Abstracts

Abstract 1
HIV AND WOMEN

Perception of Elderly People Regarding Use of Condoms and HIV/AIDS Infection in Nigeria

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BACKGROUND/SIGNIFICANCE: HIV/AIDS continues to pose a public health challenge in Sub-Saharan Africa, with the pandemic cutting across borders. Affecting all the age group strata including the elderly people, however, despite engagement in risky sexual activities which increases HIV/AIDS infection. There is limited attention paid to the elderly population in mitigating the pandemic. This study therefore examined condom use and perception among elderly about HIV/AIDS infection in Nigeria.

METHODOLOGY: The study was cross-sectional in design. A multi-stage sampling procedure was used to select 400 geriatrics. A pre-tested questionnaire, developed using information obtained from 10 Focus Group Discussions (FGD), was used to collect information. FGD data were analyzed thematically, while questionnaire data were analyzed using descriptive and statistically.

FINDINGS: Twenty-five percent of the participants had extramarital sex since they attained geriatric age. However, among this subgroup that had extramarital sex, few (6.8%) used a condom. More males (5.3%) than females (1.5%) used condom during the last extramarital sex. Low level of condom use was attributed to condom being not worthwhile (34.5%) and the opinion (50.0%) that condom is not made for geriatrics. Moreover, FGD participants viewed sex could not lead to pregnancy and majority (60.3%) posited patronizing traditional healers and few (10.3%) use of herbs/concussion could prevent HIV/AIDS. Similarly, non-condom use was due to confidence in traditional herbs, perceived to protect against STIs including HIV/AIDS.

CONCLUSION: Engagement in risky activities among geriatrics is a growing HIV/AIDS challenge. Condom use is misconstrued probably due to knowledge gap. Without urgent measures to enable them to protect themselves, development efforts will be in jeopardy. Investing in geriatric SRH is a cost-effective intervention in mitigating the HIV/AIDS pandemic.

Abstract 2
HIV AND WOMEN

Incidence and Predictors of Pregnancy Among Women Receiving HIV Care and Treatment at a Large Urban Facility in Western Uganda

AUTHORS: Jane Kabami and Francis Bajunirwe, Mbarara University of Science and Technology

BACKGROUND: HIV infection has been associated with adverse pregnancy outcomes and substantial mortality even in the early stages of the infection. Counseling is given to HIV positive women to create awareness and to provide information on the consequences of pregnancy in HIV infection. The purpose of this study was to determine the incidence of pregnancy and factors that predict pregnancy among women of reproductive age and receiving HIV care and treatment at a large urban center in western Uganda.

METHODS: We conducted a retrospective cohort study using routine data at the Immune Suppression Clinic of Mbarara Regional Referral Hospital located in Mbarara District, western Uganda, collected between January 2006 and June 2010 using a standard clinic medical form adapted from the Open Medical Record system (Open-MRS), which is an electronic database. The primary outcome was incidence of pregnancy calculated as number of pregnancies per 1000 woman years (WY). Data was analyzed by calendar year and year of enrollment into care and we used Cox Proportional Hazards model to determine the predictors of pregnancy.

RESULTS: The overall incidence rate was found to be 86 pregnancies per 1000 woman years. Incidence increased significantly from 60 pregnancies per 1000 WY in 2006 to 118 pregnancies per 1000 WY in 2010 (p<0.001). Significant predictors for pregnancy were younger age (HR 9.96, 95% CI 6.27-15.8), married (HR 2.03, 95% CI 1.65-2.5) and single (HR 1.87, 95% CI 1.3-2.7) compared to widowed or separated, lower income (HR 2.47, 95% CI 1.42-4.33), knowing the HIV status of the spouse (HR 1.95, 95% CI 1.16-3.29) compared to not knowing, use of family planning (HR 0.20, 95% CI 0.15-0.26) was protective against pregnancy. The survival probability declined as the study proceeded and 80% of women who had ever used any family planning method were still not pregnant by the end of the follow up period compared to about 60% among those who had never used family. Factors that did

not show any significant association included religion, WHO disease stage, ARV use, disclosure status of the woman, number of HIV positive children and CD4 cell count at enrollment.

CONCLUSION: Incidence of pregnancy among HIV positive women is comparable to that in the general population. Routine HIV care should integrate reproductive health needs for these women. There is an increasing trend in incidence of pregnancy among HIV positive women receiving care at Mbarara Hospital with no significant difference observed between HIV positive and HIV negative.

Abstract 3
HIV AND WOMEN

Comparison of Conventional Cervical Cytology versus Visual Inspection with Acetic Acid (VIA) among HIV-Infected Women in Western Kenya

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Over half of HIV-infected persons in Kenya are women and cervical cancer is the most common cancer among women. Cervical cancer is more prevalent and has poorer prognosis among HIV-infected women.

As HIV-infected women in Africa are living longer with highly active antiretroviral therapy, it is important to have services for cervical cancer screening. Few developing countries can maintain a high quality Pap smear screening program. We compared visual inspection with acetic acid (VIA) to conventional Pap smear to detect cervical intraepithelial neoplasia/cancer among HIVinfected women in Western Kenya.

METHODS: 150 HIV-infected women attending the HIV clinic at the Moi Teaching and Referral Hospital in Eldoret, Kenya underwent concurrent screening methods: conventional Pap smear and VIA. All women underwent colposcopy and biopsy. VIA and Pap smears were done by clinic nurses. ROC analysis was conducted to compare the accuracy between the two methods in sensitivity, specificity, positive predictive value (PPV) and negative predictive value (NPV).

RESULTS: VIA was abnormal in 83/150 (55%); Pap smear showed atypical squamous cells of undetermined significance (ASCUS) or worse in 59/135 (44%). Ten percent of the Pap smears were unsatisfactory. Of the abnormal Pap smears, 2 (3%) had ASCUS, 4 (7%) had ASC-high grade, 35 (60%) had low-grade squamous intraepithelial lesions (LSIL), 17 (29%) had high grade SIL, and one was suspicious for cervical cancer. Using cervical intraepithelial neoplasia (CIN) II or higher disease on biopsy as an end point, the sensitivity of VIA was 69.6% (95%CI=55.1-81.0%) , specificity of 51.0% (CI=41.5-60.4%), PPV of 38.6% (CI=28.8-49.3%) and NPV of 79.1% (CI=67.8-87.2%). For conventional Pap smear, sensitivity was 52.5% (CI=42.1-71.5%), specificity of 66.3% (CI=52.0-71.2%), PPV of 39.7% (CI=27.6-51.8%) and NPV of 76.8% (CI=67.0-85.6%).

CONCLUSIONS: VIA is acceptable for population based cervical cancer screening among HIV infected women in western Kenya. There is a high prevalence of cervical disease among these women. VIA is safe, practical, and affordable, and can be readily available within a clinic setting.

Abstract 4
HIV AND WOMEN

Verifying Contraceptive Use Among Potential Participants of Two Phase I/II Vaginal Microbicide Trials in Kisumu, Kenya

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BACKGROUND: Non-conventional sources of contraceptive services as well as disempowerment among women may contribute to the lack of proper documentation of contraceptive use often seen among potential participants of vaginal microbicide trials. This poses a great challenge to eligibility determination. We describe a stepwise approach used to verify contraceptive use during screening of potential participants for two vaginal microbicide trials in Kisumu, Kenya.

METHODS: Part of the eligibility criteria for the microbicide safety and acceptability trials in Kisumu required potential participants to have been on stable contraception for a period of 3 to 6 months prior to enrollment. Stable contraception included: oral contraceptives, transdermal patches, intrauterine devices, long-acting progestins and surgical sterilization. During screening, steps taken to verify self-reported contraceptive use were: review of contraceptive card for accuracy and authenticity, history-taking to counter-check participant's reported method and duration of use against information on the contraceptive card, physical confirmation through palpation for implants, pelvic examination for intrauterine devices, inspection of incision scars for surgical sterilization and evidence of pill packets used in the previous 3 months for oral contraceptives.

RESULTS: Women accessing contraceptive services from lay healthcare providers and pharmacies often lacked proper documentation of their contraceptive use. The stepwise verification process provided numerous opportunities for staff to confirm contraceptive use while minimizing biased responses from the participant. Among women using contraception covertly, it was common to find that their contraceptive cards bore different names from those on their age-verification documents. This made verification of authenticity difficult as the contraceptive cards did not bear photographs. Another challenge was that actual consistent use of oral and injectable contraceptives could not be verified beyond the participant's self-report.

CONCLUSION: In settings where potential participants lack proper documentation of contraceptive use, a multi-faceted approach offers a realistic way of helping to verify contraceptive use.

Abstract 5

HIV AND WOMEN

Family Planning Use Among Female Clients Attending the HIV/AIDS Clinic in Mbarara Regional Referral Hospital

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INTRODUCTION: The World Health Organization (WHO) lists preventing unwanted pregnancies among people living with HIV/AIDS as an important component of preventing mother to child transmission (PMTCT). The 2008 Uganda HIV Modes of Transmission and Prevention Response Analysis estimated that 18% of all new HIV infections in Uganda in 2008 occurred through mother-to-child transmission (MTCT). Uganda has one of the highest total fertility rates (TFR) worldwide of 6.7 children per woman and use of family planning (FP) is low. Use of FP has been shown to have strong potential to reduce new HIV infections in Uganda due to unwanted fertility, with the effect on PMTCT equal to or greater than that due to using antiretroviral medications to prevent transmission in pregnancy. Therefore it is important to determine factors associated with the use of FP in order to determine ways to increase its use.

OBJECTIVES: The primary goal of this study was to determine the proportion of HIV positive women using FP at HIV clinic entry, at subsequent visits in HIV care, by contraception type and associated factors

METHODOLOGY: This was a retrospective study of information collected from initial and subsequent quarterly clinical visits made by adult females attending a 8500 person HIV/AIDS clinic at Mbarara Regional Referral Hospital from 2007 through 2010, utilizing an electronic clinical data base that has been in operation since 2007 (and partially supported by the UCSF CFAR). We estimated the proportion of women of reproductive age using FP method(s), and using longitudinal data analysis methods examined the association between FP use and HIV status disclosure to sexual partner(s).

PRELIMINARY RESULTS: Of the 3900 clients whose data was analyzed over the period February 2007-Dec 2009, FP information was available for 2342 females of which 618 clients (26.4 %) reported use of family planning at first encounter to the HIV clinic. Commonly reported methods were injectable hormones (51.8%), condoms (28.8%), while a few reported oral contraceptives (9%). 31. 6% of the clients had disclosed their HIV status to partners.

HIV sero status disclosure to partner, younger age, higher monthly income, being married, higher educational level, and less severe WHO clinical stage were significantly ($p<0.01$) associated with increased odds of family planning use at Enrollment into HIV care in bivariate analysis.

CONCLUSIONS: The above data show low use of family planning at clinic entry. Hormonal methods of contraception are more commonly used. Several factors were associated with increased FP use.

IMPLICATIONS OF THE STUDY: As we plan improvement strategies to enhance FP uptake among HIV infected women in order to prevent MTCT of HIV, sero status disclosure to partners should be encouraged. Dual FP methods need to be emphasized for maximum benefits.

Abstract 6

HIV AND WOMEN

Widows' Sexual Behaviors in the Context of the Practice of Widow Inheritance in Kenya: Implications for the Spread Of HIV

AUTHORS: Kawango Agot and Jacob O. Onyango, Impact-Research & Development Organization, Kisumu, Kenya

INTRODUCTION: The culture of widow cleansing (WC) and widow inheritance (WI) are integral practices among the Luo ethic community in Kenya. WC refers to a practice where a widow engages in sexual intercourse to cleanse herself from perceived impurities conferred by the death of a husband; WI is a practice where a brother-in-law or other male performs sexual intercourse with a widow when specific social events during the course of widowhood call for sexual ritual to be observed. The practices are perceived to contribute to the high prevalence of HIV among the Luo community, the epicenter of HIV in Kenya.

OBJECTIVE: To assess the sexual behaviors of widows and their knowledge of and perceptions towards the potential association between WI and risk of HIV infection or transmission.

METHODS: A cross-sectional study design was used to collect baseline socio-cultural, sexual and HIV prevalence data of 2,379 widows. A total of 1,987 had complete data on HIV and inheritance, of whom 894 HIV-negative widows were enrolled

and followed up at Months one and three and three-monthly thereafter for 24 months. At every study visit, a structured behavioral questionnaire was administered to obtain sexual behavior and inheritance status of widows to assess their behavioral risk factors for HIV acquisition/infection. We present results for data collected at baseline.

RESULTS: At enrollment, 56.4% of the widows were inherited and about 63% were HIV infected, inheritance status notwithstanding. However, when inheritance was disaggregated by purpose of inheritance and widow's relationship to the inheritor, widows inherited by non-relatives of the husband for sexual ritual had the highest prevalence (73.8%) while widows inherited by husbands' relatives for companionship has the least prevalence (54.8%). Of the 63% who had engaged in sex after the death of the husband, 21.9% stated that they were in on-going sexual relationships at the time of the interview. Multiple sexual partnerships was reported by 16.3% of the widows, and only 2.9 % of those who had had sex during widowhood reported ever using condom during any relationship. This is despite 70% not supporting the practice in this day and age and almost all (99.7%) being aware that WI is likely to increase the spread of HIV.

Conclusion: There is a glaring disconnect between knowing that WI is a potential risk behavior for HIV and deciding to not practice it. There appears to be external factors that push the widows to be inherited despite knowledge of its potential risk for HIV and overwhelming lack of support for the tradition. Intervention programs addressing WI and other deeply engrained cultural practices that may pose risk for HIV need to identify and address sources of external pressures that continue to sustain such practices.

Abstract 7
HIV AND WOMEN

Perinatal Depression, Stigma, Social Capital Utilization, and PMTCT Adherence

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BACKGROUND: The United Nations Millennium Development Goals (MDGs) illustrate key areas in which the lives of women and children worldwide are in need, including improving maternal health and reducing childhood mortality. The success of reducing rates of childhood mortality in regions that bear a substantial degree of HIV disease burden will depend on reducing rates of vertical transmission of HIV, the achievement of which is indisputably tied to maternal well-being. Sub-Saharan Africa (SSA) is one of the areas targeted by the MDGs. At the end of 2008, well over 22 million people in SSA were living with HIV, a significant number of who were women of reproductive age. Depression is recognized as a robust predictor of non-adherence to antiretroviral therapy (ARVs) and is common among reproductive aged women in both resource rich and resource limited settings. A few studies have implicated depression in adherence to the series of health behaviors known as preventing to mother-to-child transmission (PMTCT) of HIV. Women living in resource limited settings are likely to face additional barriers to PMTCT adherence, including stigma and structural barriers. While some structural barriers may be circumvented by relying on community resources, depression and stigma may make it difficult to access these resources. Thus, understanding the role of modifiable factors, such as depression, that contribute to PMTCT adherence is critical to meeting the goals of the MDGs.

OBJECTIVES: The proposed study seeks to: (1.) explore the relationship among perinatal depression, stigma, and social capital utilization, and adherence to PMTCT, and (2.) pilot a group based counseling intervention for HIV-infected women in the perinatal period in reducing depression and internalized stigma, and increasing social capital utilization and adherence to ARVs, among women living in the province of KwaZulu-Natal, South Africa.

METHOD: Our preliminary conceptual framework is based on work by Bangsberg and Deeks (2010), who propose that HIV-infected individuals living in SSA manage both "standard" barriers to HIV adherence (such as side effects and forgetting), and unique economic and structural barriers such as high transportation to clinic costs and "opportunity costs," or loss of income that may result from time spent obtaining HIV related care. Bangsberg and Deeks propose stigma greatly reduces one's ability to make use of their social capital and can lead to lapses in adherence to ARVs. Stigma may be especially salient during the perinatal period, due to fears of disclosure amid the demands that managing a pregnancy while HIV positive place on women, including regular PMTCT appointments, delivering in healthcare facilities, and breastfeeding behavior. We have expanded the original model to include depression as an important determinant of the use of social capital in the perinatal period. In addition to stigma, we hypothesize that depression may also impact social capital through behavioral (e.g., social isolation) or cognitive pathways (e.g., hopelessness, decreased problem-solving ability). This is a work in progress, and will be submitted to NIMH for funding via the K23 Career Development Award mechanism.

Abstract 8
HIV AND WOMEN

Future Aspirations, Expectations, and Sexual Behavior In Ghanaian Youth

AUTHORS: Elizabeth Asante, Institute for Statistical, Social, and Economic Research, University of Ghana and Jeffrey Bingenheimer, The George Washington University School of Public Health and Health Services

BACKGROUND: Research on adolescents in the US suggests that perceptions about life chances (variously termed "hopelessness," "fatalism," or "optimism") may be important

determinants of risky behaviors. The goals of this paper are (1) to characterize the aspirations and future expectations of adolescents in Ghana; (2) to describe how these are associated with sociodemographic factors including gender, schooling, and household wealth; and (3) to examine cross-sectional associations between aspirations and expectations and self-reported sexual behaviors.

METHODS: We conducted a survey of youth aged 13-14 and 18-19 years in two towns in southeastern Ghana (N=1275, response rate = 75%). Youth were asked to state whether each of twelve future outcomes was very, somewhat, or not at all important to them; and to state whether they considered each outcomes very, somewhat, or not at all likely for them. The future events were: completion of secondary school, getting some education beyond secondary school, finding steady employment, getting a high-paying job, getting married ever, getting married by age 25, having many children, having at least one child, avoiding HIV/AIDS, staying healthy until age 50, being alive at age 30, and being alive at age 75. We cross-tabulated responses to each of these questions with sex and with self-reported of sexual activity. We plan to conduct further bivariate analyses and to develop a logistic regression model using sex, other sociodemographic factors, and aspirations and expectations to predict sexual behaviors.

PRELIMINARY RESULTS: Practically all youth reported that avoiding HIV/AIDS was very important to them and very likely for them. Youth also attached high levels of importance to educational attainment, employment, and future health and longevity. Although most said that marriage and reproduction were very important to them, few reported that getting married by age 25 or having many children were very important to them. Most also reported that desired outcomes in the domains of education, employment, marriage, reproduction, and future health and longevity were very likely for them. Modest but statistically significant gender differences were observed in the domains of employment, marriage, and childbearing. Boys attached more importance to finding a high paying job, to getting married someday, and to having many children than did girls. Girls attached more importance to getting married by age 25, and more often described themselves as being likely to do so, than did boys. Aspirations and expectations in the domains of education and employment were negatively associated with self-reported sexual intercourse. Aspirations and expectations in the domains of marriage and childbearing (especially early marriage and many children) were positively associated with sexual intercourse. Aspirations and expectations in the domain of health and longevity were not related to sex or to self-reported sexual activity.

CONCLUSION: Preliminary results provide some indication that you who are oriented toward achievement in education and employment are less likely to have sex, while youth who are oriented toward traditional values of early marriage and large family size are more likely to have sex.

Abstract 9
HIV AND WOMEN

Optimal Time on HAART for Prevention of Mother–to–Child Transmission of HIV

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OBJECTIVE: To determine the impact of time between initiating Highly Active Antiretroviral Therapy (HAART) and delivery – "the maternal HAART interval" – on perinatal HIV infection.

DESIGN: We conducted a retrospective cohort analysis of pregnant HIV-infected women in Lusaka, Zambia. Women in our cohort were receiving HAART and had an infant HIV polymerase chain reaction (PCR) test between 3 and 12 weeks of life.

METHODS: We examined factors associated with infant HIV infection and performed a locally weighted regression analysis to examine the effect of maternal HAART interval on perinatal HIV infection.

RESULTS: From January 2007 to March 2010, 1,813 HIV-infected pregnant women met inclusion criteria. Mean gestational age at first antenatal visit was 21 weeks (SD +/- 6 weeks), median CD4+ cell count was 231 cells/uL (IQR 164-329 cells/uL), and median maternal HAART interval was 13 weeks (IQR 8-19 weeks). 59 (3.3%) infants were HIV-infected. Maternal HAART interval was the most important predictor of perinatal HIV transmission. Compared to women initiating HAART at least 13 weeks prior to delivery, women on HAART for 4 weeks had a 5.2-fold increased odds of HIV transmission (95% CI 2.5-11.0). Locally weighted regression analysis suggested limited additional prophylactic benefit beyond a 13-week maternal HAART interval.

CONCLUSIONS: Low rates of mother-to-child HIV transmission can be achieved within programmatic settings in Africa. Maximal effectiveness of prevention of mother-to-child transmission (PMTCT) programs is achieved by initiating HAART at least 13 weeks prior to delivery.

Abstract 10
HIV AND WOMEN

Association of Serum Albumin with Markers of Nutritional Status Among HIV-Infected and Uninfected Rwandan Women

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INTRODUCTION: Considering the burden of malnutrition in sub-Saharan Africa, and the catabolic condition found in HIV positive patients, it's crucial to know how to assess it very early in order to monitor closely these patients. An important question in treating HIV-infection in Africa is the effect of comorbid malnutrition on response to antiretroviral therapy. It is therefore important to know if albumin, an inexpensive and available measure, can be used as an indication of malnutrition.

METHODS: In 2005, 710 HIV-infected and 226 HIV-uninfected women were enrolled in The Rwandan Women's Interassociation Study and Assessment. Medical/demographic parameters; CD4 count, albumin; hemoglobin, liver function parameters; anthropometric measurements and Bioelectrical Impedance Analysis (BIA) were performed by trained study nurses. Outcomes were body mass index (BMI), Fat-free mass index (FFMI) and Fat mass index (FMI). Data analysis was performed within 4 categories defined by HIV negative women and HIV positive by CD4 strata (CD4>350, 200-350 and <200).

RESULTS: In unadjusted models for each outcome in HIV-negative women and HIV positive with CD4 count >350 cells/μl, serum albumin was not significantly associated with BMI, FFMI and FI. In HIV+ women with CD4 count between 200-350 cells/μl, albumin was significantly associated with all outcomes (p<0.05) and highly significant in CD4 count<200 cells/μl (P<0.001). In the multivariable linear regression model, serum albumin was associated with FFM in women with CD4 count <200cells/μl (p<0.01) but there was no significant association in the group of women with CD4>200. There was also no significant association of serum albumin with fat mass.

DISCUSSION: Serum albumin did not predict BMI, FFMI or FI in HIV-negative and positive women, suggesting that it is not a good marker of nutritional status. However it's widely used as an indicator of nutritional status in many clinical settings. This result suggests that albumin should not be used as a proxy for nutritional status without further study of its association with validated measures.

KEYWORDS: Albumin, nutritional status, body composition, HIV, women

Abstract 11
HIV AND WOMEN

Successful Integration of Family Planning into HIV Care in Lilongwe, Malawi

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BACKGROUND: As HIV care expands in developing countries, this infrastructure can be used to integrate family planning into HIV service provision. Long-acting reversible contraceptive (LARC) methods, specifically the intrauterine device (IUD) and contraceptive implants, remain poorly used in regions where HIV is highly prevalent. LARC methods are the most effective birth control methods and may be ideal for use in individuals with HIV. We developed a model for service integration to both increase overall acceptance of family planning and to specifically prioritize uptake of LARC methods. The Lighthouse Clinic in Lilongwe, Malawi provides services for over 6,000 individuals with HIV. Prior to family planning service integration, Lighthouse offered only condoms and referred clients desiring other contraceptive methods to other clinics.

METHODS: Our multifaceted approach to integration incorporated the following elements:

- Initiation of comprehensive staff training and education

- Establishment of a private and safe place for service provision

- Coordination of flow between family planning and HIV care

- Promotion of multiple modalities of client education

- Management of other gynecologic problems

- Clear monitoring and evaluation protocols

RESULTS: We held 6 clinic staff education sessions, developed a flipbook and sensitization script for client education, consolidated education materials, and built technical, clinical capacity to provide family planning services. During the first 4 months of family planning provision at Lighthouse, daily family planning education sessions reached approximately 2800 women of reproductive age. Of these, 279 HIV-infected women (10%) received contraception with 109 women (39%) receiving an IUD.

CONCLUSIONS: We successfully integrated acceptable family planning services for HIV+ clients in an ART clinic in Malawi. Despite the low uptake of the IUD throughout sub-Saharan Africa, we demonstrated that systematic introduction of this method may increase uptake of the IUD among HIV infected women.

Abstracts

Absract 12
HIV CO-MORBIDITIES

Recent HIV Seroconverters Are at High Risk for Sexually Transmitted Infections (MTN–015)

AUTHORS: Margaret Kasaro[1], Felix Muhlanga[2], Lei Wang[3], San-San Ou[3], Nicola Coumi[4], Bonus Makanani[5], Francis Martinson[6], M. Brad Guffey[1,7], and Sharon Riddler[8]

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BACKGROUND: HIV-STI co-infections are a public health priority because of an increased risk of HIV transmission and the negative impact of STIs in these individuals. We evaluated women enrolled in MTN-015, an observational cohort study of women with HIV-1 seroconversion during microbicide trials, for STI burden and associated risk factors. This knowledge could inform STI prevention strategies in women co-infected with HIV.

METHODS: MTN 015 enrolled women who experienced HIV seroconversion during HPTN 035 at 5 African sites. Socio-demographic, behavioral and clinical information was assessed at study entry and clinical testing was performed for STIs including Neisseria gonorrhea(GC), Chlamydia trachomatis (CT), Trichomonas Vaginalis (TV) and syphilis. STIs at HPTN 035 exit and at MTN 015 baseline were compared and STI data was also collected for follow up for visits. Univariate and multivariate logistic regression models were used to assess for characteristics associated with STI risk at enrollment into MTN 015.

RESULTS: 99 HIV-infected women from HPTN 035 were enrolled. At enrollment: median age was 27 years, median time since seroconversion was 18 mo, 49% were married and 99% reported 0 or 1 sexual partner in the prior 3 mo. Median time from the final study visit for HPTN 035 and enrollment was 8 mo. Clinical parameters included median CD4+ T-cell count of 431/mm3 and a median parity of 2. Prevalence of GC, CT, syphilis or any STI was 8.1%, 10.1%, 1%, and 17.2%, respectively. STI rates varied between the sites with the highest prevalence of any STI at the Zambia and Durban SA sites (26% and 43%, respectively). In univariate analysis, parity of 1 or 0 was associated with increased risk of CT (OR 7.7; 95% CI 1.4, 78.9; p=0.01) or any STI (OR 5.1; 95% CI 1.5, 20.4; p=0.01) compared to women with 2 or more children. Younger age was associated with increased risk of CT (OR 1.4 per year decrease; 95% CI 1.1, 1.8; p=0.01). Marital status, age of primary partner, number of partners, time from HIV seroconversion, and CD4+ T-cell count were not significantly associated with risk of STI. In a multivariate model adjusting for age, site, CD4+ T-cell count and number of partners, parity < 2 increased risk of any STI more than 5-fold (OR 5.3; 95% CI 1.2, 23.9; p=0.03).

CONCLUSION: Despite prior experience in a longitudinal HIV prevention study, active STI were common among HIV positive women enrolled in MTN 015. With few exceptions, demographic characteristics were not predictive of STI risk. Ongoing surveillance and treatment as well as improved behavioral counseling interventions are needed to modify the risk of STI acquisition.

Abstract 13
HIV CO-MORBIDITIES

HIV–1 Infection in Patients Referred for Malaria Blood Smears at Government Health Clinics in Uganda

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BACKGROUND: HIV is associated with an increased incidence of malaria in adult African populations. In children, the relationship between HIV and malaria is less clear. We investigated the relationship between malaria and HIV-1 infection among adults and children referred for malaria blood smears at government health clinics in Uganda.

METHODS: This was a cross-sectional study in which 1000 consecutive patients referred for malaria blood smears over the course of 1 to 2 months at each of 7 government clinics (N = 7000) were tested for HIV-1 from dried blood spots using enzyme-linked immunosorbent assay (ELISA) screening and nucleic acid-based confirmatory testing. Risk factors for HIV-1 infection were identified using multivariate logistic regression.

RESULTS: Among 4467 children aged 16 years or younger, 77 (1.7%) were HIV-1 infected. Of 2533 adults, 270 (10.7%) were HIV-1 infected. In children, having a negative malaria blood smear was associated with higher odds of HIV-1 infection (odds ratio [OR] = 1.90, 95% confidence interval [CI]: 1.18 to 3.06) after controlling for age and gender. In adults, having a positive malaria blood smear was moderately associated with higher odds of HIV-1 infection (OR = 1.41, 95% CI: 1.01 to 1.97) after controlling for age and gender.

CONCLUSIONS: In Ugandans evaluated for suspected malaria, associations between malaria smear results and HIV infection differed between children and adults. Although further operations research is needed, our results suggest that counseling and testing for HIV may be of particular importance in children suspected of malaria but with negative malaria smears and in adults with positive malaria smears.

KEYWORDS: malaria, HIV, Africa, human immunodeficiency virus (J Acquir Immune Defic Syndr 2007;46:624-630)

Abstract 14
HIV CO-MORBIDITIES

Risk Factors for Malaria in a Cohort of HIV-Infected Ugandan Children Living in an Area of High Malaria Transmission

AUTHORS: Abel Kakuru[1], Moses Kamya[2], Humphrey Wanzira[1] and Anne Gasasira[1]

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HIV-infection has been associated with an increased incidence of malaria in adults with the effect increasing with immunosuppression. However data is limited on the effect of HIV on malaria incidence in children.

We evaluated risk factors for malaria in a prospective cohort of 57 HIV-infected children who were enrolled at the ages of 6 weeks to 1 year. Children were followed up for all their clinical care at a dedicated study clinic which was open 7 days of the week. All children were taking cotrimoxazole (CTX) prophylaxis. Children who were eligible for antiretroviral drugs (ARVs) according to the WHO guidelines were initiated on ARVs. Children who presented to the clinic with a history of fever or with a temperature of $\geq$ 38.00 C had an urgent thick blood smear done for malaria parasites. Children who had positive urgent blood smears for malaria parasites were diagnosed with a new episode of malaria. Children with uncomplicated malaria were randomized to receive either artemether-lumefantrine or dihydroartemisinin-piperaquine while those with complicated malaria were treated with quinine. Using binomial generalized estimating equations, we evaluated associations between ART use, CTX use, and CD4 percentage category with the risk of malaria adjusting for residence, age, and insecticide treated net use.

Fifty seven children were included in the analysis and all were not on ART at enrollment. By the end of follow-up, 52 (91%) had been initiated on ARVs. A total of 26 children were withdrawn before the end of follow-up. Overall, there were 213 episodes of malaria during the observation period with a malaria incidence of 2.09 episodes per person year. ART use in children was significantly associated with an increased risk of malaria compared to children who were not on ART (aRR 2.47, P=0.01). Children with CD4% < 20% were 2.23 times more likely to have malaria compared to children with CD0% $\geq$20% (aRR 2.23, P <0.001). Not taking CTX was associated with a higher risk of malaria compared with taking CTX (aRR 2.43, P=0.001).

Taking ARVs, a low CD% and not taking CTX were associated with a higher risk of malaria. The unusual association of ART use with a higher risk of malaria could be due to interaction with artemesinin combination therapy used for malaria treatment. More studies are needed to evaluate the effect of ARVs on malaria and antimalaria treatment in HIV-infected children.

Abstract 15
HIV CO-MORBIDITIES

Cost-Effectiveness of Serum Cryptococcal Antigen Screening to Prevent Deaths Among HIV-infected Persons with a CD4+ Count <=100 cells/mcL Who Start HIV Therapy in Resource Limited Settings

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BACKGROUND: Cryptococcal meningitis (CM) remains a common AIDS-defining illness in Africa and Asia. Subclinical cryptococcal antigenemia is frequently unmasked with antiretroviral therapy (ART). We sought to define the cost-effectiveness of serum cryptococcal antigen (CRAG) screening to identify persons with subclinical cryptococcosis and the efficacy of preemptive fluconazole therapy.

METHODS: There were 609 ART-naive adults with AIDS who started ART in Kampala, Uganda, and who had a serum CRAG prospectively measured during 2004-2006. The number needed to test and treat with a positive CRAG was assessed for 30-month outcomes.

RESULTS: In the overall cohort, 50 persons (8.2%) were serum CRAG positive when starting ART. Of 295 people with a CD4+ cell count 100 cells/mL and without prior CM, 26 (8.8%; 95% confidence interval [CI], 5.8%-12.6%) were CRAG positive, of whom 21 were promptly treated with fluconazole (200-400 mg) for 2-4 weeks. Clinical CM developed in 3 fluconazole-treated persons, and 30-month survival was 71% (95% CI, 48%-89%). In the 5 CRAG-positive persons with a CD4+ cell count 100 cells/mL treated with ART but not fluconazole, all died within 2 months of ART initiation. The number needed to test and treat with CRAG screening and fluconazole to prevent 1 CM case is 11.3 (95% CI, 7.9-17.1) at costs of $190 (95% CI, $132-$287). The number needed to test and treat to save 1 life is 15.9 (95% CI, 11.1-24.0) at costs of $266 (95% CI, $185-$402). The cost per disability-adjusted life year saved is $21 (95% CI, $15-$32).

CONCLUSIONS: Integrating CRAG screening into HIV care, specifically targeting people with severe immunosuppression (CD4+ cell count 100 cells/mL) should be implemented in treatment programs in resource-limited settings. ART alone is insufficient treatment for CRAG-positive persons.

Abstracts

Abstract 16
HIV CO-MORBIDITIES

Antigen Specific Preferential HIV Infection of MTB-specific CD4+ Cells by Macrophages and Dendritic Cells

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HIV is fueling a dramatic increase in the M. tuberculosis (MTB) epidemic particularly in sub-Saharan Africa. In contrast to most other opportunistic infections associated with HIV, increased risk of developing TB occurs early during the course of HIV disease. A better understanding of the basic immunology that allows HIV to dramatically increase the risk of TB is urgently needed to identify specific clinical and immunologic characteristics of co-infected individuals at greatest risk.

Containment of MTB is through cell-mediated immunity primarily involving CD4+ T cells and antigen presenting cells (APC) including both macrophages and dendritic cells (DC). HIV productively infects these same three cell types. This provides the setting and opportunity for significant cellular interactions between CD4+ T cells and APC during dual infection. Our overall hypothesis is that specific interactions between CD4+ T cells and APC in the setting of HIV/TB dual infection promote HIV infection of MTB-specific CD4+ T cells resulting in their loss thus increasing the risk of developing reactivation or progressive primary TB.

To determine if MTB-specific CD4+ T-cells are more heavily HIV-infected than non-MTB specific cells, we isolated MTB-specific cells and non-specific CD4+ T cells and performed HIV strong stop (SS) DNA by real-time PCR. MTB-specific cells had significantly higher HIV infection rates (mean 3.6 fold range 2.3 and 4.9. p<0.02) than the non-MTB specific CD4+ population in the same culture. These results are consistent with Douek et al. who found a range of ratios of 2.1- 5.3 fold more HIV gag DNA in the HIV-specific CD4+ T cells than total memory CD4+ T cells of HIV-infected individuals. This finding suggests a mechanism for loss of MTB-specific cells during dual infection.

One of the mechanisms for this increased HIV in MTB-specific CD4+ T cell could be preferential antigen specific transmission from macrophages and or DC to MTB-specific memory CD4+ T cells in the milieu of dual infection. We generated HIV-infected monocyte derived macrophages (MDM) or monocyte derived DC (MDDC). Autologous CD4+ T cells from PPD+ subjects were added to HIV/MDM or HIV/MDDC with MTB for overnight incubation. MTB-specific CD4+ T cells were purified and compared to those memory CD4+ T cells that were not MTB-specific. Our results demonstrate that MTB-specific CD4+ T cells had a median of 4.0 fold (range 3.0-11.9) higher HIV transferred by HIV/MDM and 7.4 fold (range 7.2-12.4) higher HIV transferred by HIV/MDDC than non-MTB-specific memory CD4+ T cells in the same wells. The prolonged contact between APC and T cells through cognate recognition of MTB peptide(s) may be conducive to transmission of HIV from APC to T cell. This is likely to be an important mechanism for the increased burden of TB disease in dually infected individuals regardless of CD4+ T cell count or stage of HIV disease.

Abstract 17
HIV CO-MORBIDITIES

Measuring the Association of Antiretroviral Therapy Coverage and Incidence of AIDS-Defining Malignancies in Uganda

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BACKGROUND: Antiretroviral therapy (ART) has decreased the incidence of the AIDS-defining malignancies (ADM) of KS and NHL, but not invasive cervical cancer (ICC) in the USA and Europe. These cancers have become among the most common in sub-Saharan Africa, where a high prevalence of viral oncogens and HIV infections overlap.

OBJECTIVE: To evaluate the association between increasing availability of ART in Uganda and ADM incidence.

METHODS: From 1999-2008, annual age-standardized incidence rates (ASR) were calculated from the Kampala Cancer Registry using the World Standard Population, and we obtained ART coverage (defined as number of persons on treatment divided by number of persons eligible under WHO guidelines) from UNAIDS. Poisson regression modeled the effects of ART coverage on incidence rates for each ADM.

RESULTS: ASR per 100,000 in 1999 was 31.7(KS), 6.5(NHL) and 34.7(ICC). ART coverage increased from 0 to 43% from 1999 to 2008. With each 10% increase in ART coverage, the number of incident cases decreased by 4.1% (IRR:0.996, p=0.001) for KS and increased by 6.5% (IRR:1.0065, p=0.003) for NHL. No association was found for ICC (IRR:1.002, p=0.3).

CONCLUSIONS: ART scale-up in Uganda was associated with a modest decrease in KS and increase in NHL, but no change in ICC. Possible explanations include a relatively low population ART coverage, late delivery of ART, or lag time. Future analyses will expand to other African countries and cancers. Increasing access to ART and other strategies may be needed to manage the burden of cancer among persons with HIV in resource-limited settings.

Abstract 18
HIV CO-MORBIDITIES

Evaluation of the AIDS Clinical Staging Criteria for Kaposi Sarcoma in a Resource Limited Setting

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BACKGROUND: Kaposi sarcoma (KS) is commonly staged using criteria established by the AIDS Clinical Trials Group (ACTG). ACTG staging is comprised of three dichotomous variables: Tumor extent (T), immune status (I) and systemic symptoms (S). Although validated in the US and Europe, no evaluation has been done in resource-limited settings during the HAART era. We sought to determine whether the ACTG staging criteria is predictive of survival among Ugandan patients with HIV-associated KS.

METHODS: Data were abstracted from medical records of adult patients with HIV-associated KS seen at the Uganda Cancer Institute from 2001-2006. We evaluated the association between ACTG criteria and two-year overall survival using Cox proportional hazards.

RESULTS: The cohort included 387 KS patients: 53.3 % were male, the median age was 35 years (range 18-74 yrs), the median CD4 count at diagnosis was 96 cells/ul (IQR 25, 231 cells/ul). The median survival was 474 days (IQR 141, 1372 days).

In univariate analysis, persons in the good risk category for each variable were more likely to be alive two years after diagnosis: Tumor status (HR 3.2 for T0 vs. T1, 95% CI 1.8-5.6 , $p \leq 0.001$), immune status (HR 1.5 for I0 vs. I1, 95% CI 1.0-2.3, $p = 0.02$), and systemic symptoms (HR 2.1 for S0 vs. S1, 95% CI 1.4-3.1, $p \leq 0.001$).

CONCLUSION: The individual ACTG staging criteria predict survival of KS patients in Uganda. Future analyses will examine whether combinations of ACTG criteria or other demographic, medical and biologic predictors are useful in KS prognosis and response to treatment.

Abstract 19
HIV CO-MORBIDITIES

Use of T–SPOT®TB Test in Latent TB Infection Diagnosis in HIV–Infected Children in Kampala, Uganda

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BACKGROUND: It is estimated that children age 0-14 years account for a third of all TB cases. Tuberculosis is the leading cause of mortality in HIV infected individuals with 56% of TB cases in Uganda, reporting HIV/TB co-infection. Active TB can be prevented (or possibly delayed) if latent TB (LTBI) is diagnosed and treated with isoniazid. For over a century, the Tuberculin Skin Test (TST) was used for LTBI diagnosis but adult studies have shown that IGRAs are superior to the TST. Few pediatric studies especially in high TB/HIV endemic areas confirm this finding. The objective of this study was to examine whether the T-SPOT®.TB assay has a role in LTBI diagnosis in HIV infected children in Uganda.

METHODS: Using a cross-sectional study design, 381 HIV-infected children were recruited at the Baylor-Uganda clinic at Mulago Hospital, Kampala, Uganda between March and August 2010. All children had a TST planted and a T-SPOT®.TB assay drawn and run. Sputum examination (AFB culture and smear) and chest x-rays were done to rule out active TB.

RESULTS: Fifty-four percent of the recruited population was female with a mean age of 7.7 years. The prevalence of a positive test was 6.8% for the T-SPOT®.TB test and 7.9% with the TST. There was no statistical difference between the two assays (p-value 0.59). The agreement between the two assays was 95.9% and the kappa was 0.7 (95% CI: 0.55-0.85, p-value < 0.05) indicating substantial or good agreement. Testing positive on the TST was associated with older age and higher weight for age z-scores but not with the T-SPOT®.TB. Both tests were associated with a history of taking anti-retroviral therapy (ART).

CONCLUSION: Before promoting use of IGRAs in children living in HIV/TB endemic countries, more research on their clinical role in TB diagnosis and cost-benefit analysis needs to be done.

Abstracts

Abstract 20

Impact of Concurrent Tuberculosis Treatment on Antiretroviral Therapy Adherence and Liver Toxicity in HIV-Infected Adults

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BACKGROUND: In high HIV-burdened countries a large proportion of patients initiating antiretroviral therapy (ART) will be on tuberculosis (TB) treatment and many will also develop incident TB. Concerns have been raised about the effect of concurrent TB-HIV treatment on ART treatment adherence and adverse events but specific data on this issue are sketchy.

DESIGN AND METHODS: We conducted a secondary analysis from data of patients enrolled in a randomized, controlled trial (RCT) of partially supervised ART, to determine the impact of concomitant ART and Rifampin-based TB treatment on ART adherence and adverse events in 274 HIV-infected South adults commencing NNRTI-based-ART. ACTG/DAIDS grade 3-4 liver toxicity and median (IQR) cumulative monthly pill count ART adherence were documented over a 6-month post ART initiation for patients with and without treatment of TB. Multivariate logistic regression was performed to investigate baseline independent predictors of ART adherence above the median adherence. Baseline alcohol abuse was evaluated by the CAGE questionnaire.

RESULTS: Median (IQR) age 34 years (30-40), 60% female, median (IQR) CD4 count 98 cells/mL (43-148) at baseline. 99 patients (36%) were on anti-TB drugs at the time of ART initiation (prevalent TB), 55% of whom were in the intensive phase of TB therapy. After starting ART, 28 patients (11%) developed incident TB at a median (IQR) of 7 (2-13.75) months. Median (IQR) cumulative ART adherence at 6 months was 98.2% (95.5-99.5) among those without TB, compared with 98.3% (93.42-99.45) in those with prevalent TB (p=0.38); and 96.83% (88.33-99.0) in those with incident TB (p=0.03). Grade 3-4 liver toxicity was likely to occur in TB-HIV co-infected with incident TB as compare patients without TB (1.3% vs. 7.1%, p =0.03). The only baseline independent predictor of ART adherence below the median was alcohol abuse (OR: 2.4; 95% CI: 1.20-5.0). Of note, supervised ART was not associated with improved adherence in the parent study (RCT).

CONCLUSIONS: Our data suggests that the impact of concurrent TB treatment on ART adherence is minimal, but grade 3-4 liver toxicity occurred more commonly in those with TB treatment. However, given the high morbidity and mortality of late ART initiation, these considerations should not be a limiting factor of early ART initiation. Intervention to prevent alcohol abuse is sorely needed in this population.

Abstract 21

Anemia and Neutropenia Among HIV Positive Patients on Zidovudine-Containing Anti-Retroviral Therapy at the ISS Clinic of Mbarara Regional Referral Hospital

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Zidovudine (AZT), a potent nucleoside reverse transcriptase inhibitor, is recommended in Uganda as part of first line anti-retroviral therapy (ART). It is however known to cause anemia and neutropenia as serious side effects among others. Studies done in sub-Saharan Africa (SSA) have shown that anemia is a significant problem among HIV patients. Despite the difficulty in investigating its contribution, it is possible that SSA patients starting AZT are at an increased risk of anemia. Neutropenia among HIV patients whether or not taking AZT is not well studied in SSA. We carried out a retrospective chart review to describe changes in hemoglobin and neutrophil counts among patients taking AZT for at least 6 months.

The study was done at the ISS clinic of Mbarara Regional Referral Hospital for 3 months starting May 2009. HIV positive adults who had been started on AZT containing ART regimens at the clinic during the year 2008 were included in the study. A sample size of 270 patients obtained using the Kish and Leslie formula for a precision of 5% and a 95% confidence interval around a presumed prevalence of 22.8% was used. The computer database was used to retrieve clinic numbers for patients who started AZT in 2008. These numbers were then used to create the sampling frame of 828 patients from which a random sample of 276 patients was obtained. Of the selected 276 patients, 55 were excluded because 3 did not start ART in 2008, files could not be traced for 27 and for 25, there was no baseline CBC. Information for 221 patients was then analysed using SPSS. Of the 221 patients, 129 (58.4%) patients had a CBC abnormality along the lines of either anemia or neutropenia or both either at baseline or at 6 months and these are the patients who were included in the final analysis.

The median age for these patients was 34. Females were 64%. The average CD4 at start of ART was 144 cells/cc. Average baseline weight was 56kg and of 95 patients who had an alcohol history documented, the majority (80%) had never taken any alcohol. All the 129 patients analysed had a CBC at baseline but 101 had a CBC at 6 months and only 34 had a CBC at one year available on file. The prevalence of anemia appeared to decrease with time, being 50%, 41% and 12% at baseline, at 6 months and at 1 year respectively. The average hemoglobin appeared to increase with time, being for males 13.7g/dl, 12.9, and 15 at baseline, 6 months and 1 year respectively and for females 11.7g/dl, 12, and 12.8 at baseline, 6 months and 1 year. Of 50 patients who had normal baseline hemoglobin, 30 (60%) had normal hemoglobin at 6 months.

The average MCV increased from 84 at baseline to 102 at 6 months and 106 at one year. The prevalence of neutropenia at baseline was 64% and increased to 81% at 6 months and 78% at 1 year. The average neutrophil counts appeared to reduce with time decreasing from 2000 cells/cc to 1500cells/cc both at 6 months and at 1 year.

The prevalence of severe neutropenia (less than 1000cells/cc) was 19% at baseline and 39% at six months. We found that 53% of patients with normal neutrophil counts at baseline had neutropenia at 6 months.

Our findings indicate that neutropenia may be a more significant problem than anemia among HIV positive patients taking AZT containing ART at this clinic.

Abstract 22
HIV CO-MORBIDITIES

Prevalence and Outcome of HIV-Associated Malignancies Among Children Attending a Referral Clinic in Kampala, Uganda

AUTHORS: Vincent Tukei and Adeodata Kekitiinwa, Baylor College of Medicine Children's Foundation-Uganda (Baylor-Uganda)

INTRODUCTION: The objective of this study was to determine the prevalence, associated factors, and outcome of HIV-associated malignancies among children attending the Baylor-Uganda Clinic in Kampala.

METHODS: We conducted a retrospective case series that involved review of records of all HIV-infected patients aged 6 weeks to 18 years who received care at the Baylor-Uganda Clinic between January 1, 2004 and December 31, 2008.

Proportions of patients with malignancies were computed. Survival was assessed by Kaplan Meier analysis and its association with other variables was determined by Cox regression. Variables associated with death at P<0.2 in univariate analysis and other clinically relevant variables were fitted in the final model.

RESULTS: Of 6530 patients seen during the study period, 108 (1.65%) had malignancies. The median age for patients with malignancy was 9 years, IQR (5-12 years).

Only 2 types of malignancies: Kaposi's sarcoma (KS) 98 (90.7%) and Non-Hodgkin's lymphoma (NHL) 10 (9.3%) were seen. No patient had both malignancies.

Sixty two patients (57.4%) were male; of these, 54 had KS and 8 had NHL.

Among KS patients, 32.6% had lesions in lymph nodes, 26.3% were cutaneous, 7.4% were mucosal, 5.3% were visceral and the rest were disseminated.

Of the 108 patients with malignancies, 33 died and 21 were lost to follow up (LTF). Eleven of those that died and 14 of patients LTF did not start antiretroviral therapy (ART).

Of 83 patients that started ART, 39 were on a PI-based regimen and 44 were on an NNRTI-based regimen. Upon starting treatment, CD4 cell percentage increased from a baseline median of 6%, IQR (0%-24%) to 14%, IQR (5%-33%) at 6 months,(p<0.001) and to 15.8%, IQR (3%-33%) at 12 months of ART,(p=0.032 for the 6- 12 month increase).

In multivariable Cox regression analysis, the risk of death was not related to sex, Hazard Ratio (HR) = 0.8, 95% CI (0.31, 2.19); age category (≤12 years), HR=0.7, 95%CI (0.24, 2.11); baseline CD4 percentage, HR=0.9, 95%CI (0.88, 1.02); ART regimen (NNRTI versus PI), HR=1.2, 95%CI (0.46, 2.97); or type of malignancy(KS), HR=0.7, 95%CI (0.08, 5.58).

Death during follow-up was seen more frequently in the first 6 months compared to the rest of the follow-up period. Only 3 patients (2 KS and 1 NHL) died after their second year of follow-up.

CONCLUSION: Kaposi's sarcoma and NHL remain common malignancies in children with HIV/AIDS. Many children die a few weeks to months after starting ART, but those that survive mount good immunologic recovery.

Abstract 23
HIV CO-MORBIDITIES

Variability in the Pharmacokinetics of Nucleoside Reverse Transcriptase Inhibitors in TB/HIV Co-infected Ghanaian Patients

AUTHORS: Awewura Kwara[1], Margaret Lartey[2], Isaac Boamah[2], Naser, Rezk[3], Joseph Oliver-Commey[4], Ernest Kenu[4], Angela Kashuba[3] and Michael Court[5]

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BACKGROUND: There are limited data on the pharmacokinetics (PK) of generic nucleoside reverse trancriptase inhibitors (NRTIs) in populations in Africa, where they are widely used. We evaluated the PK profiles of lamivudine (3TC), zidovudine (ZDV) and stavudine (d4T) as well as the determinants of interindividual variability.

METHODS: 30 Ghanaian HIV/TB co-infected patients on rifampin-containing TB therapy and trimethoprim-sulfamethoxazole were enrolled and treated with efavirenz plus Combivir (3TC and ZDV) or 3TC and d4T. Steady-state samples were obtained at 0, 0.5, 1, 1.5, 2, 3, 4, 6, 8, and 12 hours post-dosing. Drug levels were determined by a validated HPLC method. Direct sequencing of the UDP-glucuronosyltransferase 2B7 gene exon 2 was performed. The relationship between patient covariates, UGT2B7 genotype, and PK data were assessed by t-test, ANOVA and linear regression. PK data were log-transformed or rank-transformed as appropriate to achieve data normality and equal variance. Results are expressed as mean values (SD).

RESULTS: 27 patients (74% males) with complete data were included in this analysis. The AUC [coefficient of variation] of 3TC (n=27) was 5843 (2581) h*ng/mL [44%], ZDV (n=16) was 3368 (2747) h*ng/mL [82%] and d4T (n=11) was 865 (223) h*ng/mL [26%]. 3TC AUC was significantly lower in patients who received Combivir compared to those who received 3TC and d4T (5474 vs. 6911 h*ng/mL, P=.031) but weight-normalized apparent oral clearance (CL/F) were similar (459.2 vs. 406.0, P=.824). Compared with non-carriers, carriers of the UGT2B7 haplotype tagSNP 749A>G had lower mean ZDV AUC (2160 vs. 4997 h*ng/mL, P=.028), shorter plasma half-life (4.0 vs. 12.2 hours, P=.020), and higher CL/F (2853 vs. 969 mL/min/kg, P=.009). We did not find sex differences in PK for ZDV and 3TC in this small population. However, d4T CL/F was higher in females than males (528.6 vs. 360.7 mL/min/kg, P=012). Age and BMI were not associated with the PK of any NRTIs. All evaluated patients had suppressed plasma HIV-1 levels within 24 weeks of therapy.

CONCLUSIONS: There is significant variability in pharmacokinetic profile of commonly used NRTIs in Ghanaian HIV/TB co-infected patients on TB therapy but no difference in short-term virologic suppression. Also, we found a novel association between UGT2B7 genetic variation and ZDV PK. The relationships between variable PK profiles, intracellular concentrations, clinical effect and long-term toxicity need to be evaluated.
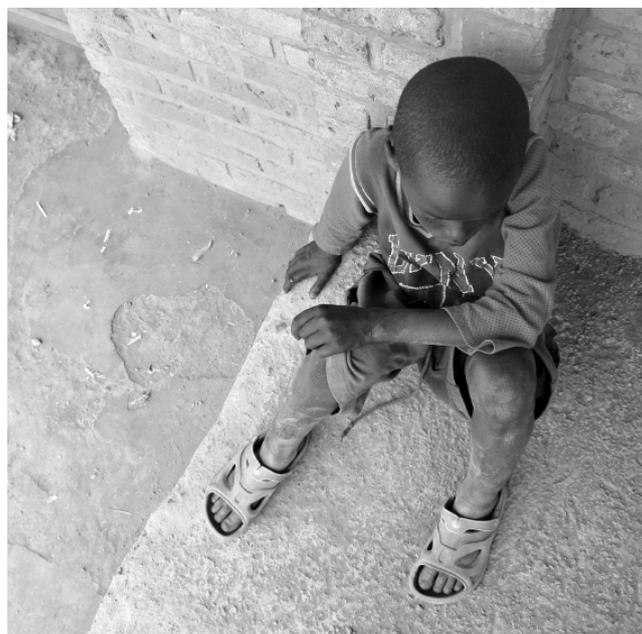
Abstract 24
HIV CO-MORBIDITIES

Epidemiology of Cancers at Kamuzu Central Hospital, Malawi

AUTHORS: Elizabeth Bigger, Carol Shores, Mina Hosseinipour, Agnes Moses and Albert Mwafongo

UNC Project-Lilongwe and Kamuzu Central Hospital, Lilongwe, Malawi; and University of North Carolina-Chapel Hill

CLINICAL BACKGROUND: Malawi lacks an operational cancer registry, thus reliable epidemiological data to develop evidence-based care and focused research. HIV, infecting approximately 20% of urban Malawians contributes to the pathogenesis of cancers, particularly AIDS-defining malignancies (Kaposi's sarcoma, non-Hodgkin's lymphoma, and cervical cancer. As antiretroviral use expands and life expectancy increases, malignancies will become a more significant cause of morbidity and mortality in this population. To gain understanding about malignancies in Malawians, we designed a database to collect clinical data for all presenting cancer patients at Kamuzu Central Hospital (KCH) in Lilongwe, Malawi.

METHODS: Patients with histologically confirmed or clinically diagnosed malignancies were identified at Kamuzu Central Hospital's departments of Medicine, General Surgery, Gynecology, Dental, Pediatrics, and Ophthalmology. From September 2009, patients underwent interviews and medical chart reviews to complete database questionnaires. Collected information included demographic data (age, sex, race, home village), family history of malignancy, exposure to potential carcinogens (tobacco, alcohol, and marijuana use, water source, cooking materials, and insecticide exposure), past medical history (including HIV, malaria, tuberculosis, and schistosomiasis), tumor location, histology diagnosis, stage, and treatment received. The questionnaire data were entered into a Web-based metaclinics database and extracted into Microsoft Excel. Calculations and analysis were performed with Excel. The cancer database will continue until at least 2013.

RESULTS: From January 2010 to March 2011, 1188 cancer patients have been identified, with 48.3% HIV positive, 11.4% of unknown HIV status, and 40.3% HIV-negative. Initially, the majority of registered patients came from the Medicine Department, suggesting possible under-reporting from other departments. Subsequently there was gradual increase in number of patients referred across the departments. For representation from different departments, there were 399 patients from Medicine, 357 from Surgery,168 from Pediatrics, 171 from Gynecology, 53 from Ophthalmology, 22 from Dental and 14 had no indication of department. Major cancers were the HIV associated cancers with Kaposi's sarcoma (30.7 %), cervical Cancer 15.2% and lymphomas 10.9%. 98% of patients with Kaposi's sarcoma had HIV. Patients with Kaposi's sarcoma used tobacco and alcohol than HIV patients with other malignancies. Among HIV-positive patients, 82.9% had a history of malaria infection, and 22.4% had a history of TB infection.

CONCLUSIONS: More than a third of the diagnosed malignancies registered occurred in known HIV-positive patients with Kaposi's sarcoma as the most common malignancy. Analysis of broader epidemiological data about malignancies of HIV patients in Malawi will aid future efforts for prevention and treatment. Treatment of Kaposi's sarcoma has since been expanded to ART clinic and prospective data is being collected.

Abstract 25
HIV CO-MORBIDITIES

Viral Decay Rates are Similar in HIV-Infected Patients With and Without TB Coinfection Treated With Efavirenz-Containing Antiretroviral Therapy

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BACKGROUND: While concurrent highly active antiretroviral therapy (HAART) during TB treatment is associated with substantially survival benefit, perceived high pill burden, overlapping drug toxicities, and drug-drug interactions are often cited as reasons to defer HAART. We hypothesized that early HIV clearance rates in HIV/TB co-infected patients would be similar to that in HIV-infected patients when treated with a similar simplified HAART regimen.

METHODS: 74 HIV-infected patients (34 with TB coinfection) were prospectively enrolled in a pilot study and treated with a once-daily combination regimen of lamivudine, didanosine, and efavirenz. HAART was initiated within 2 to 8 weeks of TB treatment in co-infected patients. Viral loads were determined on days 0, 3, 7, 14 and 28 of HAART. Plasma viral loads were fitted to a biexponential nonlinear mixed-effects model of HIV viral dynamics. The estimated viral decay rates, baseline characteristics and treatment responses were compared between the two groups using the nonparametric tests.

RESULTS: Four patients (three with TB coinfection) died before day-28 and another 4 patients (two from each group) did not complete sampling. The mean $\pm$ SD phase 1 viral decay rate was 0.586 ± 0.107/day in the co-infected patients and 0.600 ± 0.094/day in the patient without active TB (P = 0.726). The mean phase II decay rates were 0.023 ± 0.021 and 0.025 ± 0.021/day respectively, in patients with and without active TB (P = 0.415). The proportion of patients with HIV RNA < 50 copies/mL and the increase in CD4 cell count from baseline at week 48 of antiretroviral therapy were not different between the two groups. Log-rank test showed that phase I viral decay rate (P = 0.04) and phase II decay rate (P = 0.01) were associated with the risk of virologic failure and time-to-virological failure.

CONCLUSIONS: Tuberculosis coinfection and concurrent antituerculous therapy did not compromise antiretroviral efficacy or long-term effect of efavirenz-based therapy in Ghanaian HIV-infected patients.

Abstract 26
HIV CO-MORBIDITIES

Characterization of Human Herpesvirus-8 Gene Expression in HIV-Associated Kaposi Sarcoma Tumor Tissue and Its Clinical Correlates

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BACKGROUND: Human herpesvirus 8 (HHV-8) replication is necessary for KS tumor growth, and quantities of HHV-8 lytic and latent mRNA vary in KS biopsy tissue. We quantified HHV-8 gene transcripts in KS tumors from Ugandans with HIV-associated KS and examined the associations between HHV-8 gene expression in tumors, KS morphotype, and systemic HHV-8 replication.

METHODS: KS biopsy specimens were obtained from treatment-naïve, HIV-infected Ugandan adults with histologically-confirmed KS. Participants also collected oral swabs daily and plasma samples weekly over 4 weeks to quantify HHV-8 replication. HHV-8 mRNA gene transcripts, including 2 lytic genes (K8 and ORF50) and 1 latent gene (ORF73), and GAPDH were quantified in biopsy specimens using RT-PCR; total RNA was determined by optical density. Only specimens with total RNA >10 ng and GAPDH threshold cycle <35 were included in analysis. HHV-8 mRNA log copies were normalized to total ng of RNA in samples.

RESULTS: Thirteen Ugandans with HIV-associated KS contributed biopsy specimens. Eleven (85%) were male, and the median age was 35 years (range 24-42). Twelve (92%) were classified as tumor stage T1, 10 (77%) had macular lesions, median CD4 T cell count was 144 (range 5, 265), and the median log10 HIV viral load was 5.1 (range 2.3-5.8).

HHV-8 mRNA gene transcripts were detected in all 13 KS biopsy samples. The quantity of mRNA from lytic genes (K8 or ORF50) exceeded that from latent ORF73 in all samples [median (IQR) log copies/ng total RNA K8= 2.6 (2.2, 3.2), ORF50=2.7 (2.2, 3.0), ORF73= 1.7 (1.2, 1.9)]. The quantity of HHV-8 mRNA detected was also highly correlated within samples (K8 and ORF50 Spearman coefficient (Sp)=0.92; K8 and ORF73 Sp=0.78; ORF50 and ORF73 Sp=0.84).

Quantity of lytic gene expression differed based on tumor morphotype, with nodular tumors having a lower proportion of lytic genes compared to macular morphotype (K8/ORF73 p=0.13; ORF50/ORF73 p=0.04). No other clinical characteristics were significantly associated with HHV-8 gene expression in tumor tissue.

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Evaluation of systemic HHV-8 replication found that all participants had HHV-8 detected in peripheral blood on ≥1 day. The median oral HHV-8 shedding rate was 50% (IQR 3%, 61%) of days, with a median log copy number of 3.3 (range 2.6, 4.2) on days HHV-8 was detected. The quantity of K8, ORF50, and ORF73 log copies mRNA in KS biopsies was positively associated with the detection of any oral HHV-8 (K8 p=0.01; ORF50 p=0.009; ORF73 p=0.004). The quantity of lytic K8 and ORF50 mRNA, but not latent ORF73 mRNA, was also positively correlated with the quantity of HHV-8 detected in saliva (K8 Sp=0.6; ORF50 Sp=0.8).

CONCLUSIONS: KS tumors in our cohort express a preponderance of lytic HHV-8 gene products. The quantity of lytic HHV-8 mRNA detected in KS tumors is associated with tumor morphotype and the detection of replicating HHV-8 in the oropharynx. Quantification of HHV-8 mRNA from KS tissue may provide insight into the pathophysiology of KS and could help predict disease progression and response to treatment.

Abstract 27
INTEGRATING TREATMENT AND PREVENTION IN HIV CARE

Wound Healing and Resumption of Sex Following Medical Male Circumcisions in Kisumu, Kenya

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INTRODUCTION: Resumption of sex before complete wound healing in men who undergo circumcision is an emerging public health concern because it may significantly erode the benefits of male circumcision (MC). Programs currently recommend six weeks of abstinence following circumcision, though the true timing for sufficient wound healing is not known. Sex before complete healing likely increases the risk of transmission or acquisition of HIV. Conversely, prolonged post-circumcision abstinence may be a barrier to MC uptake. A study to evaluate post-circumcision wound healing, resumption of sex and associated determinants is therefore being conducted in Kisumu, Kenya.

METHODS: A cohort of newly circumcised HIV positive (n=115) and negative (n=215) men are being followed over three months to determine time to healing and time to resumption of sex. Wound healing is assessed through visual inspection for apposition of edges, presence and color of scar formation, and presence of gaps as indicators of restoration of function. Independent observers report on wound healing status at weekly intervals based on photographs and results are compared for concordance with direct observation. Participants are interviewed weekly over a period of three months after circumcision and self-reported date of resuming sex is recorded for each individual. Pre- and post-circumcision viral load and shedding in HIV-infected participants are measured

to assess how they are affected by circumcision. Keratinization of the post-circumcision scar is assessed by measuring percent keratin in desquamated cells collected using poly-L lysine slides.

RESULTS: Data collection began March 28, 2011 and is expected to be complete after 12 months. Data analysis will examine factors associated with delayed wound healing and premature resumption of sex. HIV status, baseline CD4, viral load, age, time to resumption of sex, HSV 2 infection and adverse events will be examined for association with wound healing. Demographic and behavioral characteristics will be examined for association with time to resumption of sex. Level of concordance between reported wound status based on direct observation and on photographs will be assessed.

DISCUSSION: Although the WHO recommends 6 weeks post-circumcision abstinence, precise data on duration of post circumcision wound healing are lacking. A longer than necessary period of abstinence may discourage men from accepting circumcision, whereas a shorter than necessary period may expose men or their partners to infection. This study will generate information applicable for identifying clients with risk factors for delayed wound healing and inform the tailoring of counseling messages specifically for them, while possibly reducing the period of recommended abstinence for others. The study will also contribute to further refinement and standardization of methods for evaluating wound healing.

Abstract 28
INTEGRATING TREATMENT AND PREVENTION IN HIV CARE

"I Had No Negative Expectations Because I Really Trust Doctors": Informed Consent, Experiences, and Perception of Clinical Trial Participants in Eldoret, Kenya

AUTHORS: Violet Naanyu, Fatuma Some and Abraham Siika, Moi University and USAID-AMPATH Program

Moi University Clinical Research Center (MU CRC) initiated its first AIDS Clinical Trials Group (ACTG) study in 2006. Since then, several clinical trials have been initiated. The trials are approved by institutional, national and international regulatory committees to ensure participants are well-protected. The African culture generally upholds great respect for healers and clinicians. The same view may be held in clinical trials, meaning participants may only look forward to the anticipated good, and never think of potential harm in participating in a clinical trial. Thus we explore whether trial participants fully understand the consent form, and how they generally feel about being participants in clinical trials. Sixty one participants were enrolled in the second clinical trial conducted by the MU CRC. In depth interviews were conducted on 21 participants after completion of their clinic visit. Domains were covered in a logically unfolding format including: the informed consent document; participants' understanding of informed consent; benefits associated with participation; personal experiences

in the trial; and possibility of future participation. Interviews were offered in Kiswahili, English, or both languages. Field notes were taken and audio recording were made for transcription. Transcripts were coded and emerging themes were logically connected to provide a complete description of trial participants' experiences, feelings, and thoughts.

All participants recalled being informed about the trial and its voluntary nature. Consequently, they signed the consent form and joined the trial. However, some participants were too ill and desperate to fuss about details of the trial. Some of them relied heavily on providers' advice on what to do while others left the decision to their guardians. Their opinions on the consent form and its content ranged from 'easy to understand' to 'difficult to grasp', but, they got many opportunities to ask questions regarding the consent form and to allay any fears. For the most part, participants understood what the study was about. Participants praised friendly and professional study staff, efficient and timely services, good sanitation, remarkable changes in well-being, and supportive financial and communication services offered. On the contrary, some reported negative side effects and troublesome social lives. Nonetheless, all participants were happy to volunteer again in future due to the good services enjoyed, clear indication of improved well-being, probability of being part of a medical discovery, and provision of transport reimbursement. Indeed, all were optimistic about encouraging others to participate in future trials. Clinical trial participants in Eldoret generally seem to understand their role but rely on providers and guardians when deciding to consent. Trust in providers, advanced illness, and desperation to get better may encourage participation. Happily, trial experiences have also been very positive and rewarding. Further evaluation of trial participant opinions can improve trial protocols and shape development and monitoring of future clinical trials. This study also serves as an important exemplar for scholars interested in research ethics in the developing world.

Abstract 29
INTEGRATING TREATMENT AND PREVENTION IN HIV CARE

Adverse Reactions to Antiretroviral Therapy Among HIV-Infected Ugandan Children

AUTHORS: Vincent Tukei, Isaac Sebuliba and Adeodata Kekitiinwa, Baylor College of Medicine Children's Foundation-Uganda (Baylor- Uganda)

BACKGROUND: Antiretroviral therapy (ART) is known to cause a number of adverse effects. The objective of this study was to determine the frequency of ART adverse events among patients aged 6 weeks to 18 years and to assess the outcome of these events.

METHODS: We assembled an observational cohort of 378 HIV-infected children and adolescents who started ART at the Baylor-Uganda Clinic during the period July 2004-July 2009. During the study period, patients were started on Zidovudine or Stavudine , plus lamivudine, and Efavirenz or Nevirapine. Adverse events were recorded as they occurred. Descriptive analyses and Kaplan Meier survival analysis were carried out.

RESULTS: A total of 126 adverse events were reported among 107(28.3%) patients. Ninety six of the 107 experienced only 1 adverse event; 11 patients had 2 or 3 events. The adverse events included: anorexia 3(2.4%), nausea and vomiting 18(14.3%), diarrhea 17(13.5%), abdominal pain 4(4.8%), hepatitis 3(2.4), somnolence/drowsiness 4(3.2%), dizziness 22(17.5%), amnesia 1(0.8%), anxiety/nightmares 12(9.5%), lactic acidosis 1(0.8%), skin rash 7(5.5%), nail discoloration 8(6.3%), gynaecomastia 1(0.8%), anemia 10(7.9%), cardiomyopathy 1(0.8%), peripheral neuritis 1(0.8%), and lipodystrophy 11(8.7%).

While on ART, 31 (8.2%) patients died and 8 (2.1%) were lost to follow up. Only 6 of the 31 that died had experienced adverse effects before death. None of the deaths were considered ART related. Twenty four patients changed ART as a result of adverse events. Of the 24, 10 patients had anemia; 1 had cardiomyopathy; 1 amnesia; 1 was with hepatitis and 11 patients had lipodystropy.

The median duration from start of ART to detection of adverse event was 12 weeks (IQR: 3-24). This duration varied according to adverse event: Anorexia 16.7 (IQR: 2-24) weeks; nausea/vomiting 9.3 (IQR: 2-12.1) weeks; diarrhea 11.9 (IQR: 4.7-13) weeks; abdominal pain 2 weeks; anemia 14.5 (IQR: 5-31) weeks; hepatitis 50.8 (IQR: 3-98.7) weeks; anxiety/nightmares 10 (IQR: 2-12) weeks; drowsiness/somnolence 3 (IQR: 2-8) weeks; cardiomyopathy 35.4 weeks; nail discoloration 24 (IQR: 12-71) weeks; lipodystrophy 207 (IQR: 96-224) weeks; dizziness 9.4 (IQR: 2.6-12) weeks; skin rash 11 (IQR: 4-12) weeks; amnesia 52 weeks; peripheral neuritis 13 weeks; lactic acidosis 50 weeks; and gynaecomastia 52 weeks.

The probability of occurrence of adverse events was 8.4 % (95% CI: 5.95-11.68, n=341) at month-1 of ART; 17.4 % (95% CI: 13.84-21.69, n=290) at month-3; 22.9% (95% CI: 18.87-27.62, n=259) at month-6; and 24.7% (95% CI: 20.56-29.57, n=239) at 1 year of ART. At 2 and 4 years after ART initiation, the cumulative probability of occurrence of adverse events was 28.0% (95% CI: 23.55-33.03, n=217) and 28.7 % (95% CI: 24.22-33.81, n=185) respectively.

CONCLUSION: ART adverse events are frequent, but are largely mild and do not require change of therapy. The events occur at specific times during treatment. One half of the events occur within the first 3 months of ART. To be able to capture these events, clinicians need to look for them at the specified times.

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HIV Associated Stigma, Isolation, Discrimination, and Serostatus Disclosure: A Global Survey in HIV–Infected Adults Three Decades Into the HIV/AIDS Pandemic

Authors: Jean Nachega[1], Chelsea Morroni[1], Renslow Sherer[2], Suniti Solomon[3], Mauro Schechter[4], Jürgen Rockstroh[5] and Jose Zuniga[6]

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BACKGROUND: Despite the recent global drive for universal HIV testing and access to care and treatment, little is known on a global scale about patients' perspectives on HIV-associated stigma and HIV serostatus disclosure. This knowledge is critical to help in planning of support services and to assist in designing and/or expanding targeted public health interventions strategies.

DESIGN & METHODS: A cross-sectional study was undertaken from January 2010 to March 2010 in 12 countries in North America (NA), Latin America (LA), Europe (EU), Africa (AF) and Asia/Pacific (A/P), to assess experiences and attitudes related to people living with HIV/AIDS (PLWHA), including perceptions of stigma. A face-to-face interview was conducted among HIV-infected adults on antiretroviral therapy (ART) using a validated questionnaire in patient's local language. Multivariate logistic regression was performed to investigate independent predictors of perceived HIV related stigma.

RESULTS: 2035 HIV-infected adults (1275 males, 749 females, 9 transgender, 2 unspecified) were recruited.

Overall, 40%, 53% and 6% of participants were aged 18 to 39 years, 40 to 59 years and ≥60 years, respectively. 37% of participants reported loneliness and social isolation as a result of their HIV-status (42% in NA, 28% in LA, 35% in EU, 52% in A/P vs. 24% in AF, p<0.01). Overall, self-reported depression was reported by 27% of respondents (47% in NA, 28% in LA, 27% in EU, 25% in A/P vs.13% in AF, p<0.01). According to responders, the biggest misperceptions from the public about PLWHAs are that they lead risky lifestyles (sexual promiscuity, drug use, and prostitution) (71% in A/P, 49% in EU, 41% in NA vs. 31% in Africa and 29% in LA, p<0.01); and that HIV/ADS is a death sentence and PLWHA should be avoided; 42% of PLWHA cited "strong concerns" about others learning their status. 96% of respondents reported disclosing their HIV status to at least one person – most commonly a family member (89%), and 17% of respondents who reported being in a long-term relationship indicated they had not disclosed their HIV status to their partner. Independent predictors of perceived stigma were duration HIV infection <5 vs. > 5 years (OR: 1.42; 95%

CI: 1.22-1.66; P<0.001); living in Asia/South Pacific vs. other regions (OR:1.77 95%CI: 1.96-3.92 and have not experienced body face changes (OR: 0.90; 95%CI: 0.81-1.00; P=0.04); No reported depression (OR: 0.80; 95%CI: 0.72-0.90; p<0.001) and Non-Disclosure of HIV status (OR:1.75; 95%CI: 1.28-2.41; P<0.001).

CONCLUSIONS: Three decades into the HIV/AIDS pandemic, despite gains with increased access to ART, HIV-associated stigma, isolation, and discrimination persist, and were associated with loneliness and depression in over one quarter of PLWHA surveyed. There is a critical need to address these challenges as effective targeted interventions are likely to benefit individuals and impact public health.

Abstract 31
INTEGRATING TREATMENT AND
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HIV/AIDS Preventive Health Behaviours Among Undergraduates of the University of Ibadan, Nigeria

AUTHORS: Obinna Odor and Ngozi Ezeajughi-Obunezi, University of Ibadan, Nigeria

Studies show that HIV/AIDS remains a major public health challenge worldwide and adoption of preventive health behaviours holds key to its mitigation. Little is known, however, about typology of preventive health behaviours adopted by undergraduates against the disease condition. This study, therefore determined pattern and types of HIV preventive health behaviour among undergraduates in Nigeria.

The study was cross-sectional in design. A two-stage sampling procedure was adopted. Validated questionnaire which assessed the students' preventive health behaviours and the antecedent factors was used for data collection. Descriptive and Chi-square statistics were used for data analysis.

Participants' overall mean knowledge score on HIV was 18.9 out of 25 points. Most participants (97.3%) believed that having unprotected sexual intercourse was risky. A majority (96.3%) reported that blood transfusion could transmit HIV. The preventive health practices adopted by the participants were: avoiding sharing of skin-piercing instruments (93.6%); sexual abstinence (70.3%) and consistent condom use (58.6%). The prevalence of condom use by religion was as follow: More females (57.5%) than males (42.5%) practiced consistent use of condom. More females (54.2%) than males (45.8%) abstained from sex. A majority (77.7%) of those that avoided skin-piercing instruments did so "always". The mass media topped the list of the sources of motivation to adopt HIV/AIDS preventive health behaviours.

The prevalence of adoption of the types of HIV preventive health behaviours was low in spite of general high level of knowledge of the disease. Health education strategies are needed to promote adoption of preventive health behaviours among Nigerian students.

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INTEGRATING TREATMENT AND PREVENTION IN HIV CARE

Impact of Videotape Technology on HIV/AIDS Information Dissemination Among Teenagers in Youth Friendly Centres in Owerri, Nigeria

AUTHOR: King Odor, University of Ibadan, Nigeria

INTRODUCTION: Learning through information dissemination is an activity that starts at birth and continues throughout the lifetime both in formal and non-formal settings. Facilities and personnel are employed to provide information for health learning, which aims at preparing teenagers to contribute meaningfully to the society they live in. However, empirical studies in Nigeria involving video- taped instructional strategy have been limited to the teaching and learning of science-based subjects. This study therefore attempts to determine the impacts of video-tape technology in dissemination of HIV/AIDS information among teenagers in Nigeria.

METHODS: A total of 102 teenagers in two intact youth friendly centres were the study participants. Three null hypotheses were formulated and tested. Four instruments namely: video-tape recorder of lesson used for the study, teenagers' attitudinal scale, the social studies achievement test (SSAT), and Teachers' Guide for conventional teaching were used for the study.

RESULTS: The results revealed there was significant main effect of treatment on teenagers' achievement. Also, it showed that there was significant main effect of treatment on teenagers' achievement in health information. $(F(1,97) = 145.474'$ $P<.05)$. There was a significant main effect of treatment on the attitude of teenagers to health information $(F(1,97) = 127.877$ $P<.05)$. However, there was no significant main effect of gender on teenagers' development achievement in HIV/AIDS and health information $(F(1,97) = 0.839,$ $P>.05)$. There was also no significant main effect of gender on teenagers' attitude to HIV/AIDS and health information and education $(F(1,97) = 0.640;$ $P>.05)$. There was no significant 2-way interaction effect of treatment and gender on teenagers' attitude $(F(1,97) = 2.041;$ $P>.05)$.

CONCLUSION: Based on these findings, government should equip public youth-friendly centres with necessary hardware and software facilities, trained teenage instructors should be encouraged to uptake the challenge of using this strategy. Above all, educators should develop video instrumental packages to be used in youth-friendly centre.

Abstract 33

INTEGRATING TREATMENT AND PREVENTION IN HIV CARE

Factors Affecting Adherence to Antiretroviral Therapy Among Adult AIDS Patients at Area18 ART Clinic in Lilongwe, Malawi

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BACKGROUND: Low level of adherence to antiretroviral therapy (ART) is of great public concern because it increases morbidity and mortality among AIDS patients. Assessment of antiretroviral adherence outside referrals centres in Malawi is lacking. We sought to determine factors affecting adherence to ART among adult AIDS patients attending a decentralized health center.

METHODOLOGY: This cross sectional, mixed methods study was conducted at a decentralized site in Lilongwe, Malawi. Structured questionnaires were administered to all adult patients obtaining ART services from the clinic between 30th July and 6th August, 2010. Adherence was measured using three methods; three days self recall, one month recall and pill count with ≥95% adherence considered optimal. Additionally, 3 in-depth interviews with staff and 2 focus groups with ART users were done. We used a Chi-Square to test the association of variables and manual methods of qualitative analysis to identify themes.

RESULTS: A total of 206 patients participated (64.1% female, mean age 37.6 years± 10.06). Most males attained education (94%:84.8%). Adherence varied according to methods of measurement with best results in one month recall, better in three days recall and worse in pill count (82.0%, 91.3%, and 71.1%), men having better adherence by pill count (80.6%) and women better in one month recall (94.7%). The overall average adherence rate was 81.46%. Adherence was significantly associated with sex $(P<0.05[0.027])$, missed appointment $(P<0.001[0.000])$, and past non adherence $(P<0.001)$. Age, education, occupation, disclosure, side effects and waiting time was not significantly associated with adherence. Patients' reported reasons for non-adherence included forgetfulness, being busy and travelling.

CONCLUSIONS: The rate of ART adherence at the study site was lower than the WHO recommended rate (≥95%). Females consistently reported high adherence than their pill count suggested, pill count appeared accurate than self recall methods. Non adherence is common with missing visits.

Abstracts

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INTEGRATING TREATMENT AND PREVENTION IN HIV CARE

Viruses Found in Subjects During Early Infection Are Better at Replicating in Dendritic Cell–T Cell Cocultures Compared to the Variants Circulating in the Heterosexual Partner

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BACKGROUND: A newly infected subject acquires only a limited number of HIV-1 variants from the diverse viruses circulating in the chronically infected transmitting partner. We have previously shown that compared to the viruses circulating in the transmitting partner, variants found early in infection in the newly infected subject are more closely related to ancestral viruses, often have shorter and less glycosylated envelope variable loops. The reason viruses with these genotypic characteristics are selected during transmission remains unclear.

METHODS: We have examined viruses from 6 newly infected subjects and their epidemiologically identified monogamous heterosexual partner in a Rakai, Uganda cohort prospectively followed prior to and after HIV-1 acquisition. From these subjects, virus envelope glycoproteins were generated using multiple independent PCRs, and these amplified products were incorporated into an NL4-3 backbone to construct replication competent recombinant viruses. Viruses have been examined for their sensitivity to CD4 antibody, CCR5 inhibitor, fusion blockers and coreceptor usage. Viruses are also being assayed for replication kinetics in lymphocytes, monocyte derived macrophages, and monocyte derived immature dendritic cell – T cell cocultures.

RESULTS: Samples from the newly infected partner were examined within 6 months of estimated seroconversion. Each recipient's sequences clustered with the corresponding donor's sequences in neighbor joining phylogenetic analysis which confirmed the epidemiological linkage. All couples were infected with subtype D HIV-1. Viruses found early in infection compared to those circulating in the chronically infected partner displayed no significant difference in sensitivity to CD4 antibody, CCR5 inhibitor, maraviroc, and fusion blocker, T-20. Virus found in the newly infected subject did not display significantly different replication kinetics in lymphocytes compared to those present in the transmitting partner. Viruses found early in infection were significantly better at replicating in immature dendritic cell-T cell cultures compared to the viruses in the transmitting partner (p = 0.03, Wilcoxon matched pairs signed-rank test). All viruses replicated relatively poorly in monocyte derived macrophages.

CONCLUSIONS: Our results suggest that replication kinetics in dendritic cell-T cell cocultures may influence which subtype D HIV-1 viruses are selected during heterosexual transmission in Rakai, Uganda. Strategies aimed at preventing initial capture of HIV-1 by DCs could prevent further HIV-1 transmission.

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INTEGRATING TREATMENT AND PREVENTION IN HIV CARE

Trends of HIV–1 Drug Resistance During the Past 12 Years of ARV Treatment in Uganda

AUTHORS: Immaculate Nankya[1], Samar Mehta[2], Juliet Akao[1], Fred Kyeyune[1], Joshua Kayiwa[1], Denis Tebit[2], Korey Demers[2], Cissy Kityo[1], Peter Mugyenyi[1] and Robert Salata[2]

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BACKGROUND: The HIV global epidemic is still major challenge with about 35 million people living with HIV globally. More than 50% of these live in the sub-Saharan Africa. Of concern still is that after close to 30 years of the epidemic, the number of new infections annually is still alarming with 2.2 million new infections in 2009. With the roll out of Anti-retroviral therapy (ART), only 37% of the estimated number of people that need antiretroviral therapy in sub-Saharan Africa are on treatment. However, major challenges that come with this roll out of therapy include emergence as well as transmission of drug resistance mutations.

METHODS: We have performed genotypic resistance testing using an in-house technique. With this technique, we have looked at drug resistance profiles from as early as 1999 up to date. Over 1000 genotypes have been performed on patients a viral load greater than 2000 copies/ml. We have analyzed both the reverse transcriptase (RT) and the protease (PR) regions for drug resistance as well as subtypes.

RESULTS: We show that with the universal roll out of ART in Uganda, the most frequent drug resistance mutation (DRM) to NRTIs was M184V, conferring 3TC and FTC resistance (>60% of all subtype A and D samples tested). The collection of mutations mostly responsible for thymidine analog resistance (TAMs) (sites 41, 67, 70, 75, 210, 215 and 219) were found at a low but similar frequency in both subtype A and D despite the fact that AZT is one of the most prescribed drugs in Uganda. The most frequent DRMs to NNRTIs (NVP and EFV) were K103N and G190A, similar in both subtype A and D samples. There was slightly less Y181C (conferring mostly NVP resistance) in subtype A versus D samples. We had expected to observe a decrease DRMs/sample/year with the roll out of HAART in Uganda (2005-2009). However, the level of DRMs/sample/year remained remarkably constant.

CONCLUSION: Even with the roll out of ART, the burden of drug resistance is still a major challenge that needs to be addressed through regular monitoring of patients.

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INTEGRATING TREATMENT AND PREVENTION IN HIV CARE

HIV-1 Drug Resistance in a Cohort of Drug Naïve Ugandan Women Within 3 Months of Seroconversion

AUTHORS: Fred Kyeyune[1], Denis Tebit[2], Robert Salata[2], Eric Arts[2] and Korey Demers[2]

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BACKGROUND: There is a high HIV diversity in Sub-Saharan Africa and very few data are available as to how subtype diversity may affect drug susceptibility and resistance. Due to the recently increased access to antiretroviral (ARV) drugs in Uganda there is need to determine whether different subtypes could be associated to drug resistance. Therefore this study examined the genotypic HIV drug resistance in ARV drug naïve patients in a Ugandan cohort as well as determining whether HIV-1 subtypes can be associated to drug resistance.

METHOD: In a crossectional study of 89 ART naïve patients within 3 months of HIV serocoversion, resistance to Reverse transcriptase inhibitors (RTI) was determined. The HIV-1 reverse transcriptase (RT) and Protease (P) genes were amplified by the polymerase chain reaction (PCR) technique using proviral DNA. After this the genes were then sequenced and analyzed for drug resistance using BioEdit sequence alignment editor (V 7.0.5.3) as well as the Stanford drug resistance data base. Subtyping was done using the Clustal X (V 1.83).

RESULTS: The major HIV-1 subtypes found in this cohort were A and D. Prevalence of resistance to NNRTIs was higher in subtype D patients (14.3%) than other subtypes (C and A). All resistance mutations to PIs were minor drug polymorphisms and were significantly higher in subtype A than D. Proportions of individuals that carried atleast 2 drug resistance mutations for each of the subtypes A and D were 100% and 50% respectively.

CONCLUSION: There was a high level of resistance to NNRTI in subtype D virus and therefore predictably higher treatment failure with patients harboring this virus when they start ART than those harboring other subtypes. Though resistance to PIs was minor, this could lead to higher level resistance in presence of major mutations. Subtype A patients can therefore be predicted to fail PI therapy earlier than patients harboring subtype D virus because of the numerous minor resistance polymorphisms that can increase the fitness of the drug resistant virus. However this needs to be confirmed by studies looking at Protease experienced patients.

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INTEGRATING TREATMENT AND PREVENTION IN HIV CARE

Challenges to Delivering HIV Prevention Programming During Yao Traditional Male Circumcision Rites in Malawi

AUTHORS: Judith Levy[1], Chrissie Kaponda[2], Rebecca Ngalande[2], Eric Umar[2], and Abigail Kazembe[2]

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Traditional male circumcision is widely practiced by Bantu groups throughout sub-equatorial Africa. Among the Yao of Malawi, the surgery and ceremonial rites of the Jando are conducted in a special enclave geographically segregated from the village to which only circumcised males have access. Here participants collectively practice age-prescribed normative roles within the rituals and practices of this key status passage from boyhood into manhood. Circumcision is performed by a native circumciser on the first day, followed by a 4-6 week sequestered period of healing and socio-cultural instruction during which initiates learn the expectations and responsibilities of Yao manhood including life skills, health practices, sexual behavior, and sexual partnering

Our research team has been exploring the Jando as a potential window of opportunity for AIDS education and cultural transmission of HIV prevention norms (R01 NR010490). Although still collecting data, our understandings to date have been informed through focus groups and in-depth interviews with ngaliba (male circumcisers), nakanga (counselors), lombwe (each boy's individual caregiver) and former initiates. We also ethnographically observed 4 Jando circumcision rites from pre-surgery through schooling. The data have been transcribed, coded, and analyzed for insights into how HIV prevention can be effectively incorporated.

Our data suggest at least four challenges to effectively incorporating HIV prevention into the Jando rites. First, in contrast to the prepubescent adolescents of the past, today's initiates for religious and economic reasons increasingly are between ages 4-9. Their comprehension of sexual behavior and HIV prevention is developmentally limited. Second, peer socialization into manhood and also the post-surgical wound care that traditionally has been delivered by adolescents and adult males increasingly have become the responsibility of cohorts of such young boys who post-Jando are considered to be men. At such a young age, and without a firm foundation themselves, they are ill equipped to care for young initiates during healing or to transmit lessons of responsible manhood including preventing HIV. Third, village men including the Jando counselors often are absent from the circumcision camps for fishing and trading. Although we only have anecdotal reports that this differs from the past, their absence leaves a serious gap in Jando instruction. Fourth, many of the previous customs and cultural messages of the Jando no longer coincide with the changing nature of the Jando itself. Prior to boys entering the camps to be circumcised, mothers continue to sing sexually

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implicit songs of instruction traditionally used with older pre-adolescents. Sanitation at the camps tends to be poor without adult male oversight. Circumcision is conducted in the traditional manner using local herbs, but western medications also may be used although sometimes improperly.

These findings suggest the need for a life course approach to Jando AIDS prevention that would transmit age-appropriate prevention norms and knowledge to both initiates and post-jando males who participate in the rite. Our next research stage calls for returning to the Jando camps in July to work with village men in developing age-appropriate prevention programming for the ritual that can be piloted for feasibility and cultural acceptability.

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INTEGRATING TREATMENT AND PREVENTION IN HIV CARE

Prevalence and Factors Associated with Cryptococcal Antigenemia Among Severely Immunosuppressed HIV-Infected Adults in Uganda Mulago Hospital; A Cross–sectional Study

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INTRODUCTION: Cryptococcal infection is a common opportunistic infection associated with high mortality among severely immunosuppressed HIV patients. Cryptococcal antigenemia is an independent predictor of death and cryptococcal meningitis in patients with severe immunosuppression. We evaluated the prevalence and factors associated with cryptococcal antigenemia among patients with CD4 count≤100 cells/µl in Mulago Hospital, Kampala, Uganda.

METHODS: In this cross-sectional study, 367 adults ≥18years with CD4 count ≤100 cells/ µL were enrolled between December 2009 and March 2010. Factors associated with cryptococcal antigenemia were analyzed using multiple logistic regression.

RESULTS: Median CD4+ cell count was 23 (IQR: 9-51) cells/ µL. Sixty-nine (19%) of the 367 participants had cryptococcal antigenemia. Twenty four patients had cryptococcal meningitis on CSF analysis and 3 had Cryptococcal antigenemia with no central nervous system involvement. Low BMI ≤ 15.4 kg/m2 (AOR =0.499), CD4+ T cell count <50 cells/ µL (AOR = 2.685), neck pain (AOR= 2.315), recent diagnosis of HIV infection (AOR=1.975) and presence of meningeal signs (AOR = 7.990) were associated with cryptococcal antigenemia.

CONCLUSION: Cryptococcal antigenemia is common among severely immunosuppressed HIV infected patients in Mulago hospital, Uganda. A CD4+ T cell count <50 cells/ µL, low BMI, neck pain, signs of meningeal irritation and a recent diagnosis of HIV infection were independent predictors of cryptococcal antigenemia. Routine screening of this category of patients may detect cryptococcosis hence providing an opportunity for early intervention.

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INTEGRATING TREATMENT AND PREVENTION IN HIV CARE

"Food is Medicine": HIV/AIDS and Food Security in Urban and Rural Uganda

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Case Western Reserve University, Joint Clinical Research Centre, and Mbarara University of Science and Technology

BACKGROUND: The HIV/AIDS epidemic is slowly eroding food security and exacerbating poverty as incomes dwindle and assets are depleted. Additionally the epidemic affects different households in different ways and produces a variety of coping strategies.

METHODS: We present qualitative analysis of data collected as part of an ongoing NIH sponsored study among 949 participants seeking treatment from Joint Clinical Research Centre (JCRC) in Kampala city and ISS clinic in Mbarara University of Science and Technology, South Western Uganda. This baseline data focused on demographics, treatment experiences and adherence, illness history, healthcare seeking decisions. Qualitative analysis was performed using content analysis.

RESULTS: Results indicate that food is clearly necessary for the health and well-being of all household members, but for people living with HIV, "food is medicine". Indeed, households directly affected by HIV/AIDS commonly cite food as one of their greatest needs.

Gender also plays a central role in the food security of HIV-affected households. While both men and women are actively engaged in food production, women also are responsible for a range of other household activities, including family care and nutrition. When a household member becomes ill due to AIDS, women's time is increasingly diverted to care and support, and staying away from food production and preparation, and other income generating activities which contribute to food availability.

CONCLUSION: A daily balanced diet, while sufficient in both quantity and quality for remaining healthy and alleviating illness, is considered in the same rank as medicine. The emphasis on improving health thus changes from one of pure medication to one which incorporates food and nutrition. Food security must be seen as an essential component towards preventing the spread of AIDS, and of mitigating its impact at national and household levels. Ultimately, improving a household's food security reduces vulnerability to HIV infection as food secure households' do not have to resort to detrimental livelihood strategies in order to survive.

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The Rochester / Cape Town Men's Social Media Network Study

AUTHORS: Vincent Silenzio, University of Rochester and Ben Brown, Desmond Tutu HIV Foundation

We have established a multidisciplinary research team to work closely with community-based partners and stakeholders in order to develop novel applications of electronic mobile and social media technologies in HIV prevention targeting men who have sex with men (MSM) in Cape Town, South Africa. Our team is currently conducting formative research into the acceptability and feasibility of utilizing e-media networks for HIV prevention interventions among targeted populations, including a novel assessment of available technology platforms to inform future e-media based interventions. The team collaboration is supported through the ongoing development of shared information technology infrastructure to support US- and South Africa-based collaborative data collection for HIV prevention research in electronic social media. Our overall goal is to develop applications of electronic social technologies to decrease the vulnerability of MSM to HIV infection through the adoption of novel, effective HIV prevention interventions that can be dynamically adapted to changes in social media technologies.

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INTEGRATING TREATMENT AND PREVENTION IN HIV CARE

HIV Reverse Transcriptase Mutations in HIV-1/HSV-2 Co-Infected Patients Treated with Acyclovir

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BACKGROUND: Herpes simplex virus type 2 (HSV-2) is one of the most common opportunistic infections of HIV positive patients. HSV-2 co-infection with HIV is associated with a variety of medical complications, increased plasma and genital levels of HIV, progression of HIV, and the onset of AIDS. Acyclovir is a drug used to treat HSV-2. Recent clinical trials have shown that acyclovir reduces plasma levels of HIV and reduces the risk of disease progression. A number of in-vitro studies have shown that acyclovir can select for HIV mutations which also confer resistance to Nucleoside Reverse Transcriptase Inhibitors (NRTI). Some of these mutations include; V75I, T69N and M184I.

RATIONALE: It is of interest to determine if the use of acyclovir for treatment of HSV-2 in HIV-1/HSV-2 co-infected

patients does not result in any of these HIV-1 RT mutations that might compromise the use of NRTI in the future once the patients go on HAART. It is also important to determine if there are any other HIV-1 RT mutations besides the ones that have been identified in-vitro that arise when co-infected patients undergo treatment with acyclovir.

MATERIALS AND METHODS: Subjects were drawn from the Botswana participants in the Partners in Prevention HSV/HIV Transmission Study, a randomized, double blind, placebo-controlled trial of acyclovir HSV-2 suppressive therapy to prevent HIV-1 transmission. Twenty-one plasma samples were collected from participants who were randomized to receive 400 mg of acyclovir twice daily for 24 months. The samples used were from the 24 months time-point for all 21 patients. For 14 of these patients, baseline samples were also used. The RNA was extracted from the plasma samples and using population sequencing, the first 960 nucleotides of the HIV RT were genotyped. The sequences generated were analyzed for drug resistance mutations using the Stanford HIV Drug Resistance Database.

RESULTS: Following 24 months of acyclovir use, none of the 21 patients harboured the V75I mutation, which was the predominant mutation found to be associated with acyclovir in the in-vitro studies. One patient (1/21 or 4.8%) was found to harbour the T69N mutation at 24 months and the baseline sample from the patient did not have the mutation. Further comparison of HIV RT sequences from the 24 months time point and baseline did not sure any mutations that were disproportionately found at the 24 months time point that could therefore be associated with acyclovir use.

CONCLUSION: Our data validates what has been shown by two other groups that the HIV RT V75I mutation is not selected for by acyclovir as none of our patients had this mutation after 24 months of acyclovir use. However one of the patients in our study developed the T69N mutation which was absent at baseline. The T69N might be the preferred mutation in HIV patients who receive acyclovir treatment. More efforts are needed to explore the frequency of this mutation in larger cohorts.

Abstract 42
INTEGRATING TREATMENT AND PREVENTION IN HIV CARE

Introduction and Evaluation of Advanced Rapid Tuberculosis (TB) Diagnostics: Effort to Improve Detection and Susceptibility Testing in Malawi

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BACKGROUND: TB requires accurate and rapid diagnosis for proper management. Emergence of multi-drug resistant (MDR) TB may prove detrimental to existing TB programmes and contribute to early mortality. To improve and evaluate TB diagnostic and susceptibility testing in Malawi, rapid identification and susceptibility profiling were introduced

which included LED fluorescent microscopy (FM), liquid media culture (BD MGIT), MGIT SIRE, and line probe assays (Hain GenoType MTBDRplus, CM and MTBDRsl). This was compared to Malawi's standard diagnostic methodologies of bright field microscopy (BM) and Lowenstein Jensen media (LJ). Routine susceptibility testing is not performed as the standard of care in Malawi.

METHODS: Samples underwent concentration and decontamination processes, inoculation of one LJ slant and BD MGIT tube. Two slides were prepared, one for Ziehl-Neelsen and the other for Auramine-O staining. Detection rate and mean time to positive culture for LJ and MGIT were compared. Sensitivity and specificity were calculated for BM and FM compared to liquid culture. MGIT SIRE testing was perfomed on multi-drug resistant (MDR) samples per Hain GenoType MTBDRplus. To rule out extensive drug resistance (XDR), MGIT SIRE pan-resistant samples were tested by Hain GenoType MTBDRsl.

RESULTS: 190 samples were examined at UNC Project Laboratory in Lilongwe, Malawi by acid-fast bacilli (AFB) smear and culture from October 2009 to May 2010. 59 (31%) were culture positive by LJ and 92 (48%) by MGIT. Mean time (days) to positive culture was 22 for LJ and 15 for MGIT. Of 109 samples analysed by both AFB stains, sensitivity and specificity were 85.2 and 98.3% for BM, and 92.6 and 100% for FM. 10/92 (11%) MGIT-positive samples were MDR, 4 of which were smear-negative. 3 MDR samples were MGIT SIRE pan-resistant, but no XDR was detected. Two M. intracellulare and two M. fortuitum isolates were also identified.

CONCLUSION: Use of liquid culture demonstrated earlier detection and an increase of 17% in sensitivity. Fluorescent microscopy proved more sensitive than bright field. The Hain assays provided rapid detection and identification of a high prevalence of MDR samples, as well as non-MTB isolates. Importantly, the use of MGIT and Hain assisted in identifying 4 smear-negative MDR-TB patients who would have been missed if restricting evaluation to smear-positive cases. Malawi should consider adopting more efficient technology to diagnose drug resistant TB.

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INTEGRATING TREATMENT AND PREVENTION IN HIV CARE

Comparative Outcomes of Tenofovir- and Zidovudine-Based Antiretroviral Therapy Regimens in Lusaka, Zambia

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University of Alabama-Birmingham and Centre for Infectious Disease Research in Zambia

BACKGROUND: Although tenofovir (TDF) is a common component of antiretroviral therapy (ART), recent evidence suggests inferior outcomes when it is combined with nevirapine (NVP).

METHODS: We compared outcomes among patients initiating TDF+emtricitabine or lamivudine (XTC)+NVP, TDF+XTC+efavirenz (EFV), zidovudine (ZDV)+lamuvidine (3TC)+NVP, and ZDV+3TC+EFV. We categorized drug exposure by initial ART dispensation, by a time-varying analysis that accounted for drug substitutions, and by predominant exposure (>75% of drug dispensations) during an initial window period. Risks for death and program failure were estimated using Cox proportional hazard models.

RESULTS: Between July 2007 and November 2010, 18,866 treatment-naïve adults initiated ART: 18.2% on ZDV+3TC+NVP, 1.8% on ZDV+3TC+EFV, 36.2% on TDF+XTC+NVP, and 43.8% on TDF+XTC+EFV. When exposure was categorized by initial prescription, patients on TDF+XTC+NVP (adjusted hazard ratio [AHR]:1.44; 95%CI:1.02–2.04) had a higher post-90 day mortality compared to those on ZDV+3TC+NVP. When ART regimen was treated as a time-varying exposure, TDF+XTC+NVP was again associated with higher hazard for death (AHR:1.51; 95%CI:1.18–1.95). In our predominant exposure analysis, individuals who had been prescribed TDF+XTC+NVP for >75% of the time had similar hazards for death to those prescribed ZDV+3TC+NVP over the same period. Across all analytical approaches, similar trends were noted when ZDV+3TC+NVP was compared to ZDV+3TC+EFV and to TDF+FTC+EFV.

CONCLUSION: In time-varying analysis, TDF+XTC+NVP was associated with higher mortality when compared to ZDV+3TC+NVP in this observational cohort; however, this finding was not consistent in other statistical approaches. Further research is urgently needed to determine the comparative effectiveness of ART regimens currently used in resource-constrained settings.

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Silibinin Derived From the Milk Thistle Plant Inhibits HIV Infection of Peripheral Blood Mononuclear Cells

AUTHORS: Jan McClure[1], Jessica Wagoner[1], Joan Dragavon[1], Robert W. Coombs[1], and Stephen J. Polyak[1,2]

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Natural Products serve as a rich source of potent medicines such as taxol, aspirin, and artemesenin. Silymarin, an extract of the seeds of the milk thistle plant [Silybum marianum], has liver-protective properties that have a variety of therapeutic applications1-3. We have recently shown that silymarin and silymarin-derived purified natural products block hepatitis C virus (HCV) infection in part by blocking virus entry. Moreover, silymarin inhibits proliferation and inflammatory cytokine production from T cells4-7. A soluble version of silibinin (SIL), a major component of the extract, displays anti-HCV effects in hepatocyte culture and immunomodulatory functions on T cells in vitro8. Intravenous administration of SIL inhibits viral load in HCV mono-infected patients9 and inhibits both HCV and HIV loads in an HCV/HIV co-infected patient10. We have found that SIL suppresses HIV infection of PBMC in vitro by both BAL and LAI isolates. Suppression of HIV infection by SIL has been validated in 5 different donor PBMC preparations. We are currently focusing on elucidating the mechanism(s) for the anti-HIV effects of SIL. Based on our prior studies with HCV, we hypothesize that silymarin targets host cells to inhibit HIV by blocking virus entry and/or immune cell activation. Given the large population of HCV/HIV co-infected persons throughout the world and the need to design a therapy that treats both diseases, the proposed studies may offer a cure for HCV and suppression of HIV.

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