¹Service des Maladies Infectieuses et Tropicale, Hôpital Saint Antoine, Paris, France, ¹²TransVIHMI IRD, UMI 233-INSERM U 1175, Montpellier, France, ¹³Institut de Médecine et d'Epidémiologie Appliquée, Université Xavier Bichat, Paris, France

Background: People who use injecting drugs (PWUID) are a population at high risk of hepatitis C (HCV) and HIV infection worldwide. Access to opioid substitution therapy (OST) is a key challenge for controlling the spread of both diseases, especially in resource-constraint countries. In Sub-Saharan Africa, this issue has been overlooked until recently and is now considered an emerging problem, whereas data on the prevalence and incidence of HCV and HIV in this specific group remain very scarce. In Senegal, the ANRS 12243 UDSEN study (2012 – 2014) has estimated the size of PWUID living in Dakar at 1324, with a prevalence of HIV and HCV reaching 5,2% and 23,3%, respectively. In this context, the CEPIAD (Dakar Center for addiction management) has opened in 2014 and 192 PWUID are currently offered OST combined with medical and psycho-social follow-up. Within the center, the CoDISEN cohort study has been set up to provide data on the efficacy of an integrated approach of care for PWUID in

preventing HIV and HCV infection, as well as severe morbidity associated with the use of injecting drugs.

Methods: CoDISEN is a prospective, monocentric, enrolling cohort with a six-monthly follow-up for a total duration of 3 years. Main inclusion criteria are age above 18, active use of injecting drugs or on OST and residency in Dakar > 3 months. At baseline, all patients are offered a complete medical and biological check-up with psycho-social evaluation and addiction appraisal. A sub-study on anthropologic determinants of drug use is also planned. The total number of patients to be included will be 300.

Results: As of the 23rd of February 2017, 63 patients have been included, of whom 61 are on OST. Age median is 47 years and only 8 % are women. The number of positive HBs Antigen and HCV or HIV antibodies is 7, 7 and 3, respectively. HBV vaccination has been offered to 16 non immune patients. Due to the strong precarious situation of those highly marginalized patients (31 % have no source of income and 65% earn less than 80 dollars a month), the research study team had to adapt follow-up procedures: translation of all documents in local language as well as information through video rather than written media, extension of CEPIAD opening hours, implementation of an outreach team that will include patients in the field.

Conclusion: The CoDISEN will provide a unique set of data of the impact of an integrated approach for the management of PWUID. This innovative research program should help shaping future public health policies regarding the prevention of HIV and HCV in this high risk group living in Sub-Saharan Africa.

Anstract 102

Study on knowledge, attitude and barriers to condom use among female sex workers and men in Karonga district

Edgar Phiri¹

¹*Ukhondo Services Foundation (usef), Karonga, Malawi*

Introduction: The study was to assess knowledge, attitudes and barriers to condom use among commercial female sex workers (FSWs) and men as part of providing information necessary for the design of a behavior change communication (BCC) for use in addressing HIV/STI risk-taking behaviors among FSWs and men in Karonga district.

Methods: Structured questionnaires were administered by the organization between May and July to explore FSWs' and mens' knowledge of and attitudes towards condom use among 159 FSWs and 161 men. Data was collected on barriers to condom use using focus group discussions and face-to face interviews.

Results: Condom knowledge was high among both female sex workers and men agreeing with the statement "using condoms properly and consistently reduces risk of HIV infection". Attitudes towards condom use were generally favorable agreeing with the statement condom "use is the best method of HIV prevention". Findings show that poverty, refusal to use condoms by male partners and alcohol use before sex remain key barriers to consistent condom use.

Conclusion: Our findings suggest that while female sex workers and their clients are knowledgeable about condoms as an HIV prevention method and have favorable attitudes towards their use, economic and relationship factors continue to hamper consistent condom use among these populations.

Recommendation: These findings recommend a need for interventions that address condom use barriers as well as improve economic independence of FSWs as part of condom promotional efforts in a bid to prevent HIV. Other HIV prevention interventions should focus on men, the sex buyers. Focus or campaigns should target clients of female sex workers.

Abstract 103

Vertical transmission of HIV and delayed status disclosure presenting lifetime anti-retroviral treatment consequences: A case report at the Infectious Diseases Institute.

John Mark Bwanika¹, Patience Nyakato¹, Sarah Nsibirwa¹, Eva Laker¹, Andrew Kambugu¹

¹*Infectious Diseases Institute - Makerere University, Kampala, Uganda*

Background: Perinatal acquisition of HIV presents an extremely challenging task for parents to deal with among their children. HIV status disclosure and early management is by far one of the greatest challenges that all parents to HIV positive children have to deal with. Children who progress into adolescence and become sexually active without knowledge of their HIV status also pose a risk to continued transmission of HIV especially in the young adults. Non-disclosure of parents to their infected children not only puts them at a high risk of faster progression to AIDS if not started on the right treatment early enough but also greater risk of drug resistance.

Case presentation: This is a report of a 19-year old male who was referred to the Infectious Disease Institute for screening prior to participation in an HIV drug dose optimization study. He had been diagnosed with HIV a month earlier and started on Co-trimoxazole prophylaxis. CD4 count at the time was 4 cells/uL. He was a high school student at the time. He reported no history of prior ART usage and was not on any other long-term medication and had no history of co-morbidities or allergies. However, due to numerous unexplained illnesses, he was tested and found to be HIV positive at the age of 19. The screening tests revealed a CD4 count of 5 cells/uL (1%) and a VL of 43724 copies/ml, liver and kidney function tests were all normal, Hepatitis B test was negative. Anti-retroviral therapy was initiated immediately though there was no noticeable virological and clinical improvement after 6 months of treatment. HIV Viral resistance and susceptibility tests revealed high-level resistance to all available nucleoside and non-nucleoside reverse transcriptase inhibitors (Major mutations present included M41L, M184V, L210W, T215Y, A98G,

K103N, V108I, H221Y). Numerous mutations were also noted even against a clearly demonstrated optimal self reported adherence and compliance to current treatment.

Conclusion: This case exemplifies many real life scenarios of good intentions from parents turning out catastrophic for the future management of HIV among their children. There is therefore need to provide further guidance and counseling to parents with HIV positive children right from birth through their adolescence and adulthood.

Abstract 104

Assessment of HIV related stigma among adolescents (10 - 19 years) living with HIV: Case study of Zomba, Malawi

Paul Mkwinda Nyasulu¹, Adamson S. Muula²

¹*Ministry Of Health; Department Of HIV And AIDS, Lilongwe, Malawi,* ²*University of Malawi, College of Medicine, School of Public Health and Family Medicine, Blantyre, Malawi*

Background: HIV-related stigma and discrimination is acknowledged as a major public health issue. Stigma is a barrier to uptake and retention to HIV care. There are few studies on the magnitude of stigma in which adolescents have been included. In Malawi, there is limited understanding of the types of HIV related stigma described by Berger et. al. among adolescents living with HIV.

Objectives: The study was conducted to investigate levels of HIV related stigma among adolescents (10 – 19 years) living with HIV in Zomba District, Malawi.

Method: The study was a cross-sectional descriptive design conducted on a sample of 87 adolescents living with HIV and accessing HIV services. Study participants were enrolled using convenience sampling from Zomba Central Hospital (urban site), Domasi Rural Hospital and Thondwe Health Center (rural sites) in Zomba, Malawi. A semi-structured questionnaire was used to score the four types of stigma: personalized, disclosure, negative self-image and public attitude stigma, measured using the HIV stigma scale by Berger et al. Quantitative data were analyzed using

student t-test statistic and univariate linear regression. 80 participants were purposefully selected for in-depth interviews to provide responses on interventions that may reduce HIV related stigma. Qualitative data were analyzed manually by generating codes from summary notes and then themes to identify stigma reduction interventions.

Results: 14% of all study participants had overall HIV stigma scores exceeding 50th percentile of the overall score range. 58% of those with high score were female adolescents. Female adolescents reported high overall mean score of 90.8 (SD = 15.7) compared to 84.8 (SD = 15.5) among males ($t = 2.75, p < 0.001$). Early adolescents (10 – 14 years) reported slightly high overall mean stigma score (89.3) compared to (87.2) among late adolescents (15 – 19 years) ($t = 0.605, p = 0.546$). Female adolescents reported to have high stigma mean scores 43.6 (SD = 9.7) for public attitude stigma and 39.9 (SD = 8.7) for personalized stigma compared to males ($t = 2.75, p < 0.001$). Study participants from urban areas had statistical significant difference in mean scores of $t = 2.19, p < 0.007$; $t = 2.67, p < 0.01$; $t = 2.15, p < 0.037$ in public attitude, personalized and disclosure stigma respectively compared to rural adolescents. There was gradual decrease in stigma scores as time interval increased since HIV status disclosure for public attitude stigma ($b = -0.033, p = 0.276$), personalized stigma ($b = -0.021, p = 0.446$) and disclosure stigma ($b = -0.011, p = 0.413$). Social participation, HIV education and specialized services were themes from suggestions on interventions to reduce stigma.

Conclusion: Overall HIV related stigma exists at low levels among adolescents living with HIV. Public attitude stigma and personalized stigma are the types of stigma which are experienced in high levels among female adolescents and study participants residing in urban areas. Therefore, social participation needs to be emphasized as a suggested intervention that will reduce HIV related stigma among adolescents living with HIV.

Abstract 105

"They Don't See Us As One of Them": Mentor Mothers' Professional Interactions with Healthcare Workers at Primary Healthcare Centers in Rural Nigeria.

Nadia A. Sam-Agudu^{1,2}, Miriam Bathnna¹, Gift Nwanne¹, Grace Obadiah-Manji¹, Chinenye Fan-Osuala¹, Christopher Isah¹, Llewellyn J. Cornelius³

¹Institute of Human Virology Nigeria, Abuja, Nigeria, ²Institute of Human Virology, University of Maryland Baltimore, Baltimore, United States, ³School of Social Work, University of Georgia Athens, Athens, United States

Background: Mentor Mothers (MMs) are PMTCT-experienced HIV-positive women engaged to provide lay support in PMTCT programs. MMs counsel and support other HIV-positive women to improve drug adherence, retention and HIV-free infant survival in PMTCT. MMs typically work in collaboration with professional healthcare workers (HCWs) at healthcare facilities, and have positively impacted maternal-infant PMTCT outcomes across Africa. Dysfunctional MM-HCW relationships are therefore potentially detrimental to PMTCT programs. We explored the experiences of MMs with HCWs at rural primary healthcare centers (PHCs) in North-Central Nigeria.

Methods: The MoMent study compared structured (Intervention) and unstructured (Control) MM support for PMTCT service uptake and retention. All study MMs were recruited for Focus Group Discussions (FGDs), where a structured questionnaire guided discussions on MMs' working relationships with HCWs. Manual analysis by theme and content was performed by 8 paired researchers including a Social Scientist.

Results: Seven FGDs were conducted among 36 MMs, median age 32 years; median MM work experience 4 yrs.

Few MMs expressed great relationships with HCWs:

"Honestly, the woman in charge of our facility has been very supportive, she sometimes gives us transportation money so that we can visit our clients, she advises us on how to make our lives better and always tries to make us happy." – Intervention MM.

However, most respondents across all FGDs mentioned stigmatization and lack of support/recognition from HCWs.

“Some of the nurses at my site stigmatize in the way they treat us. They treat us as if it is because of being wayward that we have HIV.”-Intervention MM.

“...I think it will be good if they are spoken to as well, so they have more awareness to accept us as one of their own rather than stigmatize us.”-Control MM.

“They make comments questioning our ability to carry on our duties even to the point of threatening to report us.”-Control MM.

“...they treat us like we are not part of them. We are not among the staff. Whenever they are having meetings, they don't let us join. They don't see us as one of them.” -Intervention MM.

“On ANC days, we work together, do everything together but if there is anything (of benefit), they will say, ‘leave, are you one of the staff?’”-Intervention MM.

Extraneous tasks assigned by HCWs distracted MMs from core activities:

“ I agree, I will bring out cards and file documents but the sweeping and the mopping; I do not want to do it”.-Control MM.

“...the facility staff sometimes ask us to sweep and mop the facility , even when our women are around they will insist that we must finish the sweeping and mopping before we attend to them...” -Intervention MM.

CONCLUSIONS: Regardless of study arm, most MMs working in our study setting expressed tenuous professional relationships and low standing with HCWs. Lack of acknowledgment; HIV-related stigma/discrimination and assignment of unrelated tasks by HCWs were reported. Collegial, supportive HCW-MM working relationships and clearly-defined and -communicated scopes of work should be prioritized in PMTCT programs in order to maximize MM impact.

Abstract 106

Incidence and risk factors for nephrotoxicity in patients initiated on Tenofovir based antiretroviral therapy in Blantyre, Malawi

Dr Bongani Chikwapulo¹

¹Malawi college of Medicine, Blantyre, Malawi, ²Malawi Ministry of Health, , Malawi

Introduction: Tenofovir (TDF) based antiretroviral therapy (ART) is the first line treatment for HIV in Malawi and over 600,000 people living with HIV are on ART countrywide. Kidney disease, both acute and chronic, is common and severe in Malawi, and one of the main side effects of TDF is nephrotoxicity. There is limited information on the contribution of TDF to kidney disease in Malawi, in part because national guidelines do not recommend routine testing of renal function at the initiation of TDF ART or during monitoring of treatment. We undertook this retrospective cohort study to investigate the incidence and risk factors for nephrotoxicity in patients initiated on TDF based ART at a community health centre in Blantyre.

Methods: ART naïve patients aged 15 years and older initiated on TDF based ART from 1st July 2013 to 31st December 2015 at Dream Centre Clinic providing free HIV care to patients in Blantyre, Malawi, were included. Patients at this organization undergo renal function testing within 1 month of starting TDF (baseline), and then at 3 months, 6 months and then 6 monthly thereafter. Patient data was collected at each of these time points up to 24 months and patients were included if they had a baseline creatinine. Nephrotoxicity was defined as eGFR <50mls/min (Cockcroft-Gault) at any time during the follow-up period. The main outcomes were an assessment of the prevalence of renal insufficiency at the initiation of ART, the incidence rate of nephrotoxicity during the first 24 months of TDF treatment, and risk factors for its development.

Results: 448 patients were initiated on TDF ART during the study period and 439 patients were included in the analysis. 317 (72.2%) were female, mean age was 33.2 years, 249 (62%) had WHO stage 1 HIV disease, and mean CD4 count was 329 cells/mm³ at baseline. 21 (4.8%) patients had renal

insufficiency (GFR <60ml/min) at initiation of therapy, 17 (3.9%) moderate (GFR 30-60ml/min) and 4 (0.9%) severe (GFR < 30ml/min).

Nephrotoxicity development was assessed in 426 patients who had GFR > 50mls/min at baseline. The incidence rate for developing nephrotoxicity during 24 months follow up period was 2.13 per 1000 person-months. The risk of developing nephrotoxicity was higher for each 1mmHg increase in diastolic blood pressure over 100mmHg [aRR=2.92, 95% CI= (1.04-8.16)].

Conclusions: The prevalence of renal insufficiency in patients initiated on TDF based ART at a community health centre in Malawi was 4.8%. In patients with eGFR >50mls/min at baseline the incidence rate of nephrotoxicity in the first 24 months was 2.13 per 1000 person-months. High blood pressure was a risk factor for development of nephrotoxicity. Cost effective, point-of-care diagnostic tools are required in low resource community settings for the assessment of renal function both at the initiation of TDF based ART and during monitoring of treatment.

Abstract 107

Resistance to Protease Inhibitors (PI) among Patients Evaluated for Third-line ART in Kampala

Francis Ssali¹, Hellen Musana¹, Ronald Ssenyonga¹, Immaculate Nankya¹, Amanda Wanyana¹, Peter Mugenyi¹

¹JCRC, Kampala, Uganda, ²JCRC, Kampala, Uganda

Introduction: Access to third-line ART is still limited in Uganda and patients are often kept for long, on failing second-line ART, with potential for accumulated resistance Mutations that can potentially impact on susceptibility to darunavir, which is the reserved third-line ART in Uganda.

Methods: We analyzed the genotypic resistance Mutations found among HIV-1 viral isolates from individuals that had virologically failed second-line ART. The samples were from patients attending the JCRC Clinic in Kampala and those referred from other ART clinics from July 2005 to March 2015. Only samples with major resistance mutation to protease inhibitors are included in this analysis.

Results: Samples were from 177 patients (60.8% male), median age 34 years (IQR 27, 42) with a mean Log viral load 11.4 (SD 1.9). The 3 commonest HIV-subtype were A(48%), D(37%) and C(3%). The median number of major PI mutations per isolate was 3(IQR 2,5) and the major NRTI and NNRTI mutations were 4.6(IQR 2,8) and 1.7(IQR 1,4) respectively. The 4 commonest major PI mutations were at positions V82(35%), I54(31%), M46(30%) and L62(30%). The prevalence of Intermediate to high level resistance to darunavir, Lopinavir and Atazanavir was 20%, 75% and 72% respectively. The accumulation of 3 or more major PI mutations was associated with an increased risk developing darunavir –associated mutations OR 4.6 [95%CI 1.43 – 19.62], p=0.0103.

Conclusion: Accumulation of multiple major PI mutations is the major risk factor for darunavir resistance among patients on Second-line ART in Kampala. Early virologic recognition of failure to second-line ART and timely switch to 3rd line ART will maximize the benefit of darunavir in third-line ART.

Abstract 109

High HIV test yield among older men testing for the first time in Zimbabwe: Implications for reaching 90-90-90 and preventing incident infections in young women

Karen Webb¹, Vivian Chitiyo¹, Sara Page-Mtongwiza¹, Diana Patel¹, Talent Maphosa¹, Barbara Engelsmann¹

¹Organisation For Public Health Interventions And Development, Harare, Zimbabwe

Background: Recent evidence highlights how sexual networks between young women and older men are driving HIV transmission in sub Saharan Africa. Zimbabwe has an HIV prevalence of 14.6%. Reaching 90-90-90 in Zimbabwe will require supporting undiagnosed individuals to know their status and initiate ART. Our objective was to explore HIV testing rates and yields by age, sex and health service entry points at 29 health facilities in Zimbabwe.

Methods: We conducted a retrospective cohort analysis of de-identified data from clients accessing HIV testing services at 29 purposively selected PEPFAR prioritised health facilities in 3 Districts of Zimbabwe (Bulilima, Mangwe, Mutare). All clients accessing HIV testing services from May-Aug 2016 were traced through multiple registers to document HIV test result and subsequent access to HIV Care and treatment services. Proportions were compared using Chi-squared tests in STATA V12.

Results: From May-Aug 2016, 7,027 HIV tests were conducted with a prevalence of 10.4% (95%CI:9.7-11.2). The majority of tests were conducted among women (67.3%; n=4,717), in antenatal care (28.3%; n=1,991). Men aged 25 and above had significantly higher HIV test yields than women of the same age (15.8% vs. 9.7%, $p < 0.0001$). Older men (45+yrs) HIV testing for the first time had the highest test yield (22%). Due to higher absolute test rates, females accounted for the majority (57.7%; n=423; 95%CI:54.0-61.3) of new positives identified. Men testing HIV positive presented at older median [IQR] age (37[30-43] vs. 31[27-39]), had significantly lower ART initiation rates (75% vs. 82%, $p=0.05$), and lower median CD4 cell count [IQR] (186 cell/ μ L [101-316] vs. 334 cell/ μ L [186-519]) than their female counterparts.

Conclusions: We observed lower HIV test rates, higher yields and lower linkages to HIV care among adult men. Reaching 90-90-90 and preventing new infections in Zimbabwe will require investment in evidence-based differentiated models of care to support timely uptake of HIV testing and treatment among adult men with unknown HIV status.

Abstract 110

Prevalence and risk factors for hypertension among HIV patients on antiretroviral therapy in Lilongwe

Florence Nkhalango¹, Levison Longwe¹, Alan Schooley^{1,2}, Daniel Kahn^{1,2}, Linna Phiri¹, Dan Namalika¹, Jessie Currier², Risa Hoffman²

¹Partners In Hope Malawi, Lilongwe, Malawi, ²University of California and Los Angeles, , United States of America

Background: The rollout of antiretroviral therapy (ART) in Africa has created infrastructure that is

ideal for the implementation of integrated management of non-communicable diseases (NCDs). A package of essential services for the prevention and treatment of NCDs has been proposed and includes screening and treatment of hypertension (HTN) as a primary focus. We sought to examine prevalence and risk factors for hypertension among patients receiving ART at an urban clinic in Lilongwe, Malawi, in which screening and treatment for HTN have been integrated into the ART program.

Methods: A cross-sectional survey was performed on all HIV-infected adults ≥ 18 years on ART for at least 12 months. Blood pressure was measured and for those known to be hypertensive (defined per Malawi guidelines as $\geq 140/90$), information was collected about current anti-hypertensive medications. Patients were surveyed about socio-demographics, HIV and ART characteristics, risk factors for hypertension, and barriers to taking hypertension medications for those on treatment including cost. STATA (version 11) was used to calculate summary statistics and prevalence of hypertension and univariate logistic regression was used to characterize risk factors for HTN.

Results: A total of 544 patients underwent blood pressure screening and completed the baseline survey. Forty-nine percent were males (N=267), 51% females (N=277) and the median age was 44 years (interquartile range, IQR 38-52). Seventy-seven percent (N=419) were on first-line ART with tenofovir/lamivudine/efavirenz. The median duration of ART for the cohort was 5.6 years (IQR 3.9-7.6) and of 489 individuals with a viral load recorded in the prior 24 months, 94.0% (N=460) were < 1000 copies/mL. The prevalence of HTN was 37.7% (N=205), of whom 135 were known to be hypertensive and already on medications. The most commonly used antihypertensive medication in this group was hydrochlorothiazide (75%, N=92). Fifty percent (N=67) of patients were on two antihypertensives, and 16% (N=19) were on three antihypertensives. Risk factors for HTN included age ≥ 40 years (OR 2.8, $p < 0.001$), diabetes (OR 3.1, $p = 0.045$) and being overweight (body mass index 25-30) (OR 2.0, $p = 0.001$) or obese (body mass index ≥ 30) (OR 5.0, $p < 0.001$). Smoking and alcohol use were rare in this cohort (4.2% and 10.7% respectively) and not associated with increased risk for HTN. Self-reported barriers to taking antihypertensives were insufficient money to purchase medications (55%, N=31), not remembering to take medications (39%, N=22), and lack of money for transport to clinic for refills (36%, N=20).

Conclusion: Over one-third of patients in our cohort were hypertensive. Of those known to be hypertensive at the time of assessment, 64% were taking more than one medication for blood pressure control. Risk factors for HTN are similar to those found in other settings. The financial burden of HTN (cost of medications and transport to clinic) and adherence to antihypertensives are important self-reported barriers in our population. Integration of blood pressure screening into ART care and free or low cost medications could result in improved long-term outcomes for HIV-infected patients in resource-limited settings

Abstract 111

Beyond Clinical Trials: cross-sectional associations of combination antiretroviral therapy with reports of multiple symptoms and non-adherence among adolescents in South Africa

Helen Mbaziira Natukunda^{1,2}, Lucie Dale Cluver^{1,3}, Elona Toska^{1,4}, Victor Musiime^{5,6}, Alexa Rachel Yakubovich¹

¹Department of Social Policy and Intervention, University of Oxford, Oxford, United Kingdom, ²Medical Research Council, Oxford, United Kingdom, ³Department of Psychiatry and Mental Health, University of Cape Town, Cape Town, South Africa, ⁴AIDS and Society Research Unit, Centre for Social Science Research, University of Cape Town, Cape Town, South Africa, ⁵Department of Pediatrics and Child Health, Makerere University, Kampala, Uganda, ⁶Joint Clinical Research centre, Kampala, Uganda

Background: Studies investigating symptoms associated with combination antiretroviral therapy (cART) use among adolescents in resource-limited settings are rare beyond clinical trials. Identifying adolescents at increased risk of non-adherence is imperative for HIV/AIDS programming and preventing onward transmission in this key subpopulation. This study examined which cART regimens were associated with reports of multiple symptoms and past-week non-adherence in a large community-traced sample of HIV-positive adolescents in South Africa.

Materials and Methods: A total of 1 175 HIV-positive ART-experienced adolescents aged 10-19

years attending 53 health facilities in Eastern Cape, South Africa were interviewed in 2014-15. Ninety percent (n=1 059) provided names and/or photographs of their current medication. Adolescents who stated no medication use and those with unclear or missing data were excluded from further analysis, leaving an analytic sample of n=501. Outcomes were reports of multiple symptoms (3 or more symptoms in the past 6 months) and past-week ART non-adherence (<95% of prescribed doses taken correctly in the past week). Analyses used multivariable logistic regressions, controlled for sociodemographic and HIV-related covariates in Stata 13/IC.

Results: Included adolescents were 54.3 % female, median age 14 (12, 16) years and 67% perinatally infected. The prevalence of multiple symptoms was 60% (95% confidence interval (CI): 55.3-63.9). Independent of covariates, Stavudine-containing cART regimens and the fixed-dose combination (FDC) of Tenofovir + Emtricitabine + Efavirenz were positively associated with reports of multiple symptoms, adjusted odds ratio (aOR) 3.38; 95% CI: 1.19-9.60, p=0.022) and (aOR 2.67; 95% CI: 1.21-5.88, p=0.015) respectively. Lopinavir/ritonavir-containing cART regimens were associated with fewer symptoms (aOR 0.47; 95% CI: 0.21-1.04, p=0.061). For Efavirenz-based regimens, adolescents on Stavudine + Lamivudine + Efavirenz reported more symptoms (aOR 3.26; 95% CI: 1.01-10.52, p=0.048) than those on Tenofovir + Emtricitabine + Efavirenz (aOR 2.86; 95% CI: 1.35-6.05, p=0.006) and Abacavir + Lamivudine + Efavirenz (aOR 1.08; 95% CI: 0.64-1.82, p=0.784). However, only the FDC containing Tenofovir + Emtricitabine + Efavirenz was significantly associated with lower levels of non-adherence amongst participants, independent of covariates (aOR 0.44; 95% CI: 0.21-0.93, p=0.032).

Conclusion: Multiple symptoms at 60% were high. Stavudine-containing cART regimens and the FDC containing Tenofovir + Emtricitabine + Efavirenz were associated with many symptoms whereas LPV/r-containing regimens were associated with fewer symptoms among adolescents. However, adolescents on the FDC containing TDF+FTC+EFV were the most adherent subgroup. These findings support the WHO-recommended discontinuation of d4T use, but also underscore the dilemma faced by clinicians when choosing between low toxicity regimens and those that promote ART adherence.

Abstract 112

Safety and Efficacy of TDF/FTC/RPV and TDF/FTC/EFV – Subgroup-analyses from the SALIF Study

Reena Shah¹, Gita Ramjee², Cissy Kityo³, Roselyn Toby⁴, Winai Ratanasuwan⁵, Paula Munderi⁶, Ceyhun Bicer⁷, Perry Mohammed⁸, Yvon Van Delft⁹

¹Aga Khan University Hospital, Nairobi, Kenya, ²HIV Research Prevention Unit, South African Medical Research Council, Durban, South Africa, ³Joint Clinical Research Center, Kampala, Uganda, ⁴Agence Nationale de Recherche sur le SIDA et les Hépatites Virales, Hopital Central de Yaounde, Yaounde, Cameroon, ⁵Siriraj Hospital Department of Preventive and Social Medicine Faculty of Medicine, Bangkok, Thailand, ⁶MRC/UVRI Uganda Research Unit on AIDS, Entebbe, Uganda, ⁷BICER Consulting & Research, Antwerp, Belgium, ⁸Janssen Ltd., High Wycombe, United Kingdom, ⁹Janssen-Cilag BV., Breda, The Netherlands

Background: The SALIF (Switching At Low HIV-1 RNA Into Fixed Dose Combinations) study evaluated the efficacy, tolerability and safety of switching to Tenofovir DF/Emtricitabine/Rilpivirine (TDF/FTC/RPV) (213 subjects) vs. TDF/FTC/Efavirenz (TDF/FTC/EFV) (211 subjects) in patients who were on first-line NNRTI-based ART with a viral load of less than 50 copies/mL and wished to switch for simplification and/or tolerability. 424 adult patients from five African countries and Thailand were randomized (1:1) to switch their ART regimen to an open-label single tablet regimen (STR) of TDF/FTC/RPV (300/200/25 mg qd) or TDF/FTC/EFV (300/200/600 mg qd) for 48 weeks. The previously presented overall analysis of SALIF demonstrated non-inferiority of TDF/FTC/RPV versus TDF/FTC/EFV in maintaining HIV-1 RNA suppression defined as HIV-1 RNA <400 copies/mL (93.9% vs. 96.2%; 95% CI (-6.4%, 1.8%)). In the TDF/FTC/EFV arm, 55.0% patients had already received EFV before randomisation, 45.0% changed from NVP to EFV. In the TDF/FTC/RPV arm, all patients changed their NNRTI; 54.0% patients switched from EFV and 46.0% from NVP to RPV. An analysis of outcomes by subgroups could offer more insights regarding the utility of switching strategies.

Methods: Univariate subgroup analyses of the virologic response (HIV-1 RNA <400 copies/mL) and safety and tolerability at week 48 were conducted. Results for the key demographic

subgroups of sex, age, women of childbearing potential, region of origin, as well as NNRTI at screening are presented herein.

Results: Median age was similar across sex and region of origin subgroups. The proportion of women in the African sites was 73% vs. 38% in Thailand. Efficacy (HIV-1 RNA <400 copies/mL) of TDF/FTC/RPV vs. TDF/FTC/EFV was similar in women and men, African and Thai subjects, in women with and without childbearing potential, and subjects above or below the age of 50 years. In subjects already receiving EFV at screening efficacy was 98.3% in the TDF/FTC/EFV arm and 93.0% in the TDF/FTC/RPV arm. For subjects switching from NVP-based ART the efficacy was 93.7% in the TDF/FTC/EFV arm and 94.9% in the TDF/FTC/RPV arm.

Most subjects experienced at least one adverse event (AE): 83.6% on TDF/FTC/RPV and 82.5% on TDF/FTC/EFV, with similar proportions per treatment arm when analysed by subgroups. The proportion of subjects experiencing AEs grade 3-4 at least possibly related to the study medication was 6.1% on TDF/FTC/RPV and 1.9% on TDF/FTC/EFV with similar proportions per treatment arm when analysed by subgroups. Eight patients (4 African women, 4 Thai men) discontinued TDF/FTC/RPV early, one male patient from Thailand discontinued TDF/FTC/EFV. There were low rates of SAEs at least possibly related to study medication seen in either treatment arm across all subgroups.

Conclusions: The STR of TDF/FTC/RPV was an effective, well-tolerated once-daily treatment option for virologically suppressed patients. No clinically relevant differences in efficacy between TDF/FTC/RPV and TDF/FTC/EFV were observed across sex, age, childbearing potential, NNRTI at screening or region of origin subgroups. Patients and healthcare providers should be aware that every regimen switch may be associated with risk of adverse events. In these subgroup analyses adverse events after switching were mostly low-graded.

Abstract 113

Predictors and prevalence of HIV-1 virological failure in ART patients at an urban health center in Mansa District, Zambia.

Godfrey Mutaawe¹, Thierry Malebe¹, Prisca Kasonde¹, Michael Welsh¹, Pule Mapulanga¹

¹*Fhi360 Zambia, Mansa, Zambia*

Background: Viral load testing has been scaled up to provincial general hospitals in Zambia. However, there is limited data on the prevalence and predictors of virological failure. This study aimed to determine the prevalence and predictors of virological failure in ART patients at an urban health centre in rural Zambia.

Methods: Using a cross-sectional study design, data was extracted from patient records both electronic and hard copy and entered into Microsoft Excel 2007. The study variables were age, gender, baseline WHO clinical stage, baseline CD4+ count, viral load, duration of ART, current ART regimen, baseline weight and haemoglobin level. Patients on ART for at least 6 months with viral load test results to be included in the study. Patients on ART for less than 6 months and those with missing ART start date were excluded from the study. Multivariate logistic regression was used to determine the predictors of virological failure in ART patients. Predictors with $p \leq 0.1$ in univariate analysis were included in the final model.

Results: 650 HIV patients on were included in the study, with 446 (68.6%) being females. The median age of the patients was 37 years (IQR: 30-45). The baseline median CD4+ count was 259 cells/mm³ (IQR: 164-343), and 121 (20.5%) of the patients were classified as having WHO stage 3 or 4 HIV disease at baseline. 641 (98.6%) of patients were taking non-nucleoside reverse transcriptase inhibitor (NNRTI) based regimens. The median ART duration was 3.5 years (IQR: 1.7-5.3). The median baseline haemoglobin level was 12.0 g/dL (IQR: 10.4-13.6) and the median baseline weight was 54 Kg (IQR: 48-60). 64 (9.9%) of the patients had virological failure. 586 (90.2%) of the patients had viral load less than 1000 copies/ml, with 530 (90.4%) having undetectable viral load (<50 copies/ml). Age, duration of ART, and baseline haemoglobin level <11.0 g/dL were associated with virological failure in univariate analysis. In the

multivariate model, age and duration of ART were significantly associated with virological failure. Patients above 30 years of age were 62% less likely (aOR=0.38; 95% CI [0.22, 0.67], $p=0.001$) to have virological failure compared to those aged 30 years and below. Compared to patients on ART for less than 2 years, patients on ART for 2.0-4.9 years of were twice more likely (aOR=2.48; 95% CI [1.16-5.28], $p=0.019$), and those on ART for ≥ 5 years were three times more likely (aOR=3.10; 95% CI [1.41-6.84], $p=0.005$) to have virological failure.

Conclusion: Our findings suggest that virological failure mostly occurs in younger HIV positive patients on ART for a long duration. There is need for intensive viral load monitoring and adherence counseling in the younger patients on ART for a long duration if viral suppression is to be achieved in line with the 90-90-90 targets.

Abstract 114

Outcomes after switch to partially active second-line regimens in Southern Africa – a prospective multi-center cohort study in rural Lesotho

Isaac Ringera¹, Thomas Klimkait³, Mokete Motlatsi¹, Thabo Ishmael lejone¹, Niklaus Daniel Labhardt⁴, Bernard Cerutti²

¹*Solidarmed Lesotho, Maseru, Lesotho*, ²*University of Geneva, Medical faculty, Geneva, Switzerland*, ³*Department of Biomedicine, Haus Petersplatz, molecular Virology, Basel, Switzerland*, ⁴*Swiss Tropical and Public health institute, Basel, Switzerland*

Background: Data on outcomes of patients switched to second-line anti-retroviral therapy (ART) in rural resource-limited settings are still scarce. The study on comorbidities and virologic outcome among patients on ART in rural Lesotho (CART-1 study, NCT02126696) followed prospectively children and adults who were switched to second-line ART in 10 clinics of two rural districts in Lesotho, Southern Africa.

Methods: Patients with first-line ART treatment failure were switched to second-line consisting of ritonavir-boosted lopinavir and two nucleosid reverse transcriptase inhibitors (NRTI). Outcomes were assessed 12 months after switch. Viral

suppression was defined as viral load (VL) < 100 copies/mL. A second-line regimen was defined as “partially active” if pre-switch genotype resistance testing (GRT) revealed at least “low-level resistance” according to the Stanford drug-resistance database against both second-line NRTIs.

Results: Of 63 adults and 21 children outcomes could be ascertained 12 months after switch to second-line. Among adults 15 (24%) had died or were lost to follow-up (LTFU), 16 (25%) retained in care with unsuppressed VL, and 32 (51%) had achieved viral suppression. Among children three (14%) died/LTFU, 9 (43%) had unsuppressed VL, and 9 (43%) achieved viral suppression.

Socio-demographic characteristics (age, gender, education, household-wealth, and distance to facility) nor adherence assessed by pill-count were associated to viral re-suppression. Patients who were switched on a partially active second-line regimen harbouring resistance against both NRTIs of their second-line backbone were significantly more likely to achieve viral suppression (Odds-ratio: 8.7, 95%CI: 2.5-30.6).

Conclusions: Outcomes of patients switched to second-line ART were generally poor with 51% of adults and 43% of children retained in care and virally suppressed 12 months after switch. Paradoxically, receiving a partially active second-line regimen was associated with better outcomes. Detection of multiple drug-resistance mutations in pre-switch GRT may reflect drug-pressure on virus, indicating that pre-switch the patient was adherent.

Abstract 115

Cardiovascular risk score in HIV infected adults in Côte d'Ivoire, Africa

Guehi Calixte Haba Hebane^{1,5}, Gabillard Delphine², Moh Raoul^{1,2,3}, Badjé Anani^{1,2}, Kouamé Menan Gérard¹, Ouattara Eric², Ahibo Hugues⁴, N'Takpé Jean Baptiste¹, Leccarou Jerome², Eholié Serge Paul^{1,3}, Anglaret Xavier^{1,2}, Danel Christine^{1,2}

¹PACCI/ANRS, Abidjan, Côte d'Ivoire, ²INSERM, Bordeaux, France, ³Department of infectious diseases, CHU Treichville/Abidjan, Côte d'Ivoire, ⁴CeDRoS, CHU Treichville/Abidjan, Côte d'Ivoire, ⁵USAC, CHU Treichville/Abidjan, Côte d'Ivoire

Background: Data on cardiovascular risk (CVR) score among HIV-infected patients in sub-Saharan Africa are scarce. Our first objective was to compare the CVR score of Framingham with BMI and lipids at baseline, and secondary to assess its evolution over time at Month 30 in the Temprano trial.

Materials and Methods: HIV-infected adults with CD4 <800/mm³ without criteria for initiating ART were included and followed for 30 months in the Temprano trial, which assessed the benefits and risks of early antiretroviral treatment (ART) vs deferred ART. For patients who attended the M30 visit, we compared the prevalence of CV risk factors between M0 and M30 for women and men with McNemar test, Chi² test, or Fisher's exact test. CVR score was estimated at baseline and Month-30 using Framingham equations with either BMI or lipids and classified as high (>20%), moderate (10-20%), and low risk (<10%). We estimated the concordance between the two Framingham equations using the Pearson correlation test at baseline. Odds Ratio with confidence interval (CI 95%) and p-value were calculated using proportional odds cumulative logit models with random effects to compare the risk of having a higher CV risk score (Framingham score in 3 classes) between M0 and M30.

Results: Among the 2056 patients, 78% were women, median age was 35 years, and median CD4 was 464/mm³, 6.8% were obese, 6.3% had hypertension, 7.8% were smokers (1.8% women, 26.8% men), 19% had Total Cholesterol>5mmol/L, and 1% diabetes at baseline. All cardiovascular risk factors (age, overweight status, waist circumference, high blood pressure, diabetes mellitus, TC, and triglycerides), significantly increased in both sexes between M0 and M30, except for obesity and triglycerides in men. At baseline the concordance between the two Framingham equations was excellent (r= 0.95; p<0.0001). Among the 1700 patients who attend M30 and with available data, 1.3% were at high CV risk score at baseline and 3.1% at M30 using Framingham equation with BMI. aOR of being at a higher CV risk score at M30 compared to a higher CV risk score at M0 was 1.35 (CI 95% 1.17-1.56). Stratified on sex, the increasing CV risk score was OR 1.73 (CI 95%: 1.30-2.29) for women and OR 1.28 (CI 95%: 1.02-1.50) for men. Early ART was not associated with an increasing CV risk score (p=0,88). Results for the 1422 patients with Framingham equation using lipids were similar.

Conclusion: In a large trial evaluating early ART for HIV infection in Côte d'Ivoire, Framingham

equation with BMI and lipids were highly correlated ; Framingham equation with BMI should be recommended to facilitate the prevention of modifiable CVD risk factors, especially in PLWHIV in areas with limited resources. CV risk score increases over time and early ART was not significantly associated with this increasing CV risk score.

Abstract 116

Longitudinal Assessment of CD4 Recovery after ART Initiation in ART-naïve HIV-infected Adults in Four African Countries

Emmanuel Bahemana¹, Allahna Esber^{2,3}, Kavitha Ganesan^{2,3}, Lucas Maganga⁴, Samoel Khamadi¹, John Owouth⁵, Jonah Maswai⁶, Francis Kiweewa⁷, Senate Amasu⁸, Julie Ake², Trevor Crowell^{2,3}, Christina Polyak^{2,3}

¹Walter Reed Program Tanzania, Mbeya Tanzania, Mbeya, Tanzania, United Republic Of, ²U.S. Military HIV Research Program, Walter Reed Army Institute of Research, USA, ³Henry M. Jackson Foundation for the Advancement of Military Medicine, USA, ⁴Mbeya Medical Research Center, National Institute for Medical research, Tanzania, United Republic Of, ⁵Walter Reed Project HIV Program, Kenya, ⁶Walter Reed Project, Kericho, Kenya, ⁷Makerere University-Walter Reed Project, Uganda, ⁸US Military HIV research Program, Abuja, Nigeria

Background: With mortality rates decreasing from increasing use of combination antiretroviral therapy (cART), HIV infected adults are surviving longer. Characterizing the impact and efficacy of cART use in older adults can inform care strategies for this population, particularly in resource-limited settings where access to cART is now rapidly expanding. We examined changes in CD4 count after first-line cART initiation, stratified by age, in a unique longitudinal cohort across four African countries.

Methodology: The African Cohort Study (AFRICOS) prospectively enrolls adults at 11 PEPFAR-supported facilities in Tanzania, Uganda, Kenya and Nigeria. HIV management history and laboratory assessments, including CD4 counts, were obtained at enrollment and every 6 months thereafter. ART-naïve adults who started ART while in the cohort and underwent evaluations six and twelve months after ART initiation were included in these analyses. Participants were categorized into

two groups by age: <50 and >50 years based on the WHO definition for older age. We assessed the association between age group and population-averaged CD4 count using linear regression with generalized estimating equations and an independent working correlation to account for repeated observations in the same individual. Variables for time since ART initiation and the interaction between age group and time were included in the model to evaluate longitudinal changes in CD4 by age stratum.

Results: Between January 2013 and January 2017, 72 HIV-infected, ART naïve participants were enrolled in the study and were eligible for inclusion in these analyses; Kenya (n=43), Uganda (n=27), Tanzania (n=8) and Nigeria (n=4). Participants had a median age of 38.6 years (interquartile range 30.3-46.1) and 48 (67%) were female. 61 (85%) participants were <50 years old and 11 (15%) were >50. At the time of ART initiation, participants who were >50 had a lower mean CD4 count than did participants <50 years old (199 vs 310 cells/mm³, p<0.001). This disparity between the older and younger age groups persisted after 12 months of ART (256 vs. 361 cells/mm³, p<0.001), representing a mean increase of 59 cells/mm³ in the older group compared to 51 cells/mm³ in the younger group.

Conclusion: Despite lower baseline CD4 counts and immune senescence that is inherent in aging, current case finding strategies are probably inadequate for older individuals. Participants >50 years old in this cohort demonstrated similar CD4 responses to ART initiation as were observed among younger participants. Additional measures of immune recovery need to be assessed.

Abstract 117

HIV CNS compartmentalization among HIV-1 infected subjects in Malawi

Olubusuyi Adewumi¹, Shuntai Zhou², Taiwo Babafemi^{3,4}, Kevin Robertson⁵, Ronald Swanstrom², ACTA Study group, Malawi⁶

¹University Of Ibadan, Ibadan, Nigeria, ²Lineberger Comprehensive Cancer Center and UNC Center For AIDS Research, University of North Carolina., Chapel Hill, USA, ³Department of Medicine, Northwestern University, Chicago, USA, ⁴Center for Global Health, Northwestern University, Chicago, USA, ⁵Department of Neurology, School of Medicine, University of North Carolina., Chapel Hill, USA, ⁶ACTA Study group, Malawi.

Background: We have shown HIV-1 compartmentalization and differential genotypic evolution in the central nervous system (CNS) of subjects infected with several different HIV-1 subtypes. Such distinct populations often occur late in infection, hence with high viral load in the blood and opportunistic infections (OIs). Little is known about the impact of OIs on HIV-1 CNS compartmentalization. We investigated HIV-1 compartmentalization in the CNS of subjects with cryptococcal meningitis (CM).

Methods: A total of 32 paired blood plasma and cerebrospinal fluid (CSF) samples collected from HIV-1-infected participants with CM in the ongoing ACTA study in Malawi were analyzed. Viral RNA was extracted from plasma and CSF, and cDNA synthesis (using Primer ID to tag individual templates), and PCR amplification of the V1/V3 region of env were done. Pooled libraries of the V1/V3 amplicons were analyzed by deep sequencing, and subsequently subjected to phylogenetic analysis to determine evolutionary association.

Results: HIV-1 RNA viral load of participants ranged between <320 – 680,442 copies/mL and <320 – 43,583 copies/mL, in the plasma and CSF, respectively. Overall, 16 participants had detectable HIV-1 RNA in both plasma and CSF, and 9 of the participants had sufficient levels of virus in the CSF to allow analysis. All recovered sequences were most closely related to HIV-1 subtypes C. Deep sequencing demonstrated varied levels of HIV-1 CNS compartmentalization in 3/9 participants, and equilibrated viral populations in the plasma and CSF in one participant. Successful amplification was recorded in one participant despite low (CSF:<320 copies/mL; plasma: 356 copies/mL) copies of viral RNA.

Conclusions: We demonstrated CNS-compartmentalized viral populations in a subset of these participants infected with subtype C HIV-1 and presenting with CM. Overall, we did not observe a distinctive pattern of CNS compartmentalization in the presence of CM.

Successful amplification from a participant with very low viral RNA confirms the effectiveness of deep sequencing technique as a tool for sampling viral population. Extremely high viral RNA levels observed in the CSF of participant ACTA 3179 may be due to the transfer of infected T cells into the CSF/CNS as part of an inflammatory response indicating a possible contribution of the CM in this case.

Abstract 118

Markers of monocytes activation associate with cognition in East Africa

Brandon Imp^{1,2}, Michael Eller^{3,4}, Allan Olwenyi Omalla^{5,6}, Eric Rono⁶, Elaine Allen¹, Francis Kiweewa⁵, Hannah Kibuuka⁵, Jonah Maswai⁶, Christina Polyak^{3,4}, Julie Ake³, **Victor Valcour¹**

¹Memory and Aging Center, Department of Neurology, University of California, San Francisco, San Francisco, United States, ²Rutgers Robert Wood Johnson Medical School, New Brunswick, United States, ³US Military HIV Research Program, Walter Reed Army Institute of Research, Silver Spring, United States, ⁴Henry Jackson Foundation, Bethesda, United States, ⁵Makerere University Walter Reed Project, Kampala, Uganda, ⁶Walter Reed Project, Kericho, Kenya, ⁷Department of Immunology, Pathology and Microbiology, University of Nebraska Medical Center, Omaha, United States, ⁸Department of Epidemiology and Biostatistics, University of California, San Francisco, San Francisco, United States

Background: Cognitive impairment persists despite access to combination antiretroviral therapy (cART) and impacts quality of life and other outcomes. Chronic inflammation likely contributes to the HIV neuropathogenesis and has been widely investigated in resource-rich settings. Biomarkers of monocyte immune activation have been linked to cognition in these resource rich settings; however, few studies investigate associations in the African context where co-existing infectious diseases may modulate the effects. We sought to examine both T-cell and monocyte activation markers in Uganda and Kenya.

Materials & Methods: We characterized biomarkers in a subset of HIV-infected and uninfected individuals randomly selected from the Kenya and Uganda sites of the AFRICOS longitudinal cohort study. All underwent a 25-minute

cognitive assessment using the WHO auditory verbal learning test, trail making A, the grooved pegboard test, and action fluency task. We calculated standardized z-scores in comparison to age- and education- stratified HIV-uninfected participants and combined individual z-scores to create a composite NPZ score as the main outcome predictor. We quantified T-cell activation (principally the frequency of HLA-DR+CD38+, CD4+ or CD8+ T lymphocytes), markers of monocyte activation (sCD163, and sCD14), and less specific inflammation markers using commercial enzyme-linked immunosorbent assays or Luminex xMAP® multiplex assays (R&D Systems, Minneapolis, MN).

Results: We examined 290 HIV-infected participants alongside 104 HIV-uninfected participants of similar age. The HIV-infected group had a mean (SD) age of 40.9 (9.5) and proximal CD4 of 402 (232) cells/mm³. Among them, 217 were on cART and 57% had an education level of primary school or less. By country, 72 HIV-infected and 28 HIV-uninfected were from Uganda with 216 and 76, respectively, were from Kenya. In terms of monocyte activation markers, sCD14 was associated with our NPZ outcome measure in models adjusted for HIV status and country ($p=0.0037$); however, sCD163 was not. No significant interactions between HIV status and country were significant for any models. T-cell activation was not associated with our cognitive outcome.

Conclusions: In contrast to studies examining monocyte activation and cognition from the United States, sCD163 was not associated with cognition in the African context; however, sCD14 was associated with cognition in the full cohort and this association was not modulated by HIV status. sCD14 serves as a co-receptor for lipopolysaccharide on bacterial walls and may be perturbed by infectious pathogens besides HIV, particularly those from gut origin. Our preliminary findings are supportive that the etiology of inflammation and cognitive impairment in the African context may involve influences from HIV and non-HIV inflammatory sources.

Abstract 119

Missing TB Cases in ART services in Zambia: results from a cross sectional study conducted in Kabwe District

Bosco Mukanyimi¹, Gift Sitenge¹, Mtumbi Goma¹, Prisca Kasonde¹, Mushota Kabaso¹, Patrick Katayamoyo¹, Thierry Malebe¹, Michael Welsh¹

¹ZPCT IIB / Fhi360, Kabwe, Zambia

Background: Tuberculosis (TB) is a major cause of morbidity and mortality among People Living with HIV (PLHIV) in the Resource Limited Setting (RLS), including those taking Antiretroviral Therapy (ART). Undiagnosed TB patients accessing ART services present an important infection control risk. The actual risk might be higher among newly enrolling ART-naïve patients who might have undiagnosed disease since they spend more time with their peers preparing for ART initiation. On random review of patient files, we observed that only a minority of PLHIV were screened for TB in ART services, hence delaying access to life-saving interventions. We therefore aimed to systematically assess the status of TB screening among PLHIV enrolled in ART services in Kabwe district of Zambia.

Methods: This was a retrospective cross-sectional study conducted at seven ZPCT IIB supported Ministry of Health's ART centers in Kabwe. We randomly selected patients' records (pre-ART and ART) aged between 15 to 54 years, seen between July and December 2013 for inclusion in the analysis. We extracted data from TB registers and the electronic health record system (SmartCare). We compared facility average for smear negative and positive replicates using the one-way Analysis of Variance (ANOVA). We also used the multiple regression and correlation to determine the relationship between TB symptoms and TB status. Lastly, we used Pearson's Chi-Square test of independence to test whether there is a relationship between TB status and the level of education.

Results: Of the 333 patients with positive TB symptoms screen, only 73 (21.9%) were provided with a standard TB diagnostic evaluated; of which 25 (34.2%) were smear negative, 17 (23.3%) smear positive and 31 (42.5%) had unknown status. A greater proportion of smear positives were in the age group 30-34 with 29.4%, followed by those in

the age groups 35-39 and 25-29 with 23.50% (4/17) each. A greater proportion with unknown status was found in two age groups (35-39 and 40-44) representing 22.6% each. Variability in performance was observed between sites. Out of the 73 (21.9%) patients screened for TB diagnosis, 47 (64.4%) were on ART against 26 (35.6%) who were on pre-ART. At 95% confidence level, the p-value was < 0.05 ($p = 0.00000113$) and the confidence interval (CI) was 1.9973921 - 4.376452556. Further, of the four TB symptoms (cough, fever, weight loss and night sweats), cough and fever showed a positive correlation with sputum smear positive (95 CI:0122, 0.152).

Conclusion: We found that only a minority of PLHIV were screened for TB in ART services; with age groups and sites performance variances. Cough and fever showed a positive correlation to TB smear positive. The higher rate of unrecorded or unknown sputum smear results observed is a missed opportunity. More research is needed to determine the most effective means of screening all PLHIV for TB in ART services.

Abstract 120

Aging with HIV infection and locomotor disorders: experience of the Infectious and Tropical Diseases Unit, Abidjan, Côte d'Ivoire

Zélica Diallo^{1,3}, Aristophane Koffi Tanon^{1,3}, Eboi Ehui^{1,3}, Doumbia Adama^{1,3}, Chrysostome Melaine Mossou^{1,3}, Karine Peres², Serge Paul Eholie^{1,3}, Aka Kakou^{1,3}

¹Service des Maladies Infectieuses et Tropicales, CHU de Treichville, Treichville, Côte D'ivoire, ²Institut de Santé Publique d'Epidémiologie et de Développement de l'Université de Bordeaux, Centre de Recherche INSERM U897, , France, ³Unité de Formation et de Recherche des Sciences Médicales, Département de dermatologie-infectiologie, Université Félix Houphouet Boigny, Cocody, Côte d'Ivoire

Objective: The aim of the study was to estimate the prevalence of locomotor disorders among people living with HIV in Abidjan.

Methods: A cross-sectional study was conducted in April–July 2014 at the Department of Infectious and Tropical Diseases in Abidjan. Data were

collected with a questionnaire and four tests of locomotor function: 4-m walking speed, five timings from sit to stand, the timed “up and go” test and standing on one leg with the eyes closed. Logistic regression models were used to find factors associated with locomotor disorders.

Results: Of the 308 patients included in our study, 67.5% were women, and the median age was 45 years. The median duration of HIV infection was 91 months, and 97.4% were receiving antiretroviral therapy. The locomotor test that showed the most frequent alteration (87% of patients) was standing on one leg with the eyes closed. The prevalence of locomotor disorders was estimated to be 34% (95% confidence interval (CI), 28.8–39.4). In the multivariate analysis, age (odds ratio (OR), 1.9; 95% CI, 1.1–3.2; $P = 0.014$) and body mass index (OR, 2.5; 95% CI, 1.5–4.3; $P = 0.001$) were significantly associated with the presence of locomotor disorders. No association was found with time since diagnosis of HIV infection or antiretroviral therapy.

Conclusions: The prevalence of locomotor disorders among people living with HIV is high. Strategies should be developed to screen and treat these disorders in order to limit functional impairment in this population

Abstract 121

The cohort study of HIV-associated seizures and epilepsy (CHASE) Study: Early insights among children

Edward Phiri¹, Manoj Mathews², Musaku Mwenechanya², Melissa Elafros³, Mwila Kabwe⁴, Michael Potchen^{5,6}, Christopher Bosisis⁷, Clara Belessoitis⁸, Allison Navis⁹, Omar Siddiqi⁴, Izukanji Sikazwe¹⁰, David Bearden⁶, Ornella Ciccone¹¹, Gretchen Birbeck^{1,6}

¹Chase Study, Lusaka, Zambia, ²Lusaka Children's Hospital, Lusaka, Zambia, ³Johns Hopkins Hospitals, Baltimore, USA, ⁴University Teaching Hospital, Lusaka, Zambia, ⁵Lusaka Apex Medical University, Lusaka, Zambia, ⁶University of Rochester, Rochester, USA, ⁷Greater Lawrence Family Medical Center, Boston, USA, ⁸UTH Neurology Research Office, Lusaka, Zambia, ⁹Mount Sinai Hospital, New York, USA, ¹⁰Center for Infectious Disease Research in Zambia (CIDRZ), Lusaka, Zambia, ¹¹Paediatric Centre of Excellence, Lusaka, Zambia

Introduction: Seizures are common in HIV positive adults, but there is little data on seizure incidence in children with HIV and the risk of chronic epilepsy after an acute seizure in HIV+ children is unknown. Drug interactions between common antiepileptic drugs (AEDs) used in Africa and antiretrovirals are of grave concerns. To address this knowledge gap, in April 2016 we expanded recruitment in the CHASE study to include children. CHASE is a prospective cohort study of HIV+ individuals with new onset seizure that aims to identify the cause(s) of the seizure and the risk of developing a chronic seizure disorder (i.e. epilepsy).

Methods: From April 2016, children admitted to Lusaka Children's Hospital with a first seizure were reviewed for eligibility. Inclusion criteria were HIV+ and new onset seizure in the past 6 weeks. If HIV status was not documented in the medical record, the child was tested. For consented children, in addition to those offered in usual care, diagnostic studies made available included brain MRI with gadolinium on a 1.5T MRI interpreted by a board certified neuroradiologist, EEG, serum viral load, cryptococcal antigen (serum and CSF), CSF Gene Xpert, CSF culture for tuberculosis, and a panel of CSF PCR studies for common opportunistic infections. Children were then followed through their HIV Clinic visits for seizure recurrence, AED use (if applicable), and ART adherence with quarterly neurodevelopmental assessments. Clinic visits were complemented by monthly phone calls as needed to assure contact with family on a monthly basis to inquire regarding seizure recurrence.

Results: To date, 18 children have been enrolled. Four children were already on ART, 14/18 were newly diagnosed with HIV and 7/14 children were sentinel cases of HIV that facilitated identification of HIV in the mother and other family members. Clinically, the CD4 was mean 281 (14.8%), median 310 (10%). Seizure etiologies were identified in 12/18 with 10 of these being HIV-related (opportunistic infection, HIV encephalopathy, immune reconstitution inflammatory syndrome), one case of possible non-accidental trauma and one due to old perinatal stroke. Three children were discharged on AEDs. To date, 13/18 children have already died with 7/18 children dying during the index admission and 6/18 during follow-up. None of the 5 survivors have recurrent seizures. CNS infections, suspected tuberculosis, and severe malnutrition were noted to be the causes of death.

Conclusion: New onset seizure in children with HIV is a highly fatal condition with heterogeneous etiologies for both seizure and death. In the setting

of otherwise successful programs to prevent vertical transmission and facilitate early diagnosis and treatment, seizures in children with unknown HIV status may be a marker for undiagnosed advanced HIV. Enrollment is ongoing and neurologic outcomes in the survivors will be monitored in the years to come with the aim to identify risk factors for mortality and epilepsy in this population.

Abstract 122

Mortality and its predictors in a cohort of HIV infected patients in East Africa and Nigeria

Hannah Kibuuka¹, Francis Kiweewa¹, Ezra Musinye¹, Jonah Maswai², John Owouth³, Lucas Maganga⁴, Senate Amusu⁵, Michael Semwogerere¹, Christina Polyak^{6,7}, Julie Ake⁶, AFRICOS team

¹Makerere University Walter Reed Project, Kampala, Uganda, ²Walter Reed Project, Kericho, Kenya, ³Walter Reed Project HIV Program, Kisumu West District, Kisumu, Kenya, ⁴Mbeya Medical Research Program, Mbeya, Tanzania, ⁵US Military HIV research Program, Abuja, Nigeria., ⁶US Military HIV Research Program, Bethesda, USA, ⁷Henry Jackson Foundation, Bethesda, USA

Background: Measurable reduction in HIV associated mortality is an important outcome of Anti-Retroviral Therapy. In the past, predictors of mortality have primarily been described from retrospective data. The African HIV Cohort Study accords us the opportunity to prospectively evaluate predictors of mortality in mature ART programs in Africa.

Methods: The African HIV Cohort Study prospectively enrolls adults at 11 PEPFAR-supported facilities in Uganda, Kenya, Tanzania and Nigeria. HIV management history and laboratory assessments to include CD4 counts and viral load were obtained at enrollment into the cohort and every 6 months thereafter. Mortality data from Jan 2013 to Feb 2017 was analyzed excluding data from participants that had completed only a single visit unless status change data was available. Person time, mortality rates and site adjusted Cox proportional hazards models were fitted to evaluate the predictors of mortality.

Results: Data from 2018 HIV infected participants was used for the analysis. Overall median age was

40 years (IQR: 33-48) and majority were female (58.8%). Participants from the Nigeria sites were significantly younger (median 38.7, IQR 33.7-43.2) compared to participants from other sites. Over a median follow up period of 1.52 years (3297.62 person years), a total of 53 deaths were observed translating into a mortality rate of 16.07/1000 PY (95%CI: 12.28-21.04). Mortality was significantly higher (242.66/1000PY) among ART naïve compared to ART experienced participants (12.62/1000PY). The risk of death in the first 6 months of follow up was higher among ART naïve compared to ART experienced participants (HR:26.67, 95% CI:9.49-74.93, $p < 0.001$). Mortality rate was highest in Uganda and lowest at the South Rift valley sites in Kenya (27.67 and 9.82/1000 PY respectively). The lag time (days) between HIV diagnosis or medical eligibility and ART initiation was longer at the Ugandan site ($p < 0.001$) compared to other sites. Predictors of mortality included; not using ART, HR 29.81 (10.74-41.48, $p < 0.001$); being underweight at enrollment into the cohort, HR: 2.02 (95% CI: 1.06-3.86, $p = 0.022$); CD4 \leq 350 cells/ μ l at enrollment into the cohort, HR 4.60(95% CI: 2.44-8.89, $p < 0.001$) and at most recent visit, HR 6.38(95% CI: 3.52-11.66, $p < 0.001$) and log viral load copies/ml at both enrollment into cohort and most recent visit, HR1.47 (95%CI: 1.30-1.67, $p < 0.001$) and HR 1.62 (1.45-1.82, $p < 0.001$) respectively. Causes of deaths were reported only in a minority of participants (28.3%, 15/53) and included malignancy (3/15), infectious causes (4/15), acute renal failure (1/15), anemia (2/15), HIV wasting syndrome (2/15), AIDS (2/15) and Post-partum hemorrhage (1/15).

Conclusion: Our data further re affirm the importance of ART initiation in minimizing HIV associated mortality and supports the current guidelines of test and treat.

Abstract 123

Building HIV-1 Drug Resistance Testing Capacity in Support of the Kenyan National HIV Control Program

Elizabeth Luvai¹, Norah Saleri¹, Yvonne Scriven¹, Matilu Mwau¹

¹Kenya Medical Research Institute, Nairobi, Kenya

Background: Achieving viral suppression is the primary goal for people living with HIV on Antiretroviral therapy (ART). In Kenya, almost 1,000,000 people are on HAART (Highly active antiretroviral therapy), and viral load testing has been a standard of care since 2014. Despite intense adherence counselling, up to 20% of those on HAART have viral loads that exceed 1000 copies/ml. It has not been possible to determine what the main cause of these elevated viral loads is, but the emergence of drug resistance has been implicated in several studies. Preliminary data analysis suggests that up to 300,000 (20%) Kenyans on HAART may be eligible for drug resistance testing. On a small scale, the Kenya Medical Research Institute(KEMRI) has been involved in HIV-DR testing for research purposes since 2000. Several research scientists both from KEMRI and from the University of Nairobi have acquired expertise in the subject matter, but these skills have not been systematically transferred to hands-on technicians and research students who would be of immense value in national service delivery.

Methods: Technical and infrastructural support was provided through a consensus between Kenya Medical Research Institute, the Clinton Health Access Initiative and several other partners. In addition Dr. Richard Harrigan based in University of British Columbia who focuses primarily on HIV drug resistance has offered technical support for capacity building. The samples used for the pilot were plasma and dried blood spots (DBS) collected from various parts of Nairobi. RNA extraction from plasma and DBS was done using Abbott mSample Preparation System (m2000sp) and Qiagen® RNA extraction kit respectively. The HIV-1 drug resistance testing was done using Thermo Fisher Inc. HIV-1 genotyping kit. An ABI 3500 analyser that can deliver up to 15 genotypes per week was available for use to sequence the samples.

Results: Six scientists have been trained, and the first HIV-1 sequences delivered successfully. The major Nucleoside Reverse Transcriptase Inhibitors(NRTIs) mutations were M184V, K65R, M41L while major Non-nucleoside Reverse Transcriptase Inhibitors(NNRTIs) mutations were Y181S, K103N, and G190A. The mutations observed, correlate with previous studies done which were indicated in HIV-1 treatment failure.

Conclusions and recommendations: The main challenge observed in the pilot was difficulty in extracting and amplifying RNA from DBS. Hence further optimization is required on the DBS as a sample for HIV drug resistance testing. In

conclusion the extent of detectable viral loads in those on HAART, drug resistance testing capacity needs to be scaled up in Kenya. Although very few tests have been done, it is likely that drug resistance mutations are common, and that this reality will profoundly influence the current approach to HAART delivery.

Abstract 124

Challenges of Access to treatment by people living with HIV in Malawi

Mr. George Kampango¹

¹*Malawi Network of People Living with HIV (MANET+), Lilongwe, Malawi*

Background: In collaboration with two media houses, MANET+ undertook a survey to establish challenges being cited by people living with HIV on accessing treatment. The survey was conducted in five districts with PLHIV of ages 15 – 49 years, both women and men. A total of 150 people living with HIV were reached in the five districts of the survey.

Results/ Key Findings: Stigma and Discrimination by health care workers, community members and family members. Some health care providers were blamed for non-adherence to treatment due to attitudes that were deemed stigmatizing, such as rudeness and untimely attendance to people living with HIV (PLHIV). As a result, some PLHIV stop frequenting the health facility. This accounted for 32% Of cases in the survey districts.

Drug pilferage and shortage. In one of the districts, government drugs meant for PLHIV were found in groceries. The Police took up the issue and two culprits were apprehended and convicted to a jail term.

Faith healing: This is one of the factors contributing to PLHIV on treatment abandoning their medication. After a man of God prays for them, they throw away the drugs believing they were healed from HIV; a situation that led to serious illnesses and deaths. All the five districts reported cases of this nature, but most prominent was one in Mangochi where a woman abandoned her treatment and travelled to South Africa with nothing but a bottle of anointed water. Sooner she became ill and nearly died. She was advised to get back to

her medication, and now she won back her health. When asked about her thoughts about faith healing, she quickly responds: "No, I think it is wrong to stop medication. What you need to do is take your medication alongside any prayers in your life."

Long distance to clinics makes it difficult for people living with HIV to travel for refill, making treatment adherence levels poor. Poverty is the commonest perpetrator.

Lack of nutritional support: many PLHIV strongly believe that they cannot take their medication on an empty stomach. They called for government intervention for nutritional support.

Actions taken: Production of TV documentaries on the challenges aired on LUSO TV and MBC TV. Transformational dialogue with Parliamentarians, jointly organised with UNAIDS on Leaving No-one Behind in the national HIV response

Recommendations: Treat AIDS: Stop the Virus by making treatment accessible. Increase resource allocation towards HIV treatment: Budget Allocation to Health with reference to Abuja Declaration. Civil society to continue engaging national level policy makers in advocacy platforms for PLHIV in Malawi

Conclusion: Research findings are key to effective programming because they provide the needed evidence. It is through available evidence from studies and engagement of policy makers that access to treatment can be improved for quality lives of people living with HIV in Malawi. It is also one way of achieving the 90-90-90 targets and making HIV history by 2030.

Abstract 125

Predictors of optimal adherence among HIV/AIDS patients on ART in rural Botswana: A cross sectional study

Lamboly Guy-noel Kumboneki¹

¹*Botswana Upenn Partnership, Gaborone, Botswana*

Background: Optimal adherence to ART plays a key role in achieving the third 90

preventing therefore the emergence a drug resistance virus strain. This study was to assess adherence among patients on ART at Letlhakane Primary Hospital and determine associated factors.

Methods: This cross sectional study was conducted using a convenience sampling method on 182 patients on ARV at Letlhakane Primary Hospital .The WHOQOL HIV BRIEF and the PDRQ-9 instrument in English and Setswana were used to assess respectively quality of life (QoL) and Health care Provider-Patients relationship. QoL scores for each domain were obtained by rescaling the six domains from 4 to 20, with 20 being the most favorable while health care provider patient relationship was assessed using the Likert scale. Adherence score was calculated by the pill count method and patients who scored 95% or more were considered as adherent and those who scored less than 95% were classified as non- adherent. Descriptive and inferential statistics were performed using SPSS (version 20.0).

Results: Between December 2015 and February 2016; 182 patients were assessed for adherence.92 were female (50.5%) and 90 males (49.5%). The mean age was 39.6 with a range 5-64 years. However 8 were illiterate, 52% were single, 14.7% were married and 25% were living as married.

95.1% had an adherence estimated at 95% or more. Moreover, QoL had an overall mean score of 17 and 94.9% had a good relationship with their Health Care Provider. Having received a tertiary education was associated with an adherence rate of 95% ($p=0.003$) or more while there were no significant association between sex and adherence or marital status and adherence.

However; elderly patients (35 years and above) had a significantly high adherence rate compared to their younger counterparts ($p=0.01$). A good relationship with the health care provider and a high QoL score were significantly associated with optimal adherence.

Conclusion: Good relationship with Health Care Provider and improved QoL are strong predictors of optimal adherence to ARV and keys to a successful Anti-retroviral program. Therefore, a multidimensional approach should be prioritized to ensure and maintain the efficacy of this life saving treatment.

Abstract 126

Prevalence of cardiovascular diseases and associated factors among HIV-infected patients during HAART in Abidjan

Nogbou Frederic Ello^{1,2}, Esaie Soya⁴, Patrick Coffie^{1,2,3}, Gisèle Kouakou^{1,2}, Doumbia Adama^{1,2}, Chrysostome Mossou^{1,2}, Alain Kassi^{1,2}, Eboi Ehui^{1,2}, Aristophane Tanon^{1,2}, Icklo Coulibaly⁴, Hugues Ahibo⁵, Aka Kakou^{1,2}, Serge Paul Eholie^{1,2,3}

¹Tropicals and Infectious Diseases Unit of Abidjan, Abidjan, Côte D'ivoire, ²Department of Tropicals and Infectious Diseases , Abidjan, Côte D'ivoire, ³Programme PAC-CI, Abidjan, Côte D'ivoire, ⁴Institut de Cardiologie d'Abidjan , Abidjan, Côte D'ivoire, ⁵Centre de Diagnostic et de Recherche sur le Sida et les Affections Opportunistes (CeDres) , Abidjan, Côte D'ivoire

Background: Non Communicable Diseases (NCDs) are increasing in HIV infected patients long term treated with cART. Few studies have been conducted in low-income countries, particularly in West Africa. We are interested in severe cardiovascular morbidity in HIV-infected patients on antiretroviral therapy (ART).

Objective: To estimate the prevalence of cardiovascular events in HIV-infected individuals long term follow up in the HIV care center of the Unit of Tropical and Infectious Diseases and to assess for factors associated with these events.

Methods: A cross-sectional study was conducted at the Unit of Infectious and Tropical's Diseases (UITD) in Abidjan, from April to July 2015 in HIV-1 infected patients, aged over 18 years, ART treated for at least 12 months. Data were collected using a structured questionnaire directly administrated and in the HIV database of the center). Clinical assessment, laboratory tests, electrocardiogram, transthoracic echocardiography, Doppler ultrasound of the vessels were performed. The primary endpoint was the proportion of patients with severe cardiovascular events (SCE). Analysis of factors associated with severe cardiovascular events was conducted by logistic regression methods.

Results: 278 patients [median age 46 years, Interquartile range (IQR), female 74.5 %, median CD4 Nadir cell count 234, (IQR, 104-251)] were included. 197 (70.9%) were in RTI first line base therapy with a median duration of follow-up of 5 years (IQR, 3.2-9.7 years). At inclusion, 229

(82.4%) of were virologically suppressed (VL < 50 copies, median CD4 cell count was 511 cells / μ L (IQR, 347–528 cells / μ L). The prevalence of SCE was 7.6% [95% CI: 4.74 to 11.32], mainly pulmonary arterial hypertension. In multivariate analysis, Age > 50 years and Nadir CD4 count > 200 cells/mm³ were significantly associated with the prevalence of SCE.

Conclusion: Our study shows a non-negligible prevalence of SCE. Therefore a standardized screening and risk reduction interventions should be routinely undertaken among HIV-infected patients receiving antiretroviral therapy.

Abstract 127

Gynecomastia associated with efavirenz. A report of three cases.

Munyaradzi Mujiri¹, Leonard Mpande¹, Precious Kasine¹, Maria Chiara Frasca^{1,2}, Massimo Migani¹, Luciano Nigro^{1,2}

¹Luisa Guidotti Hospital , All Souls Mission - Mutoko, Zimbabwe, ²Italian League For The Fighting Of Aids - Catania , Catania, Italy

Background: Gynecomastia defines a benign proliferation of the ductal tissue and periductal stroma of the male breast; it could be idiopathic (25%), due to several etiologies, such as, liver and kidney diseases, endocrin disorders, neoplasms of testicles, pituitary tumors, HIV infection (25%), relate to the use of drugs (25%) or to age and puberty (25%). In anti-HIV positives gynecomastia is a rare recognized side effect of antiretroviral treatment (ART) (2-3%) and has been related to the use of efavirenz, stavudine and didanosine. It is well known that side effects during HIV treatment can interfere with adherence and long term prognosis, so it is important to recognize and treat them on time. Few cases of gynecomastia associated to ART in resource limited settings have been described in literature.

Material & Methods: We report three cases presented in our OI clinic at Luisa Guidotti, a rural hospital in Zimbabwe, from January 2015 to December 2016 .

Results: The three patients were 53, 46 and 34 years old, respectively. All presented with tender

enlargement of both breast, the symptoms have started after around one two months of ART initiation. All of them were on treatment with tenofovir/ lamivudine/efavirenz . The patients did not report to have taken other drugs beside ART and co-trimoxazole. No-one of them had HCV or HBV co-infected neither signs of liver cirrhosis . Clinical examination shown both breasts enlarged, soft and painful at palpation; no discharge from nipple was seen. No other signs and symptoms were observed. The CD4 cell count were, 592, 918 and 673 cells/mm³; liver and kidney functions tests were within normal range. A diagnosis of drug associated gynecomastia was suspected for all the patients and efavirenz was switched to nevirapine in their ART regimen. At one month follow-up the breast enlargement was resolved.

Discussion: True gynecomastia, the proliferation of glandular tissue which can affect males of any age, from neonates to adult men, in HIV positive subjects, is usually monolateral with focal and rapid growth; in all the reported cases the onset had been bilateral showing a and after a fast growing , so a drug related etiology was suspected. Several mode of action have been hypothesized to explain gynecomastia ART related, among the most important : a) the increase of IL-2 e IL-6 levels that has been shown to increase the availability of estrogen; b) the inhibition of cytochrome-450 by ART that may determine an increase the estrogen/androgen ratio together with a decrease of the metabolism of estrogen and reduce the biosynthesis of testosterone; furthermore, it has been demonstrated that efavirenz can induce breast cancer cell growth by binding and modulating the oestrogen receptor activity providing a plausible mechanistic explanation for efavirenz induced gynecomastia.

In HIV positive subjects it has been demonstrated an increase of cancer incidence AIDS-associated and not , including breast cancer; the prompt substitution of efavirenz in subjects experienced gynecomastia can help in avoiding defaulters, and in risk patients could be a strategy to prevent the cancer of the breast.

Abstract 128

Infection by HIV, HBV, and HCV leads to joints pain and elevated risk of autoimmune diseases through IgM-RF

Atabonkeng Etienne Philémon¹

¹University of Dschang, Yaoundé, Cameroon

Background: Autoimmune diseases (AID) are diseases in which benign autoimmunity progresses to pathogenic autoimmunity. Some AID are clinically characterized by sensation of pain at joints or others locations of the body. Viruses such as HIV, HBV and HCV are known to stimulate production of autoantibodies by the immune system. The mechanisms aiming to eliminate immune complexes form from autoantibodies can cause organs and tissues damages and lead to the sensation of pain. This cross sectional study carried out in five regions of Cameroon (Center, East, Far North, Littoral and West regions) characterized by climatic and ethnic's diversity aimed at investigating if HIV, HBV and HCV could be implicated on the clinical expression of joint pains on infected patients.

Methods: Male and female humans aged 15 years and above were randomly recruited by a consecutive sampling technique in the main health facilities of selected five regions of Cameroon. Some of them during their consultation claimed to be suffering or had ever suffered of joints pain lasting six weeks and above. Blood samples were collected from each participant and used for serological analyses including HIV-Ab of the human immunodeficiency virus, HBs-Ag of the hepatitis B virus, HCV-Ab of the hepatitis C virus and IgM-RF.

Results: A total of 369 participants were included in the study of which 257 claimed joints pains lasting for more than 6 weeks. Amongst the 40 participants tested positive for HIV+, 21(52.50%) reported pain whereas 19 (47.50%) were pain free. IgM-RF amongst HIV positive participants was 7.5%; the association between HIV and pains was significant ($p = 0.017$). Also, 21 participants were tested positive for HBsAg amongst which 17 (80.95%) reported pains while only 4 (19.05%) didn't reported pains. IgM-RF was 9.5 % amongst HBV positive participants. Association between HBsAg+ and pain was not significant ($p = 0.330$). At last, amongst the 16 HCV+, 5 (31.25%) reported pains

while 8 (didn't report for such pain; correlation between HCV infection and the fact of feeling pain was not significant ($p = 0.452$) even though IgM-RF was 31.25% amongst this group.

Conclusions: This study shows that HIV, HBV and HCV by increasing IgMRF production can induce inflammatory mechanisms leading to joint pain; therefore, more investigations are needed to take care of patients complaining of joints pain in routine.

Abstract 131

A viral load service quality assessment: Preliminary results from Kenya

Kenneth Masamaro¹, Evelyn Ngugi¹, Fredrick Miruka¹, Kieran Shah³, Frank Basiye¹, Jacques Muthusi¹, Abraham Katana¹, Dr Lucy Ng'ang'a¹, Helen Chun²

¹Division of Global HIV & TB (DGHT), US Centers for Disease Control and Prevention (CDC), Nairobi, Kenya, Nairobi, Kenya,

²Division of Global HIV & TB, US Centers for Disease Control and Prevention, Atlanta, GA., Atlanta, United States, ³Abt Associates, Atlanta, GA, Atlanta, United States

Background: Critical to achieving viral load (VL) suppression is the scale up of quality viral load testing and timely management of virologic failure (VF). We conducted a service quality assessment (SQA) of VL monitoring and management of individuals with VF (defined as ≥ 1000 copies/mL) to provide findings to improve efforts in strengthening the system of VL testing and uptake of results.

Methods: An SQA was conducted in 25 Antiretroviral Therapy (ART) clinics in Kenya between April 14 and 21, 2016. Eligible sites included health facilities offering both ART and maternal and child health services with at least 500 patients on ART. We abstracted data from 1,473 randomly selected charts and registers of patients who initiated ART between January 2014 and August 2015, and who met the criteria of having at least one documented VL and a visit 6 months prior to the date of abstraction. We also collected observations from facility staff using a standardized tool. Primary outcomes included site-level compliance with national guidelines on VL monitoring of patients on ART, management of patients with VF, and ART regimen switches for

patients with VF. VL suppression (VS), defined as < 1000 copies/mL) proportions were also assessed.

Results: Of the 1,473 patients, a total of 1,039 adults (68% female) and 434 children (50% female) were analyzed. Only 529 (51%) and 218 (50%) of adults and children, respectively, had a VL performed within the first 9 months of ART initiation. At the first VL measurement post-ART initiation, 974 (94%) of adults and 326 (75 %) of children showed VS. Only 23 (35%) adults and 57 (53%) children with VF received at least one enhanced adherence counseling (EAC), while 8 adults and 28(49%) children received a second EAC. Median time to first and second EAC from date of diagnosis of VF was 94 (range 11-305) and 231 days (range 157-406) for adults, and 113 (range 0-414) and 154 days (range 34-442) for children, respectively. No individuals received 3 EAC sessions. Only 15 (23%) and 28 (26%) patients with an initial high VL had a repeat VL, of which 10 (67%) and 24 (86%) still had VF for adults and children, respectively. Only 1 (10%) adult and 3 (13%) children with a repeat high VL switched ART regimens. Interviews identified a lack of VL specific patient literacy programs, communication barriers between and within the laboratory and clinic, lack of clinical interventions after high VL, outstanding test results, rejected or back logged specimens, and lack of specific adherence interventions for patients with VF vs VS. Documentation inconsistency for VL results and EAC were identified as site level barriers that may negatively impact the quality of HIV services.

Conclusion: Findings from this SQA showed a delayed and inadequate response to interventions following a high VL result. In addition, a sub-optimal lab-clinical interface and documentation inconsistencies were identified. Site level compliance with VL monitoring, prompt identification of patients with VF, quality EAC, repeat VL testing and regimen switches are critical to achieving quality viral load testing.

Abstract 132

Laboratory evaluation of the Xpert HIV-1 Viral Load assay on low volume plasma specimens

Lara Noble¹, Wendy Stevens^{1,2}, Lesley Scott¹

¹University Of The Witwatersrand, Johannesburg, South Africa, ²NHLS, Johannesburg, South Africa

Background: The Xpert HIV-1 Viral Load (VL) assay performs well on plasma specimens, requiring 1ml of plasma. However, low plasma volume specimens are a reality in many laboratories, which raises the question of using a diluted plasma specimen to obtain a VL. We assessed whether this was feasible using HIV-1 subtype C plasma specimens of known VL concentrations.

Methods: The plasma specimens were tested undiluted (1ml) and using 500µl or 200µl across a range of VL (2.7log-5log c/ml). The specimens were diluted in a PBS buffer up to a volume of 1ml (5 repeats of each specimen) and tested immediately by Xpert HIV-1 VL using two GX4 instruments. The dilute VL results were translated to undiluted VL results using conversion factors derived from linear regression analysis. The precision (SD, %CV) and the accuracy (bias, SD of bias, %similarity) were assessed.

Results: All specimens tested reported positive results and no errors were observed. The precision was good across all VL ranges, with a post-conversion average SD of 0.05log c/ml and a percentage CV of 1.44% for the 500µl specimens and an average SD of 0.07log c/ml and a %CV of 2.03% for the 200µl specimens. When compared to the 1ml plasma result, the variability of the bias was low (0.05c/ml for 500µl specimens and 0.07c/ml for 200µl specimens) illustrating good precision. The mean bias was 0.0c/ml (n=25) for either dilution, with upper and lower levels of agreement of 0.29c/ml and -0.18c/ml for the 500µl specimens and 0.25c/ml and -0.41c/ml for the 200µl specimens. The percentage similarity (compared to the 1ml plasma result) was 99.9% (98.3%-101.9%) for the 500µl specimens and 99.9% (97%-102%) for the 200µl specimens.

Conclusions: The Xpert HIV-1 VL assay performed well with low bias when using PBS to dilute the specimens up to the required cartridge testing volume. While performing a dilution and applying a correction factor may not be feasible at point-of-care, when the Xpert HIV-1 VL is placed in a laboratory environment, testing of low volume plasma specimens is both feasible and accurate. The conversion factor could ultimately be programmed into the software to remove the manual conversion which would be problematic in high throughput settings. Further clinical evaluation of the dilution and conversion is being investigated.

Abstract 133

Laboratory evaluation of the Beckman Coulter VERIS HIV-1 Assay

Lara Noble¹, Wendy Stevens^{1,2}, Lesley Scott¹

¹University Of The Witwatersrand, Johannesburg, South Africa,

²NHLS, Johannesburg, South Africa

Background: The unprecedented scale-up of HIV viral load (VL) monitoring to meet the WHO 90-90-90 targets requires testing platforms across all levels of health care delivery. The Beckman-Coulter DxN VERIS Molecular Diagnostic System is a new platform to HIV VL quantification aimed at medium to high throughput laboratories. A standardised, 42 specimen (HIV-1 subtype C) plasma panel was used to measure the precision, accuracy, limit of the blank and carryover components of the VERIS HIV-1 assay.

Methods: Beckman Coulter performed all testing in-house, and returned the blinded HIV viral load results to our laboratory for statistical analysis. A conversion factor of 1.7IU/copy was applied to transform all results into c/ml before statistical analysis. The SD, CV, percentage similarity and bias were used to evaluate the performance of the VERIS HIV-1 compared to the Roche COBAS Amplicor/COBAS TaqMan and Abbott RealTime HIV-1 assays.

Results: The VERIS HIV-1 assay showed overall good performance with no carryover and 100% concordance detecting HIV positive and HIV negative plasma. Precision was good across all VL ranges (2.7log-5log c/ml) with an average SD of 0.05log c/ml and a %CV of 12.2%. Compared to the reference methods the VERIS HIV-1 assay had a high bias (0.82 against Roche COBAS Amplicor/COBAS TaqMan and 0.91 against Abbott RealTime HIV-1), but the variability of the bias was low (0.12), illustrating good precision. The bias was however within acceptable limits in the clinically relevant range (1000c/ml). The percentage similarity (2.2% compared to Roche CAP/CTM and 2.6% compared to Abbott RealTime HIV-1) was also acceptable.

Conclusions: The VERIS HIV-1 assay displayed good performance for measuring HIV VL across all ranges compared to current technology. The polyvalent capabilities of the DxN VERIS platform,

with the ability to perform a range of different tests on individual patient specimens at the same time, make it particularly attractive to medium throughput laboratories. Further laboratory and clinical feasibility and evaluation studies are underway.

Abstract 134

Performance evaluation of CEPHEID | XPERT for HIV-1 viral load assay in selected sites in Kenya

Priska Bwana¹, Joshua Ageng'o¹, Catherine Syeunda¹, Matilu Mwau¹

¹Kenya Medical Research Institute, Busia, Kenya

Background: In Kenya, HIV viral load for monitoring patients on anti-retroviral therapy (ART) is widely inaccessible. As increasing numbers of patients are initiated on ART, demand for viral load tests to identify cases of virological treatment failure or non-adherence is growing. Currently, viral load testing is conducted using reference molecular diagnostics technologies; Abbott M2000 and Roche CAP/CTM which are available at eight centralized laboratories. We sought to evaluate performance characteristics of Cepheid | Xpert for HIV Viral Load assay, a near patient technology, to determine its potential for interchangeable use with the existing technologies.

Method: Using methods comparison study design, remnant patient plasma samples were tested in KEMRI Alupe lab on Abbott m2000 alongside Cepheid | Xpert® HIV VL assay. In five field sites, HIV patients who met the eligibility criteria were consented and blood samples collected.

Results: A total of 430 patients were enrolled in this study. 311 (73%) were female while 114 (26%) were male. Using plasma, the sensitivity and specificity of Xpert HIV VL assay when compared to Abbott m2000 was 92.50% and 100.00%. Comparison on Xpert between; plasma and whole blood reported sensitivity and specificity of 75.00% and 91.53%, plasma and dried blood spot, reported sensitivity and specificity of 0.00% and 63.10% while whole blood and dried blood spot reported sensitivity and specificity of 100.00% and 53.66% respectively. Strength of association between; plasma Abbott and plasma Xpert was $r^2 = 0.91$, whole blood and

plasma Xpert r2 =0.68, DBS and plasma Xpert r2 =0.19 Whole blood and DBS Xpert r2 =0.01.

Conclusion: Plasma Abbott m2000 and plasma Cepheid | Xpert® HIV VL assay are interchangeable but DBS cannot be used on Cepheid | Xpert® HIV VL assay for viral load monitoring.

Recommendation: Using Plasma, Cepheid | Xpert® HIV VL assay can be used for monitoring viral load in HIV patients on ART. Whole blood and DBS should be optimized at sample extraction process to perform as well as plasma.

Abstract 135

Oral fluid HIV self-test performance in rural South Africa

Walter Devillé¹, Hugo Tempelman¹

¹Ndlovu Care Group, Groblersdal, South Africa

Background and Objectives: Self-testing for HIV is one strategy to have more people at risk knowing their HIV-status. The primary objective of this study was to evaluate the ability of untrained users in the general population in a rural area to correctly perform and interpret their own results using an oral fluid HIV Self-Test .

Methods: This was the first large controlled, observational trial in Africa, evaluating the adequacy of the packaging and labelling to direct sample collection, test performance, and reading and interpretation of oral fluid test results for the OraQuick® HIV Self-Test by untrained unsupervised users. The comparator was the study participant's oral fluid result using the same test by a blinded trained professional. Participants coming from the Moutse area, Limpopo were solicited through an HIV Counselling and Testing outreach programme.

Results: Of the 1391 study participants, 113 were included in the Sensitivity Analysis Population and 1278 were included in the Specificity Analysis Population. 48/1391 participants were excluded due to the interpretation by the participant of a self-test result as invalid (n=5), not sure/don't know (n=42), or refused/ambiguous (n=1). This resulted in a Test System Failure Rate of 3.45% (95% CI

2.56%-4.55%). Overall the sensitivity in the untrained users was 99.02% (101/102) [CI = 93.88-99.95%] and specificity 100.0% (1241/1241) [99.62-100.0%]. The 113 positive test results were confirmed by ABON™ HIV Rapid finger prick Test. 1193 participants (84.6%) had at least one observation of difficulty or error with one or more of the test steps. Only 4 tests did not provide a valid result, attesting to the robust performance of the Self-Test.

Conclusion: The OraQuick® HIV Self-Test is safe and effective for use by the untrained user in rural South Africa. Test performance is robust against procedural errors. Additionally, the concept of self-testing was well received by the target population.

Abstract 136

Incidence and timing of hepatotoxicity among HIV positive pregnant women initiating efavirenz-based ART through Option B+ in Malawi

Bryna Harrington^{1,2}, Jacob Phulusa¹, Caroline Melhado¹, McNeil Ngongondo¹, Mathias John¹, Bryan Mthiko¹, Mina Hosseinipour¹

¹UNC Project Malawi, Lilongwe, Malawi, ²University of North Carolina at Chapel Hill, Chapel Hill, United States

Background: Under Option B+, pregnant women initiate ART with tenofovir/lamivudine/efavirenz (TDF/3TC/EFV) without routine liver enzyme monitoring. Previous studies show conflicting results on whether pregnant women have increased risk for hepatotoxicity on EFV-based regimens. With the expansion of Option B+, evidence on hepatotoxicity incidence and timing is necessary for clinical management and patient well-being.

Methods: HIV positive ART-naïve pregnant women attending a public antenatal clinic in Lilongwe, Malawi in 2015-2016 joined a prospective cohort study. All initiated TDF/3TC/EFV through Option B+. Lab values from the first 6 months on ART (enrollment, months 3 and 6) were evaluated for DAIDS Grade 1 or higher alanine aminotransferase (ALT, ≥50 IU/L). We compared differences in ALT elevations by low CD4 count (<250cells/μL) and WHO Stages ≥2 with Fisher's exact tests.

Results: At enrollment of 299 women, median age was 26 (range 17-40), median CD4 count was 352 cells/ μ L (range 11-1099), and 95% were in WHO Stage 1. Elevated ALT prevalence was 0.3% at baseline, 0.4% at month 3, and 7.2% at month 6. The 6-month incidence of elevated ALT was 7.9%. Only 3 women (1.1%) had DAIDS Grade 3 or 4 ALT levels; all 3 were postpartum and not taking other hepatotoxic medications. Of those 3 women, one stayed on TDF/3TC/EFV with resolved ALT levels, one switched to a non-EFV regimen, and one died of fulminant hepatitis despite ART discontinuation (presenting total bilirubin=8.2mg/dL, ALT=7; confirmation bilirubin=18.7, ALT=1937). Low CD4 count was not associated with developing hepatotoxicity ($p=0.62$). A higher proportion of women in WHO Stages ≥ 2 developed elevated ALT (13.3%) compared to women in Stage 1 (6.7%), but the association was not significant ($p=0.28$). Viral hepatitis co-infection status was not available.

Conclusions: A small proportion of women who initiated EFV-based ART during pregnancy developed elevated ALT within 6 months of ART initiation, but all toxicities Grade ≥ 3 occurred postpartum. Neither low CD4 count nor WHO Stage was associated with hepatotoxicity. Our results do not support routine laboratory monitoring in this population; symptom monitoring is likely reasonable under a public health approach. Further follow-up will elucidate postpartum EFV hepatotoxicity timing among Option B+ women.

Abstract 137

Towards the third leg of WHO 90-90-90-: First viral load test results of 2,767 ARV experienced children and adults in Federal Teaching Hospital Gombe, North east Nigeria

Elon Isaac^{1,2}, Iliya Jalo², Yaya Saidu², Yohanna Ghidazuka², Ayomikun Ajani², Bara Jibrin³, Henry Okolie³, Idris Mohammed³, Abubakar Saidu³, Sule Bathna³, John Aremu³, Mohammed Manga⁴, Ayuba Kudi⁴, Haladu Danlami⁴, Mohammed Charanchi⁴

¹Gombe State University, Gombe, Nigeria, ²Department of Paediatrics, Federal Teaching Hospital, GOMBE, Nigeria, ³Department of Internal Medicine, Federal Teaching Hospital, GOMBE, Nigeria, ⁴Department of Microbiology, Federal Teaching Hospital, GOMBE, Nigeria

Background: Viral load is the most important indicator of initial and sustained response to antiretroviral therapy. The National implementation plan for the scale up of viral load testing in Nigeria and ART treatment guidelines was launched in 2016. The Federal Teaching Hospital Gombe in North East Nigeria provides ART services to over 6,000 PLHIV and hosts a PCR laboratory

Materials and Methods: Results of Viral load tests conducted in 2016 on 2,767 PLHIV on ART were analyzed. Variables included; Reasons for viral load request, first Viral load result, Age, Sex, Recent CD4 count, Year of HIV diagnosis, ART start date, ART type, ARVs combinations.

Results: Males were 28% (769/2767) and females were 71% (1950/2767). 5.8% (162/2767) were 0-18 years; 9.0% (248) 19-25years; 59.6% (1649) 26-45years; 12.6% (350) 46-55 years; 4.9% (137) 56-65 years; 6.8% (36) >65 years. 68% (1796/2656) were diagnosed HIV positive from 2011-2015; 29% (782/2656) from 2006-2010; 2% in 2016 and 0.9% from 2000-2005. Reason for viral load request was routine in 89.3%(2471/2766); Suspected clinical and immunological failure in 7.6%(210/2766) and 0.2% (5/2766) respectively; not indicated in 2.9% (80/2766). Antiretroviral therapy was first line in 91.8% (2537/2765); second line 1.1% (31) and third line 0.2% (5). The most commonly used first line combinations were AZT/3TC/NVP 41.0% (1117) and TDF/3TC/EFV 46.6% (1324).

The most recent CD4 count before viral load testing was < 350/mm³ in 34.6% (837/2417); 351-500/mm³ in 22.9% (555); 501-1500/mm³ in 41.1% (996); and >1500/mm³ in 1.2%. All viral load tests were done in 2016. 2763 HIV positive patients had received ART for at least 6 months before the first viral load testing; 7.2% (199/2763) for one year; 63.1% (1744/2763) between 1 and 5 years; 24.5% (678/2763) between 6 and 10 years; 0.6% (17/2763) for >10 years and 4.5% not indicated. Viral load was undetectable in 28.5% (788/2766) of HIV positive patients; <20 copies/ml in 17% (480/2766); 20-40c/ml in 11% (308/2766); 41-100c/ml in 8.3% (230/2766); 101-500c/ml in 12.6%; 501-1000c/ml in 4% (112/2766) and >1000c/ml in 20.9% (578/2766).

Viral load was >1000c/ml in 48.1% (78/162) of children less than 18 years of age. Females constituted 65.3% (378/578) with VL >1000c/ml. 87.8% (507/577) were on first line ART; 1.3% (8/577) second line ART; 0.5% (3/577) on third line ART. ART type was not indicated in 10.2% (59/577). 21.9% (244/1117) on AZT/3TC/NVP and 19.1% (253/1324) on TDF/3TC/EFV had viral load >1000c/ml. VL was >1000c/ml in 29.9% (250/837) with CD4 count <350/mm³; 16.4% (91/555) with CD4 count of 351-500/mm³; 15.1% (151/996) with CD4 count of 501-1500/mm³; 20.7% (6/29) with CD4 count >1500. VL was >1000c/ml in 22.6% (45/199) of those who had received ART for one year; 20.0% (348/1744) 1-5 years; 21.7% (147/678) 6- 10 years and 28.0% (35/125) >10 years.

Conclusion: First viral load test results showed a high percentage of patients with viral load >1000c/ml at least 6 months after starting ART. These findings may have profound implications for ART and overall national HIV programme.

Abstract 138

Remote logging by health facilities in Kenya

Fredrick Ohidi¹, Joy Ndunda¹, Matilu Mwau¹

¹Centre for Infectious and Parasitic Diseases, KEMRI, Busia, Kenya

Background: Viral load testing in Kenya is a standard of care for monitoring patients on highly active antiretroviral treatment (HAART). Testing laboratories have seen an increase in number of samples, data collection forms due to viral load scale up. A short turnaround time is required for timely patient management. Quality viral load monitoring requires time efficiency in testing which has led to the establishment of remote logging. In a remote logging system, facilities are enabled to enter the data remotely thus reducing the need for data entry at the testing laboratory. We report on the effectiveness of remote logging by health facilities served by KEMRI Alupe HIV laboratory.

Methods: KEMRI Alupe HIV laboratory developed remote logging criteria for health facilities to which it provides laboratory services. A 5 – day training on how to log in samples into the system remotely was conducted to users in 20 facilities. Advantages and impact of remote logging on patient management

were discussed during the training. This training was followed by implementation and its performance analyzed.

Results: Analysis of turnaround time for both early infant diagnosis and viral load testing was performed using the average turnaround time 6 months before (February 2016 to August 2016) and after (September 2016 to February 2017) remote logging was introduced to the facilities.

Out of the 20 facilities, 16 facilities (80%) embraced remote logging. The analysis showed an average turnaround time of 30 days for 868 samples in February to August 2016 compared to an average of 6 days for 4139 in September 2016 to February 2017 in early infant diagnosis testing. Viral load turnaround time analysis showed an average of 25.3 days for 87925 samples in February to August 2016 compared to 19.2 days for 53682 samples in September 2016 to February 2017.

Conclusion: Remote logging improves average turnaround time as the findings above show an improvement in average laboratory turnaround time for both early infant diagnosis and viral load testing. The 20% were unable to embrace remote logging due to lack of sufficient resources. There is need for enhanced commitment towards embracing remote logging in viral load monitoring.

Abstract 139

Evaluation of the accreditation process at a HIV reference Laboratory

Joy Mwende Ndunda¹, Catherine Syeunda¹, Matilu Mwau¹

¹Centre for Infectious and Parasitic Disease Research, Kenya Medical Research Institute, Busia, Kenya

Background: Accreditation is acknowledged as the most effective route to comprehensive laboratory quality assurance. In an accreditation system, laboratory resources are evaluated periodically to ensure quality of services on the basis of previously accepted standards. Quality management systems ensure that all the processes, personnel and equipment that go into generation of lab results uphold international best practices in order to guarantee the accuracy and reliability of the results.

Here we evaluate the steps KEMRI Alupe HIV Laboratory undertook in seeking the accreditation.

Methods: KEMRI Alupe HIV laboratory participated in a WHO-SLIPTA stepwise model of accreditation, from September, 2015 to August, 2016. Gaps in the 12 quality system essentials were addressed through development of work plans, team formation, training and mentorship of personnel. Internal audits and assessments by CLSI mentors were conducted and the score progress tracked along a five-star grading scale. Laboratory objectives were laid down and monitored for their achievement. Standard quality indicators; turnaround time, specimen rejection rates, External quality assurance (EQA) performance and customer satisfactory surveys were monitored over the accreditation process and the data that was collected was then analyzed.

Results: The objective of customer satisfaction survey was to ensure that 80% of our customer's needs were met. In 2016, customer satisfaction was at 93 % in the 1st quarter and 94% in the 2nd quarter. The objective of external quality assurance was to ensure that the external quality results obtain at least a score of 80%. DNA-PCR scores under the GAP/CDC EQA program were 100% in the 2015 and 2016. Viral Load scores under the GAP/CDC EQA program were at 80%, 60% and 100% in this period. CD4 count under the QASI Canada program scores were at 75%, 75% and 100%. The objective of monitoring sample rejection rates was to ensure that the rates of sample rejection were reduced to less than 2% during this period which was achieved. Laboratory turnaround time was monitored to ensure that at least 80% of results were dispatched within the set turnaround time for the test profiles. Turnaround time was monitored from August 2015-July 2016 and only results dispatched in August 2015 were below the set target at 70%. Turnaround times from September 2015 surpassed the 80% target.

Conclusion: Improvement in the quality of services delivered by a laboratory is a key component of the accreditation process. The findings above show that improvement of laboratory systems towards accreditation is possible despite lack of initial QMS systems provided there is involvement of staff, commitment by management in terms of finances and resource and teamwork towards excellence. There is a need to ensure sustainability of quality management systems within laboratories through continual staff involvement and management commitment.

Abstract 140

Comparison of Gene-Xpert MTB/RIF system and Auramine-phenol microscopy technique in the Laboratory diagnosis of Mycobacterium Tuberculosis at Mangochi District Hospital Laboratory

Ibrahim Gambuleni¹, Mr Felix Dambula

¹Ministry Of Health, Malawi, Mwanza, Malawi, ²Mzuzu University, Mzuzu, Malawi

Background: Tuberculosis (TB) continues to be a public health problem and cause of misery and death in Malawi and the entire globe at large despite that it can be diagnosed and cured. In Malawi, TB case detection rate of 46% is still below WHO target of 70%. Consequently, false negatives due to a clinical test's insensitivity, inaccuracy and TB microscopical inexperience, pose a detrimental burden on TB control and prevention. Moreover, in Malawi, no any research study has ever been done to compare the effectiveness of Gene Xpert MTB/RIF assay system and Phenol-Auramine microscopy technique and yet some centers use only one method as a final base line laboratory result for TB suspects' management. As such, it is imperative to compare the effectiveness of these two TB diagnostic methods.

Objective: To appraise the effectiveness of Gene Xpert MTB/RIF assay system in the laboratory diagnosis of Mycobacterium tuberculosis.

Methods: The study was experimental and retrospective with qualitative and quantitative aspects in approach. Non-probability convenience method and audit method (for retrospective data) were used. With the experiment, the same number of sputum specimen samples were examined with both techniques until the desired sample size of 100 was attained. Furthermore, 2012-2013 retrospective data from TB records was analysed. Lastly, disguised quality assurance (QA) observations were made.

Results: The study revealed that Gene Xpert MTB/RIF system assay is more effective as compared to Phenol-Auramine Microscopy technique in the laboratory diagnosis of Mycobacterium tuberculosis. This is the case because both the experimental and retrospective

audit data findings confirmed that the positive pickup rate and the positive predictive value (PPV) of Gene Xpert MTB/RIF system assay were much higher than that of Auramine Microscopy. On average, Gene Xpert MTB/RIF system assay increased positive case detection by 40.7 %. Furthermore, it was revealed that Gene Xpert is simple to use with less human error and produces results more rapidly than phenol-auramine microscopy technique.

Conclusion: Gene Xpert MTB/RIF system assay is more effective and efficient than Phenol- Auramine microscopy technique and it was suggested as a recommendation that more Gene Xpert MTB/RIF assay machines should be procured and supplied to all hospitals with TB diagnostic facility service. Furthermore, Gene Xpert MTB/RIF system assay should replace TB Microscopy except when a sputum specimen is from a TB suspect who is on follow up category.

Abstract 141

Viral Suppression among HIV positive patients on treatment in Rural HIV Clinics, South-Eastern Nigeria: A Gender-based Perspective

Prince Obinna Anyanwu¹, Okezie Onyedinachi, Olumide Okunoye, Modupe Odeyale, Andy Eyo

¹Excellence Community Education Welfare Scheme, Abuja, Nigeria, ²Excellence Community Education Welfare Scheme, Abuja, Nigeria, ³Excellence Community Education Welfare Scheme, Uyo, Nigeria, ⁴Excellence Community Education Welfare Scheme, Abuja, Nigeria, ⁵Excellence Community Education Welfare Scheme, Uyo, Nigeria

Background: The goal of HIV treatment is to ensure viral suppression (<1000 copies/ml) within first six months following ART initiation; thus meeting the third 90(having 90 percent of those on ART virally suppressed) of Joint United Nations Program on HIV/AIDS 90-90-90 goal. Initial viral load for patients on Anti-Retroviral Therapy provides useful guide to understanding how effective and suitable the selected regimen is for the individual. Viral load monitoring was introduced to rural HIV clinics in the South-east Nigeria in June, 2015. This abstract reviews gender-based

difference in response to treatment among HIV positive patients at rural HIV clinics in Ebonyi, Enugu and Imo States, South-Eastern Nigeria using viral load test.

Methods: Viral load samples from treatment naïve patients on antiretroviral drugs for at least six months were collected, processed and transferred to Polymerase Chain Reaction reference Laboratory for analysis. Viral load test results retrieved from the reference lab between July 2015 and September 2016 were documented using laboratory registers. The data were collated and analyzed using Microsoft excel and IBM SPSS Statistics 22 (2013) data package. Viral load results less than 1000copies/ml were classified as virally suppressed based on the national guidelines.

Results: 81% of the patients (F=801; M=188) that had access to viral load test were females. 77% (n=620 Females) and 70% (n=131 Males) had less than 1000 viral copies/ml respectively. Viral suppression for all ages was better for females. **Conclusions:** The viral load test results showed Gender-based differences in both access and response to HIV treatment.

Abstract 142

Improving Quality of HIV Testing in PMTCT Sites Using Dried Tube Specimen -Experience from South Eastern Nigeria.

Olumide Okunoye¹, Okezie Onyedinachi, Nsiffiok Okon Sebastin, Godswill Odunze, Prince Obinna Anyanwu, Andy Eyo

¹Excellence Community Education Welfare Scheme, Uyo, Nigeria, ²Excellence Community Education Welfare Scheme, Abuja, Nigeria, ³Excellence Community Education Welfare Scheme, Enugu, Nigeria, ⁴Excellence Community Education Welfare Scheme, Owerri, Nigeria, ⁵Excellence Community Education Welfare Scheme, Abuja, Nigeria, ⁶Excellence Community Education Welfare Scheme, Uyo, Nigeria

Background: Lay Testers provide HIV Testing Service for Pregnant women accessing antenatal care. Quality Assurance procedure for HIV test results from Lay testers is ascertained using Dried Tube Specimen-based Proficiency Testing. This study assesses improvements in the quality of HIV testing at ECEWS supported PMTCT Sites enrolled into Proficiency Testing program in 2014.

Methods: Proficiency Testing using Dried Tube Specimen was administered in cycles of four rounds per year to 158 PMTCT Sites in Ebonyi, Enugu and Imo States, South-Eastern Nigeria. The acceptable Proficiency Testing result pass rate per round was set at 100%. Each Testing point was provided with 2 sets of Proficiency Testing samples per round and results were retrieved within 3 weeks of receiving the samples. The results were evaluated and Corrective Actions recommended for Sites with unsatisfactory outcomes.

Findings: The pass rate for the four rounds were 25%, 41.7%, 13.8%, and 100% in 2014 and 41.5%, 92.7%, 95.4%, and 100% in 2015 respectively.

Conclusion & Recommendations: The quality of HIV testing at the supported sites improved significantly with each round. Quality Assurance monitoring using Dried Tube Specimen should be prioritised in order to ensure accurate, reliable and reproducible HIV testing results from Lay Testers.

Abstract 143

Uptake and ART Outcomes of Women Initiating Antiretroviral Therapy under Option B+ in Malawi: Cox Proportional Hazards and Multistate Survival Models

Andrew Mqanga^{1,2,3}, Lawrence Kazembe³, Baggrey Ngwira³, Lyson Tenthani²

¹Ministry of Health, Lilongwe, Malawi, ²I-tech Malawi, Lilongwe, Malawi, ³University of Malawi, Zomba, Malawi

Background: Prevention of Mother to Child Transmission (PMTCT) remains critical to decreasing paediatric HIV infections. Women have to remain on ART during pregnancy and lactating period in order for PMTCT interventions to be effective. In 2011, Malawi adopted PMTCT Option B+ without any trials to assess effectiveness. To-date, few studies have evaluated effectiveness of Option B+ in low income settings although such information may guide better implementation of Option B+ strategy. This study was a nationally representative and explored the ART outcomes of women who initiated under Option B+ in Malawi. Specifically, this study identified facility and

individual level factors that affect uptake, default and transfer out.

Materials & Methods: We conducted secondary data analysis of the PMTCT Retention of Option B+ Evaluation (PROBE) study collected by Management Sciences for Health (MSH). PROBE study was a retrospective cohort of women attending ANC. In this study, the main outcome variables were ART uptake (patients coming for a second routine visit after the first registration visit) and outcomes (default and transfer out) from ART. Individual and facility level predictors were included in this study. Two models were fitted, Cox proportional hazards model to assess factors associated with ART default. Multi-state models to assess uptake and retention after ART uptake. The standard errors were bootstrapped.

Results: PROBE study collected data on 2,979 Option B+ women. 2,739 women with a total of 17,769 observations had complete information and complete case analysis was used. The 2,739 patients accumulated 2,033 person years. At the end of follow-up, 410 had defaulted, 39 transferred out, 14 died and 4 stopped. In Cox proportional hazards model, the risk of defaulting was 30% lower in Ministry of Health relative to Christian Health Association of Malawi facilities (HR 0.70, 95%CI 0.56-0.87). Pregnant women compared to lactating women had a 64% higher risk of defaulting (HR 1.64, 95%CI 1.29-2.07). Default rate was 21% lower among adults compared to adolescents (HR 0.79, 95%CI 0.62-0.99), 40% lower among women with ART education compared to those without ART education (HR 0.60, 95%CI 0.47-0.77) and 61% higher among symptomatic women compared to asymptomatic (HR 1.61, 95%CI 1.05-2.48). In the multi-state model, sub-hazards were used in the model. Women accessing services in health centres had a 65% higher chance of ART uptake (SHR 0.35, 95%CI 0.30-0.41), 182% among women with ART education (SHR 2.82, 95%CI 2.43-3.26) and 19% lower among symptomatic women (SHR 0.81, 95%CI 0.70-0.94). After ART initiation, the risk of either defaulting or transferring to another facility was not significantly associated with any of the predictors.

Conclusions: The findings suggest that management authority, facility level, status at ART registration, age group, ART education and clinical condition are significantly associated with default from ART. While location of residence was not associated with attrition from ART. Furthermore, accessing ART in health centres, being asymptomatic and ART education were associated with high ART uptake. After ART initiation, none of

the predictors studied were associated with both default and transfer out.

Abstract 144

How quickly does external quality assurance to prevent early infant misdiagnosis of HIV save costs in 4 African countries

Fern Terris-prestholt⁷, Debi Boeras¹, Jason Ong^{1,7}, Sergio Torres-Rueda⁷, Paul Sandstrom², Naseem Cassim³, M. Mwau⁴, Raiva Simbi⁵, Peter Vickerman⁶, Rosanna Peeling¹

¹International Diagnostics Centre, London School of Hygiene and Tropical Medicine, London, United Kingdom, ²Public Health Agency of Canada, National HIV & Retrovirology Laboratories, JC Wilt Infectious Disease Research Centre, National Microbiology Laboratory, Winnipeg, Canada, ³National Health Laboratory Service, National Priority Programme Unit, , South Africa, ⁴University of the Witwatersrand, Department of Haematology and Molecular Medicine, Johannesburg, South Africa, ⁵Jomo Kenyatta University of Agriculture and Technology, , Kenya, ⁶University of Bristol, School of Social and Community Medicine, , United Kingdom, ⁷Department of Global Health and Development, London, UK

Background: Decentralised early infant diagnosis (EID) of HIV using point-of-care testing (POCT) has the potential to narrow current testing gaps, which ranges from 13% to 58% across Kenya, South Africa, Uganda and Zimbabwe. However, without external quality assurance (EQA) systems, POCT can lead to potentially high mis-diagnosis rates. EQA programmes aim to assess the provider proficiency in performing POCT and identify critical gaps in the laboratory systems. Problems identified are addressed through corrective actions. We are the first to model the cost-effectiveness of EQA programmes, with application to POCT EID in these countries, representing varying HIV epidemics and health systems.

Methods: Countries were brought together to develop a national EQA programme and estimated costs related to implementing these programmes using a bottom-up costing approach, including start-up and recurrent costs. Optimal POCT performance was estimated using published data on sensitivity (98.5%) and specificity (99.9%), while a suboptimal programme without EQA was conservatively modelled using lower confidence bounds (sensitivity 91.7% and specificity 99.3%). Assuming

EQA improves programmes to optimal performance, \$/DALY averted was modelled. Potential for a 1-year EQA programme to avert missed HIV infections, false positive diagnoses and unnecessary treatment costs over 20-years was modelled from observed clinical EID POCT performance from published studies.

Results: The national annual incremental cost of EQA, including corrective action ranged from US\$100,000 in Kenya to \$365,000 in Zimbabwe. Even in optimal testing scenarios, misdiagnosis rates are estimated around 0.3%. Without EQA, the misdiagnosis in the deteriorated programme ranged from 1.4% in Uganda to 1.7% in Zimbabwe, or 179 to 555 infants misdiagnosed annually in Kenya and South Africa, respectively. Adding EQA to POCT EID is cost-saving across all countries, i.e. the costs saved by averting unnecessary treatment exceeds the EQA programme costs.

Conclusion: Though EQA would initially require increased funding, it rapidly provides a positive return on investment by averting the costs of treating HIV-negative infants (potentially for life), and save lives by correctly identifying HIV-positive infants needing treatment. This study is the first to demonstrate the value of funding EQA programmes.

Abstract 145

The MoMent Study: An Evaluation of PMTCT Knowledge among Healthcare Workers and Pregnant Women in Rural North-Central Nigeria

Salome Ereka¹, Iboro E. Nta¹, Erika Saunders², Nadia A. Sam-Agudu^{1,3}

¹Institute of Human Virology Nigeria, Abuja, Nigeria, ²School of Social Work, University of Maryland Baltimore, Baltimore, United States, ³Institute of Human Virology, University of Maryland School of Medicine, Baltimore, United States

Background: Effective healthcare worker (HCW)-to-client knowledge transfer is essential, as inadequate client knowledge may hinder health service uptake. In Nigeria, PMTCT service scale-up has been challenging partly due to poor uptake among eligible women, especially in rural areas.

We evaluated PMTCT knowledge among HCWs and pregnant women in rural North-Central Nigeria.

Methods: In this cross-sectional study, random proportionate sampling based on monthly client load was used to recruit pregnant women at antenatal clinics (ANCs) of primary health facilities (HFs) located in rural communities. Additionally, different cadres of HCWs were selected with stratified proportionate sampling across 20 primary HFs participating in the MoMent Nigeria rural PMTCT study. Secondary and tertiary referral centers for the primary HFs were included, since their staff provided technical assistance to the staff at the primary HFs. Structured questionnaires developed from HCW-facilitated ANC client "HealthTalk" curricula and the most current (2014) national PMTCT guidelines were developed. The HealthTalk and national guidelines questionnaires evaluated client and HCW knowledge, respectively. Knowledge Scores (KS) of <50% (Poor), 50-75% (Fair) and >75% (Good) were calculated out of 23 (client) and 21 (HCW) maximum points. T-test and ANOVA compared means and tested associations. Data was collected between October 2014 and May 2016.

Results: A total of 422 pregnant women were interviewed at 11 primary HFs; their age characteristics showed ≤ 19 yr olds comprising 8.3%, 20-24 yrs (31.8%), 25-29 yrs (38.0%), 30-34yrs (15.9%), 35-39 yrs (5.0%) and ≥ 40 yrs (0.9%). Clients' single most reported source of PMTCT information (63.8%) was HCWs. Approximately 7% of pregnant women had no formal education, 30% primary/Qu'ranic, 40% secondary, and 23% tertiary education. Nearly half (46%) of women were primigravid, and 54% multigravidae, with a median of 3 (IQR 3-5) total pregnancies. The majority (88%) of multigravid women had attended ANC for at least 1 previous pregnancy.

A total of 257 HCWs (36.9% doctors, 44.4% nurses, 18.7 % community health workers) were surveyed at 30 HFs comprising 20 (66.7%) primary, 6 (20.0%) secondary, and 4 (13.3%) tertiary facilities.

The proportion of HCWs with poor, fair and good KS were 40.5%, 53.3% and 6.2%. Proportion of clients making poor, fair and good KS were 26.5%, 44.0% and 29.5%, respectively. There were higher KS for HCWs with higher education ($p \leq 0.001$); and recent (within 2 years) PMTCT training ($p \leq 0.001$). Work experience was not associated with HCW KS. For pregnant women, older age >24 yrs ($p=0.031$) and higher education ($p=0.003$) were associated with higher KS. There was no association between

gravity ($p=0.780$) or previous ANC exposure ($p=0.060$) and client KS.

Conclusions: Among HCWs, higher education and recent training, not work experience, was associated with better PMTCT knowledge. For pregnant women clients, older age and higher education, not prior/repeated ANC exposure, was associated with higher PMTCT knowledge scores. Routine refreshers/retraining of HCWs needs to be prioritized for PMTCT, not only for quality service delivery but for adequate client education. Among clients, adolescents and young women <25 yrs should be targeted for PMTCT counseling and transfer of knowledge, especially during HealthTalks.

Abstract 146

Countdown to zero: Correlates of PMTCT among HIV-infected women in rural Zambia

Leah Sittler³, Mutinta Hamahuwa², Molly Feldman¹, Kathy Sinywimaanzi², Philip Thuma^{1,2}, William Moss¹, **Catherine Sutcliffe¹**

¹Johns Hopkins Bloomberg School Of Public Health, Baltimore, United States, ²Macha Research Trust, Choms, Zambia, ³Pennsylvania State University, State College, Unites States

Background: The dramatic scale-up of programs to prevent mother-to-child transmission (PMTCT) has led to significant decreases in the number of infants acquiring HIV. Targets have been set for coverage of PMTCT programs with a goal of eliminating pediatric HIV by 2020. For barriers to be addressed and PMTCT programs to reach their target, a better understanding of the women not being reached and at high risk of transmitting HIV to their infants is needed in the era of option B+ and in diverse settings.

Methods: This was a cross-sectional study of HIV-infected mothers bringing their infants for early infant diagnosis at Macha Hospital in Southern Province, Zambia. All infants from April 1, 2013 to October 31, 2015 were eligible. Mothers were administered a questionnaire, a chart review was completed and a blood sample was sent to the central laboratory for HIV DNA testing.

Results: 503 mother-infant pairs were enrolled in the study and 85% of mothers had received PMTCT. Infants born to mothers who did not receive PMTCT were more likely to have detectable HIV DNA (40% vs. 3%). Mothers who did not receive PMTCT were younger (28 vs. 32 years; $p=0.003$), less likely to have received antenatal care (95% vs. 99%; $p=0.002$), and more likely to report having been diagnosed with HIV during (32% vs. 17%) or after (61% vs. 2%) the pregnancy ($p<0.0001$). Among mothers who did not receive PMTCT but attended antenatal care, only 7% reported an HIV diagnosis prior to the pregnancy. Maternal age was correlated with timing of HIV diagnosis, with younger mothers more likely to be diagnosed during or after the pregnancy.

Conclusions: In this geographical area, antenatal care and PMTCT programs were effective in identifying and treating HIV-infected pregnant women. Few women eligible for PMTCT were missed as most women who did not receive PMTCT were diagnosed after the pregnancy. Frequent HIV testing should be emphasized, particularly for young women, to facilitate early diagnosis and treatment and prevent transmission to their infants.

Abstract 147

Effectiveness of outpatient nutritional rehabilitation based on ready-to-use food in Senegalese children and adolescents infected with HIV: The multicenter SNAC's Study.

Sidy Mokhtar Ndiaye¹, Marie Varloteaux², Karim Diop¹, Mohamed Coulibaly³, Bara Ndiaye¹, David Masson⁴, Fatou Niassé⁵, Cécile Cames²

¹Centre Régional De Recherche et de Formation À La Prise En Charge Clinique, Dakar, Senegal, ²Institut de Recherche pour le Développement, UMI233/U1175/Université de Montpellier, France, Montpellier, France, ³Division de Lutte contre le Sida et les IST, Ministère de la Santé et l'Action Sociale, Dakar, Senegal, Dakar, Sénégal, ⁴Sidaction/GIP Esther, Paris, France, Paris, France, ⁵Conseil National de Lutte contre le Sida, Dakar, Senegal, Dakar, Sénégal

BACKGROUND: Severe acute (SAM) and moderate acute malnutrition (MAM) remain common in HIV-infected children and adolescents,

even when on antiretroviral treatment (ART) and are strongly associated with death. Ready-to-use food (RUF) are effective and widely used in outpatient nutritional rehabilitation of children <5 years with SAM. However, data on effectiveness of such therapies in HIV-infected older children and adolescents are unavailable. The SNAC's Study aims to assess effectiveness of RUF protocols in 12 HIV clinics in Senegal.

METHODS: Plumpy Nut™ and Plumpy Sup™ were provided every 2 weeks and prescribed by weight to SAM and MAM children, respectively, aged 6 months to 19 years. Successful nutritional rehabilitation (SNR) was defined as body mass index-for-age >-1.5 z-score. Laboratory monitoring was performed at enrollment and at last visit. Multiple logistic regression was used to assess factors associated to SNR.

RESULTS: Overall, 185 children were enrolled, 79 SAM and 106 MAM (Table 1). Most, 70%, succeeded in the study, 16% failed to gain weight and/or to consume RUF and were discontinued, 7% defaulted, 2% died and 5% were still under follow-up. Median duration for SNR was 97 days (IQR: 58–167) in MAM and 153 days (89–266) in SAM children ($P=0.003$). MAM (aOR=3.7, 95% CI: 1.6–8.3), enrollment in a regional clinic (3.0, 1.2–7.4), and age 5–10 vs 10–18 years (3.0, 1.1–8.5) were associated with SNR. There was a trend towards an association between virologic suppression and SNR in children on ART, 2.5 (1.0–6.2).

CONCLUSION: RUF therapies are feasible and effective in undernourished HIV-infected children and adolescents, including in decentralized setting. The results suggest that nutritional support should be initiated at the early stage of malnutrition and advocate for the integration of RUF therapies in the global HIV care of children.

Abstract 148

Prevalence of Antiretroviral Therapy (ART) Treatment Failure Among HIV-infected Pregnant Women at First Antenatal Care: PMTCT Option B+ in Malawi

Chagomerana M^{1,2}, Miller W³, Hoffman I^{1,4}, Mthiko B¹, Phulusa J¹, John M¹, Jumbe A¹, Hosseinipour M^{1,4}

¹UNC Project - Malawi, ²Institute for Global Health and Infectious Diseases, The University of North Carolina at Chapel Hill, ³Division of Epidemiology, College of Public Health, The Ohio State University, ⁴Department of Medicine, The University of North Carolina at Chapel Hill

Background: ART treatment failure can lead to the development of HIV drug resistant (HDR) strain. For HIV-infected pregnant women, the HDR strain can be transmitted to the child, resulting in impaired ART efficacy in both mother and child. In Malawi's PMTCT Option B+ program, HIV-infected pregnant women who are already on ART are continued on therapy without testing for treatment failure at the first antenatal care (ANC). As women are not tested for treatment failure, the prevalence of treatment failure among women who are already on ART at first ANC is unknown.

Materials and Methods: We conducted a cross-sectional study of HIV-infected pregnant women who were on ART at the first ANC under PMTCT Option B+ program at Bwaila Hospital in Lilongwe, Malawi from June 2015 to December 2016. We used logistic regression models to investigate predictors of ART treatment failure.

Results: A total of 434 women were tested for ART treatment failure and their median age was 30.8 years (interquartile range: 26.9 – 34.2). Of the women tested 402 (93%) were married, 343 (82%) were in HIV-WHO stage 1, and 353 (82%) attended first ANC during the 2nd trimester. The overall prevalence of ART treatment failure was 7.1% (95% confidence interval (CI): 5.1 – 10.0). Compared to women with none or primary education, women with secondary or tertiary education had an indication of reduced odds of having developed treatment failure, odds ratio (OR) = 0.67, 95% CI: 0.27 – 1.70. For women who knew their partners' HIV status, women with HIV-infected partners had an indication of reduced odds of having developed treatment failure (OR = 0.45, 95% CI: 0.10 – 2.03) compared to those with HIV-uninfected partners.

Conclusions: The existence of women who have already developed ART treatment failure at first ANC will likely have implications on the success of ART programs. Countries implementing PMTCT Option B+ but have limited resources for HIV-RNA screening at first ANC should develop mechanisms that will identify women at risk of having developed ART treatment failure to prompt switch to an alternative and effective ART regimen during pregnancy.

Abstract 150

PMTCT Cascade outcomes in Nigeria, a low PMTCT coverage setting: Experience from a sub-regional programme in North East Nigeria

Elon Isaac^{1,2}, Iliya Jalo², Yaya Alkali², Yohanna Ghidazuka², Ajani Ayomikun², Ayuba Kudi³, Haladu Danlami³, Mohammed Charanchi³, Mohammed Manga³, Alfred Massa⁴, Aliyu Elnafaty⁴, Umar Yahaya⁴, Yahaya Dawha⁴, George Melah⁴, Hinna Tijjani⁴, Emily Medina⁵, Abdullahi Suraj⁶

¹Gombe State University, Gombe, Nigeria, ²Department of Paediatrics, Federal Teaching Hospital, GOMBE, Nigeria, ³Department of Microbiology, Federal Teaching Hospital, GOMBE, Nigeria, ⁴Department of Obstetrics & Gynaecology, Federal Teaching Hospital, Gombe, GOMBE, Nigeria, ⁵Centre for integrated health programmes, GOMBE, Nigeria, ⁶Gombe state HIV/AIDS control programme, GOMBE, Nigeria

Background: ARVs for HIV infected mothers and infant prophylaxes are proven interventions to prevent MTCT of HIV. Continuous drop off in the PMTCT cascade characterizes PMTCT programmes especially in resourced constrained settings. Nigeria bears disproportionately the burden of MTCT of HIV globally. This study reviewed outcomes in a sub-regional PMTCT programme

Materials and Methods: Results of Infants HIV DNA PCR from 2009 – 2015 in a referral PCR laboratory in the Federal Teaching Hospital Gombe, North East Nigeria were analysed.

Results: There were 2758 HIV DNA PCR results; Female infants constituted 50.2% (1385) and males 49.8% (1373). Reasons for the test request were first test for a healthy exposed baby 74.9% (2065/2758); Repeat after cessation of breastfeeding 20.4% (562/2758); first test for a sick baby 2.0% (55/2758) and repeat to confirm a test result 2.0% (55/2758).

DBS sampling was done in 44.7% (1228/2743) at age 6-8weeks; 41.9% (1150/2743) > 12weeks of age; 7.7% (212/2743) 8-12weeks of age and 5.6% (153/2743) <6weeks. 61% (1695/2758) of HIV + mothers were on HAART before pregnancy; 24.7% (682/2758) started HAART in pregnancy, 7.5% (207/2758) received no ARVS. 76% (1974/2589) of infants received NVP prophylaxis, 9% (238/2589)

had no prophylaxis; 5.7% (148/2589) received AZT; 4% (106/2589) AZT/NVP. 92.1% (2526/2743) were ever breast fed, 7.9% (217/2743) had never breastfed. 2.7% (69/2526) stopped breastfeeding by three months of infants' age; 6.2% (156/2526) between three and six months; 13.8% (348/2526) between six and twelve months and 2.4% (61/2526) above twelve months.

HIV DNA PCR was positive in 4.9% (3/61) of infants breastfed for more than 1 year and 2.9% (10/348) breastfed for 6-12 months. Of 2746 HIV DNA PCR results, 97% (2663/2746) were Negative; 3% (82/2746) were Positive; there was an indeterminate result. Among infants with positive DNA PCR, males were 52.4% (43/82) and females 47.6% (39/82).

Among infants aged 9-18 months, 307 had rapid tests done. 13.0% (40/307); 82.1% (252/307) and 4.9% (15/307) had positive, negative and indeterminate rapid antibody test results respectively. 37.5% (15/40) with positive rapid test results >9 months had positive DNA PCR.

Infants whose mothers received no ARV; HAART started during pregnancy and HAART started before pregnancy contributed 32.9% (27/82), 12.2% (10/82) and 39.0% (32/82) of positive DNA PCR results respectively.

Mothers who did not receive any ART, those who started HAART during pregnancy and mothers who had been receiving HAART before pregnancy had positive DNA PCR results in 13.3% (27/204); 1.5% (10/654) and 1.3% (32/1657) respectively.

13.0% (30/231) of infants who received no prophylaxis; 2.1% (3/143) who received AZT; 1.9% (2/106) who received AZT/NVP and 1.7% (34/1921) who received NVP alone had positive DNA PCR.

16.1% (20/124) of infants whose mothers received no ARV had positive DNA PCR.

Of the 82 infants with positive DNA-PCR results 25% (21/82) of mother-infant pairs received neither ART nor prophylaxis.

Conclusion: ARVs are highly efficacious in reducing MTCT of HIV. Attrition in this PMTCT cascade is high and is associated with significant implications for maternal and child health. Elimination of MTCT is indeed feasible in Nigeria.

Abstract 151

Viral Suppression at Delivery among Pregnant Women Newly Initiated on Antiretroviral therapy (ART) During Pregnancy: PMTCT Option B+ in Malawi

Chagomerana M^{1,2}, Miller W³, Hoffman I^{1,4}, Mthiko B¹, Phulusa J¹, John M¹, Jumbe A¹, Hosseinipour M^{1,4}

¹UNC Project - Malawi, ²Institute for Global Health and Infectious Diseases, The University of North Carolina at Chapel Hill, ³Division of Epidemiology, College of Public Health, The Ohio State University, ⁴Department of Medicine, The University of North Carolina at Chapel Hill

Background: Effective ART for PMTCT reduces HIV viral load in pregnant women to minimize vertical transmission during pregnancy, labor or delivery. In PMTCT Option B+ programs, HIV-infected pregnant women who are not on ART are started on ART during pregnancy and continued for life. As women may present late in their pregnancy for first antenatal care, whether women achieve viral suppression by delivery and how suppression varies with time on ART is unclear.

Materials and Methods: We conducted a prospective cohort study of HIV-infected pregnant women initiating ART for the first time under PMTCT Option B+ program at Bwaila Hospital in Lilongwe, Malawi from June 2015 to November 2016. We used multivariable Poisson models with robust variance estimators to estimate risk ratios (RR) and 95% confidence intervals (CI) of the association between duration of ART and both viral load (VL) ≥ 1000 copies/ml and VL ≥ 40 copies/ml at delivery.

Results: Among 299 women enrolled, the median gestation age at first antenatal visit was 22.1 weeks (Interquartile range (IQR): 18.1 – 26.3). The median duration of ART prior to delivery was 17 weeks (IQR: 13 – 21). Of the 253 women (84.3%) who had viral load test at the time of delivery, 40 (15.9%) and 78 (31%) had VL ≥ 1000 copies/ml and VL ≥ 40 copies/ml respectively. Compared to women who were on ART ≤ 12 weeks at the time of delivery, women who were on ART 13 – 20 weeks (RR = 0.52; 95% CI: 0.36 – 0.74) or 21 – 35 weeks (RR = 0.26; 95% CI: 0.14 – 0.48) were less likely to have VL ≥ 40 copies/ml.

Conclusion: Women with longer duration of ART during pregnancy had lower risk of no-suppressed viral load at delivery. Countries implementing PMTCT Option B+ should encourage early ANC attendance in pregnancy to facilitate prompt ART initiation for HIV-positive women.

Abstract 152

Effect of antiretroviral prophylaxis on prevention of mother to child transmission of HIV in infants in Western Kenya

Joshua Ageng'o¹, Ibrahim Oyawa¹, Marylyn Kangwana¹, Wycliffe Wanga¹, Catherine Syeunda¹, Matilu Mwau¹

¹CDC/KEMRI, Kisumu, Kenya

Background: Most children infected with HIV acquire infection from their mothers during pregnancy, childbirth and delivery through breastfeeding. WHO introduced short-course antiretroviral (ARV) prophylaxis in late pregnancy and labor to prevent the mother-to-child transmission (MTCT) of HIV. Various regimens included in the PMTCT programme by health centers in Western Kenya include AZT+SdNVP+3TC, HAART and SdNVP only.

Objective: To compare the positivity rates in infants whose mothers are on ARV intervention with those whose mothers are not on any ARV prophylaxis.

Methodology: Dried blood spot samples were collected from infants (≤ 6 wks) whose mothers HIV status were known and whose PMTCT records were available from various health centers in Western Kenya between 2015 and 2016. The samples were couriered to KEMRI-Alupe HIV Lab for testing using DNA-PCR on either Abbott RealTime HIV-1 assay or on Cobas® AmpliPrep/Cobas® TaqMan® Roche platforms. The test data collected was analyzed using SPSS (version18).

Results: A total of 3176 DBS samples from infants were tested in the year 2015 and 2016, 86(2.7%) of which were positive and 3090(97.3%) negative. Out of the total, 43(1.4%) were on AZT(for the last14wks)+SdNVP+3TC with a positivity rate of 4.7%, 2763(87.0%) were on HAART with a positivity rate of 2.5%, 150(4.7%) were on interrupted HAART with a positivity rate of 1.3%

while 91 (2.9%) were not on any ARV intervention with a positivity of 11%, 106(3.3%) were on other ARV intervention with a positivity rate of 1.9% and 23(0.7%) were on SdNVP only with a positivity rate of 0%.

Conclusion: The rate of positivity in infants whose mothers were not on any ARV intervention was higher, that's 11% compared to when on any other regimen. ARV intervention or PMTCT is a key strategy to preventing vertical transmission of HIV-1 from mother to child in Western Kenya.

Abstract 153

Expanding early infant Diagnosis (EID) services through active referrals and follow up in rural clinics in North Central Nigeria

Greg Abiazem¹, Ogechi Njoku²

¹AIDS Healthcare Foundation, Makurdi, Nigeria, ²AIDS Healthcare Foundation, Daudu, Nigeria

Background: Prevention of Mother to Child Transmission (PMTCT) programs has made it possible to achieve reductions in the rate of vertical transmission. However, factors like high Ante-natal care (ANC) user fee, proximity to health facilities and limited pediatric HIV services had impeded the expansion of EID services in rural communities. Coverage of EID services remains low in Nigeria and there are many HIV infected infants or at risk of infections who may not enter the health system through PMTCT programs.

Methods: Demand creation for PMTCT was done in 21 communities to increase uptake of ANC services, advocacy visits to key stakeholders on the need for male involvement during ANC services, tracking of mother-baby pair, training of 27 health care providers on DBS sample collection, drying and packaging and training of community volunteers on active follow of HIV exposed infants. The DBS samples collected in health facilities were transported to the Polymerase chain Reaction (PCR) laboratory for analysis.

Results: AHF has successfully implemented EID services in 21 health care facilities that had no access to EID support. 119 EID samples collected and sent to PCR laboratory and no result was

retrieved. Post intervention, 235 HIV exposed infant had been delivered in the facilities, 432 HIV exposed infants tracked, EID samples collected and sent to PCR laboratory and 253 DBS results retrieved with 5 positive and 248 negative cases seen.

Conclusion: Uptake of PMTCT intervention and EID services in rural communities is unsatisfactory. An integrated health program in facilities using healthcare providers has favourable implications for maternal health that leads to early infant diagnosis. It is imperative to scale up EID services in rural settings if elimination of mother to child transmission is to be achieved.

Abstract 154

Efficacité de la récupération nutritionnelle ambulatoire basée sur les aliments prêts à l'emploi chez les enfants et adolescents sénégalais infectés par le VIH : la recherche opérationnelle multicentrique SNACs

Sidy Mokhtar Ndiaye¹, Marie Varloteaux², Karim Diop¹, Mohamed Coulibaly³, David Masson⁴, Bara Ndiaye¹, Fatou Niasse⁵, Cécile Cames²

¹Centre régional de recherche et de formation à la prise en charge clinique, CHU de Fann, Dakar, Sénégal, Dakar, Senegal, ²Institut de Recherche pour le Développement, UMI233/U1175/Université de Montpellier, France, Montpellier/France, France, ³Division de lutte contre le sida et les IST, Ministère de la santé et l'action sociale, Dakar, Sénégal, Dakar/Sénégal, sénégal, ⁴Sidaction/GIP Esther, Paris, France, paris/France, France, ⁵Conseil National de Lutte contre le Sida, Dakar, Sénégal, Dakar/sénégal, Sénégal

Contexte: La malnutrition aigüe sévère (MAS) et modérée (MAM), fréquente chez les enfants et adolescents infectés par le VIH, y compris quand un traitement antirétroviral (TAR) est en cours, est un facteur de risque de décès. Les aliments prêts à l'emploi (APE) sont efficaces et largement utilisés dans la récupération nutritionnelle (RN) chez les enfants < 5 ans en MAS. Cependant, il n'existe pas de données sur l'efficacité de tels protocoles chez les enfants plus âgés et les adolescents infectés par le VIH. L'objectif de l'étudeSNACs est d'évaluer

l'efficacité des APE dans 12 sites de prise en charge du VIH pédiatrique au Sénégal.

Methodes: Le PlumpyNut™ et le Plumpy Sup™ ont été prescrits chaque 2 semaines selon le poids aux enfants MAS et MAM, respectivement, âgés de 6 mois à 19 ans, jusqu'à la RN, définie comme l'indice de masse corporelle pour âge > -1.5 z-score. Un bilan biologique a été réalisé à l'inclusion et en fin d'étude. Les facteurs associés à la RN ont été identifiés par une régression logistique multivariée.

Resultats: Au total, 185 enfants ont été inclus, 79 MAS et 106 MAM, dans 2 sites dakarois et 10 sites régionaux. L'âge médian était 11,7 ans (IQR: 8.1–14.3) et 39% étaient des filles. Parmi 87% des enfants sous TAR, 46% présentaient une charge virale < 300 cp/ml. La majorité, 70%, ont récupéré, 15% étaient en échec, 6% ont abandonné, 2% sont décédés et 6% sont toujours en cours de suivi. La durée médiane de RN était 102 jours (63–189) chez les enfants en MAM et 178 jours (89–275) chez les MAS (P<0.001). Présenter une MAM (aOR=4.2, IC 95%: 1.8–9.8), être inclus en région (3.9, 1.5–10.1), et être âgé < 10 ans (3.7, 1.3–10.9) étaient associés à la RN.

Conclusion: Les protocoles thérapeutiques basés sur les APE sont faisables et efficaces chez les enfants et adolescents infectés par le VIH, y compris en milieu décentralisé. Ces résultats plaident pour l'intégration de ces thérapies dans la prise en charge globale du VIH pédiatrique et pour une intervention aux stades précoces de la malnutrition aigüe.

Abstract 155

Evaluation of the efficacy of the PrimeXtract kit and the CTAB method for direct extraction of DNA from Mycobacterium tuberculosis sputum

Victor Ndhlovu^{1,3}, Wilson Mandala¹, Mercy Kamdolozi¹, Maxine Caws², Gerry Davies³

¹University Of Malawi-College Of Medicine, Blantyre, Malawi, ²Liverpool School of Tropical Medicine, Liverpool, United Kingdom, ³University of Liverpool, Liverpool, United Kingdom

Whole genome sequencing (WGS) has shown superiority of other bacterial typing methods and can be used to monitor disease transmission. *Mycobacterium tuberculosis* (Mtb) is an agonizingly slow growing organism and conventional culture typically takes between 2 to 8 weeks. The long culture period has hampered efforts to use WGS as a diagnostic tool for TB. Single Molecule Real Time (SMRT) Sequencing is a third generation sequencing platform that can yield highly accurate consensus sequences as it offers long read lengths and random error profiles. Additionally, SMRT sequencing lacks GC bias and by monitoring the period between base incorporations during sequencing, it can be used to detect DNA base modifications. To date and to the best of our knowledge, no study has attempted SMRT sequencing directly from clinical samples either through a commercial kit or an in-house DNA extraction method.

We evaluate the efficacy of the PrimeXtract kit and an in-house CTAB method. By extracting DNA from a 200 µl aliquot of Mtb sputum we compare the extraction efficiency of the two methods. We evaluate the methods on the ease of use, efficiency (quantity and purity) and the cost per extraction. We further assessed suitability for SMRT sequencing

The PrimeXtract kit had a concentration (µg/mL) of 5.93 ± 0.94 , n=40 (Mean \pm SEM) and DNA yield (µg) of 0.2975 ± 0.04723 , n=40 (Mean \pm SEM). Comparatively the CTAB method produced a concentration (µg/mL) of 1.88 ± 0.38 , n=40 (Mean \pm SEM) and DNA yield (µg) of 0.09 ± 0.02 , n=40 (Mean \pm SEM). Both concentration (P=0.0002) and yield (P=0.0002) from kit were significantly higher than those from CTAB. The PrimeXtract kit had a DNA purity (260/280) ratio of 1.69 ± 0.09 , n=40 (Mean \pm SEM) compared to the CTAB's 1.73 ± 0.14 , n=40 (Mean \pm SEM). This result was not statistically significant.

We demonstrate that the PrimeXtract kit has a superior extraction efficiency than the CTAB method on a 200 µl aliquot of Mtb sputum. Furthermore the amount of DNA recovered by both methods on a 200 µl aliquot is incompatible with SMRT sequencing.

Abstract 156

Cytokine networks in the lung are disrupted during chronic HIV infection and exhibit compartment-specific signatures

Kondwani Jambo^{1,4}, Dumizulu Tembo⁶, Arox Kamng'ona², Musicha¹, Dominic Banda¹, Anstead Kankwatira¹, Rose Malamba¹, Theresa Allain³, Rob Heyderman⁵, David Russell⁶, Henry Mwandumba^{1,4}

¹Malawi-liverpool-wellcome Trust Clinical Research Programme, Blantyre, Malawi, ²Department of Biomedical Sciences, University of Malawi, College of Medicine, Blantyre, Malawi, ³Department of Medicine, University of Malawi, College of Medicine, Blantyre, Malawi, ⁴Department of Clinical Sciences, Liverpool School of Tropical Medicine, Liverpool, United Kingdom, ⁵Division of Infection and Immunity, University College London, London, United Kingdom, ⁶Department of Microbiology and Immunology, College of Veterinary Medicine, Cornell University, Ithaca, USA

Individuals living with HIV, even those on ART who are virally-suppressed, exhibit increased susceptibility to lower respiratory tract infections (LRTIs). The mechanisms underlying this increased susceptibility are unknown but likely reflect impairment of the immune environment of the lung.

To assess the lung immune environment we measured the concentrations of 34 cytokines in bronchoalveolar lavage fluid (BALF) and plasma from 21 HIV-1-uninfected adults for comparison with 33 HIV-1-infected, ART-naïve, and 21 HIV-1-infected, ART-treated individuals.

We found distinct differences in cytokine microenvironments between the lung and blood in both HIV-infected and uninfected individuals. MCP-1, GRO- and IL-8 were more abundant in BALF than in plasma while IL-18, RANTES, IL-27, IL-2 and SDF-1 were more abundant in plasma than BALF. Cytokines in the lung showed stronger correlations with each other and formed more clusters than in blood. Compared to HIV-uninfected individuals, untreated HIV infection was associated with predominance of chemokine clusters and markedly reduced adaptive, inflammatory, and anti-inflammatory cytokine clusters in the lung. HIV-infected individuals on effective ART had partial restoration of the lung cytokine milieu, but still differed significantly from uninfected individuals.

These cytokine signatures shed light on the basis of the immune impairment responsible for increased susceptibility to LRTIs in HIV-infected individuals and emphasise the incomplete and compartment-specific nature of ART-mediated immune reconstitution. New interventions for HIV-associated LRTIs that target the lung cytokine microenvironment and augment ART could further reduce the burden of LRTIs and their long-term impact on lung health.

Abstract 157

HIV infection in children results in a change in T-helper polarized-HBV vaccine specific IgG antibody subclass responses

Thibau Flaurant Tchouangueu^{1,2}, Abel Lissom^{2,3}, Ghislain Njambe Priso^{2,3}, Loveline Ndengko^{2,4}, Jules-Cesar Tchadjji^{2,3}, Georgia Ambada^{2,3}, Carole Sake Ngane^{2,4,5}, Jackson Ndenkeh^{2,6}, Larissa Djuikou^{2,4}, Suzanne Magagoum^{2,3}, Nadesh Nji², Laure Brigitte Kouitcheu Mabeku¹, Godwin Nchinda²

¹Department Of Biochemistry, University Of Dschang, Dschang, Cameroon, ²Laboratory of Vaccinology and Biobank, CIRCB,, Yaounde, Cameroon, ³Department of animal physiology of the University of Yaounde I, Yaounde, Cameroon, ⁴Department of biochemistry of the University of Yaounde I, Yaounde, Cameroon, ⁵Department of microbiology of the University of Yaounde I, Yaounde, Cameroon, ⁶Department of biomedical Science of the University of Dschang., Yaounde, Cameroon

Introduction: In Sub-Saharan Africa, HIV infection transmitted to children during pregnancy, childbirth and breastfeeding by HIV-positive women is limited by prevention of mother to child transmission (PMTCT) of HIV-1 that limits this risk to below 5%. MTCT accounts for over 90% of new HIV infections among children. Without treatment, the likelihood of HIV passing from mother-to-child is 15% to 45%. However endemic hepatitis B virus (HBV) infection overlaps a large area with HIV infection (Sub-Saharan Africa) where coinfections are commonly observed. Prevention of HBV is hence of a very important interest in children exposed to HIV. Some studies showed reduced hepatitis B surface antigen IgG specific antibodies in HIV-1 infected children as compared to healthy ones. Furthermore another studies showed varied anti-HBs specific IgG subtypes responses for either vaccinees with cDNA HBsAg (IgG1 and IgG2) and plasma-purified

HBsAg (IgG1) or naturally infected individuals (IgG3 and IgG1). Interestingly there is a paucity in findings in the anti-HBs specific subclass responses HIV-1 infected children, then the main Th-cells path used in response to HBsAg vaccination in HIV-1 infected children. Our objective in this study was to determine the IgG subclass response profile as well as Th-cells type polarization in HIV-1 infected children against HIV-1 negative children.

Methods: Blood samples were obtained from 94 assented children, 50 of whom was HIV-1 infected and 44 HIV-1 negative. Next Hepatitis B vaccine induced humoral responses in plasma at the IgG subclass level was determined by ELISA using a recombinant Hepatitis B surface antigen (rHBsAg) and Th1:Th2 ratio was then determined

Results: Our study showed a significantly ($P < 0.05$) lower levels of Hepatitis B specific IgG subclass responses in HIV-1 infected children relative to their negative counterparts. The path of Th-ratio was different among the assessed groups; In HIV infected children, Th-1 cells (Th1:Th2 = 1.36) polarization was predominant while Th2-cells (Th1:Th2 = 0.76) was mostly determined for the HIV-1 negative ones. The mean ELISA OD patterns for the different IgG subclass was similar (IgG3>IgG4>IgG2>IgG1) to both groups.

Conclusion: There is reduced overall HBsAg specific IgG subclass response in HIV-1 infected children, hence result in a change in Th-mediated HBsAg vaccine specific IgG subclass responses.

Abstract 158

Implementation of a TB active case-finding approach in Côte D'Ivoire

Bangaly Doumbouya¹, Dramane Coulibaly²

¹Aconda Vs Côte D'Ivoire, Abidjan, Côte D'Ivoire, ²CAT Man, Man, Côte d'Ivoire

Background: In Cote d'Ivoire (CI), HIV infection prevalence rate is 3.7%. This situation is worsened by Tuberculosis (TB), a common opportunistic infection in population living with HIV/AIDS (PLWHA). According to WHO, in 2011 the TB incidence rate was 191 cases per 100 000 inhabitants, and HIV patients represented 26% of

TB patients. But the incidence rate reported by the national TB program (NTP) was 106 per 100 000 inhabitants. TB and HIV/TB co-infection cases are therefore under-reported at national level. In addition, the aforementioned situation is the result of a passive case-finding approach. Accordingly, many TB cases remain to be detected within the general population and the PLWHA. Knowing that non-detected TB can be lethal when combined to HIV, a new approach based on active TB case-finding has been designed. This project is implemented in 17 intervention sites in CI. The target populations are walk-in patients, PLWHA, accompanying persons of patients, and the entourage of smear-positive pulmonary tuberculosis (PTB+) in the community. The objective of the project is to increase and to accelerate TB detection within the general population and PLWHA in Abidjan and in the Western part of CI.

Methods: 36 community counselors (CC) and 34 health workers have been trained to fill a TB screening form. On the sites, CC organize communication training sessions to encourage behavioral change. CC administer the form to walk-in patients and PLWHA and health workers are more keen to screen HIV patients for TB. In addition, CC deliver the screening form to the accompanying persons. After screening, CC and health workers refer suspect patients for TB testing. CC also conduct home-based visits to administer the screening form to at least 10 persons in the environment of each PTB+ case. Subsequently, they refer suspect patients to health centers for TB testing. They also stay in touch with the suspect persons in the community. Funds are provided to allow indigent patients from the community to visit health centers for TB testing. Coaching, monitoring and evaluation missions are organized jointly by ACONDA and NTP on intervention sites to coordinate activities.

Results: Since the training conducted, 2115 men (24%PLWHA) and 6103 women (26%PLWHA) have been screened among the general population and PLWHA by CC. Respectively, 109 men (31%PLWHA) and 166 women (38%PLWHA) have been tested for TB. 44 men (25%PLWHA) and 51 women (25%PLWHA) were diagnosed PTB+ among the general population and PLWHA. In CI, the treatment is initiated for all cases from the detection day.

Conclusion: Thanks to this project, the increased detection of co-infected HIV/TB patients should allow a better orientation of their treatment. The faster PTB+ detection should help reduce the delay

in the TB treatment; knowing that a high delay in treatment is linked to a high mortality among co-infected HIV/TB patients. Depending on results, this active case-finding approach should be scaled-up in other regions in CI.

Abstract 159

Recent tuberculosis diagnoses and symptom screening among HIV-infected women and their infants at 4-26 weeks postpartum in a routine program setting in Malawi

Megan Landes¹, Monique van Lettow¹, Beth Tippet Barr², JJ van Oosterhout¹, Nellie Wadonda³, AF Auld³, Erik Schouten⁴, Happy Phiri⁴, T Kalua⁵, Andreas Jahn⁵

¹Dignitas International, Zomba, Malawi, ²Centers for Disease Control - Malawi, Malawi, ³Centers for Disease Control - Zimbabwe, Zimbabwe, ⁴Management Sciences for Health, Malawi, ⁵Department of HIV/AIDS, Ministry of Health, Malawi, ⁶I-TECH, University of Washington, USA

Background: Tuberculosis (TB) and HIV co-infection is associated with increased maternal and perinatal morbidity and mortality in sub-Saharan Africa. Limited data exist on TB prevalence in HIV-infected women during pregnancy and postpartum. We report baseline TB recent and active cases diagnosed under routine programmatic conditions among women in the National Evaluation of the Malawi PMTCT Programme (NEMAPP).

Methods: In a cross-sectional study of HIV-infected women and infants at 4-26 weeks postpartum, a structured interview and patient record review collected data on socio-demographics, ART use, previous TB testing and treatment within routine care. A sub-group had CD4 count, HIV-1 RNA and the World Health Organization TB symptom screen (i.e., cough, fever, nightsweats, and weight loss). Women with ≥ 1 symptom were referred to Ministry of Health sites for confirmatory testing (sputum results pending).

Results: 1307 women were included: 67.3% were 6-12wks postpartum and over half were < 30 yrs (55.8%). 45.2% (n=591) had HIV status known prior to pregnancy and 88.1% (n=1151) were on ART at enrollment.

32 (2.4%) women were diagnosed with TB in the 12 months prior to enrollment; 11 (0.8%) were diagnosed in the three months prior to enrollment, of whom 9 had infants <3 months old. Two infants had been diagnosed with TB: one was on treatment. Both infants' mothers were diagnosed with TB in the year prior to enrollment.

Symptom screening identified 116 (20%) women with ≥ 1 positive symptom. Cough was the most common symptom present ($n=57$, 9.8%). Not being on ART at the time of screening was associated with positive symptom screening when controlled for CD4 count and duration of known HIV infection (aOR=3.1; 95%CI: 1.0-9.2, $p=0.04$).

Conclusions: The rates of recent TB and positive symptom screenings are similar to other regional prevalence estimates (1.5-2.5% and 8-17%) among pregnant or breastfeeding women; however, active TB prevalence might be higher than regional estimates. With expanded ART access via Option B+ in Malawi, further research should explore ART's role in reducing opportunistic infections such as TB for both mothers and their infants over time and thus improving maternal and child outcomes.

Abstract 160

Training Course in Focused Assessment with Sonography for HIV/TB in HIV Prevalent Medical Centers in Malawi

Tim Canan¹, Risa Hoffman¹, Linna Phiri², Alan Schooley^{1,2}, Zak Boas¹, Kristin Schwab¹, Danny Kahn¹, Roger Shih¹, Khumbo Phiri², Julie Parent², Mr Benallen Banda², Ronald Chagoma², Chifundo Chipungu², Kara-Lee Pool¹

¹University Of California Los Angeles, Los Angeles, United States, ²Partners in Hope, Lilongwe, Malawi

Background: Ultrasound is a portable and inexpensive imaging technique that has expanded diagnostic capacity in resource-limited settings. Ultrasound has been found to be particularly useful in the setting of extrapulmonary tuberculosis (TB), which can be challenging to diagnose in resource-limited settings. Ultrasound can be used to identify findings of TB including pericardial effusions, pleural effusions, ascites, abdominal lymph nodes, and hepatic or splenic lesions. Heller et al. developed a "focused assessment with sonography

for HIV-associated TB" (FASH) protocol to evaluate for these six findings. The group then trained three junior hospital physicians in an intense two-day training course including theoretical and case-based lectures as well as hands-on practicals using normal models and hospital patients. We sought to apply a similar training program to medical providers of different training backgrounds at three sites in Malawi, to expand the availability of ultrasound for TB diagnosis.

Materials and Methods: We included three sites in the Central region of Malawi, including one public-private medical center (Partners in Hope Medical Center), one district hospital (Kasungu), and one mission hospital (Madisi). Participants were eligible if they were certified as a physician, clinical officer, radiographer, or medical assistant. Nineteen participants completed a four-day course focusing on the FASH protocol.

Surveys were completed in the morning on the first day prior to the start of training and again on the final day. The survey assessed the clinician's comfort level diagnosing pulmonary and extrapulmonary TB, using ultrasound for medical care and using ultrasound to diagnose TB before and after the training course. In addition, a six-question quiz was used to assess knowledge of the use of ultrasound in the FASH exam before and after the training course. Quizzes were completed before and after training by all 19 participants. Quiz results were reported as a percentage score. To evaluate the significance of the percentage change in pre- and post-training quiz scores, a McNemar's Test was used.

Results: Participants' knowledge of the FASH technique significantly improved after the four-day course with a 32% increase in total quiz questions answered correctly (45% pre-course quiz versus 77% post-course quiz, $p<0.001$). All participants were queried regarding the utility of the FASH exam. Ninety-five percent ($n=18$) of participants answered that they would "likely" incorporate FASH in their clinical practice with the other 5% ($n=1$) answering that they were "somewhat likely." Approximately 90% ($n=17$) of the participants felt that they needed 10 FASH exams or fewer to feel comfortable implementing ultrasound to diagnose TB. Furthermore, 100% ($n=19$) of participants agreed that the FASH exam would improve their ability to diagnose TB and 95% ($n=18$) agreed that FASH would improve patient care in their clinic.

Conclusions: Our study found that after completing a 4-day training course, medical providers were more knowledgeable about the

FASH exam and its findings, and felt more comfortable using ultrasound for the diagnosis of TB. Participants were also unanimous in opinion, after completing the training, that the FASH ultrasound exam would improve their ability to diagnose TB.

Abstract 161

Effectiveness of concentrated sputum smear microscopy as compared to direct sputum smear microscopy in the detection of *Mycobacterium tuberculosis* in patients at Queen Elizabeth central hospital in Blantyre, Malawi.

Pemphero Mphande¹, Chimwemwe Waya¹, Dalph Nyirongo¹, Chikondi Nkwanju¹

¹College Of Medicince, Blantyre, Malawi, ²Queen Elizabeth Central Hospital, Blantyre, Malawi, ³Malawi Liverpool Wellcome Trust, Blantyre, Malawi

BACKGROUND: Tuberculosis is one of the commonest infectious diseases in Malawi and contributes highly to patient mortality. Laboratory diagnosis of TB is very important for early identification of disease to allow for effectiveness of treatment. The most commonly used method in the laboratory is direct sputum smear microscopy. Concerns have been raised regarding the sensitivity of the direct method compared to the method that includes a concentration step. The aim of this study is to compare the effectiveness of both methods of microscopy by analyzing their sensitivity and specificity while using the GeneXpert as the gold standard. The results were analysed using STATA and Epi info.

OBJECTIVE: To compare the sensitivity and specificity of direct sputum smear microscopy against concentrated sputum smear microscopy in detection of MTB.

METHOD: Left of sputum samples were collected from Queen Elizabeth Central Hospital Microbiology GeneXpert lab and transported to COM Malawi Liverpool Wellcome Trust TB lab

where they were analyzed. A total of 81 sputum samples were analyzed. From each sample, Direct and concentrated sputum smears were prepared and examined after staining with ZN stain. GeneXpert was used as the gold standard method.

RESULTS: Of the 81 samples analyzed on GeneXpert; 60 samples were negative while 21 were positive for acid fast bacilli.

A total of 10 samples of the 21 GeneXpert positive samples, tested positive on direct sputum smear and 16 tested positive on concentrated sputum smear representing sensitivities of 47.6% and 71% respectively. All samples that tested negative on GeneXpert, tested negative on direct sputum microscopy, while 3 of the samples that tested negative on GeneXpert tested positive on concentrated sputum smear microscopy.

Using the likelihood ratio, direct sputum smear microscopy yielded a sensitivity of 47.62% while concentrated sputum smear microscopy yielded 61.9%. Direct sputum smear yielded a specificity of 100% while concentrated sputum smear microscopy yielded 95%.

CONCLUSION: Concentrated sputum smear microscopy is more sensitive than direct sputum smear microscopy in detection of *Mycobacterium tuberculosis* and therefore is more effective.

Abstract 162

Prevalence of syphilis infection and risk factors among HIV-infected pregnant women attending antenatal clinic at Bwaila Hospital in Lilongwe, Malawi

Jacob Phulusa¹, Maganizo Chagomerana¹, Robbie Flick¹, Allan Jumbe¹, Mathias John¹, Bryan Mthiko¹, Bryna Harrington¹, Caroline Melhado¹, Mina C Hosseinipour^{1,2}

¹UNC Project - Malawi, Lilongwe, Malawi, ²University of North Carolina, Chapel Hill, USA

Background: The prevalence of syphilis among HIV-infected pregnant women is a public health concern. In addition to increasing the risk of HIV mother-to-child transmission, maternal syphilis puts the fetus at risk of congenital syphilis with the attendant health risks including intrauterine death.

Information regarding the prevalence of syphilis among HIV-infected pregnant women in Malawi is limited. Our study aimed to estimate the prevalence of syphilis and describe risk factors associated with syphilis among HIV-infected women.

Methods: We conducted a cross sectional study among HIV-infected pregnant women attending their first antenatal care at Bwaila Hospital in Lilongwe, Malawi, from July 2015 to December 2016. Women were screened for syphilis using point-of-care rapid Alere determine TP tests. All Alere determine TP positive women were treated on the same day with a single dose of benzathine penicillin 2.4 MU by intramuscular injection. Alere determine TP-positive mothers were encouraged to send their partners for treatment. We used means and frequencies to describe the population. Fisher's exact and rank-sum tests were used to assess associations between syphilis infection and level of education, parity, marital status, WHO staging, and partner characteristics for the current pregnancy.

Results: Of the 350 HIV-infected pregnant women enrolled, the mean age was 28.3 (SD=5.5) and mean gestational age was 22.0 weeks (SD = 6.2). 310 (89%) were married, and 308 (88%) lived with the partner (Table1). The overall syphilis prevalence was found to be 6% (95%CI :3.9% - 9.0%). No factors were found to be statistically significantly associated with the prevalence of syphilis.

Conclusion: The prevalence of syphilis among HIV-infected women is worrisome. Aggressive measures are urgently needed to strengthen universal syphilis screening and testing efforts at ANC to prevent mother to child transmission of syphilis.

Abstract 163

Artemether Lumefantrine treatment failure for uncomplicated *Plasmodium falciparum* malaria in HIV-infected adults on ART highlights the possible impact of artemether lumefantrine efavirenz drug interactions

Wongani Nyangulu¹, Edson Mwinjiwa¹, Titus Divala², Randy Mungwira², Maxell Kanjala², Lufina Tzirizani², Gillian Mbambo³, Terrie. E Taylor², Mathew B Laurens³, Miriam K Laufer³, Joep J van Oosterhout^{1,4}

¹Dignitas International, Zomba, Malawi, ²Blantyre Malaria Project, University of Malawi College of Medicine, Blantyre, Malawi, ³Division of Malaria Research, Institute for Global Health, University of Maryland School of Medicine, Baltimore, USA, ⁴Department of Medicine, University of Malawi College of Medicine, Blantyre, Malawi

Background: HIV and malaria co-treatment is common in sub-Saharan Africa due to geographical overlap of these two diseases. Previous studies have reported drug-drug interactions between artemisinin combination antimalarial drugs and antiretroviral therapy (ART) due to utilization of common metabolic pathways. In particular, evidence suggests that interaction between efavirenz (included in Malawi's standard first line ART regimen) and artemether lumefantrine (AL), first line treatment for malaria, leads to reduced bioavailability of AL. In vivo evidence of this interaction is rare. We describe four cases of malaria treatment failure with LA, suspected to be caused by drug interaction with efavirenz.

Case presentation: Four persons on tenofovir/lamivudine/efavirenz with good response to ART (HIV1 RNA non-detectable; CD4 count: 461, 883, 792 and 258 cells/ μ l) and no recent history of malaria enrolled into a clinical trial and were randomized to remain on cotrimoxazole preventative therapy (CPT) (n=1), or discontinue CPT (n=2), or replace it with weekly chloroquine prophylaxis (n=1). They developed uncomplicated malaria, were treated with AL and underwent formal malaria treatment evaluation according to WHO guidelines with follow up on day 1, 2, 3, 7, 14, 21 and 28. The two who discontinued CPT experienced recurrent parasitemia after day 14 following rapid initial clearance of parasitemia, suggesting late parasitological failure due to insufficient effect of lumefantrine. One patient on CPT and another on chloroquine prophylaxis experienced early parasitological failure with parasitaemia on day 2 greater than on day 0 suggesting insufficient effect of artemether. All reported full antimalarial treatment adherence, denied vomiting, used no other relevant drugs and had no signs or symptoms suggesting HIV enteropathy. They received successful second line treatment with quinine and clindamycin.

Discussion: In these cases, a likely explanation of early and late parasitological failure is sub-therapeutic drug concentrations due to drug interactions. Metabolism of both efavirenz and AL is mediated by CYP3A4; efavirenz acts as an inducer, and this may lead to enhanced metabolism of both artemether and lumefantrine. Genetically determined slow efavirenz metabolism in some individuals is also associated with stronger CYP3A4 induction and enhanced metabolism of AL. These malaria treatment failures could also be due to antimalarial resistance. Mutations in the K13 propeller regions commonly associated with artemisinin resistance in Southeast Asia have been described in SSA infrequently but a recent report of artemisinin treatment failures in patients returning to the UK from Africa suggests that artemisinin resistance may also be mediated by mutations other than Pfk13. At this stage, we have not yet carried out in vitro malaria drug resistance assays; and have not measured antimalarial drug levels. These investigations will help to test our hypothesis that drug-drug interactions between efavirenz and AL explain both early and late parasitological failures.

Conclusion: Efavirenz and AL drug interactions are a likely explanation for AL treatment failure in our four cases. This report highlights the need to conduct thorough investigation of antimalarial drug efficacy in adults on ART and the need to develop the necessary local reference laboratory capacity for resistance testing and pharmacokinetics to evaluate such cases.

Abstract 164

Tuberculosis Disease Among HIV Positive Adults on Antiretroviral Therapy in Malawi

Oswald Nvirenda¹, Joep van Oosterhout⁴, Jaya Goswami², Dr. Randy Mungwira¹, Titus Divala¹, Maxwell Kanjala¹, Francis Muwalo¹, Felix Mkandawire¹, Terrie Taylor¹, Jane Mallewa³, Miriam Laufer², Matthews Laurens²

¹Blantyre Malaria Project, Blantyre, Malawi, ²Division of Malaria Research, Institute of Global Health, University of Maryland School of Medicine, Baltimore, United States of America, ³Department of Medicine, College of Medicine, Blantyre, Malawi, ⁴Dignitas International, Zomba, Malawi

Background: Tuberculosis (TB) and HIV co-infection is common and associated with high mortality. The incidence and clinical outcomes of TB among people who are stable on ART are not well documented. To describe this, we used data from screened and enrolled participants in a clinical trial of adults on ART with CD4 count >250 cells/ μ L and viral load <400 copies/ml.

Methods: All participants underwent 4-8 weekly WHO recommended 4-symptom TB screen and those with TB symptoms submitted sputum samples for MTB-Xpert testing and had chest X-ray if MTB-Xpert was negative. Pulmonary TB (PTB) was diagnosed if MTB-Xpert was positive or chest x-ray was suggestive of TB without response to standard antibiotics. Extra-pulmonary TB (EPTB) diagnosis was based on clinical, laboratory and radiological findings.

Results: 41 participants out of 1416 screened (2.9%) had symptoms suggestive of TB. Two were diagnosed with PTB (one positive MTB-Xpert). The prevalence of PTB in the screened population was 0.1% and among those with symptoms 4.9%. We enrolled 900 participants and accumulated 1,206.5 years of follow up. The incidence rates were 70, 16, 7, and 9 per 1000 person years for any PTB symptom, TB diagnosis, PTB diagnosis and EPTB, respectively. All new PTB and EPTB events occurred in patients with undetectable VL (<400 copies/ml) measured before TB diagnosis. Case-fatality rates were 0% (PTB) and 45% (EPTB).

Conclusions: TB incidence in adult ART patients with well-controlled HIV disease was 9 times lower than in a study at the same site of adults with mostly advanced HIV before the ART era, but around 3 times higher than reported for the Blantyre general population. PTB diagnosed in patients on successful ART who are symptom-screened regularly was not associated with mortality but EPTB diagnosis carried a poor prognosis.

Abstract 165

Timing of initiation of antiretroviral therapy and survival in patients with HIV and tuberculosis in Dakar, Senegal

Louise Fortes Déguénonvo¹, Ndeye Fatou Ngom², Assane Diouf¹, Judicaël Tine¹, Francois Dabis³, Gilles Wandeler⁴, Moussa Seydi¹

¹*Clinical Infectious and Tropical Diseases, University Hospital Center of Fann, Dakar, Senegal*, ²*Ambulatory treatment Center (CTA), University hospital center of Fann, Dakar, Senegal*, ³*Institut de Santé Publique, d'Epidémiologie et de Développement, Université de Bordeaux, Bordeaux, France*, ⁴*Department of Infectious Diseases, University Hospital Bern, , Suisse*

Background: Since 2010, national recommendations on the management of HIV and tuberculosis (TB) co-infected patients in Senegal include the initiation of antiretroviral therapy (ART) within 2 to 4 weeks after the start of TB treatment. The impact of early ART on survival among patients co-infected with HIV and TB remains controversial in some situations.

Objectives: To compare 1-year survival between patients co-infected with TB and HIV who initiated ART before and after the first four weeks of TB treatment and to identify further factors associated with mortality

Methods: A retrospective cohort study was conducted among TB/HIV co-infected patients treated for TB and having initiated ART at Fann teaching Hospital in Dakar, Senegal between 2008 and 2013. Survival during the first year of ART was estimated with Kaplan-Meier analyses and the logrank test was used to compare survival of patients according to the time of ART initiation (≤ 4 weeks vs. > 4 weeks after TB treatment start). Cox proportional hazard methods were used to determine baseline risk factors of death during the first year of follow-up

Results: Of 231 patients included, 97 initiated ART less than 4 weeks after the start of TB therapy. The proportion of patients in the "early ART" group (≤ 4 weeks) increased from 19% (95% CI 48-56) in 2008 to 50% (95% CI 90-96) in 2013 (test for trend: $p=0.01$). Early treated patients were younger ($p=0.01$) and had a lower rate of haemoglobin ($p=0.01$). Median CD4 cell count was 75

cells/mm³ (interquartile range [IQR] 26 - 257). Forty seven patients died during the first year of follow-up (20.3%). The mortality rate was 27.3/100 person-years [95% confidence interval [CI], 17.4 - 42.7] in the "early group" and 30.1/100 person-years (95% CI 21.1 - 44.2) in the "late group" (hazard ratio [HR] = 1.12; 95% CI 0.50-2.49). Body mass index (HR = 0.83; 95% CI 0.70-0.99) and hospitalization at TB diagnosis (HR = 3.65; 95% CI 1.20-11.05) were independent predictors of mortality.

Conclusion: In this hospital-based study population of TB/HIV co-infected patients, mortality during the first year of ART was high but did not depend on the timing of ART initiation.

Abstract 166

Health Seeking Behaviour among Youth with Sexually Transmitted Infection in Nigeria

Orobosa Enadeghe¹, Babatunde Adedokun¹

¹*Department of Epidemiology and Medical Statistics, University of Ibadan, Ibadan, Nigeria*

In Nigeria and other developing countries, STIs and their sequelae are ranked among the top five reasons for adults to seek health care. Despite these, there has been a disproportionate neglect on STIs as most research focus is on HIV/AIDS. Also, more is yet to be explored on behaviour of youth towards seeking care especially on problems like STIs that are often stigmatized. This study aimed to assess the healthcare seeking behaviour and associated factors among youth with STI in Nigeria.

Data from 10,091 respondents aged 15-24 years were extracted from the 2012 National HIV/AIDS and Reproductive Health Survey (NARHS) consisting of 648 who self reported having at least one STI symptoms and 347 who had sought advice or treatment for their STIs. The NARHS was a household survey with a cross-sectional design conducted in all the 36 states of Nigeria and the Federal Capital Territory (FCT). Variables on socio-demographics, lifestyle, sexual behaviour, condom use, media exposure, STI knowledge, self reported STI and health seeking behaviour of youths aged 15-24 years were extracted from the survey data. Associations between variables were tested using chi square tests and multiple logistic regression to

determine factors associated with STIs and healthcare seeking behaviour among youth with STIs. Level of significance for all tests was at 5%.

Overall mean age of the respondents was 19.1 years (SD=2.7); a larger percentage were females (55.3%). Prevalence of at least one symptom of STI was 6.4%. By gender, 8.1% females and 4.3% males were found. Overall knowledge of STI symptoms was low. For the reported STI symptoms, prevalence of genital itching was highest (4.3%), followed by genital discharge (3.3%), genital rash (1.7%) and genital sore/ulcer (1.3%). Variables which remained significantly associated with self reported STI in multiple logistic regression included being female (OR=2.65, 95% CI=2.01-3.50); Christianity (OR= 1.43, 95% CI=1.03- 1.96); North Central zone (OR=4.38, 95% CI= 2.72-7.05); more than one sexual partnership (OR=1.76, 95% CI=1.31- 2.37); condom use at last sexual act (OR=0.69, CI=0.50-0.94); high STI knowledge (OR=0.69, 95% C.I= 0.53-0.89). More than half (53.5%) of youth who self reported STI symptoms sought STI treatment, females (54.1%) and males (52.3%). Most reported place of seeking STI treatment was government clinic/hospital (17.1%) from which greater percentage of females (18.9%) than males (13.0%) sought STI treatment. Variables which remained significantly associated with seeking STI treatment in multiple logistic regression included having secondary school education or higher (OR=2.41, 95% CI=1.05-5.51); high STI knowledge (OR=4.41, 95% CI=2.44-7.96); alcohol use (OR=2.23, 95% C.I= 1.25-4.33).

STI prevalence and the place of seeking treatment for STI varied among youth. Therefore, the need for programmes that enhance coordinated collaborations between the formal and informal places of STI care for optimum STI treatment. For effectiveness, such programmes must be built upon the understanding of those factors associated with the varied place of seeking STI treatment among youth.

Abstract 167

The pattern of transaminase abnormality among HIV and HBV co-Infected women on ART in Lilongwe Malawi

Elizabeth Kachingwe¹

¹Wits Reproductive Health And Hiv Institute, Johannesburg, South Africa, ²University of The Witwatersrand, Johannesburg, South Africa

Background: Hepatitis B and ART have been established to cause liver damage. We compared the changes in the levels of Alanine amino Transferase (ALT) in HBV/HIV co-infected and HIV infected women on ART to determine liver disease among women on ART in Lilongwe Malawi using Data from the BAN study.

Methods: We conducted a secondary data analysis from The BAN study to investigate the changes in the levels of ALT among HIV/HBV co-infected and HIV mono-infected women who were randomised into the maternal ART arm. In brief The BAN study assessed the benefit of nutritional supplementation given to women during breastfeeding, the benefit and safety of antiretroviral medications given either to infants or to their mothers to prevent HIV transmission during breastfeeding and the feasibility of exclusive breastfeeding followed by early, rapid breastfeeding cessation. ALT was monitored up to 48 weeks with an average of 12 follow-ups per individual. Continuous variables i.e. Age, ALT and CD4 count were compared between HIV/HBV co-infected women and HIV mono-infected women using the Wilcoxon rank sum test. Multiple regression analyses were performed using longitudinal data Generalised Linear mixed models to evaluate the relationship between ALT and HIV/HBV co-infection, among HIV-infected women, controlling for ART regimen, CD4 count and visit. All individuals were included in the analysis regardless of the different numbers of follow-up visits.

Results: The study subjects comprised of 544 women of whom 5.6% were HIV/HBV co-infected. The age range of the study population was 16-45 years. Median age at enrolment was 26(IQR: 22-29). The median ALT enzyme level of HIV/HBV co-infected individuals was slightly higher at baseline (13 UI/L (10-16) vs 14 UI/L (11-18, p=0.10) and at the last follow-up (17UI/L (14-22) vs 19 UI/L (16-26, p=0.04) compared to HIV mono-infected counterparts. HIV/HBV co-infection women were 3.28 times (1.43-9.03 p= 0.01) more likely to have abnormal ALT, compared to their mono-HIV infected counterparts. Individuals that were initiated on Nelfinavar as first line ART were 3.22 times (1.85-5.59 p=0.001) more likely to have elevated ALT compared to those that were initiated on LPV/r based regimen. Moderately immune suppressed women (CD4 count of between 200 to 500 cells/dl) were 0.38 times less likely to have elevated ALT(0.15-1.00) while women who were severely

immune suppressed had 3.51 times more likely to have abnormal ALT. Overall there was an increase in the level of ALT per each subsequent visit.

Conclusion: Individuals co-infected with HIV/HBV generally had higher levels of ALT compared to HIV mono-Infected individuals and this increased over time. The current study suggests that monitoring of ALT in patients co-infected with HIV/ HBV on ART should be performed regularly, and the caution should be taken when prescribing first line ART.

Abstract 168

Effect of daily trimethoprim sulfamethoxazole prophylaxis on the long term clinical impact of malaria infection among HIV infected adults on successful ART in Blantyre, Malawi

Felix Mkandawire¹, Randy Mungwira¹, Titus Divala¹, Oswald Nyirenda¹, Maxwell Kanjala¹, Lufina Tzirizani¹, Francis Muwalo¹, Nicaise Ndembu², Terrie Taylor³, Jane Mallewa⁴, Joep van Oosterhout⁵, Matthew Laurens⁶, Miriam Laufer⁶

¹Blantyre Malaria Project, Blantyre, Malawi, ²Institute of Human Virology, Lagos, Nigeria, ³Department of Internal Medicine, Michigan State University, E. Lansing, Michigan, USA, ⁴Department of Medicine, University of Malawi College of Medicine, Blantyre, Malawi, ⁵Dignitas International, Zomba, Malawi, ⁶Division of Malaria Research, Institute for Global Health, University of Maryland School of Medicine, Baltimore, United States of America

Background: Sub-Saharan Africa has 90% and 70% of all new cases of malaria and HIV respectively. The risk of malaria infection is higher in HIV infected adults. Malaria infection in HIV positive individuals is associated with increased HIV viral load (VL) and decreased CD4+ T-cells. Daily trimethoprim-sulfamethoxazole prophylaxis (CPT) reduces the risk of malaria infection in HIV positive individuals but its long term benefit after successful ART has not been well documented.

Material and Methods: To determine the impact of CPT on malaria infection and disease, we analyzed data from clinically stable, non-pregnant HIV infected adults on non-protease inhibitor ART enrolled in an ongoing randomized controlled trial in Blantyre, an area with low to moderate malaria

transmission. Participants with CD4 count >250 cells/mm³ and VL <400 copies/ml were randomized to continue daily CPT, discontinue CPT, or discontinue CPT and begin chloroquine. During the rainy season, we measured asymptomatic infection by quantitative PCR of dried blood spots. Clinical malaria was diagnosed in participants with symptoms suggestive of malaria and positive microscopy.

Results: We included a subset of participants who continued on CPT prophylaxis (n=34) or stopped prophylaxis (n=27). The two groups were similar in age, gender distribution, CD4 count, hemoglobin level and bed net use. Four participants in the CPT discontinuation group developed clinical malaria (29/100 person years) compared to one from the daily CPT group (6/100 person years). No episodes of asymptomatic malaria infection were detected by PCR.

Conclusion: This suggests that there may be CPT associated protection against clinical malaria disease even in this lower transmission setting. The absence of asymptomatic malaria infection is in contrast with the common finding of high rates of low-level asymptomatic parasitemia in Malawi. HIV infected adults may be more likely to develop symptomatic disease, or ART or CPT prophylaxis confer some protection. We are currently undertaking immunological evaluation to determine mechanisms of this observed phenomenon.

Abstract 169

Addressing Clinician-induced barriers to INH prophylaxis for Persons Living with HIV in South-Eastern Nigeria

Okezie Onyedinachi¹, Prince Anyanwu, Andy Eyo, Modupe Odeyale, Tochukwu Noh

¹Excellence Community Education Welfare Scheme, Gudu, , Nigeria, ²Excellence Community Education Welfare Scheme, Abuja, Nigeria, ³Excellence Community Education Welfare Scheme, Uyo, Nigeria, ⁴Excellence Community Education Welfare Scheme, Abuja, Nigeria, ⁵Excellence Community Education Welfare Scheme, Owerri, Nigeria

Introduction/Background: The HIV/AIDS epidemics in Nigeria is complicated by the high tuberculosis (TB) burden. Nigeria is among the 20

high-burden TB countries in the world and also with the highest estimated numbers of incident TB cases among people living with HIV (WHO, 2016). Despite these facts, only 57% of HIV-positive registered cases in Nigeria were screened for TB in 2010; while 4712 (2.5%) out of the 185,708 individuals newly enrolled ART in 2013 started Isoniazid Preventive Therapy (IPT). The 2014 Nigeria GLOBAL AIDS RESPONSE Country Progress Report (GARPR) also included reluctance of Clinicians to initiate HIV positive patients on IPT due to perceived fear of Isoniazid (INH) resistance and difficulty with diagnosing active TB in HIV setting as some of the barrier that limit access to TB preventive services for PLHIV.

Materials & Methods: Review of INH uptake at HIV treatment centres showed poor access to IPT services. Clinicians were provided with targeted technical assistance (TA) to address the barriers hindering access to IPT for PLHIVs. This include continuous medical education, hands-on mentoring, monthly data feedback and quarterly review of program performance. Excel and Statistical Package for the Social Sciences were used to analyze IPT data captured at the supported treatment centres.

Results:

The rate of INH uptake ranged from 0%, to 61% between Jan-Dec, 2014. Targeting 70% of eligible clients (3092); after intervention IPT uptake increased from 11% (348) in Jan, 2015 to 110% (2,356) in Dec 2015.

Discussions: The rate of INH uptake increased when the Clinicians' fears about INH prophylaxis were addressed using evidence based supportive systems. It becomes important for HIV program policy makers to include strategic mentoring as a good means of addressing program challenges.

Conclusions and Recommendations: The TA given to the clinician resulted in sustained increased in the rate of IPT uptake at the HIV treatment sites; relative to achievement in 2014. It is therefore recommended that continuous engagement of the fore front clinicians should encouraged to sustain INH access for eligible clients.

Abstract 170

Masculinity and cultural attuned perceptions delays Tuberculosis early diagnosis, case management and timely treatment: An analysis of barriers and contributing factors.

Dickens Mahwayo¹

¹*Given-secret Foundation, Mangochi, Malawi*

Background: Though Tuberculosis (TB) and HIV/AIDS constitutes a deadly combination, TB infection transmission control and early diagnosis is still one of the challenges amongst men especially in rural and resource-limited settings. It is against this backdrop that a study was conducted to analyse factors and barriers that contribute to delayed TB early diagnosis and treatment amongst men. The study was carried out in randomly selected villages of T/A Chowe (11 Villages) and T/A Nankumba (18 villages) in Mangochi district.

Methodology: In an exploratory, mixed method study, a well structured questionnaire was used to collect data in which key questions were centered on finding and exploring barriers, constraints and factors contributing to delayed TB diagnosis and treatment amongst men. Comparative TB Data records (female/male versus survival and death) from 4 health facilities in the two areas were analysed. We also collected data through focus group discussion from communities, randomly selected sample of 8 health care workers, situational analysis and in-depth interviews with 38 chronic coughing men.

Results: The study come up with the following as some of the factors and barriers contributing to delayed TB early diagnosis and treatment. Culturally men are regarded as strong and in most cases bread winners and providers in a family hence men disregard and conceal symptoms of TB (Be a man! Be strong) to remain empowered. Health facilities in Malawi are gender responsive hence men are not given special priorities that they need in as far as service or treatment delivery is concerned as such men feel demoralized and disempowered to be on the queue for hours together with women. There is a general mindset and perception that TB is associated to being HIV+ hence some men take their wives as their own

mirrors as such a man would force the wife to go for TB testing after several weeks of coughing of which positive results compel the man to seek medication from other sources thereby not coming out for diagnosis. In Malawi public Health facilities are far apart in which case paying and privately owned facilities (CHAM) serves the populations in many rural and hard to reach areas of the country where public or non paying health facilities are not available as such men feel that spending financial resources on a long time treatment (TB) is an extra burden.

Conclusion and Recommendation: Government through the Ministry of Health and other stakeholders should periodically/annually organize a TB screening/testing campaign in rural areas .Unless the government of Malawi reinvigorates its efforts to address the masculinity and cultural related factors as barriers to early TB early diagnosis and access to treatment for men as highlighted herein the ambitious dream of a TB-free Malawi will remain a nightmare.

Abstract 171

Tuberculosis infection control in Malawi: A close analysis of strategies, constraints, gaps and unmet needs

Dickens Mahwayo¹

¹Given-secret Foundation, Mangochi, Malawi

Background: The Malawi Ministry of Health in close collaboration with other partners developed an ambitious target of creating a TB-free Malawi by the year (2016). Though of late there has been a steady decrease in reported and diagnosed cases of Tuberculosis (TB) as well as in the rate of deaths, but the fact that HIV/AIDS is still with us and that it is HIV that makes a person more vulnerable to developing TB, the TB-free Malawi target remains a nightmare. It is against this backdrop that a study was conducted to investigate and gauge TB infection control strategies, constraints, gaps and unmet needs in as far as achieving the TB-free Malawi by 2016 is concerned

Methods: The study involved secondary data/literature review, in-depth interviews and focus group discussions in Mangochi and Balaka districts.

Study respondents were anonymous and they provided information and data upon consent. The respondents comprised 38 patients currently on TB treatment, those who were on TB treatment during the past 2 to 3 years (44) and health care workers from public and private health facilities in the two districts (11).

Results: Despite the fact that Malawi has opportunities to achieve full potential to stop the spread of TB and achieve a TB-free Malawi, there are some constraints, gaps and unmet needs in as far as fighting the spread of TB is concerned as can be justified by the following study findings:

There are gaps and unmet needs in the decentralised TB services that aims at increasing accessibility to TB diagnosis and treatment in which some players are basically not covering the whole spectrum of TB services (case notification, diagnosis and treatment).

The Directly-Observed Treatment, Short- Course (DOTS) strategy lacks publicity, continuity and technical support hence it is relatively at a lower scale in many rural areas and not impressive.

Though TB and HIV/AIDS constitute a deadly combination that speeds the progression of illness and death, in many cases the approach does not always cover the whole spectrum.

Because of lack of public sensitisation and knowledge on TB, there are a lot of undiagnosed TB cases in rural areas thereby increasing transmission within the community.

Conclusion: TB is still a big public health problem in Malawi of which the most affected people are within the highly productive age group of 15 to 49 years, hence this calls for the government of Malawi and its partners to reinvigorate their efforts. Tuberculosis is preventable and curable.

Abstract 172

Assessment of severe Malaria among pregnant mothers living with HIV/AIDS in Aminu Kano Teaching Hospital Kano State, Nigeria

Yusuf Mohammed¹, Amina Usman¹, NUra Sani²

¹Bayero University, Kano, Nigeria, ²Federal University, Dutse, Nigeria

Background: HIV and Malaria are among the leading causes of morbidity and mortality during pregnancy in Africa, and each interact with the host immune system, resulting in complex activation of immune cells. People living with HIV are likely exposed to severe malaria with marked reduction of CD4 cells count and increase in plasma viral load. The aim of the study was to determine in pregnant mothers the relationship between HIV infection and malaria prevalence, and to examine in relation to parasitemia level and the severity of infection.

Materials and Methods: A hospital based prospective cohort study was conducted among pregnant women at Aminu Kano Teaching Hospital through routine voluntary and confidential HIV screening in antenatal clinic. After obtaining ethical approval, 200 HIV- infected and equivalent numbers of HIV-negative pregnant mothers were consecutively selected from whom we obtained socio-demographic and biomedical history data using a structured Questionnaire. Blood sample were aseptically collected in an EDTA container. A blood smears (Thick and thin) for malaria screening; Pack Cell Volume and Blood Glucose Level were systematically performed using standard procedure. The results were analyzed using Microsoft excel and OpenEpi statistical software version 2.3 and p-value of ≤ 0.05 was considered significant.

Results: Malaria prevalence was 141(70.5%) in HIV-infected and 110(55.0%) in HIV-uninfected. The severity of the infection was 41(29.1%) and 5(4.5%) in HIV-infected and HIV-uninfected respectively with significance difference ($p < 0.05$).

Conclusion: Conclusively, the HIV-infected pregnant mothers had clear evidence of greater exposure to severe malaria in a region of higher malaria transmission. Both diseases are wide spread in Africa and therefore strategies to reduce the severity of malaria during pregnancy should be reinforced especially in area of high HIV prevalence.

Abstract 173

Re-emerging epidemic? Poor outcomes among the HIV/TB co-infected.

Jerusha Mogaka¹, Lewis Magu¹, Charity King'ori¹, Racheal Obwori¹, Jared Mecha², Ann Njoroge¹

¹Kenyatta National Hospital, Nairobi, Kenya, ²University of Nairobi, Nairobi, Kenya

Background: Integration of TB prevention strategies including screening (intensive case finding) and Isoniazid Preventive Therapy (IPT) among HIV-infected individuals in addition to the impact of antiretroviral therapy (ART) has contributed to decline in incidence of HIV-related TB. We assessed the prevalence of TB/HIV co-infection among TB patients who were being screened for glucose intolerance.

Methods: Ambulatory newly diagnosed TB patients based on microscopy and chest x-ray or Xpert MTB/Rif between May 2015 and August 2016 were enrolled. HIV status was ascertained through self-report or on-site testing if the participant had not been tested within the previous 12 months. Participants had a random blood glucose test at enrollment prior to onset of TB treatment and a glycated hemoglobin (HbA1C) test after 6 months at completion of TB treatment. We present the TB treatment outcomes of the sub-set who were TB/HIV co-infected.

Results: Of the 109 participants enrolled, 20(18.3%) were found to be HIV-infected. Of these, 12 (60%) were male and the median age was 35.5 years (IQR 26, 48). Fourteen (70%) had normal BMI, 5(25%) were underweight and one person (5%) was overweight. All of them knew their HIV status prior to the TB diagnosis and were on ART. None had ever been diagnosed with TB previously. Thirteen (65%) had pulmonary TB while 7 had extra-pulmonary TB (TB adenitis, TB meningitis and pleural effusion). 11 of the 13 pulmonary TB cases (84.6%) were smear-positive. Rashes, nausea and numbness were the common adverse events reported during the course of anti-TB drugs. 3(15%) of the co-infected participants died within the 6 months of TB treatment.

Conclusion: Despite being on ART, incidence of TB; particularly smear-positive pulmonary TB in HIV-infected individuals was relatively high and

associated with increased mortality. These findings call for further evaluation of ART adherence and overlap of drug toxicities among TB/HIV co-infected individuals.

Abstract 174

Limitations of the International HIV Dementia scale in the current era

Benedetta Milanini¹, Emmanuel Bahemana⁴, Senate Amusu⁵, Francis Kiweewa⁶, Rither Langat⁷, John Owuoth⁸, Elaine Allen¹, Christina Polyak^{2,3}, Julie Ake^{2,3}, **Victor Valcour**¹

¹Memory and Aging Center, Department of Neurology, University of California, San Francisco, San Francisco, United States, ²U.S. Military HIV Research Program, Walter Reed Army Institute of Research, Silver Spring, United States, ³Henry M. Jackson Foundation for the Advancement of Military Medicine, Bethesda, United States, ⁴Walter Reed Program-Tanzania, Mbeya, Tanzania, ⁵Walter Reed Program-Nigeria, Abuja, Nigeria, ⁶Makerere University-Walter Reed Project, Kampala, Uganda, ⁷KEMRI/Walter Reed Project, Kericho, Kenya, ⁸KEMRI/Walter Reed Project, Kisumu, Kenya

BACKGROUND: The International HIV Dementia Scale (IHDS) was developed as a tool for HIV dementia in both the industrialized and developing world. As initially described, a cut-point of 10 on this 12-point scale had sensitivity of 80% with specificity of 55% in Uganda. Recent publications from Uganda identify very high rates of probable HIV dementia (64%, BMC Psychiatry 2013) using this screening instrument, prompting us to examine performance characteristics for the current era.

MATERIALS & METHODS: 2414 individuals from East Africa underwent testing with the IHDS and a 30-minute cognitive battery that included the World Health Organization (WHO) auditory verbal learning test (AVLT) trial 1, sum of 1-5, and recall; the Trails A test; the grooved pegboard test; and action fluency task. We defined impairment among HIV+ participants as - 1 SD on two tests or - 2 SD on one test when performance was compared to concurrently enrolled controls stratified by age (<35/>=35) and education (<6 years, 6-12 years, >12 years). We examined predictive capacity of the IHDS using receiver operator characteristic (ROC) curve. Psychometrists underwent initial certification with re-certification every 6 months.

RESULTS: We enrolled participants from Uganda (n=531), Kenya (n=1466) and Tanzania (n=417) with mean (SD) age for HIV+ (n=2009) and HIV-negative (n=405) groups: 39.8 (10.8) and 37.6 (10.5), respectively (p=0.006). Among HIV+, 1651 (67%) were on cART, 979 (51%) had plasma viral loads <50 copies/ml and 702 (36%) met criteria for impairment. The mean (SD) IHDS score was 8.5 (1.7) and 9.0 (1.6) for HIV+ and HIV-negative, respectively (p=0.001). Using the cut-point of 10, 1290 (64%) of HIV+ subjects would be classified as having dementia as well as 215 (53%) of HIV negative controls. The ROC area under the curve (AUC) was maximally 60% offering a sensitivity of 66% and specificity of 66% at a cut point of 9 among HIV+.

CONCLUSIONS: The IHDS has poor performance characteristics for the identification of impairment in East Africa in the current era. Performance for the most severe form of impairment, HIV Dementia, typically constituting < 5% of patients with access to cART, cannot be assessed from these data. Our data raise concerns for continued use of the IHDS in the era of cART.

Abstract 175

Effects of cardio-metabolic risk factors on standard antiretroviral therapy outcomes in Malawi: a prospective cohort study

Alemayehu Amberbir¹, Victor Banda¹, Alfred Matengeni¹, Zahra Ismail², Colin Pfaff¹, Victor Singano¹, Gift S Chinomba³, Theresa J Allain⁴, Adrienne K Chan^{1,5}, Sumeet K Sodhi^{1,5,6}, Joep J van Oosterhout^{1,4}

¹Dignitas International, Zomba, Malawi, ²Pirimiti Rural Hospital, Pirimiti, Malawi, ³Ministry of Health, District Health Office, Zomba, Malawi, ⁴Department of Medicine, College of Medicine, University of Malawi, Blantyre, Malawi, ⁵Faculty of Medicine, University of Toronto, Toronto, Canada, ⁶Department of Family and Community Medicine, Toronto Western Hospital, University Health Network, Toronto, Canada

Background: Cardiovascular disease (CVD) risk among people living with HIV is elevated due to persistent inflammation, hypertension and diabetes comorbidity, lifestyle factors and exposure to antiretroviral therapy (ART). Data from Africa on how CVD risk affects morbidity and mortality gains

among ART patients are lacking. We explored the effect of CVD risk factors and Framingham Risk Score (FRS) on medium/short term ART outcomes.

Materials and Methods: A prospective cohort study of standardized ART outcomes (alive on ART, stopped ART, defaulted, dead, transferred out) was conducted from July 2014 - December 2016 among patients in care at a rural and an urban HIV clinic in Zomba district, Malawi. Primary outcome was Adverse ART Outcome, a composite of dead/defaulted. Patients who transferred out were excluded from the analysis and active defaulter tracing was not done. At enrolment, hypertension, diabetes and dyslipidemia were diagnosed, lifestyle data collected and the FRS was determined. Cox-regression analysis was used to determine independent risk factors for adverse ART outcome.

Results: Of 952 patients enrolled, median age was 52 years (IQR: 35-50), 72% were female, 24% had hypertension, 4% had diabetes and 15.8% had elevated total cholesterol. The median follow up time was 2.4 years. Twenty (2.1%) patients died, 50 (5.4%) defaulted, 63 (6.8%) transferred out and 798 (85.7%) were alive on ART care (47.9% urban vs. 52.1% rural, $p=0.21$). In multivariable survival analysis, male gender (aHR=2.08; 95%CI: 1.28 - 3.39, $p<0.01$), age (aHR=2.89, 95%CI: 1.39 - 5.98 for ≤ 30 years and aHR=1.38, 95%CI: 0.80 - 2.36 for 31-45 years, compared to age >45 years; overall $p=0.03$) and non-vigorous physical activity (aHR=1.84; 95%CI: 0.95 to 3.56; $p=0.07$) were associated with Adverse ART Outcome. There was no significant association between Adverse ART Outcome and body mass index, central obesity, hypertension, diabetes, FRS, elevated total cholesterol, current smoking and WHO disease stage.

Conclusions: In this study, medium/short term Adverse ART Outcome was not associated with FRS and most classic CVD risk factors. The association with younger age relates to increased risk of defaulting. Larger studies with longer follow up investigating CVD risk and clinical outcomes in African ART populations are needed.

Abstract 176

High risk genital HPV infection, dysplasia and cancer of the cervix in a cohort of women infected with HIV in Senegal

Selly Ba¹, Papa Salif Sow¹, Boubacar Dembele², Macoumba Toure¹, Marie Pierre Sy¹, Fatou Traore¹, Fatima Sall¹, Moussa Seydi¹, Q Feng³, Geoffrey Gottlieb³, Nancy Kiviat³, Steve Hawes³

¹Department Infectious Diseases, Dakar, Senegal, ²Institut Curie, Dakar, Senegal, ³University of Washington, Seattle, USA

Background: Screening programs to prevent development of cervical cancer in sub-Saharan African women with HIV infection are lacking. We have undertaken the study to determine the burden of HPV infection and dysplasia of the cervix in a cohort of HIV-positive women

Methods: This is an analysis of prevalence data from the baseline visit of a prospective cohort study conducted from October 2005 to September 2011. Inclusion criteria included no pregnant woman aged 18 years and more, infected with HIV, who consented to participate in the study. Exclusion criteria included pregnancy at baseline. Study visits were scheduled every four months with cervical Pap smear, HPV detection by PCR at all visits, and biopsy at the initial and final exit visit, as well as with abnormal cytologic findings.

Results: 209 women infected with HIV (HIV-1: 79% (n = 167); HIV-2: 14% (n = 29); HIV-1 and HIV-2: 7% (n = 13)) were enrolled. Median age was 41 years (range 20-66), 54% were married, and 84% reported no contraception during study follow-up. The median CD4 count was 375 cells/mm³, 58% were on ART, and average length of follow-up was 2.45 years. At baseline, HPV DNA was detected in 75% of HIV-1, 62% of HIV-2, and 77% of dually HIV-1 and HIV-2 infected subjects, respectively; $p = 0.3$, among them 118 (78%) were positive for multiple HPV types. High risk genital HPV types most commonly detected were HPV-52 (17%), HPV-58 (16%), HPV-35 (15%), HPV-16 (14%), HPV-51 (11%), HPV-18 (10%), and HPV-33 (10%). At baseline, 30% (n = 62) had prevalent cytological abnormalities (HIV-1 (33%), HIV-2 (25%), dual HIV-1/HIV-2 (23%); $p = 0.7$), including 6% with ASCUS, 12% with low grade lesions, 4% with high grade lesions, 4% with carcinoma in situ (CIS), and 4% with invasive cancer (ICC).

Conclusions: In a cohort of HIV infected women in Senegal, there was a high burden of prevalent HPV infection and prevalent cervical abnormalities identified at baseline. Early detection of cervical abnormalities through cervical screening, or their prevention by HPV vaccination, is critical to prevent cervical disease among the HIV-positive women.

Abstract 177

Smoothing the HIV cascade: implementation and evaluation of HIV self-testing in Malawi 2010-2017

Augustine Choko^{1,2}, Peter MacPherson³, Moses Kumwenda¹, Pitchaya Indravu¹, Michael Murowa⁴, Cheryl Johhson⁵, Elizabeth Corbett^{1,6}, Katherine Fielding²

¹TB/HIV, Malawi Liverpool Wellcome Trust Clinical Research Programme, Blantyre, Malawi, ²Dept. of Infectious Disease Epidemiology, London School of Hygiene and Tropical Medicine (LSHTM), London, UK, ³Liverpool School of Tropical Medicine, Liverpool, UK, ⁴Ministry of Health, Thyolo District Health Office, Thyolo, Malawi, ⁵World Health Organization (WHO), Geneva, Switzerland, ⁶Dept. of Clinical Research, London School of Hygiene and Tropical Medicine (LSHTM), London, UK

Background: World Health Organization (WHO) guidelines include a strong recommendation to implement HIV self-testing (HIVST) as a complimentary HIV testing strategy. There have been a number of studies investigating different models of HIVST in different populations within the sub-Saharan African (SSA) region. Here we summarise results from six studies conducted in urban and rural Malawi from 2010-2017.

Materials and Methods: A narrative review summarising evidence from primary studies that investigated HIVST uptake, accuracy, and subsequent linkage into HIV care and prevention in Malawi. Results from two randomized trials, one prospective study, and three cross-sectional studies are summarised.

Definitions of accuracy: comparison of self-test self-read result and counsellor performed finger prick rapid tests in parallel (reference). Participants had to present a pre-provided self-referral card to be

identified as linked for follow-on services. All studies included in this review were duly approved by relevant local and/or international institutional review boards. Reported social harms including psychological and physical intimate partner violence (IPV) were measured through independent reporting by participants or key informants.

Results: Sample size ranged from 250 to 16,660 adults with relatively older participants in studies conducted in rural (~32y) compared to urban population (~27y). In adjusted analysis, uptake of HIVST ranged from 74% in the general population to 95% among male partners of antenatal clinic attendees in urban setting. High diagnostic accuracy was observed across four studies with few false positives (specificity: 99.6-100%) although sensitivity was lower (92.9-97.9%).

Linkage into care and prevention was highest (53%) in a trial using financial incentives to motivate male partners to link following HIVST and was lowest (~20%) in rural a population. Formal reporting of social harms including IPV were extremely rare reported by only 7 of ~20,000 participants across the studies.

Conclusions: Our experiences of implementing and rigorously evaluating HIVST in Malawi demonstrates that high uptake and accuracy can be achieved. Adults who self-test for HIV require support to link into care and prevention services, with interventions such as facilitated linkage, reminders or financial incentives showing promise.

Abstract 178

Feasibility of TB screening of unselected HIV-positive hospital admissions in Sub-Saharan Africa: The STAMP Trial

Ankur Gupta-wright^{1,2}, Liz Corbett^{1,2}, Joep J van Oosterhout³, Doug Wilson⁴, Melanie Moyo³, Jurgens Peters², Lingstone Chiume¹, Katherine Fielding²

¹London School of Hygiene & Tropical Medicine, London, UK, ²Malawi-Liverpool-Wellcome Trust Clinical Research Programme, Blantyre, Malawi, ³Dignitas International, Zomba, Malawi, ⁴Department of Internal Medicine, Edendale Hospital, Pietermaritzburg, South Africa

Background: HIV-associated tuberculosis (TB) remains a significant cause of mortality in patients admitted to hospital in sub-Saharan Africa, much of which is left undiagnosed. The rapid urine-based Screening for TB to reduce AIDS-related Mortality in hospitalised Patients in Africa (STAMP) trial aims to determine the impact of a sensitive TB screening strategy on mortality, measured at 2-months, in Malawi and South Africa.

Methods: The study recruited unselected HIV-positive adult admissions to medical wards, irrespective of presenting complaint or presence of TB symptoms. 50mls of urine and a single sputum sample were requested at enrolment for TB screening. We report early enrolment data from the STAMP trial describing the feasibility and acceptability of this TB screening approach.

Results: 1,875 eligible patients were screened to date, with only 25 (1.3%) citing additional samples for TB screening as the reason for non-participation. Of the 1,629 patients enrolled across both sites, 56.1% were female. TB symptoms were common; current cough was reported by 52.7%, fever 62.2%, weight loss 70.2% and night sweats 42.2%. Overall, 91.5% were positive using the WHO four-symptom TB screen. In contrast, only 39.2% were suspected of having TB by the admitting clinical team. 248 (15.3%) of participants were newly diagnosed with HIV. Of those with an existing HIV diagnosis, 83.3% were currently taking antiretroviral therapy (ART). The median CD4 cell count was 212 cells/mm³ (interquartile range 69-421).

99.1% of participants were able to produce a urine sample for TB screening but only 54.8% produced a sputum sample. 97.6% of sputum samples and 98.8% of urine samples tested with Xpert MTB/RIF produced valid results. 47.4% of participants had a chest x-ray done during their admission.

Conclusions: TB screening of unselected HIV-positive hospital admissions in sub-Saharan Africa is both feasible and acceptable to patients. Twice as many patients reported TB symptoms compared to those suspected of having TB by their clinicians, although both were common despite high ART coverage and median CD4 cell count >200cells/mm³. Urine specimens could be produced by almost all patients, in contrast to sputum, and were tested using Xpert MTB/RIF with a very low error rate.

Abstract 179

WHO 90-90-90 HIV testing targets: Optimizing coverage in acutely ill medical patients

Jurgens Peters¹, Katherine Fielding¹, Ankur Gupta-Wright^{1,2}, Melanie Moyo³, Joep J van Oosterhout⁴, Donald Chokuda Zao⁴, Douglas Wilson^{4,5}

¹London School of Hygiene & Tropical Medicine, London, United Kingdom, ²Malawi-Liverpool-Wellcome Trust Clinical Research Programme, Blantyre, Malawi, ³Dignitas International, PO Box 30096, Blantyre 3, Malawi, ⁴Umkhuseleli Innovation and Research Management, Pietermaritzburg, South Africa, ⁵Department of Medicine, Edendale Hospital, Pietermaritzburg, South Africa

Background: The WHO 90-90-90 target aims to diagnose 90% of HIV-positive individuals for initiation of ART. While HIV is common in patients admitted to medical departments of public hospitals in sub-Saharan Africa, uptake of HIV testing is unknown.

Methods: We conducted a cohort study nested within an ongoing randomised trial of urine-based TB screening (STAMP trial). Provider-initiated HIV testing and counselling (PITC) was offered to all adults admitted to medical wards at two hospitals in KwaZulu-Natal, South Africa, and Zomba, Malawi. We determined HIV testing uptake within 72 hours of admission, and factors associated with non-uptake.

Results: From October 2015-August 2016, 5568 patients were admitted; 48% men, mean age 39 years. 54% had a confirmed HIV status and/or self-reported to knowing their HIV status, of whom 67% were HIV positive. Of those with an unknown HIV status (n=2572), 63% consented to testing: 13% tested positive. There were some differences by country: the proportion of patients with known HIV status was higher in South Africa (0.65, 95% CI 0.63-0.66) compared to Malawi (0.44, 95%CI 0.42 to 0.46, p<0.0001). However, the proportion of patients with unknown status who agreed to PITC was higher in Malawi (0.82, 95%CI 0.80-0.84) compared to South Africa (0.30, 95% CI 0.26-0.33, p<0.0001).

Following PITC, HIV status remained unknown for 17% of admissions. A greater proportion of patients with unknown HIV status were not tested by 72 hours after admission in South Africa (0.25, 95% CI

0.23-0.26) compared to Malawi (0.10, 95% CI 0.09-0.11, $p < 0.0001$). Men at Edendale were more likely to decline testing (OR 1.6, 95%-CI 1.1-2.3), and younger patients more likely to decline at Zomba (OR 3.9, 95%-CI 2.1-7.1; aged <30 vs. 30-39 years). 49% of patients with unknown HIV-status were confused and unable to consent, and 22% were discharged or died without testing.

Conclusion: With limited additional human resources, we achieved a high HIV-testing coverage (83%) among acute medical admissions. Gender and age were associated with non-uptake of testing. Half of patients not testing were confused and unable to consent, suggesting that changes in the approach to testing confused patients may improve uptake. Patients were commonly discharged or died before testing, demonstrating missed opportunities for diagnosis and linkage to care. Qualitative studies are warranted to understand why testing uptake was reduced in men and younger persons in these settings

Abstract 180

Retention in care among adolescents on antiretroviral treatment (ART) at a tertiary referral hospital in Malawi: a nested case-control study of an adolescent-centered psychosocial support intervention

Rachel K MacKenzie¹, Adrienne Chan^{1,2}, Chrissie Gondwe¹, Brave Nyirenda¹, Edith Thaulo³, Victor Banda¹, Teferi Beyene⁴, Daniela Garone⁵, Sumeet Sodhi¹, **Monique van Lettow**^{1,2}

¹Dignitas International, Zomba, Malawi, ²University of Toronto, Toronto, Canada, ³Zomba Central Hospital, Zomba, Malawi, ⁴Baylor College of Medicine, Lilongwe, Malawi, ⁵Médecins Sans Frontières, Harare, Zimbabwe

Background: Structural barriers to the care of adolescents living with HIV (ALHIV) make them vulnerable to attrition from care, poor adherence and treatment failure. In 2010, a specialized psychosocial support intervention, Teen Club, was established at a tertiary referral HIV clinic of the Malawi Ministry of Health with the aim of providing

dedicated clinic time, health education, disclosure support, and peer mentorship for ALHIV.

Methods: We conducted a nested case-control study using routinely collected programmatic data from 2004-2015 for HIV patients in an observational ART cohort in Zomba District, Malawi to evaluate the association between Teen Club attendance and retention in care. ALHIV were eligible for inclusion if they were between the ages of 10-19 when receiving ART from Zomba Central Hospital after 2010. Patients on ART < 3 months were excluded from analysis. Adolescents were considered cases if they had defaulted or died during the specific observation time. Controls were matched 4:1 to cases by observation time, where observation start time was the date of ART registration. Multivariable logistic regression was performed to measure the association between Teen Club attendance and retention in care, when controlled for sex, age at ART initiation (< 10; 10-14; 15-19 years), reason for ART initiation and year of initiation (duration on ART).

Results: Among all 939 eligible adolescents, 235 patients were not retained in care, including 202 patients who were lost to follow up and 33 patients who died. In multivariable analysis, attending Teen Club increased the likelihood of being retained in care for adolescents who started ART at 10-14 or at 15-19 years of age [aOR 1.99 (95% CI 1.22, 3.21); aOR 3.81 (95% CI 1.63, 8.88)]. Attending Teen Club did not significantly impact the likelihood of retention in care for adolescents who had started ART before the age of 10 [aOR 1.06 (95% CI 0.51, 2.20)].

Conclusion: Interventions addressing attrition from care for ALHIV should be a priority in high prevalence, low resource settings. These results provide further evidence that an adolescent-centered psychosocial support intervention can improve treatment retention for ALHIV starting ART, and should be resourced in national programs.

Abstract 181

PMTCT program utilization and HIV transmission rates in young and adolescent mothers compared to adult mothers: A nationally representative sample of women screened at 4-26 weeks postpartum in Malawi

Monique Van Lettow^{1,3}, Megan Landes^{1,3}, Joep J van Oosterhout^{1,4}, Erik Schouten², Happy Phiri², Ernest Nkhoma², Thokozani Kalua⁵, Andreas Jahn⁶

¹Dignitas International, Zomba, Malawi, ²Management Sciences for Health, Lilongwe, Malawi, ³University of Toronto, Toronto, Canada, ⁴College of Medicine, Blantyre, Malawi, ⁵Ministry of Health, Lilongwe, Malawi, ⁶ITEC, Lilongwe, Malawi

Background: Evidence from limited studies indicate that prevention of mother-to-child-transmission (PMTCT) outcomes in young and adolescent women are worse than for adult women. In this study we compare utilization of PMTCT services (uptake of antenatal testing and antiretroviral treatment (ART)) and mother-to-child transmission (MTCT) rates between young (<25yrs) or adolescent (<20yrs) mothers, and adult mothers (>25yrs) in a national PMTCT evaluation in Malawi.

Methods: Mothers were consecutively consented and screened in 54 under-5 clinics with their 4-26 week old infant between October 2014 and May 2016. Structured interviews with mothers confirmed uptake of antenatal testing and ART. Maternal HIV rapid-testing was conducted at site. Exposed infants underwent infant virological HIV testing. Weighted survey design analysis was conducted using SPSS.

Results: A total of 33,744 mother-infant-pairs were included; 17,928 (53.8%) were young (12-24yrs), 6,427 (20.5%) were adolescent (12-19yrs) mothers. Among all, 33,276 (97.8%) reported being tested for HIV before or during last pregnancy. Young mothers had more likely missed antenatal HIV testing than adult mothers [OR 1.8(95%CI1.2-2.7)]. Overall, 3,233 (11.3%) mothers were identified HIV-infected before or during pregnancy; this prevalence was lower in young (4.6%) and adolescent (2.8%) mothers. At time of study, an additional 286 new infections were identified (244 previously negative; 42 previously unknown).

Adolescents were less likely newly identified infected (previously negative) than young and adult mothers [OR 0.5(95%CI0.2-0.9)]. However, newly identified HIV-infected (previous unknown) young mothers may have missed earlier diagnoses than adult mothers [OR 3.5(95%CI0.9-14.4)]. Among the known HIV-infected women, 3,034 (94.7%) reported being on ART, with no difference between young or adolescent and adult mothers. Overall MTCT rate at 4-26 weeks was 4.7%, with no difference between young or adolescent and adult mothers.

Conclusion: Over half of mothers attending under-5 clinics in Malawi are under 25 years. Utilization and effectiveness of PMTCT services in Malawi is high and MTCT rates are relatively low. HIV prevalence is much lower among young and adolescent compared to older mothers, but the risk of missing antenatal HIV testing appears higher among younger and adolescent women. There appears little difference in PMTCT outcomes between younger and older mothers in Malawi.

Abstract 182

National Evaluation of Option B+ in Malawi: High maternal ART coverage and low early infant transmission in all areas of the country

Tippett Barr B¹, van Lettow M², Landes M³, van Oosterhout J^{2,4}, Armene E⁵, Schouten E⁶, Wadonda-Kabondo N⁷, Gupta S⁸, Kalua T⁹, Jahn A^{9,10}

¹Centers for Disease Control and Prevention, ²Dignitas International, ³University of Toronto, ⁴University of Malawi College of Medicine, ⁵Centers for Disease Control and Prevention, ⁶Management Sciences for Health, ⁷Centers for Disease Control and Prevention, ⁸Centers for Disease Control and Prevention, ⁹Malawi Ministry of Health Dept of HIV and AIDS, ¹⁰ITECH, University of Washington

Background: Option B+ was conceptualized and implemented in Malawi in 2011. Routine program data suggest relatively high ART uptake among pregnant women and challenges with retention. HIV testing for exposed children is affected by delays and loss to follow-up. The Ministry of Health has led the implementation of a National Evaluation of Malawi's PMTCT Program (NEMAPP) to provide unbiased nationally representative data on

maternal ART coverage and on early and late vertical transmission rates.

Methods: NEMAPP is a 2 year longitudinal cohort study implemented at 54 health facilities in November 2014 using a two-stage cluster sampling design to identify a representative sample of 4-12 week old infants. Mothers were consecutively consented and screened for HIV while attending an under-5 clinic; HIV-exposed infants receive HIV-1 DNA testing at enrolment, 12 and 24 months. Complex weighted survey design analysis was conducted using STATA.

Results: Among 2,125 HIV-positive mothers, 2,082 (96.1%) reported knowing their HIV status before or during pregnancy, and 1,865 (88.5%, 59.4-100% across sites %) were on ART in pregnancy. Overall MTCT was 4.2% (95% CI 2.9-6.1); for women on ART in pregnancy, MTCT was 2.5% (95% CI 1.6-3.9). MTCT was 17.9% (95% CI 13.0-24.2) among women not on ART during pregnancy. MTCT varied from 1.4% (95% CI 0.5-3.9) among women who initiated ART before pregnancy, to 20.2% (95% CI 5.8-50.7) in those starting ART post-partum. Early infant transmission was similar across geographic strata, ranging from 3.2% (95% CI 1.7 – 5.8) to 5.1% (95% CI 3.5-6.3) between strata (Table 1).

Conclusion: Malawi's early MTCT rates are close to those of developed nations. Decentralization of ART services to all ANC clinics and strong program leadership through quarterly supportive site supervision and active supply chain management have resulted in high levels of ART coverage and low early transmission rates in all areas of the country. The number of new pediatric infections are disproportionately contributed to by the small percentage of HIV-positive women not on ART in pregnancy.

Abstract 183

Predictors of mother-to-child transmission in women on ART: Results from a National Evaluation of Malawi's PMTCT Program

Tippett Barr B¹, Landes M², van Lettow M³, van Oosterhout J^{3,4}, Schouten E⁵, Nyirenda R⁷

¹Centers for Disease Control and Prevention, ²University of Toronto, ³Dignitas International, ⁴University of Malawi College of Medicine, ⁵Management Sciences for Health, ⁶Ministry of Health Department of HIV and AIDS, ⁷Centers for Disease Control and Prevention

Background: In 2016, high ART uptake in HIV infected pregnant women was documented by the National Evaluation of Malawi's PMTCT Program (NEMAPP), and early infant transmission reduced to less than 2% in women on ART. Understanding factors associated with infant transmission in women on ART becomes increasingly important as countries seek to reach virtual elimination of mother-to-child transmission (eMTCT).

Methods: NEMAPP was implemented at 54 health facilities in 10 districts. A stratified cluster sampling design was used to identify a nationally representative sample of 4-12 week old infants. Mothers were consecutively consented and screened for HIV while attending an under-5 clinic, and all identified HIV-exposed infants underwent HIV-1 DNA testing. Structured interviews collected data on sociodemographic and clinical characteristics. Complex weighted survey design analysis was conducted using STATA.

Results: Of the 2125 HIV-infected women enrolled, 1,865 (88.5%) were on ART at the time of enrollment. Early infant transmission was lower in mothers who started ART prior to pregnancy in comparison to those who started in pregnancy (2.3% vs 3.5%, $p=0.014$) and women who disclosed their status to their partners (5.8% vs 2.0%, $p=0.008$).

In multivariable analysis for the subgroup of woman on ART, early infant transmission was almost twice as likely if a woman started ART during compared to before their pregnancy (aOR 1.9; $p=0.032$). Additionally, partner's HIV status disclosure to mother was significantly protective against early infant transmission (aOR 0.39; $p=0.011$), although maternal disclosure to spouse was not. Maternal self-reported health status, mother's self-reported missed ART, exclusive breastfeeding and infant receiving nevirapine syrup were not associated with early transmission in this sub-group of women on ART.

Conclusions: Women who have not openly discussed their partner's HIV status are more likely to transmit the virus to their child, indicating that disclosure between partners may mediate the effectiveness of PMTCT, potentially through the mother's adherence to antiretrovirals. This is the first time HIV status disclosure between partners has been documented to affect vertical transmission at national level.

**11th International Workshop on HIV
Treatment, Pathogenesis, and Prevention
Research in Resource Limited Settings
INTEREST**

AUTHOR INDEX

Author Name	Abstract title	Abst #	Page #
Abiazem, G.	Accelerating the achievement of 90-90-90 Nigeria: A model of sub-population, prevalence-guided HIV testing in high transmission hotspots	79	73
Abiazem, G.	Expanding early infant Diagnosis (EID) services through active referrals and follow up in rural clinics in North Central Nigeria	153	122
Adewumi, O.	HIV Cns Compartmentalization Among HIV-1 Infected Subjects In Malawi	117	99
Ageng'o, J.	Effect of antiretroviral prophylaxis on prevention of mother to child transmission of HIV in infants in Western Kenya	152	122
Aghokeng Fobang, A.	Short And Long Term Virological Failure And HIV Drug Resistance In Cameroon	36	39
Agot, K.	Perceptions of adolescent girls about their ability to offer HIV self-test kits to their sexual partners: a pilot study in Siaya County, western Kenya	89	80
Amberbir, A.	Effects of cardio-metabolic risk factors on standard antiretroviral therapy outcomes in Malawi: a prospective cohort study	175	137
Amusu, S.	Disclosure of Sexual Practices to Family and Healthcare Providers by Men who have sex with Men in Nigeria.	14	18
Anyanwu, P. O.	Viral Suppression among HIV positive patients on treatment in Rural HIV Clinics, South-Eastern Nigeria: A Gender-based Perspective	141	115
Atanga, P.	Moderate to high antiretroviral therapy adherence is optimal for virologic suppression in HIV-positive pregnant and breastfeeding Cameroonian women initiating "Option B+": A prospective cohort study.	32	35
Ashaba, S.	Social adversities of HIV-positive adolescents in rural Uganda: a qualitative study Authors: Scholastic Ashaba ¹ , Christine Cooper-Vince ^{2, 3} , Dagmar Vořechovská ² , Alexander C. Tsai ^{1, 2, 3}	82	75
Ba, S.	High risk genital HPV infection, dysplasia and cancer of the cervix in a cohort of women infected with HIV in Senegal	176	138
Bahemana, E.	Longitudinal Assessment of CD4 Recovery after ART Initiation in ART-naïve HIV-infected Adults in Four African Countries	116	99
Birungi, C.	Coping with the challenge of long-term liabilities of HIV financing: a fiscal analysis of the national HIV program in Uganda	42	49
Birungi, C.	The end of AIDS: a possibility or pipedream? Modelling the future trajectory of the HIV epidemic in Uganda	50	54
Bosha, E.	Leveraging social media to raise awareness of gender-based violence and sexual health services: initial observations of use from a national assessment in South Africa	92	82
Botomani, C.	Care And Support For HIV Positive Children And Adolescents	98	86
Burmen, B.	Circumcision intentions and actual circumcision status of men from a traditionally non-circumcising Kenyan community: results from two rounds of a longitudinal bio-behavioural survey in Western Kenya, 2012-2014	74	69
Bwana, P.	Performance Evaluation Of Cepheid Xpert For HIV-1 Viral Load Assay In Selected Sites In Kenya	134	110
Carty, C.	The potential of advanced mHealth interventions for youth populations: insights from mobile phone use in a mixed rural-urban sub district in South Africa	83	76
Chasweka, D.	Validation of a screening tool to improve HIV case finding in pediatric wards in Malawi	31	34
Chavula, B.	Rate of antiretroviral drug substitution before and after the introduction of tenofovir based regimen in Malawi	35	38
Chikwapulo, B.	Incidence and risk factors for nephrotoxicity in patients initiated on Tenofovir based antiretroviral therapy in Blantyre, Malawi	106	92
Chilongo, M.	HIV and AIDS Stigma: What Drives the Gender HIV/AIDS Accepting Attitudes Gap in Malawi?	16	20

Author Name	Abstract title	Abst #	Page #
Chinyama, M.	An Analysis of the Extent of Social Inclusion and Equity Consideration in Malawi's National HIV and AIDS Policy Review Process	39	47
Chirwa, G.	Examining Heterogeneity in HIV Comprehensive Knowledge among Men and Women in Malawi	85	77
Chitiyo, V.	Operational Implementation of Provider Initiated Testing and Counselling: The Effect on HIV Testing Rates among Adult Outpatients in Zimbabwe	59	60
Chitiyo, V.	Entry Point Analysis of Provider Initiated HIV Testing Services: Progress Towards Achieving the First 90 in Zimbabwe	65	64
Choko, A.	One year outcomes following availability of community-based HIV self-testing: uptake, accuracy and linkage into care in a prospective study in Blantyre, Malawi	5	7
Choko, A.	Smoothing the HIV cascade: implementation and evaluation of HIV self-testing in Malawi 2010-2017	177	139
Coetzee, L.	CrAg positivity rates reported from a national CD4-reflexed screening programme identify high-risk regions of co-existent HIV/Cryptococcal disease, requiring urgent programmatic focus into care	30	33
Dah, T.	Hepatitis B virus infection in HIV-seronegative and HIV-seropositive MSM in West Africa: prevalence, associated factors, and acceptability of vaccination (CohMSM ANRS 12324 – Expertise France)	4	6
Devillé, W.	Oral Fluid HIV Self-Test Performance In Rural South-Africa	135	111
Diallo, Z.	Aging with HIV infection and locomotor disorders: experience of the Infectious and Tropical Diseases Unit, Abidjan, Côte d'Ivoire	120	102
Diaw, K.	The persistence of violence and discrimination against MSM in Senegal aggravates their vulnerability. The experience of the association ADAMA	21	25
Diop, E.	ANRS 12334 CoDISEN - Cohort study on people who inject drugs in Senegal	101	88
Doumbouya, B.	Implementation Of A Tb Active Case-Finding Approach In Cote D'Ivoire	158	125
Dovel, K.	Barriers to ART uptake experienced by healthy clients in Malawi under Test and Treat	26	46
Dovel, K.	Examining Malawi's Rollout of Universal Treatment: Policy Implementation and Provider Perceptions	37	46
Dovel, K.	Facility-level barriers to antiretroviral therapy experienced by men in Malawi	51	54
Dube, A.	Factors associated with acquisition of HIV during 2005-2014 among men and women in 5 African cohorts	47	52
Eghaghara, O. M.	Monitoring Stock Level of HIV Treatment drugs in South-Eastern Nigeria – The case for Stock Tracking Tool	58	59
Ello, N.	Prevalence of cardiovascular diseases and associated factors among HIV-infected patients during HAART in Abidjan	126	106
Enadeghe, O.	Health Seeking Behaviour among Youth with Sexually Transmitted Infection in Nigeria	166	131
Enegela, J.	Rates of condom use among HIV positive patients on ART in Nasarawa Eggon, North central Nigeria	76	71
Erekaha, S.	The MoMent Study: An Evaluation of PMTCT Knowledge among Healthcare Workers and Pregnant Women in Rural North-Central Nigeria	145	117
Essen, U.	Strategic Advocacy: A Key Element In Increasing Uptake Of HIV Testing & Counselling (Htc) Services In Multi-Disease Outreaches In Nigeria.	78	72
Essen, U.	Cultural Impediments In The Uptake Of HIV Testing & Counselling (Htc) Services In Nigeria.	80	74
Etienne Philémon, A.	Infection by HIV, HBV, and HCV leads to joints pain and elevated risk of autoimmune diseases through IgM-RF	128	108

Author Name	Abstract title	Abst #	Page #
Fortes Déguénonvo, L.	Timing of initiation of antiretroviral therapy and survival in patients with HIV and tuberculosis in Dakar, Senegal	165	131
Gambuleni, I.	Comparison Of Gene Xpert Mtb/Rif System Assay And Auramine-Phenol Microscopy Technique In The Laboratory Diagnosis Of Mycobacterium Tuberculosis At Mangochi District Hospital Laboratory	140	114
Gausi, B.	HIV Sero-Discordance And Dual Method Use Among HIV-Affected Couples In Lilongwe, Malawi	48	53
Gitau, E.	Invisible or Ignored: Most At Risk Adolescents	100	87
Gupta-wright, A.	Feasibility Of Tb Screening Of Unselected HIV-Positive Hospital Admissions In Sub-Saharan Africa: The Stamp Trial	178	139
Gupta-wright, A.	WHO 90-90-90 HIV TESTING TARGETS: OPTIMIZING COVERAGE IN ACUTELY ILL MEDICAL PATIENTS	179	140
Gwayi, O.	Inclusive Education For HIV-Positive Learners In Primary Schools	34	37
Habe Hebane, G. C.	Cardiovascular risk score in HIV infected adults in Côte d'Ivoire, Africa	115	98
Harrington, B.	Prevalence and factors associated with antenatal depression among women enrolled in Option B+ PMTCT in Malawi	33	36
Harrington, B.	Incidence and timing of hepatotoxicity among HIV positive pregnant women initiating efavirenz-based ART through Option B+ in Malawi	136	111
Hermans, L.	Increased risk of treatment failure after low-level viremia in a large cohort of South African HIV-positive patients treated according to WHO guidelines	7	9
Isaac, E.	Towards the third leg of WHO 90-90-90-: First viral load test results of 2,767 ARV experienced children and adults in Federal Teaching Hospital Gombe, North east Nigeria	137	112
Isaac, E.	Pmtct Cascade Outcomes In Nigeria, A Low Pmtct Coverage Setting: Experience From A Sub-Regional Programme In North East Nigeria	150	120
Jambo, K.	Cytokine networks in the lung are disrupted during chronic HIV infection and exhibit compartment-specific signatures	156	124
Jere, H.	Evaluation of a Community Defaulter tracing program focused on mothers who accessed the PMTCT option B+ program in Malawi	29	32
John, M.	Loss to follow up among newly diagnosed HIV positive pregnant women in the option B+ program in Malawi.	27	30
Johnson, C.	Should HIV self-testing be offered as an additional approach to delivering HIV testing services? A systematic review and meta-analysis	71	68
Johnson, C.	A clinical utility risk-benefit analysis for HIV self-testing	75	70
Kachingwe, E.	The pattern of transaminase abnormality among HIV and HBV co-Infected women on ART in Lilongwe Malawi	167	132
Kampango, G.	Challenges of treatment access by people living with HIV in Malawi	124	105
Kanjala, C.	HIV Incidence patterns and sexual behaviour in the era of ART, Karonga Prevention Study 2007 - 2011	13	17
Karoney, M.	Burden of Hepatitis B infection among high risk populations in Western Kenya	49	53
Khamofu, H.	Linkage to treatment and retention amongst adolescents and young adults in a large antiretroviral treatment program in Nigeria	25	29
Khembo, F.	The indirect impact of health expenditure on life expectancy through coverage of antiretroviral therapy in Malawi.	43	49
Khumalo, G.	Experiences of the MaxART Early Access to ART for All community advisory board (CAB) in Swaziland	96	85

Author Name	Abstract title	Abst #	Page #
Kibuuka, H.	Mortality and its predictors in a cohort of HIV infected patients in East Africa and Nigeria	122	103
Kosgei, J.	Burden of HIV and Sexually Transmitted Co-Infections among the Most-At-Risk Populations in East Africa: A Review of The Echo Study.	18	22
Kumboneki, L.	Predictors Of Optimal Adherence Among HIV/Aids Patients On Art In Rural Botswana: A Cross Sectional Study	125	105
Kumwenda, M.	Discordance, Disclosure and Normative gender roles: A triad of barrier to couples HIV self-testing provided through a community-based approach in urban Blantyre, Malawi	86	78
Kumwenda, M.	Peer-led delivery model for HIV self-testing in female sex workers: Designing the model based on research and participatory strategies in urban Blantyre, Malawi	97	85
Laborde-balen, G.	Treatment failure in Cameroon : problems and current limitations of the health care system	84	77
Landes, M.	Maternal health and ART use at 4-26 weeks postpartum in Option B+ in Malawi	88	79
Landes, M.	Recent tuberculosis diagnoses and symptom screening among HIV-infected women and their infants at 4-26 weeks postpartum in a routine program setting in Malawi	159	126
Lungu, T.	"The drug will help protect my tomorrow": Awareness, willingness, and preferences to use pre-exposure prophylaxis (PrEP) among female sex workers in Lilongwe, Malawi	9	13
Luvai, E.	Building HIV-1 Drug Resistance Testing Capacity in Support of the Kenyan National HIV Control Program	123	104
Mahwayo, D.	Masculinity And Cultural Attuned Perceptions Delays Tuberculosis Early Diagnosis, Case Management And Timely Treatment: An Analysis Of Barriers And Contributing Factors.	170	134
Mahwayo, D.	Tuberculosis Infection Control In Malawi: A Close Analysis Of Strategies, Constraints, Gaps And Unmet Needs.	171	135
Makelele, P.	Integration of HIV testing and counseling services in national immunization program: Experience from Kasama District in Northern Zambia	52	55
Malamba, S.	Prevalence and factors associated with unknown HIV status among HIV positive female sex workers: Rwanda behavioral and biological surveillance survey (BBSS) 2015	12	16
Malebe, T.	Meeting the contraceptive needs of HIV + individuals with a "one Stop Shop" Model in Antiretroviral (ART) clinics in northern part of Zambia	20	24
Malebe, T.	Assessing Pregnancy Rates in HIV-positive Women using Contraceptives and First line Antiretroviral Therapy in Zambia: A Retrospective Study.	90	81
Malema, M.	Using human resource and infrastructure costing analysis to determine required investments for scaling up HIV and AIDs services for meeting 90-90-90 prescribed treatment targets	1	3
Mangenah, C.	The costs of community based HIV self-test (HIV-ST) kit distribution: Results from three (3) district sites in Zimbabwe	2	4
Mangwe, G.	Behavior Change Interventions Among Young People	81	74
Masamaro, K.	A Viral Load Service Quality Assessment: Preliminary Results From Kenya	131	108
Mbayiha, A.	Transactional sex among men who have sex with men (MSM) in Rwanda: Behavioral and Biological Surveillance Survey 2015	15	19
Mbichila, T.	Partnership Duration And HIV Serostatus Disclosure Among People Living With HIV/Aids In Lilongwe, Malawi	22	26
Mbulaje, P.	Evaluation of HIV and AIDS Workplace Policy at Nkhotakota District Council, Malawi	44	50
Melhado, C.	Contraceptive Failure and Pregnancy Intentions Among ART-Naive and ART-Adherent HIV-Infected Pregnant Women Enrolled in Option B+	87	79
Mendelsohn, S.	Implementation of the HIV "test-and-treat" strategy in Malawi prisons: experience, challenges, and effectiveness	8	10

Author Name	Abstract title	Abst #	Page #
Mfochive Njindam, I.	Evaluating Different Linkage to HIV Treatment Implementation Models for Key Populations living with HIV in Cameroon.	17	21
Mganga, A.	Uptake and ART Outcomes of Women Initiating Antiretroviral Therapy under Option B+ in Malawi: Cox Proportional Hazards and Multistate Survival Models	143	116
Mills, L.	Using Community-Based HIV Testing Campaigns by Lay Health Workers to Identify Signs and Symptoms of Tuberculosis in the Botswana Combination Prevention Project	6	8
Mills, L.	Risk factors associated with HIV infection among MSM in Rwanda: Behavioral and Biological Surveillance Survey 2015	70	67
Misiri, H.	Using compartmental model simulations to determine the effect of antiretroviral therapy(ART) default and non-adherence rates on HIV mortality.	68	66
Mkandawire, F.	Effect of daily trimethoprim sulfamethoxazole prophylaxis on the long term clinical impact of malaria infection among HIV infected adults on successful ART in Blantyre, Malawi	168	133
Mnisi, S.	Early ART in the Community: Experiences from Support Groups in Hhohho, Swaziland	38	40
Mogaka, J.	Re-emerging epidemic? Poor outcomes among the HIV/TB co-infected.	173	136
Mohammed, Y.	Assessment Of Severe Malaria Among Pregnant Mothers Living With HIV/Aids In Aminu Kano Teaching Hospital, Kano State, Nigeria	172	135
Mphande, P.	Effectiveness of concentrated sputum smear microscopy as compared to direct sputum smear microscopy in the detection of Mycobacterium tuberculosis in patients at Queen Elizabeth central hospital in Blantyre, Malawi.	161	128
Mukanyimi, B.	Missing TB Cases in ART services in Zambia: results from a cross sectional study conducted in Kabwe District	119	101
Mutaawe, G.	Predictors and prevalence of HIV-1 virological failure in ART patients at an urban health center in Mansa District, Zambia.	113	97
Natukunda, H. M.	Beyond Clinical Trials: cross-sectional associations of combination antiretroviral therapy with reports of multiple symptoms and non-adherence among adolescents in South Africa	111	95
Ndhlovu, V.	Evaluation of the efficacy of the PrimeXtract kit and the CTAB method for direct extraction of DNA from Mycobacterium tuberculosis sputum	155	123
Ndiaye, S.	Effectiveness of outpatient nutritional rehabilitation based on ready-to-use food in Senegalese children and adolescents infected with HIV: The multicenter SNAC's Study.	147	119
Ndiaye, S.	Efficacité de la récupération nutritionnelle ambulatoire basée sur les aliments prêts à l'emploi chez les enfants et adolescents sénégalais infectés par le VIH : la recherche opérationnelle multicentrique SNACs	154	123
Ndunda, J.	Evaluation of the accreditation process at a HIV reference Laboratory	139	113
Ng'ambi, W.	Cross sectional trend analysis of characteristics and management of presumptive TB patients in integrated TB/HIV facilities in Malawi: 2014-2016	23	27
Nigro, L.	Gynecomastia associated with efavirenz. A report of three cases.	127	107
Nkhalango, F.	Prevalence and risk factors for hypertension among HIV patients on antiretroviral therapy in Lilongwe	110	94
Noble, L.	Laboratory evaluation of the Xpert HIV-1 Viral Load assay on low volume plasma specimens	132	109
Noble, L.	Laboratory evaluation of the Beckman Coulter VERIS HIV-1 Assay	133	110
Nyakato, P.	Vertical Transmission of HIV and delayed status disclosure presenting lifetime anti-retroviral treatment consequences: A case report at the Infectious Diseases Institute.	103	90
Nyangulu, W.	Artemether Lumefantrine treatment failure for uncomplicated Plasmodium falciparum malaria in HIV-infected adults on ART highlights the possible impact of artemether lumefantrine efavirenz drug interactions	163	129

Author Name	Abstract title	Abst #	Page #
Nyasulu, P.	Assessment Of HIV Related Stigma Among Adolescents (10 – 19 Years) Living With HIV: Case Study Of Zomba, Malawi	104	90
Nyirenda, K.	Provider perspectives on barriers to reproductive health services for HIV-infected clients in Central Malawi	60	60
Nyirenda, O.	Tuberculosis Disease Among HIV Positive Adults on Antiretroviral Therapy in Malawi	164	130
Ochieng, L.	Usability characteristics of HIV self- tests in Kenya	130	42
Ogumbo, F.	HIV viral suppression trends among patients on antiretroviral treatment in Western Kenya in 2016	46	51
Ogumbo, F.	Comparison of HIV-1 viral titre measurements using Plasma and Dried Blood Spots on Cobas AmpliPrep/TaqMan viral load assay Version 2.0 in western Kenya	129	41
Ohidi, F.	Remote logging by health facilities in Kenya	138	113
Oladele, E.	Sexual network testing as a strategy to reach the first 90; so much promise despite the barriers	10	14
Okunoye, O.	Improving Quality of HIV Testing in PMTCT Sites Using Dried Tube Specimen - Experience from South Eastern Nigeria.	142	115
Onyedinachi, O.	Linkage to Care: What Role does Community Referral Coordination Platforms Play?	94	84
Onyedinachi, O.	Addressing Clinician-induced barriers to INH prophylaxis for Persons Living with HIV in South-Eastern Nigeria	169	133
Owino, G.	It is possible: Lessons learned in a home-based couples intervention among pregnant women and their male partners in Southwestern Kenya	73	68
Pantelic, M.	HIV, blame and shame: Pathways of risk to internalized HIV stigma among South African HIV-positive adolescents	11	15
Pfaff, C.	Early experiences in integrating Cervical Cancer Screening and Treatment into HIV services in Zomba Central Hospital, Malawi	19	23
Phiri, C.	Community Perspectives On Parental/Caregiver Communication On Reproductiv Health And HIV With Adolescent Orphans And Non-Orphans In Rural Karonga	95	84
Phiri, E.	Study On Knowledge, Attitude And Barriers To Condom Use Among Female Sex Workers And Men In Karonga District	102	89
Phiri, E.	The Cohort Study Of HIV-Associated Seizures And Epilepsy (Chase) Study: Early Insights Among Children	121	102
Phiri, L	Training Course in Focused Assessment with Sonography for HIV/TB in HIV Prevalent Medical Centers in Malawi	160	127
Phulusa, J.	Prevalence of syphilis infection and risk factors among HIV-infected pregnant women attending antenatal clinic at Bwaila Hospital in Lilongwe, Malawi	162	128
Price, A.	Reasons for not linking to HIV care in newly diagnosed HIV positive adults in rural Malawi	69	66
Ringera, I.	Outcomes after switch to partially active second-line regimens in Southern Africa – a prospective multi-center cohort study in rural Lesotho	114	97
Sam-Agudu, N.	"They Don't See Us As One of Them": Mentor Mothers' Professional Interactions with Healthcare Workers at Primary Healthcare Centers in Rural Nigeria.	105	91
Sande, L.	A Gender Analysis of User Costs for HIV Testing among Rural Communities in Malawi	40	48
Ssali, F.	Resistance to Protease Inhibitors (PI) among Patients Evaluated for Third-line ART in Kampala	107	93
Stanczyk, B.	Evaluation of Strategies for Improving Subject Retention in The Option B+: ART Safety and Durability during First and Subsequent Pregnancies Study	66	64

Author Name	Abstract title	Abst #	Page #
Sutcliffe, C.	Challenges of implementing a point-of-care test for early infant diagnosis of HIV infection in rural Zambia	67	65
Sutcliffe, C.	Puberty and sexual activity among perinatally infected adolescents in rural Zambia	99	87
Sutcliffe, C.	Countdown to zero: Correlates of PMTCT among HIVinfected women in rural Zambia	146	118
Tchouanguueu, T.	HIV Infection In Children Result In A Change In T-Helper Polarized-Hbv Vaccine Specific Igg Antibody Subclass Responses	157	125
Tchouwa, G. F.	Burden Of HIV Pretreatment Drug Resistance In Cameroon	24	28
Tembo, G.	The Factors Influencing Reporting Of HIV Occupational Exposure And Adherence To HIV Post Exposure Prophylaxis	77	71
Tembo, T.	Screening index clients attending ART clinic to identify untested children at risk of HIV in Balaka, Malawi	61	61
Terris-prestholt, F.	How quickly does external quality assurance to prevent early infant misdiagnosis of HIV save costs in 4 African countries	144	117
Thole, D.	An evaluation of the depth of non-communicable diseases among patients on ART in Malawi	64	63
Tippett Barr, B.	National Evaluation of Option B+ in Malawi: High maternal ART coverage and low early infant transmission in all areas of the country	182	142
Tippett Barr, B.	Predictors of mother-to-child transmission in women on ART: Results from a National Evaluation of Malawi's PMTCT Program	183	143
Toska, E.	HIV-positive adolescents most at risk of onwards HIV transmission: quantitative findings from a community-traced sample in South Africa	3	5
Toska, E.	Teen Voice: What do the Sustainable Development Goals mean for HIV-positive adolescents in Southern Africa?	93	83
Ugwu, C.	"For just one HIV test, I have to fill 121 things...": Experiences of primary healthcare workers with using HIV/AIDS program documentation tools in Nigeria.	53	56
Valcour, V.	Markers Of Monocyte Activation Associate With Cognition In East Africa	118	100
Valcour, V.	Limitations Of The International HIV Dementia Scale In The Current Era*	174	137
Van Lettow, M.	Retention in care among adolescents on antiretroviral treatment (ART) at a tertiary referral hospital in Malawi: a nested case-control study of an adolescent-centered psychosocial support intervention	180	141
Van Lettow, M.	PMTCT program utilization and HIV transmission rates in young and adolescent mothers compared to adult mothers: A nationally representative sample of women screened at 4-26 weeks postpartum in Malawi	181	142
Vos, A.	Truckers Health Survey. A cross sectional study of long distance truck drivers to provide insight into the risk factors and diseases which impact the health of African men.	45	51
Webb, K.	Six month retention among patients initiated under Treat All learning phase in Zimbabwe: implications for national scale up in high prevalence, resource limited settings	28	31
Webb, K.	Progress towards achievement of the UNAIDS 3rd 90 in Zimbabwe: Capacity and functionality of viral load monitoring in 22 Districts	54	56
Weyer, L.	Recommendations for requirements gathering to effect an efficient data harmonization program to promote South-to-South HIV cohort collaborations	56	58
Wong, C.	Should non-pregnant adults be offered antiretroviral therapy immediately after HIV diagnosis? The views of HIV patients in Swaziland.	63	62
Zwane-machakata, M.	Targeted Demand Creation an Effective Methodology for Case Finding of HIV positive cases	91	81