Abstract Book
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Abstracts
Oral Presentations
Abstract 1

Evaluation of Cabergoline for Lactation Suppression in Women Living with HIV

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Background: In Canada and in the USA, exclusive formula feeding is recommended for all infants who are born to women living with HIV (WLWH) to prevent HIV perinatal transmission. Data regarding the use of cabergoline, a dopaminergic ergot derivative inhibiting lactation, is very limited. The objective of this study is to evaluate the acceptability and efficacy of a single 1 mg oral dose of cabergoline, taken within 48 hours postpartum in WLWH.

Material & Methods: This is a multicenter prospective cohort study in 2 Canadian centers. In both centers a 1 mg single dose of cabergoline is offered within the first 48 hours postpartum to inhibit lactation in WLWH. Recruited women filled out a questionnaire regarding symptoms of lactation on Day 2 and Day 15 postpartum, with specific questions about cabergoline adverse effects. On Day 15, they also completed a questionnaire about their satisfaction towards the cabergoline treatment. Descriptive statistics were performed.

Results: To date, 18 WLWH who delivered after 37 weeks have been recruited. All were on combination antiretroviral therapy at delivery and in the postpartum period. All received cabergoline within 24 hours postpartum. While 9 (50%) had a previous live birth, 5 of them had breastfed after a previous pregnancy (prior to HIV diagnosis or prior to immigration to Canada). Within 14 days after delivery, none of the women reported breast engorgement, but 3 (17%) women reported nipple discharge and breast pain which was easily tolerable. Mild non-specific adverse effects were experienced by 7 (39%) women (dizziness, nausea, vomiting, headache, hand or foot numbness) and lasted 48 hours or less. All women found cabergoline easy to use, were satisfied with its ability to prevent postpartum lactation symptoms and would recommend this treatment to a woman in a similar situation.

Conclusion: In this interim analysis, it appears that cabergoline is a well-tolerated and accepted medication for lactation suppression in WLWH.
Abstract

US Healthcare Providers Survey On Breastfeeding Among Women Living With HIV

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Background: Several national organizations in the United States recommend complete avoidance of breastfeeding (BF) by women living with HIV (WLHIV), regardless of viral load (VL) and combination antiretroviral therapy (cART). However, many WLHIV inquire about BF during prenatal care and some BF despite US policy. We sought US health care providers' (HCP) attitudes about BF among WLHIV.

Methods: We conducted an anonymous online survey with a convenience sample of HCP on a reproductive infectious disease listserv. The survey was pilot-tested to establish content validity. Univariate analysis for 28 closed-ended and thematic analysis for 8 open-ended responses were performed. HCP who did not care for WLHIV or HIV exposed infants, or practiced outside of the US were excluded. IRB approval was obtained.

Results: There were 97 HCP who responded and 79 were eligible. The majority were white (64.6%) and female (86.1%). Most HCP were OB/GYN (44.3%) or Adult HIV Medicine (40.5%) compared to Pediatrics (15.2%). Most practiced in academic settings (70.9%) and were physicians (69.6%). Almost 75% reported having WLHIV ask if they could BF; of these, only 49.2% report that they mostly encounter BF interest among immigrant patients. Nearly 30% reported having patients who BF despite recommendations. HCP reported patient concerns about stigma (69.4%), inability to reap health benefits (58.2%), and fear of not bonding with baby (51.9%) if they did not breastfeed. In this sample, 21.6% of HCP were completely against BF, while 46.8% would consider offering BF as an option for WLHIV with a repeatedly undetectable VL, and 31.6% were uncertain (Table 1). Number of years in practice was the only variable significantly associated with willingness to offer BF: those willing to offer BF averaged 12 years of experience compared to 21 years for those not willing to offer BF (p-value 0.04). The two primary HCP concerns included: 1) lack of cART adherence postpartum (84.8%) and 2) fear of ongoing HIV transmission (81.0%). Professional society opinions (74.7%), governmental clinical guidelines (73.4%), or real-world safety data (60.8%) were reported to be needed before HCP would assist WLHIV with BF. HCP were also concerned with legal implications in case of transmission (25.3%). Open-ended responses reflected diverse perspectives on current policy and HCP’s role in infant-feeding decisions. Some HCPs view themselves as the sole decision-maker and prohibit BF to avoid transmission risk, while others guide and support patients to make informed decisions in light of personal context and cultural values.

Conclusions: This study verifies that US WLHIV commonly ask HCP about BF and that some BF against current medical advice. Nearly half of HCP, regardless of specialty, would consider offering BF as an option for WLHIV with an undetectable VL. Guidance from professional and governmental organizations are needed to assist HCP whose WLHIV patients are interested in BF.
Economic Evaluation of Infant Feeding Modalities for Mothers in Canada Living with HIV

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Background: In high-income countries such as Canada, mothers living with HIV are currently advised to practice exclusive formula feeding to eliminate the risks of HIV transmission. In comparison, exclusive breastfeeding poses a potential risk of HIV transmission, but provides immunological protection and ideal nutrition to the infant. The morbidity and mortality issues arising from both infant feeding modalities have accompanying economic consequences for the health care system. Accordingly, there persists a health economic dilemma which has remained unexplored in the high-income country context, especially when transmission risk is steeply reduced through mother’s strict adherence to antiretroviral treatment. This study aimed to determine whether exclusive breastfeeding or exclusive formula feeding is more cost-effective, when a mother is living with HIV and fully virally suppressed, with considerations of short and long-term outcomes.

Materials & Methods: A micro-simulation model was developed to estimate lifetime costs and effectiveness of exclusive breastfeeding and exclusive formula feeding. The model population was a hypothetical group of 1,000,000 initially healthy, HIV negative, neonates, who were exclusively breast/formula fed for six months, followed by non-exclusive breast/formula feeding until the infant reached two years of age. This analysis was completed from the Ontario Ministry of Health perspective, with costs and effects discounted at 3%. Uncertainties around model parameters were evaluated using one-way and probabilistic sensitivity analyses.

Results: Based on systematic reviews of current literature, the health outcomes found to be associated with infant feeding modality, and thus incorporated into the micro-simulation model as health states included acute otitis media, atopic dermatitis, asthma, type 2 diabetes, obesity, nonspecific gastroenteritis, and lower respiratory infection. Compared to exclusive formula feeding, exclusive breastfeeding was the dominant feeding modality (less costly and more effective), yielding cost-savings of 13,812.49 CAD for each additional quality-adjusted life year.

Conclusions: Despite the risk of HIV transmission, exclusive breastfeeding was more cost-effective than exclusive formula feeding. These findings suggest that a review be undertaken of infant feeding guidelines for mothers living with HIV in high-income countries, which currently differ from the World Health Organization Guideline on the subject.
Abstract 4

Effect of Sex and Hepatitis C Co-infection on HIV Treatment and Mortality: A Multisite, 15-Year Follow-Up

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Background: Hepatitis C (HCV) infection is prevalent in those HIV+ but its contribution to mortality and therapeutic response to combination antiretroviral therapy (cART) is unclear. Contradictory disparities exist in response to cART among HIV+ and HIV-HCV co-infected women relative to men. We compared risk of HIV outcomes according to biologic sex and HIV-HCV co-infection status among people on cART.

Methods: The Canadian Observational Cohort (CANOC) Collaboration is a multi-site cohort study of HIV positive adults (≥18 years) who initiated cART between 2000 and 2014. Participants were classified co-infected by a documented positive HCV test. Fine and Gray models adjusted for competing risk of death estimated the effect of sex and HIV mono- and HIV-HCV co-infection following cART initiation on time to undetectable viral suppression (VS) (two consecutive viral loads <50 copies/mL at least 3 months apart); increased CD4 (IC) (by 100 cells/mm3 or greater from baseline); and time to virologic rebound (VR) following VS (two viral load measures above 200 copies/mL at least 30 days apart). A Cox proportional hazard model estimated time to all-cause mortality following cART initiation. We report hazard ratios (HR) with 95% confidence intervals (CI) adjusted for demographic and clinical factors.

Results: Of 10,186 participants (median follow-up 5.0 years (interquartile range (IQR): 2.4, 8.3), 18% were women who were more likely to be co-infected than men (45% vs. 26%) (p<0.001). At cART initiation women were younger (HIV: median age 35; HIV-HCV: 38) than men (HIV: 36; HIV-HCV: 42) (p<0.001). Women HIV+ were more likely to be black (47.0% vs. 8%) and less likely to be Caucasian (16% vs. 39%) compared to men (p<0.001). Women HIV-HCV co-infected were less likely to be Caucasian (29% vs. 42%) and more likely to be Indigenous (31% vs. 13%) or have a history of injection drug use (48% vs. 36%) versus men (p<0.001). In adjusted Fine and Gray models, compared to men HIV+, HIV-HCV co-infected women were less likely to achieve VS (aOR 0.65 [95% CI 0.58, 0.73]), experience IC (aOR 0.73 [95% CI 0.73, 0.90]), and more likely to experience VR (aOR 2.02 [95% CI 1.61, 2.54]) or die during follow-up (aOR 2.88 [95% CI 2.17, 3.82]). HIV+ women were also at greater risk to experience VR (aOR 1.59 [95% CI 1.28, 1.97]) relative to HIV+ men. Likewise, co-infected men were less likely to achieve VS and IC and more likely to experience VR or die, relative to HIV+ infected men. However, women had greater risk of outcomes than male counterparts.

Conclusion: HIV-HCV co-infected, and women in particular, had significantly less successful response to HIV treatment with greater risk of death. There is need to further understand mechanisms driving observed differences to improve health outcomes and survival, with a focus on women who are at the greatest risk of experiencing negative outcomes of HIV and HCV infection.

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Abstract 5


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Background: Perinatal care strategies for women with Human Immunodeficiency Virus (HIV) are designed to optimize maternal health and reduce mother-to-child transmission (MTCT). Recommendations have evolved dramatically over the last couple of decades and current treatment mainstays in the United States include the use of highly-active antiretroviral therapy (HAART) and elective cesarean delivery. The aims of this study were to examine adverse outcomes associated with HIV infection in pregnancy, and to discern the potential impact of therapeutic interventions on these complications.

Materials & Methods: This retrospective birth cohort study involved 10,430,138 California births between January 1, 1991 and December 31, 2010, and was based on data derived from California’s Office of Statewide Health Planning and Development (OSHPD). Identification of the 1,376 women with HIV in the cohort was based on hospital discharge diagnosis codes. Multiple logistic regression models were developed to examine the associations between maternal HIV infection and pregnancy and neonatal adverse outcomes, controlling for maternal age, race, insurance payer, and drug, tobacco and/or alcohol use. Separate models were generated to compare outcome rates between HIV-infected women who gave birth before and after December 31, 1998, an arbitrary timepoint after which cesarean delivery and HAART administration were likely to have been therapeutic options that were strongly considered in the care of these women to reduce HIV MTCT.

Results: Mothers with HIV were more likely to be older, African American, and government-insured compared with their uninfected/undiagnosed counterparts. Compared to HIV-infected women who delivered during 1991-1998, mothers with HIV who delivered in 1999-2010 were more likely to be 35 years of age or older, of Hispanic ethnicity, and tobacco users. The cesarean rate in women diagnosed with HIV doubled after 1998 to just over 50% and remained steady thereafter. In adjusted analyses, pregnant women with HIV were 50% more likely to have essential hypertension, twice as likely to develop preeclampsia or oligohydramnios, and four times as likely to have underlying renal disease when compared to women without a diagnosis of HIV. In parallel with higher rates of maternal hypertensive disorders, infants of mothers with HIV were 80% more likely to be small-for-gestational age compared to those of uninfected women. Neonates born to HIV-infected women were nearly twice as likely to develop respiratory distress and three times more likely to be treated for sepsis. In the subset of women with HIV, rates of gestational diabetes doubled and chronic hypertension tripled among women delivering

Conclusions: Cesarean rates doubled in 1999, consistent with emerging recommendations regarding its protective benefits in reducing MTCT. This rate remained elevated during the second decade of observation despite increasingly wide use of HAART and reduced relative benefit from elective abdominal birth. Dramatic elevations in maternal metabolic complications and evidence for placental insufficiency in recent years are likely to be due, at least in part, to broader use of HAART.
Abstract 6

Elvitegravir/Cobicistat Pharmacokinetics In Pregnancy And Postpartum

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Background: Elvitegravir (EVG), an integrase strand transfer inhibitor, is significantly metabolized by CYP3A and UGT 1A1/3, and must be administered with a pharmacokinetic (PK) booster. It has not been studied in pregnant women or infants. This study described EVG/cobicistat (COBI) exposure during pregnancy compared to postpartum and in infant washout samples after delivery.

Methods: IMPAACT protocol P1026s is an ongoing, nonrandomized, open-label, parallel-group, multi-center, international and domestic, phase-IV prospective study of antiretroviral PK in HIV-infected pregnant women. Intensive steady-state 24 hour PK profiles of EVG/COBI following 150/150 mg once-daily dosing were performed during the 2nd trimester (2T), 3rd trimester (3T) and 6-12 weeks postpartum (PP). Infant EVG washout samples were collected if birth weight > 1000 grams and there were no severe malformations or medical conditions. EVG/COBI were measured by validated LC-MS/MS with a quantitation limit of 10 ng/mL. A two-tailed Wilcoxon signed rank test (α = 0.10) was employed for paired within-subject comparison.

Results: Twenty-nine subjects from the US were enrolled – 19 black, 3 white, 6 Hispanic, 1 Asian/Pacific Islander with a median age of 29 years at 3T (range 19 – 48). EVG/COBI PK data were available for 16, 20 and 15 women in 2T, 3T and PP, respectively. EVG exposure was lower and clearance was higher in the 2T and 3T compared to PP (Table 1). COBI exposure was lower and clearance higher in the 2T and 3T compared to postpartum, significantly for 3T. Washout EVG/COBI PK data were available for 18 infants; EVG elimination half-life was 7.4 hours (range 4.3 - 13); COBI was undetectable in all infant samples. Viral load at delivery was < 50 copies/mL for 14 of 19 women (74%). Median infant gestational age at birth was 38.8 weeks. Congenital anomalies were reported in 2 infants. Twenty of 26 infants were HIV-negative based on best available data, and 6 are indeterminate or pending thus far.

Conclusions: EVG/COBI exposure are substantially lower in pregnancy compared to postpartum. Infant EVG elimination half-life was similar to postpartum maternal subjects and historical non-pregnant adult controls. More PK, safety and outcome data in pregnant women are needed before EVG/COBI can be recommended for use during pregnancy.
Abstract

Identifying Pregnant Women for PrEP Using Routine Antenatal Care Indicators in Kenya

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Background: PrEP could prevent HIV acquisition in pregnancy, however, implementation strategies have not been established for pregnant women in high HIV prevalence settings. Regional HIV prevalence and indicators assessed in antenatal care (ANC) could be used to prioritize PrEP. Data from a Kenyan national survey of 62 ANC facilities were used to estimate the proportion of women at potential risk for HIV who could be prioritized for PrEP.

Methods: Facilities were selected using stratified random sampling by ANC volume. Data were abstracted from the first 10% of initial ANC visits per facility per year from 2011-2013. Potential high HIV risk was defined as having syphilis and/or a male partner of unknown or positive HIV status. Survey weights and clinic-level clustering were applied. Kenya Demographic and Health Survey 2014 data were used for projected estimates.

Results: Overall, 9250 records from first ANC visits of HIV-uninfected women were abstracted, of which 8634 (93%) met inclusion criteria (had syphilis or partner HIV status data); partner HIV status and syphilis data were available for 85% and 69% of records, respectively. Median age was 24 years and 18% of women were <20 years; 86% were married and 37% were primagravidas. Having a male partner of unknown HIV status was common (46%) and higher in Nyanza, a high HIV prevalence region, than in other regions (50% vs. 32%, p=0.04). Couples HIV counseling and testing was low (3%), without regional differences. Few women reported HIV-infected partners (1%) and 1% had syphillis infection. Overall, 39% of women had potential high HIV risk (as defined by syphillis and/or positive or unknown partner HIV status among women with data on either variable) with similar rates between 2011 and 2013; prevalence of potential high HIV risk was highest in Nyanza (51%) than other regions (Prevalence Ratio 1.5, 95% CI 1.1-2.2). In all regions combined, prioritizing PrEP to pregnant women with these ANC indicators would decrease the number of women offered PrEP by 61% while providing PrEP to all women at potential high HIV risk (Figure 1). An HIV prevalence-guided approach with PrEP provision only to all women in the high prevalence region (Nyanza) would reduce the number of women exposed to PrEP by 74%, but exclude 63% of high-risk women nationally.

Conclusion: A combination of prevalence and risk assessment strategies may be useful to strategically deliver PrEP in pregnancy. Many pregnant women remain unaware of partner HIV status; enhancing partner HIV testing could improve PrEP provision.
Abstract 8

Changes in genital tract HIV target cells with three progestin-based contraceptives

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Background: Recent findings suggest that the injectable contraceptive Depot Medroxyprogesterone acetate (DMPA) may increase the risk of HIV acquisition for women but the risk for other progestin-based contraceptives is not known. We evaluated the effect of DMPA, Etonogestrel Implant (Implant) and Levonorgestrel Intrauterine Device (IUD) use on HIV target cells in the genital mucosa of adult premenopausal HIV-negative women.

Methods: Paired cervicovaginal lavage (CVL) and blood samples were prospectively obtained from eligible subjects pre (weeks 0, 2), and post (weeks 14, 16) contraceptive initiation, with contraception initiated at week 2. Genital tract leukocytes enriched from CVL and peripheral blood mononuclear cells (PBMC) were examined for T-cell markers (CD3, CD4) and HIV susceptibility, activation and trafficking markers (CCR7, CCR5, CD38, HLA-DR) by multicolor flow cytometry. Repeated-measures analyses using linear mixed models were used to estimate and compare study endpoints.

Results: Participants in this analysis included 10 DMPA, 11 Implant, and 9 IUD users of African American (76.7%) and non-Hispanic white (20.7%) races with a mean age of 35.6 +/- 8.1 years. The percentage of genital tract CCR5+ CD4+ T cells increased after implant initiation (E=16.9, p=0.007) and with DMPA use (E=14.8, p=0.039) but only when samples with <100 CD3+ lymphocytes were excluded from the DMPA analysis. Genital tract CCR7+ CCR5+ CD4+ T-cell percentages increased with Implant use (E=10.9, p=0.005) but not with DMPA or IUD; CD38+ and HLA-DR+ CD4+ T-cell percentages did not change with these 3 contraceptives. PBMCs had increased CCR5+ CD4+ T-cell percentages with DMPA use (E=2.2, p=0.004) and increased CCR7+CCR5+ CD4+ T-cell percentages with implant use (E=10.9, p=0.005).

Conclusions: DMPA and Etonogestrel Implant but not Levonorgestrel IUD use was associated with increased HIV target cell percentages in female genital tract lymphocytes. Implant use was associated with increased percentages of CCR5+ HIV target cells in the genital tract and blood capable of trafficking (CCR7+) to lymphoid organs. How these changes in genital tract HIV targets among progestin-based contraceptive users may affect their risk of HIV acquisition deserves further investigation.
Abstract 9

Early Onset Menopause Among Women Living With HIV In Canada

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Background: The interplay between HIV and aging has become crucial. Menopause is a pivotal age-related transition for women. Women with HIV are most likely to experience early menopause (EM) (menopause between 40-45 years) and premature ovarian failure (POF) (menopause <40 years). We measured the prevalence and correlates of EM and POF in a cohort of post-menopausal Canadian women with HIV.

Methods: We used baseline survey data from the Canadian HIV Women’s Sexual and Reproductive Health Cohort Study, a prospective community-based study of 1425 women with HIV aged >16 years in British Columbia, Ontario and Quebec enrolled from October 2013 to June 2015. Analyses were restricted to post-menopausal women and excluded women who had never had menses, were pregnant, or were using hormonal contraception. Multivariable logistic regression models assessed independent correlates of EM and POF combined (i.e. menopause <45 years).

Results: 232 women were included. Median age was 55 (IQR=51,59) and years since HIV diagnosis was 15 (IQR=10,20); 53% of women were White, 22% African/Caribbean/Black and 19% Indigenous; 39% had history of injection drug use (IDU), 95% were on ART and 87% had viral loads <50 copies/mL. Median age of menopause was 48 years (IQR=43,51); 29.3% of women had menopause <45 years: 16.4% with EM and 12.9% with POF. In univariate analyses, menopause <45 years was associated with longer duration of HIV (p=0.05), recreational drug use (p=0.02), IDU (p=0.005), and hepatitis C (p=0.006). Older age at interview (P<0.001), being born outside of (p=0.041) and having high-school education or higher (p=0.009) reduced risk of EM/POF. The multivariable model demonstrated a trend for increased risk of EM/POF with longer duration of HIV (aOR 1.04,95%CI=0.99-1.09). EM/POF was less likely with older age at interview (aOR 0.86,95%CI=0.81-0.92); having high-school education or higher (aOR 0.48,95%CI=0.22-1.01) was borderline significant. IDU was not independently associated with EM/POF in the multivariate model (aOR 1.43,95%CI=0.73-2.77).

Conclusions: In this cohort of post-menopausal women with HIV, median age of menopause was 48 years; 3 years lower than the general population; 29% of women had menopause <45 years, and 13% had POF, substantially higher than the 1% rate of POF in Canada. Menopause <45 years was associated in univariate analyses with age, duration of HIV, region of birth, education, drug use and hepatitis C, but only age at interview remained significant in multivariate analyses.
Abstract 10

The Safety and Efficacy of E/C/F/TDF in Treatment-Naïve Women With HIV-1 Infection (WAVES Study): Week 96 Results

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Background: The Women AntiretroViral Efficacy and Safety study (WAVES) demonstrated superior efficacy of the single tablet integrase inhibitor-based regimen containing elvitegravir, cobicistat, emtricitabine, and tenofovir disoproxil fumarate (E/C/F/TDF, Stribild) when compared to a protease inhibitor-based regimen (atazanavir boosted by ritonavir [ATV/r] plus coformulated F/TDF) in 575 treatment naïve women at Week (W) 48. We now report W96 safety and efficacy of E/C/F/TDF after 48 additional weeks of treatment in the open-label phase.

Materials and Methods: After completing the initial randomized (1:1), blinded 48-week trial, women on E/C/F/TDF (Stribild, STB) could elect to continue on their current regimen in an open-label fashion. Women who became pregnant while in the open-label phase could continue study drug after signing a separate consent statement. Viral suppression (HIV-1 RNA <50 c/mL) by FDA snapshot analysis, pre-defined bone and renal safety, and tolerability endpoints after 96 weeks of treatment are reported.

Results: Of the 289 women initially randomized to E/C/F/TDF (median age 34 years, 49.5% black, 81.3% with asymptomatic HIV infection), 246 entered the open-label extension and continued on E/C/F/TDF. At W96, 84.5% maintained viral suppression (HIV-1 RNA <50 c/mL), with a mean (SD) change from baseline in CD4 cell count of 265 (190.4) cells/mm3. No participant had virologic failure with resistance through W96. Treatment with E/C/F/TDF was well tolerated, with most adverse events being mild (grade 1) in severity. The most common AEs reported were: headache, 22.1%; upper respiratory tract infection, 20.4%; and nausea, 15.9%. Consistent with cobicistat’s inhibition of tubular secretion of creatinine, median estimated glomerular filtration rate decreased at W4, after which values generally stabilized through W96, with no discontinuations due to renal AEs. Bone mineral density (BMD) decreased from baseline to W48 and stabilized from W48 to W96 (mean change from baseline in hip BMD: -0.80%; spine BMD: -1.66%). During the study, 24 pregnancies were reported (3 women each had 2 pregnancies); 20 of these 21 women remained on E/C/F/TDF. Ten pregnancies resulted in live births (2 in one woman). Seven other pregnancies ended in elective abortions, 3 ended in spontaneous abortions, 1 was an ectopic pregnancy, and for 3 pregnancies, 1 is ongoing and 2 have no reported outcome. All pregnant women except 1 remained on E/C/F/TDF. No birth defects were reported, and no study-drug related AE were reported during pregnancies.

Conclusions: Through W96, E/C/F/TDF demonstrated durable efficacy with no emergent resistance development. Seven percent of the women became pregnant while on E/C/F/TDF, and all except one remained on study drug. E/C/F/TDF continued to be a safe and well tolerated treatment in ART-naive, HIV-infected women.
Abstract 11

Efficacy and Safety of Switching to EVG/COBI/FTC/TAF in Virologically Suppressed Women

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Background: The integrase inhibitor regimen (elvitegravir/cobicistat/emtricitabine/tenofovir disoproxil fumarate [E/C/F/TDF]) demonstrated superior efficacy when compared to a protease inhibitor regimen (atazanavir boosted by ritonavir [ATV/r] plus F/TDF) in 575 treatment naïve women at Week (W) 48. We now report the safety and efficacy of subsequent switching to E/C/F/tenofovir alafenamide (TAF) versus remaining on ATV/r+F/TDF.

Methods: After completing the initial randomized, blinded 48-week trial, women on ATV/r+F/TDF were randomized 3:1 to receive open label E/C/F/TAF versus remaining on ATP/r+F/TDF.

Results: 212 HIV-infected, virologically suppressed women were randomized (E/C/F/TAF n=159, ATV/r+F/TDF n=53). Virologic suppression (<50 copies [c/mL]) was maintained in 94.3% on E/C/F/TAF vs 86.8% on ATV/r+F/TDF (weighted difference: 7.5%; 95% CI: -1.2% to 19.4%), with virologic failure in 1.9%, 3.8%, respectively. More women on E/C/F/TAF achieved <20 c/mL at W48 compared to ATV/r+F/TDF (84.9% versus 71.7%, weighted difference: 13.2% [-0.0% to 27.5%], p=0.041). No treatment emergent resistance was detected in either study groups. Mean % increase in BMD was higher in the TAF group for both lumbar spine and total hip (Table). Multiple markers of renal safety were improved for participants randomized to TAF (Table). No cases of proximal renal tubulopathy were reported. Participants on TAF had greater increases in lipids (Table), with no difference in TC:HDL ratio (Table). 19 women became pregnant during the switch study, 13 E/C/F/TAF and 6 ATV/r+F/TDF) and 3 normal infants have been delivered in each group to date.

Conclusion: These data demonstrate that women who switch to an integrase inhibitor + TAF-based regimen maintain high levels of virologic suppression with improvement in BMD and renal function biomarkers, as compared with those remaining on their ritonavir boosted atazanavir+TDF-based regimen.

Table. Changes in Renal, Bone, and Lipid Safety Parameters from Baseline at Week 48

<table>
<thead>
<tr>
<th>Parameters</th>
<th>E/C/F/TAF (n=159)</th>
<th>ATV/r+F/TDF (n=53)</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>eGFR, ml/min (Cockcroft-Gault)</td>
<td>4.2 (6.0, 13.6)</td>
<td>1.8 (8.8, 7.2)</td>
<td>0.060</td>
</tr>
<tr>
<td>β-2 microglobulin/Cr (β-2M/Cr), %</td>
<td>-47.7 (-79.7, -13.6)</td>
<td>-20.7 (-11.1, 113.0)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Retinol Binding Protein/Cr (RBP/Cr), %</td>
<td>-33.6 (-54.6, 1.5)</td>
<td>23.4 (-6.8, 93.3)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Lumbar Spine BMD, %</td>
<td>2.82 (3.158)</td>
<td>0.00 (3.383)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Total Hip BMD %</td>
<td>2.08 (3.327)</td>
<td>1.33 (3.342)</td>
<td>0.29</td>
</tr>
<tr>
<td>Total cholesterol, mg/dL</td>
<td>27 (7, 46)</td>
<td>5 (-7, 24)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>LDL cholesterol, mg/dL</td>
<td>16 (1, 34)</td>
<td>8 (-10, 18)</td>
<td>0.002</td>
</tr>
<tr>
<td>HDL cholesterol, mg/dL</td>
<td>5 (-1, 12)</td>
<td>0 (-4, 7)</td>
<td>0.009</td>
</tr>
<tr>
<td>Total cholesterol:LDL ratio</td>
<td>0.1 (-0.1, 0.5)</td>
<td>0.0 (-0.3, 0.4)</td>
<td>0.075</td>
</tr>
<tr>
<td>Rate of initiation of lipid-modifying agents</td>
<td>2 (1.3%)</td>
<td>0</td>
<td>1.00</td>
</tr>
</tbody>
</table>

4 Mean (SD) used to summarize BMD; otherwise, median (Q1, Q3) is used.
Abstract 12

Efficacy and Safety of Switching to RPV/FTC/TAF in Women

Hagins D1, Mills A2, Martorell C3, Walmsley S4, Gallant J5, Tebas P6, Liu Y7, Quirk E7, SenGupta D7, Cao H7

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Background: Of 35 million people currently living with HIV, approximately 16 million (46%) are women. We aimed to evaluate the efficacy and safety of switching to the single-tablet regimen rilpivirine/emtricitabine/tenofovir alafenamide (RPV/FTC/TAF) in women. RPV/FTC/TAF has favorable tolerability associated with RPV, FTC and TAF.

Methods: We conducted a post-hoc subgroup analysis in women using Week (W) 48 data pooled from 2 double-blinded, active-controlled studies in virologically suppressed HIV-infected adults who were randomized (1:1) to switch to RPV/FTC/TAF or continue RPV/FTC/TDF or EFV/FTC/TDF (TDF group). Viral suppression (HIV-1 RNA <50 copies/mL) rates at W48 were determined by the FDA snapshot analysis and noninferiority was assessed using 95% confidence intervals (CI) with a noninferiority margin of 8%. W48 safety analysis included assessment of adverse events (AEs), bone mineral density (BMD), kidney function, and tolerability. To compare treatment differences, Wilcoxon rank sum test was used for continuous laboratory test results and ANOVA for BMD.

Results: Of 1505 treated subjects, 178 (12%) were women (RPV/FTC/TAF n=106, TDF group n=72); median age was 50 yrs (range 23-67 yrs), 58% black. Baseline viral load, CD4 count, renal biomarkers, and BMD were similar between groups. Overall virologic success at W48 was RPV/FTC/TAF 91.5% and TDF 92.8%, and in women was RPV/FTC/TAF 87.7% vs TDF 88.7% (difference in percentages -1.0%, 95% CI -10.7% to 10.0%, p=1.00). Reported grade 3 or 4 AEs were similar between groups (RPV/FTC/TAF 6.6%, TDF group 5.6%). Lumbar spine and total hip BMD increased with RPV/FTC/TAF vs decreased or remained stable with TDF, with significant differences between groups in changes from baseline to W48 (Table). Assessment of renal safety using renal biomarkers demonstrated significant differences between groups that consistently favored RPV/FTC/TAF over TDF (Table). Estimated glomerular filtration rate remained stable in both groups through W48. No cases of Fanconi syndrome or proximal renal tubulopathy were reported.

Conclusion: At 48 weeks, women who switched to RPV/FTC/TAF had comparable HIV suppression rates and similar tolerability profile compared to those remaining on either RPV/FTC/TDF or EFV/FTC/TDF. BMD and measures of renal safety improved in women who switched to RPV/FTC/TAF. The improved bone profile may benefit HIV-infected women, who are at increased risk of developing osteoporosis.

Table. Percent Changes from Baseline in Measures of Renal and Bone Safety at Week 48

<table>
<thead>
<tr>
<th>Percent Changes in Renal Biomarkers, median (%)</th>
<th>RPV/FTC/TAF (n=106)</th>
<th>TDF group (n=72)</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urine Protein: Creatinine Ratio</td>
<td>-24.6</td>
<td>+3.7</td>
<td>0.021</td>
</tr>
<tr>
<td>Urine Albumin: Creatinine Ratio</td>
<td>-5.8</td>
<td>+15.0</td>
<td>0.032</td>
</tr>
<tr>
<td>Urine Retinol Binding Protein: Creatinine Ratio</td>
<td>-24.5</td>
<td>+48.3</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Urine Beta 2-Microglobulin: Creatinine Ratio</td>
<td>-20.9</td>
<td>+18.0</td>
<td>&lt;0.001</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Percent Changes in BMD, mean (%)</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Lumbar spine</td>
<td>+2.12</td>
<td>+0.14</td>
<td>0.001</td>
</tr>
<tr>
<td>Total hip</td>
<td>+0.97</td>
<td>-0.22</td>
<td>0.018</td>
</tr>
</tbody>
</table>

Reviews in Antiviral Therapy & Infectious Diseases 2017_01
Abstract 13

Women Gain More Weight Than Men Following Initiation Of Antiretroviral Therapy

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Background: Obesity is prevalent among HIV-infected individuals on antiretroviral therapy (ART). Cross-sectional studies have suggested that HIV-infected women are more likely to be overweight or obese than men. Observational studies evaluating sex differences in body mass index (BMI) increases following ART initiation are conflicting. Three ACTG U.S.-based randomized trials (A5142, A5202 and A5257) assessed changes in BMI over 96 weeks during 2005-2013 in treatment-naïve individuals initiating ART. We performed a pooled analysis of these studies to estimate whether BMI changes in the first 96 weeks following initiation of ART differed by sex at birth.

Methods: BMI data over 96 weeks following ART initiation were compared between 760 women and 3041 men in the three contributing clinical trials. Analysis excluded participants not starting ART and women who became pregnant. Multivariable linear regression estimated the relationship between sex and change in BMI from baseline to week 96.

Results: Women were older than men (mean 40.5 vs 37.7 years), and more likely to be black, non-Hispanic (58% vs 31%). Baseline CD4 count did not differ (mean 261 cells/mm3). Mean baseline BMI was higher in women vs men (28.4 vs 25.2 kg/m2), and fewer women were categorized as normal weight (32% vs 51%). After 96 weeks, women gained an average of 1.91 kg/m2 (95% CI 1.64, 2.19), men 1.39 kg/m2 (95% CI 1.30, 1.48); p for sex difference <.001; the sex difference persisted within each baseline BMI subgroup (see Table). After adjusting for baseline age, BMI, CD4 count, HIV-1 RNA, race/ethnicity, study and ART, mean BMI change for women was on average 0.63 kg/m2 (95% CI 0.41, 0.85) more than for men (p<.001). More women moved from normal to overweight/obese BMI category (40% of normal-weight women vs. 33% of normal-weight men). Statistical interactions were observed between sex and both baseline CD4 count and baseline HIV-1 RNA and suggest that for subgroups with higher viral load and lower CD4 at baseline, the estimated BMI changes in women are even larger than the average estimated difference.

Conclusions: In this pooled analysis, HIV-1 infected women experienced a significantly greater increase in BMI following ART initiation than men. These sex differences, even for women in the obese BMI category at baseline, suggest a problem of real clinical significance to women living with HIV. Future work will explore the impact of immune activation on these observations.
Abstract 14

Interaction Between Etonogestrel-releasing Implant and 3 Antiretroviral Regimens

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Background: Long acting reversible contraceptives are highly efficacious and used to prevent unplanned pregnancies in HIV infected women worldwide. There are limited data on pharmacokinetic (PK) interactions between the etonogestrel releasing implant (ENG) and antiretroviral therapy. We evaluated both the effect of ENG on the PK parameters of 3 highly active antiretroviral (ARV) regimens including: ritonavir boosted atazanavir (ATV/r), ritonavir boosted lopinavir (LPV/r) or efavirenz (EFV) and the effect of these antiretrovirals on ENG levels in HIV infected postpartum women.

Methods: IMPAACT P1026s is an ongoing, non-blinded international study of ARV PK in pregnancy and postpartum. We enrolled postpartum women who desired to use ENG implants and were taking ATV/r, LPV/r, or EFV-based regimens for at least 2 weeks. ENG implant was inserted between 2 and 12 weeks postpartum. PK sampling was performed before and 6 to 7 weeks after insertion. ARV and ENG concentrations were measured using liquid chromatography-mass spectrometry. The P1026s target minimum AUC for ATV, LPV and EFV were 29.4, 52 and 40 μg*hr/mL (10th percentile in non-pregnant historical controls), respectively. Median (range) ENG concentration within the first few weeks of use in women not receiving ARV’s is 400 pg/mL (250-500 pg/mL). ENG concentration >90 pg/mL is believed to reliably suppress ovulation.

Results: PK data are available for 62 postpartum women (6 Black, 49 Hispanic, 7 Asian). Median (range) age at enrollment was 26.9 (15.8-41.1) yr, weight 62.7 (38.7-157.9) kg, median duration of LPV/r, ATV/r and EFV use before implant insertion was 30.0, 32.1 and 4.4 weeks, respectively. Median CD4 was 584/mm3 (79-1578) in 61 women and VL was <400 in 40/54 women (74.1%) before ENG initiation. Table 1 presents ENG concentrations and ARV AUCs among these three arms. Median ENG concentration of EFV arm was <10% of the other two arms. ARV AUCs before and after ENG insertion did not differ significantly. Proportions of women meeting ARV PK targets before and after ENG insertion were: 77% and 66% for ATV/r, 84% and 84% for LPV/r and 90% and 81% for EFV (p=0.73).

Conclusions: No significant change in ATV/r, LPV/r and EFV exposure was seen after ENG insertion. EFV use was associated with greatly decreased ENG concentrations to levels that may impair contraceptive efficacy. Co-administration of LPV/r and ATV/r with ENG resulted in adequate ENG concentration, suggesting that these combinations should have no impact on implant efficacy.
Abstract 15

Health Outcomes Associated With Gender-Based Violence Among Women Living With HIV In Canada

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Background: Gender-based violence (GBV) is a global epidemic that disproportionately impacts women living with HIV (WLWH). Most GBV research with WLWH has examined intimate partner violence (IPV); IPV is associated with reduced ARV adherence and reduced medical care engagement among WLWH. Less is known about: the prevalence of GBV, including but not limited to IPV, among WLWH; associations between GBV and a range of socio-demographic, social, and health outcomes; and associations between social and health outcomes by type of violence experienced. We aimed to assess factors associated with experiencing GBV among WLWH in Canada.

Methods: Baseline survey data were analyzed for WLWH (≥16 years) enrolled in a community-based research cohort study in British Columbia, Ontario, and Québec. GBV was assessed through self-report of ever experiencing physical, sexual, emotional, or verbal abuse, in adulthood (>16 years). Multivariable logistic regression was used to identify socio-demographic, clinical and psychosocial factors associated with having experienced any adulthood GBV, and each type of violence separately.

Results: Of 1320 participants, the median age was 43 (IQR=36-51) years; 22% identified as Indigenous, 28% African, Caribbean or Black (ACB), 42% White, and 8% other. Most (80%) women reported experiencing any adulthood GBV, including physical (62%), sexual (43%), verbal (73%), and control (46%). In adjusted analyses (n=1241), women who had ever experienced GBV had higher odds of marginalization across social axes, including: incarceration history (AOR: 6.03, CI: 3.47, 10.45), food insecurity (AOR: 2.96, CI: 1.48, 5.93), racial discrimination (AOR: 1.03, CI: 1.01, 1.05), and older age (1.02, 95% CI: 1.00, 1.04). GBV was associated with increased odds of substance use: recent cannabis use (AOR: 7.33, CI: 1.71, 31.47), current cigarette use (AOR: 4.31, CI: 2.50, 7.44) and past 3 months recreational drug use (AOR: 4.08, CI: 1.18, 14.07). GBV was associated with increased odds of poor health: previous cancer diagnosis (AOR: 3.66, CI: 1.55, 8.61), Hepatitis C co-infection (AOR: 2.48, CI: 1.64, 3.75), sub-optimal antiretroviral adherence (<80% vs. >95%) (AOR: 2.31, CI: 1.11, 4.81), current post-traumatic stress disorder (AOR: 2.30, CI: 1.53, 3.45), and delayed access to HIV medical care after diagnosis (AOR: 2.22, CI: 1.40, 3.53). Correlates varied for each type of violence. Sexual violence was associated with lower income, depression, Hepatitis B, gender discrimination, and sharing needles/syringes. Physical violence was higher among participants who were Indigenous, had lived in a group home, and had a history of sharing needles/syringes. Control was associated with HIV stigma.

Recommendations: Most (80%) WLWH experienced violence in adulthood. Experiences of adulthood violence were associated with PTSD symptoms and recreational drug use, highlighting the need for trauma-informed and harm reduction approaches to engage women in the HIV care continuum. Women who experience gender discrimination and other forms of social exclusion, including women who use drugs and Indigenous women, reported disproportionate rates of violence. Intersectional approaches that address gender discrimination are crucial to reduce gender-based violence experienced by women with HIV. Multi-level approaches are required: clinicians need to address and screen for GBV in HIV care, and community-based interventions are needed to reduce GBV.
Abstract 16

HIV Disclosure Without Consent Linked To Increased Risk Of Verbal And Physical Violence Against Women Living With HIV In Metro Vancouver, British Columbia

Barreto D1, Krüsi A1,2, Ranville F1, Safford H1, Pooyak S3, Braschel M1, Kestler M1, Shoveller J1,2, Shannon K1,2
1Gender and Sexual Health Initiative, British Columbia Centre for Excellence in HIV/AIDS, Vancouver, Canada, 2University of British Columbia, Department of Medicine, Vancouver, Canada, 3Canadian Aboriginal AIDS Network, Vancouver, Canada, 4Oak Tree Clinic, BC Women’s Hospital and Health Centre, Vancouver, Canada

Background: Canada stands out globally in its assertive approach to criminalizing HIV non-disclosure. While frequently framed as a law to “protect” women there is currently very limited understanding of how forced or involuntary HIV disclosure shapes experiences of violence among women living with HIV (WLWH). In this analysis we quantitatively examined the impact of HIV disclosure without consent (e.g., by a health professional, service provider, friend etc.) on experiences of violence due to HIV status amongst WLWH.

Materials & Methods: This analysis draws on baseline data from SHAWNA (Sexual Health and HIV/AIDS: Women’s Longitudinal Needs Assessment), a longitudinal community-based research project with WLWH (trans inclusive) aged 14+, who live or access HIV services in Metro Vancouver, Canada (2015- present). At baseline and semi-annually, participants complete interviewer-administered questionnaires by trained interviewers, including WLWH and sexual health nurses. Bivariate and multivariable logistic regression were used to investigate prevalence and factors associated with experiencing physical and/or verbal violence due to HIV status amongst WLWH.

Results: Of 255 WLWH enrolled in SHAWNA, half (49.8%, n=127) had had their HIV status disclosed without their consent (e.g. by health providers, housing, prisons, ex-partners, and friends) and one-third (38.0%, n=97) had experienced gender-based violence due to their HIV status. The median age was 44.3 (IQR: 37.0-52.0), 61.2% (n=156) were of Indigenous ancestry and 32.9% (n=84) identified as a gender/sexual minority (LGBTQ2S). Homelessness [OR 3.43 (1.52-7.73)], diagnosis with a mental health condition [OR 3.06 (1.71-5.49)], and lifetime experiences of intimate partner violence [OR 2.29 (1.15-4.54)] were also significantly associated with violence due to HIV status. In multivariable analysis, adjusting for other factors, non-voluntary disclosure of HIV status (e.g., HIV status “outed” without consent by health providers, housing staff/residents, prisons, ex-partners) retained the strongest independent association with increased odds of gender-based violence due to HIV status [AOR 4.94 (2.73-8.95)].

Conclusions: These findings underscore the significant rights-based concerns of WLWH. WLWH who had their HIV status disclosed without their consent had 5-fold increased risk of experiencing HIV-related violence. This research highlights that the criminalization of HIV non-disclosure may contribute to and reproduce gender-based violence due to HIV stigma and discrimination, and raises concern around consent and the rights of WLWH in services and supports. Canada needs to move away from the criminalization of HIV and implement urgently required trauma-informed HIV care for WLWH alongside efforts to reduce HIV-related stigma and gender-based violence, and ensure women’s rights to privacy and confidentiality.
Abstract 17

Realizing Women’s Reproductive Rights In The Era Of ART: The Negative Impact Of Having One’s HIV Status ‘Outed’ On Pregnancy Decisions Amongst Women Living With HIV In A Canadian Setting

Duff P1,2, Socías E1,2, Chamboko P2, Brasczel M1, Kestler M3, Money D2,3, Ogilvie G2,3, Krüsi A1, Shannon K1,2, on behalf of the SHAWNA Project

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Background: Advances in antiretroviral therapy (ART) and ‘prevention-of-mother-to child-transmission’ (PMTCT) over the last decade have greatly supported women’s reproductive choices and shifted fertility trends among women living with HIV (WLWH) globally. However, little is known about the influence of social factors on WLWH’s pregnancy decisions. This study examined the effect of non-consensual HIV disclosure on WLWH’s decision to become pregnant.

Methods: Analyses drew on initial baseline data (2015-present) from SHAWNA (Sexual health and HIV/AIDS: Women’s Longitudinal Needs Assessment), a longitudinal community-based cohort with WLWH (trans inclusive), aged 14+ across Metro-Vancouver, Canada. SHAWNA is guided by extensive consultation and advisory from community, WLWH, and HIV providers. Using community-recruitment strategies and referral by health providers, women are invited to participate and complete a semi-annual interviewer-administered questionnaire and HIV/STI monitoring by a sexual health nurse. Multivariable logistic regression was used to model the effect of non-consensual HIV disclosure (having your HIV status ‘outed’) on WLWH’s decision to become pregnant.

Results: Of 216 cisgender women of reproductive age (at diagnosis) included in the analysis, 55.6% were Indigenous, and 7.4% were born outside of Canada. Of concern, 52.3% reported ever having their HIV status ‘outed’ and 25.0% had been discouraged from becoming pregnant due to their diagnosis. While only 11.6% reported ever accessing formal preconception counseling, over half (50.5%) had accessed women-centred HIV care inclusive of sexual and reproductive health services. In multivariable analyses, women reporting non-consensual HIV sero-status disclosure had 3.47-fold increased odds of reporting that their HIV diagnosis discouraged them from wanting to become pregnant (AOR: 3.47; 95%CI 1.60-7.52), independent of sexual and gender identity or previous HIV-related violence. Year of HIV diagnosis was not significantly associated with participant’s decision to become pregnant.

Conclusions: Despite advances in PMTCT and HIV treatment, non-consensual HIV disclosure continues to undermine WLWH’s ability to realize their reproductive rights. The low level of preconception counseling may reflect internalized stigma, which can prevent/delay women from disclosing pregnancy intentions to health providers or accessing SRH services. Supporting the reproductive rights of WLWH will require multi-level interventions, including efforts to better incorporate conception-focused discussions and address stigma in HIV clinical care interactions alongside increasing access to women-centred HIV care.
Abstract 18

The Effect Of Gender-Based Violence On Food Security Among A Prospective Cohort Of Women Sex Workers In Metro Vancouver, British Columbia

Barreto D1, Shoveller J1,2, Duff P1,2, Braschel M1, Shannon K1,2

1Gender and Sexual Health Initiative, British Columbia Centre for Excellence in HIV/AIDS, Vancouver, Canada, 2University of British Columbia, Department of Medicine, Vancouver, Canada

Background: The current study examines the impact of gender-based violence on moderate-to-severe food insecurity among sex workers (SWs) in Metro Vancouver, Canada. SWs face food insecurity (a form of structural violence) alongside many other forms of violence, including gender-based violence. Yet, few studies have documented the impact of gender-based violence on food security among women SWs, despite evidence substantiating this association in the general population.

Materials & Methods: Data were drawn from a prospective community cohort of SWs, known as AESHA (2010-2014). The primary outcome was moderate-to-severe food insecurity, measured using a modified Radimer-Cornell scale. The variable of interest was lifetime gender-based violence (physical/sexual). We used bivariate and multivariable logistic regression using GEE to analyze the association between gender-based violence and food insecurity.

Results: Of 761 SWs enrolled in the study, 64.9% (n=494) were food insecure at baseline. Over a third of SWs, 35.2% (n=268) were of Indigenous ancestry and a quarter, 25.6% (n=195) identified as a gender/sexual minority. Within the 11.0% (n=84) of SWs living with HIV, 96.4% (n=81) were food insecure at some point during the study. Additionally, 75.6% (n=575) of SWs reported sometimes or always buying their own food at baseline, contributing to the economy. Initial bivariate analysis revealed a strong relationship between having experienced physical and/or sexual violence (OR 12.11 [95% CI: 8.08, 18.15]) and moderate-to-severe food insecurity. Recent use of stimulants (cocaine, crack or crystal methamphetamine) (OR 3.35 [95% CI: 2.78, 4.03]), and living with a mental health issue (OR 3.16 [95% CI: 2.46, 4.07]) were also significantly associated with moderate-to-severe food insecurity. In multivariable analysis, experiencing any lifetime physical and/or sexual violence remained independently associated with moderate-to-severe food insecurity (AOR 4.62 [95% CI: 2.99, 7.14]).

Conclusions: Almost all study participants living with HIV reported being food insecure. The odds of reporting food insecurity was more than 4.5 times higher in SWs who had experienced gender-based violence than in those who had not. These intersecting risks demonstrate the multiplicative, negative impacts associated with living with HIV, experiencing food insecurity, and/or physical or sexual violence. This also highlights the potential for interventions that address structural violence (e.g., decriminalizing sex work) to have crosscutting impacts. For example, decriminalization has been shown to reduce sexual and physical violence against SWs, as well as to reduce barriers to accessing necessities (including food) or health and social services (e.g., methadone; primary care).
Abstract 19

Violence Against HIV Positive Women: Looking Beyond Stigma And Discrimination

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Violence against women (VAW) is a fundamental violation of a woman’s human rights. There is increasing recognition that violence is both a cause and consequence of HIV. Positive women suffers dual stigma- 'being women' and 'positive' and are more likely to experience violence due to their HIV status, from partners, family members, community, even from health care institutions.

This paper highlights violence positive women are subjected to, using quantitative data from 204 positive women & men and 12 case studies.

Significantly higher proportion of men (44%) as compared to women (9%) were in HIV-discordant couple, whereas, 85% women reported to be in HIV-concordant couple (Chi2=26.1***). Further, 31% women compared to 11% men reported to have at least one positive child (Chi2=8.9***), highlighting a prominent difference in family structure of positive women and men.

Findings reveal that men were index case in 86% HIV-positive couples, yet women remained at receiving end of abuse with 69% having faced verbal and 10% both physical & verbal abuse, highlighting an epidemic of VAW among positive women operating parallel to HIV epidemic. Substantiating this is narrative by a woman, “He got it from another women... and when I blame him for that he beats me bad… almost to the level to kill me. My life is spoiled and I can’t even cry about it…” (Woman, age 33, housewife, Mumbai).

Another narrative brings out different forms of blame and violence: “My children blame me... they say we got infected because of our mother… my husband and relatives taught them this and also fact that everywhere people say 'Mother to child transmission (MTCT)’...I have also started blaming myself”, (Woman, age 27, mother of 2 positive children, housemaid, Pune). Men accepted role of perpetrator, 67% accepted verbally abusing, and 17% accepted physically abusing partner. Ten percent women reported to have suffered from coercion in the first sex, 14 percent of men accepted to have forced their partner in the incidence of first sex. Considering the fact that for 93% women, it was husband with whom they had first sex, even the first marital sex is not free from coercion. Sexual coercion within marriage mostly goes unreported and is not even perceived or acknowledged as coercion. The sexual coercion within marriage was also shockingly high. Around 10 percent women reported to have experienced coercion within marital sex ever and 15 percent men accepted causing this sexual oppression on their wives. “I didn't understand how I, as an obedient woman, could be infected, having been faithful to my husband in my life.” - HIV-positive woman questioning the conservative Indian belief Marriage-Safety or Risk for HIV. High level of enacted discrimination (55%) with stark gender difference emerged (62% women and 47% men, X2=4.3***) and main perpetrators being family (women=44%, X2=9.9***; men=22%, X2=9.9***).

Violence and subjugated status emerges strongly and reinforced need for PLHIV women’s support networks. Study puts question on marital relationships, and conservative prevention techniques and thus highlighting need to address attitudes and behaviors violate women’s basic human rights.
7th International Workshop on HIV & Women
11 - 12 February 2017, Seattle, WA, USA

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PrEPing for a PrEP Demonstration Project: Understanding Awareness and Perspectives among Women in Southern California

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Background: Pre-exposure prophylaxis (PrEP) with emtricitabine/tenofovir disoproxil fumarate (FTC/TDF) has been shown to be effective in preventing HIV, although data is conflicting among women due to poor adherence and biological differences in pharmacokinetics. In preparation for an adherence-based study using daily text messaging with individual drug-level guided counseling support, we sought to understand women’s knowledge and perspectives about PrEP as well as what would be useful to support at-risk women taking PrEP.

Methods: We conducted three focus groups of HIV- and HIV+ women in San Diego and Los Angeles between November 2015 and January 2016. Women were recruited through local testing sites, community-based organizations and social media. Focus group questions elicited discussion about PrEP awareness, candidates and concerns, methods to facilitate PrEP use, HIV prevention strategies, PrEP awareness, barriers and facilitators of potential PrEP use, and text message frequency and content. All focus groups were audio recorded, transcribed and coded by hand.

Results: Focus group 1 consisted of 4 HIV- and 4 HIV+ women (ages 26-64; 1 Black, 7 Caucasian), focus group 2 of 10 HIV- women (ages 20-57; 5 Black, 4 Latina, 1 mixed) and focus group 3 of 4 HIV- women (ages 30-65; 4 Latina). Across all focus groups, there was limited knowledge about PrEP. In focus group 1 with HIV- and HIV+ women, there was misinformation about PrEP from HIV+ women, but the women highlighted the importance of dialogue between HIV- and HIV+ women about HIV prevention and transmission to support their potential PrEP use. In aggregate, concerns about PrEP included potential misuse, side effects, possibility for resistance, medication diversion, effect on pregnancy, stigma related to its use, a reminder of HIV/AIDS and no studies examining the long-term effects of PrEP use. Women described children, competing priorities, other people’s needs, lack of partner support and judgmental physicians as potential barriers of PrEP use. On the other hand, facilitators included the importance of health, family and partner support, not wanting to become HIV-infected, support from other women taking PrEP, and physician trust. Women described ways to facilitate PrEP-taking including practical tools such as phone apps, pill boxes, pamphlets, watches and sensors but they also noted support of a trusted doctor as well as individual responsibility and empowerment. In terms of text message content, women discussed the importance of greater choice in receiving messages with an emphasis on positive content, including affirmations, jokes, do-it-yourself ideas, quotes, things to do in Southern California, HIV facts and messages of hope from HIV-infected individuals.

Conclusions: In these focus groups of HIV- and HIV+ women, the majority of HIV- women expressed interest in participating in a PrEP demonstration project using daily text messages as prompts for adherence and using this HIV prevention strategy. Despite limited PrEP knowledge and concerns about taking PrEP, women highlighted the importance of PrEP use and ways to facilitate PrEP-taking. These findings were fundamental to the development of the first PrEP demonstration project in the US designed specifically for women.
Abstract 21

HIV Risk Factors and Risk Perception among Adolescent Girls and Young Women in Malawi

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**Background:** The high HIV incidence among adolescent girls and young women in sub-Saharan Africa has been associated with a range of individual, social, and structural risk factors. Perceived risk of HIV is a key element in the uptake of prevention programming; an understanding of the association between HIV risk factors and perceived risk in a vulnerable group can inform intervention planning and targeting.

**Methods:** Adolescent girls and young women 15-24 years old were recruited from four government-run health clinics in Lilongwe, Malawi to participate in a study evaluating four models of HIV service delivery. They completed a baseline survey assessing risk factors, and if HIV-uninfected or HIV-unknown, their risk perception. Risk perception was elicited by assessing lifetime chances of acquiring HIV with three possible responses: "no chance", "small chance", or "high chance". This variable was then dichotomized for analysis into "any chance" or "no chance". We analyzed associations between risk perception and five HIV risk factors: inconsistent or no condom use, >1 lifetime partner, transactional sex, and forced sex with a current partner.

**Results:** In a cohort of 1000 adolescent girls and young women, 967 reported being HIV-negative or of unknown status at baseline and were included in this analysis. The median age of respondents was 19 (IQR 17–21). 69% used condoms inconsistently or not at all; 54% had >1 lifetime sexual partner; 15% had a partner >5 years older; 21% reported current transactional sex; and 46% reported forced sex from a current partner. 41% reported no perceived lifetime risk of HIV. Inconsistent condom use (OR 1.86, 95% CI 1.40–2.47), >1 lifetime partner (OR 1.65, 95% CI 1.26–2.15), transactional sex (OR 1.50, 95% CI 1.07–2.11), and forced sex (OR 1.71, 95% CI 1.30–2.25) were associated with any perceived lifetime risk of HIV. Despite association between risk factors and risk perception, 35% of those with one or more risk factor perceived no lifetime risk of acquiring HIV.

**Conclusion:** Adolescent girls and young women in this cohort have a high prevalence of HIV risk factors. However, many participants with these risk factors perceive no risk of HIV acquisition. As a critical gap in the HIV prevention cascade, accurate risk perception is needed to tailor effective and sustained combination prevention strategies for this vulnerable population.
High burden of asymptomatic genital tract infections among sexually-experienced youth enrolled in a community-based HIV prevention cohort in South Africa: Implications for HIV prevention programming for a priority population of adolescent girls and young women


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**Background:** Adolescent girls and young women in southern Africa remain among the highest risk groups for HIV acquisition. Untreated genital tract infections (GTIs) increase both HIV transmission and acquisition risk. South African GTI treatment guidelines employ syndromic management, which relies on individuals to report GTI signs and symptoms. Syndromic management may, however, underestimate cases, particularly among adolescents and young adults. We compared GTI prevalence by symptom-based and laboratory assessment among youth, stratified by sex.

**Methods:** We analysed baseline data from youth (aged 16-24) who reported HIV-negative or unknown status at enrolment in a community-based and youth-centred cohort in Durban and Soweto (n=425; Nov 2014-May 2016). Interviewer-administered surveys assessed demographics, behaviours, and sex-specific GTI symptoms. Laboratory tests assessed HIV-1, Chlamydia trachomatis, Neisseria gonorrhoea, Trichomonas vaginalis, Mycoplasma genitalium and, among females only, bacterial vaginosis (BV) and Candida. Genital ulcers were tested for herpes simplex virus (HSV-2) and Treponema pallidum. We assessed sensitivity and specificity of syndromic GTI screening.

**Results:** Among 349 sexually-experienced youth (56% female, median age 19, 6% LGBTQ), 56% self-perceived as low/no risk of HIV although 21% of females and 74% of males reported ≥2 sexual partners in the last 6 months (p<0.001) and 81% of females and 51% of males reported inconsistent condom use (p<0.001). Overall, 32/195 (16%) females reported ≥1 GTI symptom, primarily symptoms of Vaginal Discharge Syndrome (VDS) (21/32; 66%). Just 1/154 (0.7%) male reported any GTI symptom (Male Urethritis Syndrome (MUS)). In contrast, clinical tests identified ≥1 GTI in 135 (69%) females and 16 (10%) males. Female BV prevalence was 53.7%, chlamydia 18.1%, candidiasis 9.9%, M genitalium 8.3%, trichomoniasis 8.8%, gonorrhoea 6.7%, and HIV 5.1%. Male chlamydia prevalence was 7.8%, M genitalium 3.3%, trichomoniasis <1%, gonorrhoea 1.3%, and HIV 2.0%. 1 female case of herpes was identified (0 syphilis). Among females, 19/21 reporting VDS were infected with a VDS-associated STI, however, of 135 infected with any GTI, just 19 were symptomatic (sensitivity 14.1%, specificity 96.7%). Among males, 0/1 reporting MUS were infected with a MUS-associated STI. Of 16 males infected with any GTI, none reported symptoms (sensitivity 0%, specificity 99%).

**Recommendations:** The prevalence of GTI infections in South African youth is high, particularly among adolescent girls and young women, and is frequently asymptomatic. Syndromic GTI management has poor sensitivity and is thus suboptimal for this population. There is an urgent need for linked biomedical and structural youth HIV prevention modalities, resourced to incorporate laboratory-based GTI services.
Abstract 23

A unique population: adherence to PrEP among HIV negative women attempting conception with HIV positive male partners in the US

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Background: The efficacy of PrEP is dependent on adherence. Little is known about adherence in women who are using PrEP to achieve a safe conception in a serodiscordant relationship in the US. We assessed concordance in adherence measured by self-report and blood levels among HIV negative women who used PrEP for safe conception with HIV positive men.

Methods: In this cohort study, HIV negative women in serodiscordant relationships who desired PrEP for conception at one of 4 medical centers in the U.S. (Boston University, Drexel University College of Medicine, John Hopkins University and Northwestern University) were prospectively enrolled. Self-reported (SR) adherence measures were compared to dried blood spot (DBS) for tenofovir-diphosphate concentrations one month after starting emtricitabine/tenofovir disoproxil fumarate. Steady state dosing adjustment was made based on a 17-day half-life. Spearman correlation was used to assess the association between DBS and SR measured as continuous variables.

Results: Baseline data was collected on 25 women of whom 20 (80%) had both DBS and SR results one month after starting PrEP. Median age was 35 years (34.8 +/- 6.7), 64% were Black, 41% had some college education or above, median length of current relationship was 3 years, 44%

worked full time. There was no significant difference in demographics in the 5 subjects with incomplete results compared to the 20 with complete results. There were zero transmissions to date among the women. Mean PrEP use per month was 29 days (+/- 1.87); 85% reported < 1 missed dose. One woman (5%) had a DBS corresponding to taking< 2 tablets/wk; one (5%) corresponding to 2-3 tablets/wk, and 18 (90%) corresponding to ≥ 4 tablets/wk on average. The estimated mean DBS drug level at steady state was median= 1125; IQR=662.84. We found a moderate to strong correlation between DBS and SR (r=0.59, P=0.0061).

Conclusion: This study is unique in that it compares objective and subjective adherence to PrEP in HIV negative women in serodiscordant relationships who are using PrEP for safe conception in the US. In contrast to published studies in females on PrEP, this population was adherent and SR was accurate. These results will be useful counseling and treating women who opt to use PrEP for conception. Future studies are needed to determine the clinical relevance of the adherence categories for PrEP outcomes in women as the categories were developed in studies of men who have sex with men.
Abstract 24

Protease Inhibitor Based Cart Is Associated With High Estradiol Levels In Pregnancy

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Background: Over 1.5 million HIV-infected (HIV+) women become pregnant annually. Most of these women access combination antiretroviral therapy (cART) for their own health and to prevent perinatal transmission of HIV. Studies have linked protease inhibitor (PI)-based cART to adverse birth outcomes. Endocrine dysfunction is common among HIV+ individuals, and altered levels of estradiol (E2) have been reported in patients on cART. However, no data exist on the effect of cART on E2 in the context of pregnancy. Our objective was to investigate the effect of PI-based cART on E2, and to investigate the association between E2 and adverse birth outcomes in HIV+ pregnant women.

Methods: A multi-centre prospective cohort study of 96 pregnant women was conducted between 2010 and 2015 in Toronto, Canada. Plasma samples were collected from HIV+ pregnant women on PI-based regimens (n=46), PI-sparing regimens (n=8), and matched controls (n=42) at 3 different gestational time points defined as early (12-18 weeks), mid (24-28 weeks), and late (34-38 weeks). Maternal and cord plasma samples were also collected at delivery. Plasma levels of E2, sex hormone binding globulin (SHBG), and the E2 precursor dehydroepiandrosterone sulfate (DHEAS) were measured by ELISA. Associations between birth weight and hormone levels were assessed by Spearman correlation.

Results: Birth weight centile was lower in the HIV+ group compared to controls [median 25 IQR (9.5-55.9) vs. 53.5 (30.75-70.75), p=0.0008]. There was a significant increase in E2 levels from mid to late gestation in HIV+ women on PI-based regimens, but not in women on PI-sparing regimens or HIV-uninfected controls. E2 levels in the cord were significantly higher in the PI-cART group compared to controls [median 23.9 ng/mL IQR (16.36-36.40) vs. 15.68 (12.19-21.21), p=0.0018], as were DHEAS levels and the E2/SHBG index. There was a positive correlation between cord E2 and DHEAS levels in the PI-cART group (r=0.47; p=0.0013). Cord E2 levels correlated inversely with birth weight centile in the PI-cART exposed women (r= -0.41; p=0.007), but not in controls or non-PI-cART exposed women.

Conclusion: Our data suggest that PI-cART use in pregnancy may be associated with higher than normal levels of E2, perhaps stimulated by increased production of DHEAS. An association between high cord E2 levels and fetal growth restriction was observed in PI-cART exposed pregnant women.
Abstract 25

Association between antiretroviral treatment regimen and adverse birth outcomes for women living with HIV in Denmark

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Background: Combination Antiretroviral Therapy (cART) use in pregnancy, and specifically regimens containing protease inhibitors (PIs), has been associated with adverse infant outcomes including preterm birth (PTB) and low birth weight (LBW). Recently, a higher rate of prematurity has been associated with boosted PI, compared to non-boosted cART. The objective of this study was to assess the association between cART regimen and adverse birth outcomes (low birth weight and premature birth) in a national cohort of HIV-infected women in Denmark.

Methods and materials: This is a population-based cohort study of all HIV-infected women in Denmark giving birth to one or more singleton children between 2000 and 2015. Women diagnosed with HIV after delivery, and with dual or unknown treatment history were excluded. Data was extracted from medical records. The main outcomes were PTB defined as delivery less than or at 37 weeks of gestation and LBW defined as birth weight less than 2500 grams. Multivariate logistic regression models were used to estimate the association of cART (NRTI/NNRTI, cART with PI, and cART with boosted PI) with the risk of PTB and LBW. Random effect on unique maternal ID was used to account for dependency between children born to the same mother. Odds ratios (ORs) were adjusted for potential confounders.

Results: In total, 322 women giving birth to 436 children were included in the analysis. The mean age of the women at time of delivery was 33 years (SD 5.30; range: 18-46). Of the women, 279 (64%) started treatment prior to conception and the majority were well treated at time of delivery (337 women (77%) had CD4 cell count >350 CD4 cells and 420 women (96%) had HIV RNA<1000 copies/mL). The women were treated with the following cART regimes: NRTI/NNRTIs (n=87 (19.9%)), cART with PI (n=68 (16%)), and cART with boosted PI (n=281 (65%)). More than half of the children (n=253 (58%)) were delivered by caesarian section with a mean birthweight of 3183 g (95% CI 3126 – 3240). None of the children were transmitted with HIV. Overall, 124 (28%) children were born premature and 38 (9%) had a LBW. There was no association between cART regime (reference: women treated with NRTI/NNRTI) and PTB (cART with PI OR: 1.98 (95% CI 0.95 - 4.14); cART with boosted PI adjusted OR: 1.07 (95% CI 0.60 - 1.93)), or LBW (cART with PI OR: 0.51 (95% CI 0.10 - 2.60); or cART with boosted PI OR: 1.08 (95% CI 0.38 - 3.07)). The absence of associations between cART regime and adverse birth outcomes persisted after adjusting for timing of cART initiation, maternal age at delivery, maternal CD4 cell count prior to delivery, maternal HIV RNA level prior to delivery, delivery mode, and smoking. A sensitivity analysis omitting women delivering by elective caesarian section prior to week 37 did not change results.

Conclusion: In a population of HIV-infected well-treated women in Denmark, maternal receipt of PI-containing cART regimens during pregnancy was not associated with an increased risk of preterm birth or low birth weight.
Abstract 26

HIV Continuum outcomes among Women with and without Depression in the Perinatal Period

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Introduction: Depression is one of the strongest predictors of non-adherence to antiretrovirals and may lead to poor maternal HIV outcomes. Perinatal Medical Case Managers (PCM) reduce barriers to care by providing psychosocial and supportive services. We evaluated HIV care continuum outcomes of pregnant and postpartum (PP) women with and without depression receiving PCM services.

Methods: We performed a retrospective cohort analysis of HIV+ pregnant women enrolled in PCM in Philadelphia and evaluated the relationship between definite depression (diagnosis made by a health professional or by self-report) or possible depression (symptoms of depression but no diagnosis) and four outcomes 1) viral suppression (HIV viral load (VL) <200 copies/ml closest to the time of delivery); 2) PP care engagement (≥ 1 VL or CD4 count up to 3 months of delivery); 3) retention in care at 1 year PP(≥1 CD4 or VL in each 6 month interval of the 12 month period with ≥60 days between tests); and 4) viral suppression at 1 year PP(VL <200 copies/ml at closest to the 12 month period).

Results: A total of 337 deliveries from 281 women were analyzed for 2005-2013. Psychosocial stressors included intimate partner violence (IPV) (24%), child sexual abuse (8.3%), unstable housing (55%), poor partner (40%) and poor family support (30%). Women with >2 previous live births (AOR 2.4, 95% CI 1.1-5.0), drug use (AOR 2.3, 95% CI 1.2-4.4), IPV (AOR 3.1, 95% CI 1.5-6.4), child sexual abuse (AOR 5.6, 95% CI 1.6-20.3), poor partner (AOR 1.7, 95% CI 0.9-2.9) and poor family support (AOR 2.2, 95% CI 1.2-4.0) were more likely to have definite or possible depression. The percentage of women with definite/possible depression receiving psychotherapy increased from 29% before pregnancy to 37% during pregnancy (p=<0.001) and on average had twice the number of PCM encounters (34 versus 62, p<0.001). In our multivariable logistic regression model, no differences were found between the 4 care continuum outcomes among women with definite or possible depression and women without depression and the interaction between depression and number of PCM encounters was significant for retention and VL suppression at one year PP.

Conclusion: Women with definite or possible depression enrolled in PCM had similar outcomes to women without depression likely because of intensive case management. These results suggest that despite the presence of severe psychosocial stressors, supportive services can help improve maternal HIV outcomes.
Abstract 27

Factors associated with detectable viral load and treatment non-adherence in HIV-infected women in the first year postpartum

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Background: Women with HIV infection in the postpartum period are at risk of non-adherence to both combined antiretroviral therapy (cART) and out-patient visits. Treatment interruptions can lead to adverse clinical outcomes, such as viral rebound, development of viral resistance, disease progression and higher risk of HIV transmission. In this study we aimed to get insights into factors associated with both cART and appointment non-adherence among HIV infected women during the first year after delivery in high-income country.

Materials and methods: We conducted a retrospective monocentric study in a group of HIV positive pregnant women in the University Medical Center Utrecht, The Netherlands, who gave birth between January 2002 and May 2015. Each pregnancy was included as an independent event. Data on virological outcomes, self-reported therapy adherence and out-patient visit adherence were retrieved from the medical charts. Univariate and multivariate logistic regression analyses were used to identify factors associated with these outcomes. Influence of time of diagnosis was examined by comparing characteristics of women diagnosed prior to pregnancy to those diagnosed during pregnancy, using chi2-test (for trend), Fisher exact test, student’s t-test or Mann-Whitney test. P values <.05 were considered statistically significant.

Results: A total of 119 pregnancies in 88 individual patients were eligible for analysis. During pregnancy all mothers were treated with cART. In 88 pregnancies HIV infection was diagnosed before conception. 13 patients were lost to follow up in the first year after delivery. In 85 (80.2%) of the remaining 106 pregnancies, cART was continued after delivery. At least one episode of detectable viremia (plasma HIV RNA 50 copies/mL or more) postpartum was seen in 30.6% of mothers continuing cART and was significantly associated with both viral blips and treatment interruptions seen during pregnancy (multivariate analysis, adjusted odds ratio (AOR) 3.70 (95% confidence interval (95%CI 1.10-12.58) resp. AOR 7.51 (95%CI 1.30-43.43)). In 41.6% of pregnancies, the mother reported non-adherence with cART after delivery. Having a non-cohabiting partner and being born in Western Europe were predictive of this outcome in the multivariate analysis (AOR 5.70 (95%CI 1.71-19.03), resp. AOR 3.51 (95%CI 1.01-12.64)). Postpartum visit non-adherence was seen in 57.5%, with significant association with history of advanced disease and an unstable postpartum psychosocial situation (AOR 3.45 (95%CI 1.33-8.92), resp. AOR 2.56 (95%CI 1.09-6.05)). Being diagnosed with HIV infection during pregnancy was not associated with impaired adherence to treatment/out-patient visits or viral rebound postpartum.

Conclusion: In our cohort, we found high rates of detectable viral load, treatment- and out-patient visit non-adherence in HIV infected mothers the first year postpartum. Most important associated factors were postpartum psychosocial instability, previous therapy- or visit non-adherence and history of AIDS whereas no association was found with time of HIV diagnosis (before or during pregnancy). Our results show that even in a country with good access to medical care and antiretroviral therapy, the postpartum period remains a challenge for both patients and health care providers, indicating the critical need for research of targeted interventions to improve treatment compliance and retention in care.
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Infant Feeding in HIV in Canada: Clinical and Research Priority Meeting

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Background: The World Health Organization (WHO) recommends exclusive breastfeeding by HIV-positive mothers in resource-limited settings and exclusive formula feeding in resource-rich settings. This dichotomy is often confusing in a real world setting, which is highly transnational. Healthcare provider surveys and focus group of women living with HIV (WLWHIV) in Canada have suggested that there is a growing need for consensus on clinical management, research and advocacy in regards to infant feeding in the HIV context in Canada.

Materials and Methods: Physicians (adult and pediatric HIV providers, Obstetricians), basic science researchers, social workers, social scientists, HIV nurses, HIV Community agencies, and Peer Research Assistants from across Canada were invited to attend a Priority Setting meeting on Infant Feeding in HIV. Introductory sessions included: (a) participating centers description of the resources available to them and major challenges faced; (b) social scientist description of HIV stigma and criminalization research; (c) community based research on the Infant Feeding experience; (d) review of the basic science of HIV transmission via breastmilk and the findings from a recent systematic review on the risk of transmission from mothers whose HIV is well controlled with combination antiretroviral therapy (cART); (e) laboratory and feasibility aspects of research that involves the use of breastmilk. Breakout discussion were conducted using a ‘World Café’ model in which priority topics for clinical care and research were discussed and voted upon. The conclusion of the meeting was a summary session in which clinical and research priorities were set by consensus.

Results: There were significant differences in affected populations and in care models across the country. There was variability in the depth of counselling and preparation for bottle feeding, the accessibility of formula, and the multidisciplinary supports available to diverse communities affected by this issue. Subsidized formula programs exist in only 5 out of 10 provinces and 3 territories. Only 3 clinics have experience prescribing breast milk suppressant (Cabergoline). The meeting led to the creation of the Canadian Infant Feeding in HIV Network (CIFHN), with six working groups being formed; National Formula Access, Basic Science Research, Breast Care and Cabergoline Guidelines, Knowledge Translation, Consensus Clinical Management, and Community Engagement. Specific next steps planned are to perform literature reviews to inform Consensus Clinical Guidelines, engage a National Community Advisory Board to determine the specific KT needs, and governmental advocacy to lobby for accessible formula in all settings.

Conclusions: Infant feeding in the HIV context is an important emerging issue in Canada. Knowledge gaps include our understanding of the mechanisms of HIV transmission via breastmilk and the risk of transmission when the mother is optimally managed with cART. Knowledge translation of the science of HIV transmission via breastmilk to the community and the need for consensus clinical management guidelines when a mother is breastfeeding were identified as key priorities moving forward.

Abstract 29

Predictors of intended pregnancy in HIV-infected women

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Abstract

Intro: Pregnancy desires differ little between HIV-positive and HIV-negative women, and incidence of pregnancy intendedness are similar. It is unknown whether pregnancy intendedness varies among subpopulations of pregnant HIV-positive women in the U.S. and how such differences may impact HIV clinical outcomes and partner social support.

Methods: A retrospective analysis of HIV+ receiving care at Johns Hopkins from 2003-2014 was conducted, identifying 346 women. Data was abstracted from the electronic medical record; intendedness was assessed 1) as a “yes/no" question a standardized nursing registration questionnaire or 2) via medical record search for the terms “planned" and “intended.” Chi square, t-test, and logistic regression analysis were performed.

Results: There were 346 women with the following demographics: Mean age 35.7±6.9. Mean CD4 count: 462±260.9 at pregnancy entry, 502±275.4 at delivery. Ethnicity: 64.7% African America, 17.7% Caucasian, 11.7% African, and 6.1% other. Marital status: 75.5% single, 24.5% married. Citizenship: 84.8% U.S. citizen, 15.1% immigrant. HIV transmission risk factors: 82.6% heterosexual, 19.0% intravenous drug use, 7.8% perinatal, 6.6% blood exposure. 29.2% of women reported intended pregnancies.

Intendedness varied demographically, including by ethnicity (African American, 16.4% vs. Caucasian, 40.7% vs. African, 80.0%, p<0.001), marital status (married, 59.5% vs. single, 19.4%, p<0.001), and citizenship status (immigrant, 56.3% vs. U.S. citizen, 23.0% intended, p<0.001). Male partner support varied with intendedness, including involvement of (intended, 84.6% vs. unintended, 67.3%, p=0.028) and disclosure to (intended, 90.2%, unintended, 71.7%, p=0.011) the father of the baby. Women with intended pregnancies were less likely to be lost to follow-up (26.5% vs. 44.4%, p=0.028) and had lower log viral counts at pregnancy entry (2.53±1.300 vs. 3.16±2.235, p=0.004) and delivery (1.77±0.643, 2.346±1.057, p<0.001). Contraception at discharge differed between groups (p=0.026): woman with intended pregnancy were more likely to receive no contraception (58.0% vs. 31.6%, p=0.001) and less likely to receive Depo Provera (6.0% vs. 22.4%, p=0.009).

In a stepwise logistic regression model (R²=0.169, p<0.001), intendedness was best predicted by married marital status (adjusted OR 1.39, 95% CI 1.16-1.66, p<0.001) and negative FOB HIV status (adjusted OR 0.87, 95% CI 0.78-0.97, p=0.019).

Discussion: These data identify several subpopulations of U.S. HIV-positive pregnant women with significantly lower frequencies of pregnancy intendedness, including those with indicators of weaker male partner social support and poorer disease control throughout pregnancy. These data indicate potential focal areas for targeted preconception, prenatal, and postpartum interventions.

Abstract 30

Reducing Financial Barriers To Accessing PMTCT Services In The Private Sector In Nigeria

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Background: According to the Federal Ministry of Health, 38% of health facilities in Nigeria belong to the Private health sector but provide 60% of the healthcare in the country. The private sector which is made up of the Formal (Hospitals, Clinics, Maternity Homes) and Informal (TBAs, Faith-based Maternity homes) despite its relatively higher costs/charges as compared to the public sector, are preferred for various reasons including cultural norms, religious beliefs, an assurance of privacy, and flexible payment arrangements. 42% of women (15-49yrs) sampled in the NDHS cited getting money for treatment as a barrier to service uptake. The public sector with inadequate staff and infrastructure relative to the needs of the population, is currently overburdened and therefore cannot meet the demand for PMTCT services. The private sector, however, remains an untapped resource in the bid to address the
HIV/AIDS epidemic as most investments have been targeted at the public sector. This abstract seeks to review the potential of reduction in costs of PMTCT services in Private facilities as a strategy to expand PMTCT access in Lagos State, Nigeria.

Methods: 17 facilities across four USAID priority LGAs in Lagos State were selected to conduct community outreaches over an 8-month period based on infrastructure, human resource capabilities, and willingness to participate. Price waivers on routine ANC, Labor and Delivery and other ancillary services were negotiated based on support provided by the USAID/E2A project for staff trainings, HIV commodities and clinical equipment. The aim of the waiver was to reduce financial barriers to accessing PMTCT services in the private sector as a form of corporate social responsibility. The informal health providers within the catchment areas were linked to the supported facilities in a hub-and-spoke model to increase access to affordable PMTCT services.

Results: 17 of 17 facilities (100%) consented to free service charge for HIV counseling and testing (HCT) to pregnant women and their partners, 15 of 17 (88%) gave discounts for ANC registration and clinic visits while 7 of 17 facilities (41%) gave 50-100% discounts on Labor and Delivery fees. 17 of 17 facilities (100%) provide free drug pick-up options for women who were reluctant to change service providers. A total of 8,379 USD in cost savings for clients was successfully negotiated. 19, 415 pregnant and breastfeeding women received HCT services. 104 HIV-positive women were referred to private PMTCT centers for ANC/ARV services, 94 of which (90.3%) commenced ARV services.

Conclusion: The Private sector will play a decisive role in ending the HIV/AIDS epidemic due its significant reach, and its capacity must be explored and harnessed to ensure that all PMTCT clients have access to quality services wherever they may be and irrespective of social and financial status. The possibility that a significant number of private facilities are willing to provide discounted PMTCT services as a form of CSR in exchange for minimal support is worth exploring if the UNAIDS 90-90-90 strategy is to succeed.

Abstract 31

Social Support and Loneliness: Are the Experiences of Mothers Living with HIV Unique?

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Background: The successes of antiretroviral therapy, including decreases in rates of vertical transmission, are indisputable. Alongside this progress, more women living with HIV have become mothers. In 2010, researchers in Ontario, Canada embarked on the HIV Mothering Study to enhance understanding of the psychosocial experiences and needs of mothers living with HIV (MLHIV). Subsequently, the Mothering on the Margins (MoM) Study recruited a matched cohort of HIV-negative women to understand the unique experiences of MLHIV as compared to demographically similar HIV-negative mothers. The current analysis aimed to determine if there was a difference between the two groups in their experiences of loneliness and social support.

Materials and Methods: An observational, mixed-methods design was used in both cohorts. The HIV-negative matches were recruited from 3 sites with high enrolment in the HIV Mothering Study. Participants were matched based on age +/- 5 years, site of enrolment, race, and country of origin. Quantitative, qualitative, and clinical data were collected at 4 time points: in the 3rd trimester and at 3, 6, and 12 months postpartum. This analysis draws on two scales over the first 3 time points: the MOS Social Support Survey and the UCLA Loneliness Scale.

Results: 30 HIV-negative women were matched with 30 women from the HIV Mothering study. The total sample of 60 women ranged in age from 19 to 42 (mean = 29.97, SD = 7.713) and 50% were Black/African, 40% were White, 7% were Canadian Aboriginal, and 3% were South Asian. A two-way repeated measures ANOVA (rmANOVA) was used to determine if there were
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[71x749]differences between the women living with/without HIV over time with respect to loneliness and social support. Assumptions of the rmANOVA were met or adjusted for. There was a main effect of HIV such that the mean score of loneliness was 12.1 (95% CI, 4.648, 19.552) higher on average for MLHIV as opposed to the HIV-negative women; a difference that was significant, F(1,19) = 11.55, p = .002. In contrast, there was no main effect of HIV status, F(1,21) = 1.804, p = .194, or time, F(2,42) = .455, p = .638 on social support.

Conclusions: These results highlight the heightened experience of loneliness for MLHIV. This is of clinical significance given the correlation between loneliness and depression found in past research, particularly in the postpartum period. Comparatively, the analysis found no statistically significant difference between the groups in their experiences of social support. Given the finding that the MLHIV experienced greater loneliness, the finding that social support does not differ suggests a potential gap in the realized impact of these social supports for MLHIV. Additional research may be warranted to explicate where MLHIV and similar HIV-negative mothers are accessing social supports, and if differences in sources of support may offer clarity on why MLHIV continue to perceive greater loneliness. These results also behove care providers to understand the mechanisms of social support in mothers’ lives and the extent to which these supports mitigate loneliness.

Abstract 32

Contraceptive Use in Women Living with HIV

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Background: Globally, the majority of women living with HIV utilize barrier methods as their only method of contraception. There is a lack of data within the last ten years on the contraceptive methods used by this patient population in the United States. Barrier methods are effective in reducing the risk of sexually transmitted diseases, but are less effective as contraception. More effective contraceptives are available and safe to use in HIV-infected women. Given the benefits of combination antiretroviral therapy (cART) for child-bearing women (greatly diminished risk of perinatal transmission and dramatic improvements in life expectancy), it is important that HIV+ women are aware of all contraception and family planning options. This study aims to identify the contraceptive methods used by women living with HIV, their provider counseling experiences around contraception and family planning, and their counseling preferences.

Materials and Methods: Cross-sectional descriptive survey with study participants recruited from a non-profit community-based organization that provides social services to women and families living with HIV in San Diego, California. HIV-infected women of reproductive potential who can write and speak in English or Spanish were asked to complete a self-administered survey. Institutional Review Board (IRB) approval was obtained prior to recruitment. The primary objective of the study was to identify contraceptive methods used by HIV-infected women receiving services. Highly effective contraception methods were defined as those with a reported failure rate < 1% (IUD, implant, or sterilization). A secondary objective of the study was to describe participants’ contraception and family planning counseling experiences and preferences.

Results: 37 women were enrolled and completed the survey. Most participants were Hispanic (49%) and the average age was 40 years old. More than half (65%) reported a previous unplanned pregnancy. The most common contraceptive method used was the male condom (59%). Only 8% of participants reported using highly effective contraception. In describing their interactions with health care providers, 64% of participants said they were not asked about future pregnancy desires or family planning goals. Most (70%) stated that they were not counseled on potential drug interactions between hormonal contraception and cART. The majority (54%) did not want to learn more about a particular contraceptive method. Among the 70% of
participants who stated a preference regarding who should provide their family planning counseling, more than half (54%) preferred their HIV care provider over an obstetrician/gynecologist (19%), nurse (15%), pharmacist (4%), or other provider (7%).

**Conclusion:** In a small cohort of mostly Hispanic women living with HIV, few were using highly effective methods of contraception. Most participants reported prior unplanned pregnancies. Counseling by health care providers (as reported by the study participants) did not include information on drug interactions between hormonal contraceptive methods and HIV antiretroviral therapy. Family planning/contraception counseling needs to be integrated into comprehensive HIV management of women of reproductive potential in a systematic and individualized way. Additional research is needed to gain a better understanding of barriers to the use of highly effective contraception methods.

**Abstract 33**

“**It’s Not Easy**”: Infant Feeding in the HIV context in a Resource-Rich Setting – Strengths, Challenges and Choices

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**Background:** In order to prevent transmission of HIV via breastmilk, the World Health Organization (WHO) guidelines for resource rich settings recommend exclusive formula feeding, and breastfeeding in resource poor settings. This has contributed to confusion and frustration for women living with HIV (WLWHIV). In a global society that perceives breastfeeding as superior for all infants, WLWHIV continue to experience personal, social and cultural pressures to breastfeed. While a growing body of Canadian literature has presented incidental findings related to WLWHIV’s attitudes, knowledge, and perspectives related to infant feeding, this qualitative descriptive study set out to explore these experiences in greater depth.

**Materials and Methods:** WLWHIV were invited to participate in two focus groups. Participants were recruited from community networks, health centre, and word of mouth. Participants had to self-identity as WLWHIV, had a child in the past 5 years, and able to meet for a focus group. In the first focus group, a semi-structured interview guide was used by the facilitator, an experienced Research Nurse in Perinatal HIV, to allow for spontaneous, participant driven discussion. Following the initial meeting, preliminary analysis was used to inform the development of a structured interview guide for the second focus group. Directed content analysis was used to identify themes and categories that were of importance to the participants.

**Results:** Eleven WLWHIV attended the first focus group and 4 joined for the second meeting. The women included two Canadian-born women, two Caribbean-born women, and nine women born in Africa. The women had experiences with infant feeding in low-middle resource countries and experiences with breastfeeding before HIV-infection. The number of pregnancies since their HIV diagnosis ranged from 1 to 3. Three major categories related to infant feeding for WLWHIV in Canada were identified: novel stories of personal experiences, potential solutions in supporting WLWHIV, and future research considerations in a Canadian context. Participants in this study shared experiences of: infant feeding in endemic countries; of personal strength and resilience in the face of a difficult decision; of choice, or lack thereof, as it pertains to infant feeding; and of the long-term grief and trauma women and their families face regarding infant feeding. Potential solutions included a more holistic approach to education and clinical care to fully support WLWHIV. The need for innovative supports, including home based programming, spaces for open discussions about choice, and formalized peer-support opportunities, were described by participants. Participants also shared ideas for community-based research...
focused on novel topics including an exploration of the cultural significance of breastfeeding, and implementation science programming with home visits to support WLWHIV with the challenges of a new infant, including feeding among other issues.

**Conclusions:** WLWHIV have a wealth of knowledge, ideas, and experience pertaining to infant feeding despite the persistence of confusion about guidelines and risks of transmission. This study marks an opportunity to begin community based innovative clinical and research approaches to help resolves these issues.

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**Abstract 34**

**Sexual Behavior and Family Planning Knowledge, Attitudes and Practices among Young, HIV-Infected Women in Atlanta, Georgia**

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**Background:** Young, HIV-infected women in the United States are at risk of unintended pregnancies, sexually transmitted infections, and transmitting HIV-1 to their partners or offspring. Therefore, it is imperative to better understand their contraceptive and sexual behaviors and knowledge and attitudes regarding pregnancy and STI prevention to effectively target future interventions.

**Methods:** In a cross-sectional study conducted from November, 2013 until August, 2015, HIV-infected women of ages 14-30 years attending the Grady Infectious Disease Clinic in Atlanta, Georgia completed an audio computer-assisted self-interview assessing sexual reproductive health knowledge, practices and behaviors. CD4 count, viral load and recent STI history were abstracted from medical records. Descriptive statistics were generated and multivariable logistic regression was used to evaluate factors associated with effective contraceptive and condom use.

**Results:** Of 103 women enrolled, the median age was 21 (range 14-30 years); 89% were African American, 52% were perinatally infected, 89% received combination antiretroviral therapy, and 44% had CD4 T-cell counts above 500. About three-quarters (72%) were sexually active, with 40% having ≥1 prior pregnancy and 22% having an STI within the last year. At last intercourse, 46% used effective non-barrier contraception (hormonal contraception or an IUD) and 62% reported any condom use, with just 27% reporting dual-method use (condom with effective contraception). Contraception and condom use did not significantly differ between perinatally and horizontally infected women. DMPA was used by 68% of those using contraception within the last month, and many had not heard of long-acting reversible contraceptive options, such as contraceptive implant (32%), copper IUD (30%), or levonorgestrel IUD (52%). Despite 18% saying they would be happy if they became pregnant in the next six months, 21% had felt discouraged by a healthcare provider from having children because of their serostatus.

**Conclusions:** While a minority of young HIV-infected women desired pregnancy in the next six months, contraception and condom use remained inadequate among both perinatally and horizontally infected women. As part of routine HIV care, strategies to successfully promote adequate family planning and increase knowledge and access to long-acting reversible contraceptive methods, as well as dual method use, are needed.
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Pharmacokinetics of total and unbound rilpivirine in HIV-1–infected pregnant women

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Background: Antiretroviral therapy for HIV-1 infection is recommended during pregnancy to protect maternal health and reduce risk of viral transmission to infants. Physiologic changes during pregnancy have the potential to impact pharmacokinetic properties of drugs. This phase 3b, open-label study in HIV-1–infected women evaluated the impact of pregnancy on the pharmacokinetics of the non-nucleoside reverse transcriptase inhibitor rilpivirine when given in combination with other antiretroviral agents.

Material & Methods: HIV-1–infected pregnant women (18-26 weeks gestation) receiving rilpivirine 25 mg once-daily as part of combination antiretroviral therapy at the time of study entry were enrolled. Blood samples (collected over the 24-hour dosing interval) to assess the plasma pharmacokinetics of total and unbound rilpivirine were obtained at clinic visits during the second and third trimesters of pregnancy (24-28 and 34-38 weeks gestation, respectively) and 6-12 weeks postpartum. Cord blood and maternal plasma samples were taken at the intrapartum visit. Rilpivirine pharmacokinetic parameters (area under the plasma concentration-time curve over 24 hours [AUC24h], maximum plasma concentration [Cmax], minimum plasma concentration [Cmin]) were derived using noncompartmental analysis and compared between pregnancy and postpartum using linear mixed effects modeling. Antiviral response (HIV-1 RNA <50 copies/mL), immunologic response, and safety were assessed at each visit.

Results: Of 19 women enrolled, 15, 13, and 11 had evaluable pharmacokinetic results for the second trimester, third trimester, and postpartum visits, respectively. Total and unbound (pharmacodynamically active) rilpivirine exposure was lower during pregnancy versus postpartum (total rilpivirine: 29%-31% [AUC24h], 20%-21% [Cmax], and 35%-42% [Cmin] lower; unbound rilpivirine: 22%-25% [AUC24h], 10%-15% [Cmax], and 32%-36% [Cmin] lower). At study entry, 12 of 19 (63.2%) women were virologically suppressed; suppression was maintained in 100% (13/13) of women with available data at the third trimester visit and 83.3% (10/12) at the postpartum visit. One woman had virologic failure postpartum (suspected non-adherence postpartum; completed study) and another discontinued due to suspected virologic failure at study entry (viral load was resuppressed at time of withdrawal). Mean CD4+ count increased over time. Twelve infants were born to the 12 women who completed the study (7 discontinued); no perinatal viral transmission was observed (among 10 infants with available data) and there was 1 premature birth (34 weeks gestation). Median cord/maternal plasma ratio of total rilpivirine was 55.27% (range: 43.04%-97.52%; n=8). Rilpivirine was generally well tolerated; there were no adverse events leading to discontinuation and none considered possibly related to study drug. Overall, 7 of the 12 infants born to women who completed the study experienced ≥1 adverse event, all grade 1 or 2 in severity.

Conclusions: Rilpivirine exposure was lower during pregnancy (and similar between the second and third trimesters) versus postpartum; this decrease was less pronounced for unbound (active) rilpivirine. Despite decreased rilpivirine exposure, treatment was effective in preventing mother-to-child transmission and suppressing HIV-1 infection in pregnant women. Rilpivirine was generally well tolerated. Findings suggest that rilpivirine 25 mg once-daily, as part of individualized combination antiretroviral therapy, may be an appropriate option for HIV-1–infected pregnant women.
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HIV-related pill aversion in pregnant women: Characterizing a novel barrier to adherence

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Objective: Adherence to antiretroviral medications during pregnancy is the cornerstone of prevention of mother-to-child transmission of HIV. Pill aversion, defined as the difficulty swallowing pills with no structural or physiologic explanation as well as an anxiety associated with pill swallowing, appears to be a common experience in HIV-infected pregnant women. While we observe pill aversion symptoms in the greater HIV population, we hypothesized pregnancy symptoms further complicate the experience of taking pills and leads to conditioned associations. Given the absence of data about this disorder, we aimed to characterize the experience of pill aversion among pregnant or recently pregnant HIV-infected women.

Methods: This was a mixed methods, hypothesis-generating observational study of HIV-infected pregnant and non-pregnant individuals at a single tertiary care center. Participants completed anonymous questionnaires about their HIV history, the experience of swallowing their highly active antiretroviral therapy (HAART) pills, and their pregnancy-related symptoms (for pregnant or recently pregnant participants). Descriptive statistics, bivariable analyses, and qualitative analysis techniques were used to characterize the pill-taking experiences of this population.

Results: Of 243 overall participants, 19 were currently pregnant or less than 12 months postpartum and were prescribed HAART, and are the focus of this analysis. Pregnant women were largely non-Hispanic black (84.2%) and received public insurance (73.6%). The most common emotions expressed about HIV pill-taking were “Taking my HIV pills makes me feel badly about having HIV” (41.2%) and “I have upsetting or scary images about HIV pills” (27.8%). Nearly half (42.1%) of women reported problems with HAART pill-swallowing, including feeling that the pill is stuck in the throat (26.3%), gagging (21%), choking (10.5%), and nausea (15.8%); nearly 40% reported skipping pills due to these symptoms. Those who reported negative feelings about pills or having had upsetting or scary images about pill swallowing (80% vs. 23%, p=0.04) were more likely to report skipping pills than those who did not have those emotions. Regarding pregnancy-specific symptoms, 17.7% reported greater difficulty swallowing pills while pregnant and 33.3% reported reduced pill aversion once pregnancy-specific symptoms decreased. Qualitative data suggested relaxation and anxiety management reduced pill aversion symptoms and facilitated pill swallowing.

Conclusions: Pill aversion during pregnancy is a potential novel barrier to prevention of mother to child transmission of HIV. Understanding factors that contribute to successful adherence to HAART is crucial to reducing the risk of perinatal HIV transmission.

Abstract 37

Relationship between intimate partner violence and prevention of maternal-to-child transmission of HIV

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Background: Pregnant women with HIV are at increased risk of experiencing intimate partner violence (IPV). The objective was to determine whether IPV is associated with uptake of interventions aimed at prevention of maternal to child transmission (PMTCT).

Materials & Methods: This was a retrospective cohort study of HIV-infected pregnant women enrolled in a specialty perinatal HIV clinic who
delivered between 2007 and 2014. Clinical records were reviewed to assess factors associated with risk of vertical HIV transmission, including antenatal visit attendance, antiretroviral [ARV] adherence, time until virologic suppression after starting ARVs, achievement of an undetectable HIV RNA by 36 weeks gestation, HIV RNA at delivery, and preterm birth. All women received care by a social worker and/or psychologist and underwent assessment of IPV status and risk. Women who self-reported experiencing IPV were compared to those who had not. Chi-square tests, Fisher’s exact, and Wilcoxon rank sum were utilized as appropriate.

Results: Of 215 women enrolled in care, 91.6% (N=197) had a documented history of IPV status. Of these women, 13.7% (N=27) reported experiencing IPV during pregnancy. Women who reported IPV were more likely to be multiparous but less likely to be married, employed, insured, foreign-born, or have education beyond high school compared to women who did not report IPV. Women with IPV were also less likely to have disclosed their HIV status to their sexual partner (53.9% vs 76.1%, p=0.02). Regarding PMTCT measures, women who reported IPV were more likely to miss ARV doses (62% vs 38%, p=0.04) and experience a greater time to virologic suppression [10 weeks (6-14) vs 6 weeks (5-12), p=0.03].

Conclusions: Maternal experience of IPV during a pregnancy complicated by HIV is associated with decreased uptake of PMTCT interventions. Pregnant HIV-infected women experiencing IPV showed poorer adherence to ARVs with subsequent delay in achievement of virologic suppression. HIV-infected women who are victims of IPV represent a vulnerable population who may require additional support to reduce the risk of MTCT.

Abstract 38

High unmet need and factors associated with utilization of contraceptive methods among women from the Digo community of Kwale, Kenya

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Background: Utilization of contraceptive methods has been associated with improved maternal and child health (MCH) outcomes. Unfortunately, there has been sub-optimal uptake of contraceptive services in the developing world despite significant resources being dedicated accordingly. It is imperative to granulate factors that could influence uptake and utilization of contraception.

Methodology: Between March and December 2015, we conducted a mixed-methods cross-sectional study among women of reproductive age (18-45 years) from a pre-dominantly rural coastal Kenyan community. Qualitative approaches involved focus group discussions as well as a series of key-informant interviews. We also administered a sexual and reproductive health survey questionnaire at the household level.

Results: We interviewed 745 women from 15 villages in Kwale County. The median (interquartile range, IQR) age was 29 (23-37) while 76% reported being currently in a marital union. Eighty seven percent and 85% of respondents reported ever attending school and ever giving birth, respectively. Respondents who had ever attended school were more than twice as likely to be using contraceptive methods [Odds Ratio, OR = 2.1, 95% confidence interval, CI: 1.4-3.4, P = 0.001] while those who had ever given birth were five times as likely to be using these methods [OR = 5.0, 95% CI: 1.7-15.0, P = 0.004]. The odds were similarly high among women who reported attending antenatal care (ANC) [OR = 4.0, 95% CI: 1.1-14.8, P = 0.04] as well as those who expressly stated that they did not want any more children or wanted to wait longer before getting another child [OR = 6.7, 95% CI: 3.3-13.8, P<0.0001]. Interviewees reported deferring to the
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‘wisdom’ of an older maternal figure in the decision-making process.

Conclusions: Uptake and utilization of contraceptive methods among Digo women from Kwale, Kenya is positively associated with demand-side factors including educational attainment, previous birth experience, ANC attendance and a negative future fertility desire. Interventions to improve contraceptive services should focus on engaging dominant maternal figures in the community.

Abstract 39

Breastfeeding Policy For Us Women Living With HIV: An Ethical Analysis Of The Evidence

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Background: US HIV guidelines recommend against breastfeeding (BF) by women living with HIV (WLHIV), regardless of viral load (VL) and combination antiretroviral therapy (cART), to eliminate risk of breastmilk mother-to-child-transmission (MTCT). However, BF decreases morbidity and mortality for children and women, and is an important reproductive right. Our previous work has shown that many WLHIV in the US desire to BF, and health care providers report that cultural stigma, awareness of the benefits of BF, and fear of interfering with maternal-infant bonding all influence WLHIV’s feeding choices. In this setting, US policy may prompt surreptitious BF or loss to follow-up, thereby increasing risk to infants. This has prompted some to adopt a harm reduction approach, although our data indicate that most providers are not willing to support BF in this population without professional society opinion or government guidelines endorsing this practice. We sought to evaluate the medical evidence for categorically prohibiting BF for US WLHIV and to assess whether the policy itself is ethically sound.

Methods: Our empirically informed ethical analysis: (1) reviews latest data on MTCT risk and BF benefits for HIV-exposed infants in high income countries; (2) discusses data regarding maternal health risks from not BF with attention to epidemiology of WLHIV; (3) explores ethical challenges to a universal prohibition of BF by US WLHIV with regard to the obligations of health policy to protect vulnerable parties, eliminate health disparities and justify any significant compromise of personal freedom with commensurate promotion of the greater good.

Results: (1) MTCT from short-term exclusive BF is less than 1% with cART and undetectable VL, even in low-resource settings. Formula-fed HIV-exposed infants have increased risk of prematurity, low birthweight, sudden infant death syndrome (SIDS), and necrotizing enterocolitis (all causes of US child mortality); and diabetes, asthma, and obesity (major sources of US child morbidity). Considering the increased risk of SIDS from not BF to the risk of MTCT from BF, it is not certain whether infants of cART-adherent US WLHIV would be helped or harmed by BF. (2) Without BF, WLHIV have increased risk of breast/ovarian cancer, hypertension, diabetes, heart disease, depression and unintended pregnancy. The risk of many of these conditions is further elevated for the largely underserved population of WLHIV as a result of the social determinants of health. (3) HIV-exposed infants and WLHIV are vulnerable parties who experience higher rates of adverse health outcomes than the baseline US population. This suggests that they may be disproportionately harmed by not BF, which in turn may reinforce health disparities. Given low MTCT with cART and BF health outcome data, there is insufficient evidence to support a policy that uniformly revokes some women’s right to BF.

Conclusion: There is extremely low MTCT from exclusive BF with cART and undetectable VL. Given potential benefits of BF for WLHIV and their infants, eliminating choice is ethically problematic. We propose a nationwide discussion to critically re-evaluate the medical and ethical bases of prohibiting BF for select cART-adherent, virally suppressed WLHIV.

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Contraceptive Use Among HIV-infected and Noninfected Women in the United States

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Background: There is limited information on the patterns and trends of contraceptive use among women living with HIV, including those on antiretroviral therapy (ART), compared with those of non-infected women in the United States. Such information is needed to help identify potential gaps in care and to target future unintended pregnancy prevention efforts.

Materials and methods: We used a large U.S. nationwide database to identify women ages 15-44 years who had health care claims for prescription drugs. We used diagnosis, procedure, and national drug codes to assess current permanent and reversible prescription contraception use in 2008 and 2014 among women continuously enrolled during 2003-2008 or 2009-2014. Women with no codes were considered non-users; these may have included women using non-prescription methods, such as condoms. We calculated prevalence of contraceptive use by HIV status, and among those with HIV, by use of ART. We used polytomous logistic regression to calculate adjusted odds ratios (aOR) and 95% confidence intervals (CI) for permanent sterilization, long acting reversible contraception (LARC) and reversible hormonal contraception (HC) compared to no method.

Results: In both 2008 and 2014, a higher proportion of HIV-infected women used no prescription contraceptive method (2008: 82.5%; 2014: 71.1%), compared with non-infected women (2008: 71.2%; 2014: 60.2%), although contraceptive use increased among both HIV-infected and non-infected women from 2008 to 2014. In 2014, HIV-infected women using ART were statistically significantly more likely to use no method (76.8% versus 64.1%), and significantly less likely to use HC (11.0% versus 22.7%), compared to HIV-infected women not using ART. Controlling for demographics, history of chronic medical conditions, pregnancy history and time frame, women with HIV had significantly lower odds of using LARC (aOR 0.67; 95% CI 0.52-0.86) or HC method (aOR 0.59; 95% CI 0.50-0.70) compared to no method. Those receiving ART had significantly lower odds of using HC compared to no method (aOR 0.45; 95% CI 0.32-0.64). There was no significant difference in permanent contraceptive use by HIV status or ART use.

Conclusions: Despite the safety of reversible contraceptives for women with HIV, use of prescription contraception continues to be significantly lower among HIV-infected women, particularly those who are receiving ART.

Abstract 41

Predictors of HIV status disclosure in pregnancy and postpartum

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Intro: HIV-positive women face unique challenges during pregnancy, including the disclosure of HIV status to the father of the baby (FOB) and others in their social network. Little research has addressed the factors predicting disclosure in the prenatal period, or the factors predicting subsequent disclosure in the postpartum period.

Methods: A retrospective analysis of women receiving through the Johns Hopkins HIV in Pregnancy Program from 2003-2014 was conducted. Data was abstracted from the
electronic medical record. Chi square, t-test, and stepwise logistic regression analysis were performed using SPSS (IBM), with \( p \leq 0.05 \) indicating statistical significance.

**Results:** There were 346 women with the following demographic characteristics: Mean age, 35.76.9. Mean CD4 count, 462260.9 at pregnancy entry, 502.2275.4 at delivery. Ethnicity, 64.7% African America, 17.7% Caucasian, 11.7% African, and 6.1% other. Marital status, 75.5% single, 24.5% married. Citizenship, 84.8% U.S. citizen, 15.1% immigrant. Risk factors, 82.6% heterosexual, 19.0% intravenous drug use, 7.8% perinatal, 6.6% blood exposure. 21.4% of women first tested positive for HIV during pregnancy.

Prenatally, 81.6% of all women disclosed to the FOB and 70.9% disclosed to others. Of all women who did not disclose in the prenatal period, 21.1% disclosed to the FOB and 6.7% disclosed to others prior to the postpartum visit; in the subgroup of women who had received a prenatal HIV diagnosis, 50.0% of women disclosed to the FOB postpartum.

In significant stepwise logistic regression models for disclosure, knowledge of the FOB status (aOR=1.65, 95% CI 1.45-1.87, \( p<0.001 \)) and pregnancy intendedness (aOR=1.13, 95% CI 1.00-1.28, \( p=0.045 \)) predicted prenatal FOB disclosure, age (\( p=0.009 \)) & ethnicity (\( p=0.019 \)) predicted prenatal disclosure to others, and HIV diagnosis during pregnancy (aOR=1.67, 95% CI 1.32-2.13, \( p<0.001 \)), being afraid of one’s partner or others (aOR=1.60, 95% CI 1.06-2.45, \( p=0.027 \)), and pregnancy intendedness (aOR=2.25, 95% CI 1.65-3.06, \( p<0.001 \)) predicted postpartum FOB disclosure.

**Discussion:** Prenatally, demographic factors predict disclosure to others, whereas social factors predict disclosure to the FOB. Postpartum disclosure is predicted by pregnancy intendedness and prenatal HIV diagnosis, but also by fear of one’s partner or others, indicating a vulnerable subpopulation of disclosing mothers. These data suggest that focused interventions to facilitate and support disclosure may need to be targeted depending on specific goals and time period.

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**Abstract 42**

**High rates of sexual trauma history and food insecurity among HIV-positive pregnant women in Toronto, Canada**

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**Background:** Clinical care of HIV-positive pregnant women is complex, and there are many issues to consider beyond medical management. A substantial proportion of women have myriad psychosocial needs that must also be addressed.

**Materials and Methods:** We performed a retrospective review of all women cared for in the Positive Pregnancy Program (P3) in Toronto, Canada from January 2011-December 2016. We assessed rates of, and demographic factors associated with, food insecurity and histories of sexual trauma.

**Results:** During the study period there were 139 pregnancies, of which 18 were repeat pregnancies in the same individual. Therefore 121 pregnancies were used for this analysis. Ninety-eight women were Black (86 of African descent and 12 Caribbean), 16 Caucasian, four Asian and three Hispanic. Within the total cohort, 75/121 (62%) of women had food insecurity issues. Black women were significantly more likely to experience food insecurity than non-Black women (54% vs. 8%, \( p=.042 \)), with an odds ratio of 2.56 (95% CI 1.02, 6.46). Within racial groups, 66% of Black women and 43% of non-Black women had histories of sexual trauma. Black women were significantly more likely to have a history of sexual trauma compared to non-Black women (54% vs. 8%, \( p=.042 \)), with an odds ratio of 2.85 (95% CI 1.10, 7.32). Within racial groups, 60% of Black women and 39% of non-Black women had a
history of sexual trauma. Of Black women, food insecurity and trauma history were both more frequent in Caribbean vs. African women.

Conclusions: Food insecurity and histories of sexual trauma are both frequently seen in HIV-positive pregnant women. Engagement in prenatal care offers an opportunity to address these issues. Providers caring for this population should have a heightened awareness of the likelihood of these issues, and be prepared to offer additional services (social work, psychiatry) to assist with their management.

Abstract 43

Efficacy of the Quadrivalent HPV Vaccine Against Cervical Dysplasia in a Cohort of HIV-Positive Females

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Background: HIV-positive women experience higher rates of HPV infection and cervical cancer than their HIV-negative counterparts. HPV vaccination has proven efficacious in young HIV-negative females; however, efficacy of the vaccine is less well understood in HIV-positive females. Other vaccines have shown reduced immunogenicity and efficacy in HIV-positive individuals. We therefore hypothesized that HIV-positive women would experience a higher incidence of cervical intraepithelial neoplasia 2 and greater (CIN2+) post vaccination than that seen in HIV-negative women post vaccination.

Materials & Methods: HIV-positive females received three doses (0, 2, and 6 months) of quadrivalent HPV (qHPV) vaccine in 14 study centres across Canada. Participants provided demographic and health data and underwent pelvic examination including cervical cytology and HPV DNA sampling every 6 months for the first 2 years of follow-up and annually thereafter. Cervical cytology, conducted in a reference laboratory, was reported by Bethesda criteria and HPV DNA samples were tested for 36 genotypes by Linear array assay. Participants were referred for clinical colposcopies as per the standard at their institution. No tests of hypothesis were conducted in the present analysis due to the low number of cases observed.

Results: 204 females received at least one dose of vaccine, had normal baseline cytology and underwent follow-up pelvic examination. At baseline, the median age of participants was 39 years (IQR: 34-46), median CD4 count was 523/mm3 (IQR: 390-696), median CD4 nadir was 231/mm3 (IQR: 122-340), and 76% had a suppressed HIV viral load (<50 copies/mL). The total person-years of follow up were 694.3 and the median follow up per person was 2.4 years (IQR: 2-5). Only 2 cases of CIN2+ occurred during the study period resulting in a CIN2+ incidence rate of 0.29 per 100 person-years (95% CI: 0.03-1.04). One woman was experiencing HPV 16 infection that had persisted since study enrolment and one woman was infected with HPV 39 and 52. Neither of the women with CIN2+ exhibited new acquisition of qHPV types and therefore these lesions do not represent vaccine failures.

Conclusions: The rate of CIN2+ within our HIV-positive cohort was exceptionally low at 0.29 per 100 person-years. Additionally, none of the CIN2+ cases in our study reflected new acquisition of vaccine containing HPV types, suggesting excellent short-term efficacy of the vaccine in HIV-positive women. As one of the first studies of HPV vaccination among HIV-positive women, these results will inform screening and vaccination recommendations for this vulnerable population.
Abstract 44

The Effect of Iron Deficiency on Hepatic Fibrosis among HIV-HCV Co-infected Men and Women

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Background: Experimental and clinical studies suggest that chronic iron deposition increases the risk of liver fibrosis and cirrhosis. We aimed to determine if iron deficiency protects against hepatic fibrosis progression in HIV-HCV co-infected men and women. We hypothesized that since women may have lower rates of fibrosis progression and are at increased risk for iron deficiency, they will have a lower risk of liver fibrosis progression compared to men.

Methods: The Canadian Co-infection Cohort is a prospective multicentre cohort study of 1635 co-infected patients from 18 sites in Canada, with visits scheduled every 6 months. We analyzed HCV RNA positive participants with available serum ferritin values and without significant liver fibrosis or end-stage liver disease (ESLD) at baseline. We evaluated the association of iron deficiency (serum ferritin < 30 µg/L) with the incidence of significant fibrosis (aspartate to platelet ratio index (APRI) > 1.5, FIB-4 > 3.25, or ESLD) by sex, and used multivariable Cox models to adjust for potential confounders.

Results: Overall, 668 participants (455 men and 213 women) with a median age of 44 years; median duration of HCV infection, 17 years; median baseline APRI, 0.5; 22%; Aboriginal ethnicity, 22% (35% women and 16% of men) were included in the study. Of these, 27% of women and 8% of men were iron deficient. Females and Aboriginals were more likely to be iron deficient (odds ratio (95% CI): 4.2 (2.6 – 6.9) and 2.6 (1.6 – 4.3), respectively). In total, 198 participants (136 men and 62 women) developed significant fibrosis over a median follow-up of 3.5 years. The effect of iron deficiency appeared to differ in women and men so further analyses were stratified by sex. After adjustment, iron deficiency was not associated with liver fibrosis in either men (adjusted hazard ratio (aHR) = 1.0, 95% CI, 0.5 – 1.9) or women (aHR = 0.7, 95% CI, 0.3 – 1.4). However, among women, Aboriginals had a lower risk of liver fibrosis (aHR = 0.5, 95% CI, 0.2 – 0.9). Baseline APRI was significantly associated with liver fibrosis in both sexes.

Conclusions: Iron deficiency does not appear to be associated with a lower risk of liver fibrosis progression in either sex but instead may be acting as a marker of Aboriginal ethnicity. Among women in particular, Aboriginal ethnicity appeared to be protective for liver fibrosis progression. Understanding the mechanisms behind such a protective effect may yield insights into the pathogenesis of HCV-related liver disease.

Abstract 45

Comorbidity Risk Scores in Women Living with HIV Aged 45 and Older in Canada

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Background: People living with HIV (LWH) have higher rates of comorbidities at younger ages. Data on validated risk prediction scores in aging women LWH is scarce. We looked at various risk prediction scores in mature women LWH in Canada.

Methods: All women LWH aged ≥45 y enrolled in the CARMA (Children and Women: AntiRetrovirals and Markers of Aging) cohort study with a visit between 2008 and 2016 (N=96) were retrospectively reviewed for this study.
Abstract 49

Demographic, clinical and biological data were extracted from the CARMA database and medical charts. Participants’ risk of developing various comorbidities were calculated for several validated risk prediction scores whenever the required data was available. These included: Framingham Score for cardiovascular disease (CVD), the Aspartate aminotransferase-to-Platelet Ration Index (APRI) to assess liver fibrosis, the Veterans Aging Cohort Study (VACS) Index to predict 5-year risk of all-cause mortality in persons LWH, and the risk score for chronic kidney disease (CKD) for people LWH.

Results: Ninety (90) women LWH had the required data available to calculate at least one of the risk scores. Median (range) age was 52 (45-69) years; 52% self-identified as Caucasian, while 26% identified as Indigenous. Prevalence of HCV antibody was 37%, of those, 61% were HCV RNA+. Prevalence of previous osteoporosis diagnosis was 14%. Of the 62 women LWH for whom the required data was available, mean ± SD Framingham risk score was 10.3 ± 4.3, corresponding to 6% risk of CVD in the next ten years. Mean CKD risk score was 10.2 ± 5.3 (for N=78 with data), corresponding to high risk (17%) of CKD in the next five years. The median VACS Index score was 27 (IQR 12-14) among 89 women LWH, predicting a 5-year mortality risk of 10.2% (high). Of the same 89 women LWH, 33 (37%) had APRI scores ≥ 0.5 indicative of liver fibrosis stage ≥ F2. Only 17/33(52%) of them were HCV RNA+, suggesting causes other than the HCV, such as fatty liver, must be sought for liver damage in this population.

Conclusions: Our results in this relatively young study group suggest that women LWH are at high risk of various comorbidities, including CVD, liver disease, osteoporosis, and kidney disease. The APRI scores showed liver disease prevalence above that explained by HCV. Health care providers should assess and treat HCV early in this middle-aged often co-infected population before fibrosis develops, and maximise control of risk factors for other comorbidities.

Abstract 46

Efficacy of the Quadrivalent HPV Vaccine Against Genital Warts in a Cohort of HIV-Positive Females

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Background: HIV-positive women experience higher rates of HPV infection and genital warts than their HIV-negative counterparts. Genital warts are one of the most frequent sexually transmitted infections. They cause a psychological burden and often require painful treatment. HPV vaccination has proven efficacious in young HIV-negative females; however, efficacy of the vaccine has not been demonstrated in HIV-positive females. We hypothesized that HIV-positive women would experience a higher incidence of genital warts post-vaccination than HIV-negative women.

Materials & Methods: As part of a safety and immunogenicity study of the quadrivalent HPV (qHPV) vaccine in HIV-positive girls and women, the subjects, in 14 study centres across Canada, received three doses (0, 2, and 6 months) of qHPV vaccine. Participants provided demographic and health data and underwent pelvic examination including cervico-vaginal HPV DNA sampling every 6 months for the first 2 years of follow-up and annually thereafter. HPV DNA samples were tested for 36 HPV genotypes by the Linear array (Roche). Follow-up for case determination began on day 1 after the first vaccine dose. No tests of hypothesis were conducted in the present analysis due to the low number of cases observed.

Results: 275 females received at least one dose of vaccine and underwent pre-vaccination and post-vaccination pelvic examination. 13 women had genital warts at the time of first vaccination.
and thus were excluded, leaving 262 for follow-up analysis. At baseline, median age was 39 years (IQR: 34-45), median CD4 count was 500 cells/mm³ (IQR: 382-682), median CD4 nadir was 230 cells/mm³ (IQR: 120-334), and 72% were HIV virologically suppressed (<50 copies/mL). Total person-years of follow-up were 851 and the median follow-up per person was 2.3 years (IQR: 2-5). 18 women were diagnosed with genital warts during the study period (incidence rate: 2.12 per 100 person-years [95% CI: 1.25-3.34]). 7 of the 18 total cases (39%) occurred prior to completion of the vaccine series. As an additional endpoint, 8 cases of newly acquired persistent HPV6/11 were observed (incidence rate: 0.94 per 100 person-years [95% CI: 0.4-1.9]), 7/8 of which were HPV6.

In order to mimic enrolment criteria of a vaccine study in an HIV-negative cohort, we studied a subset of 76 women (mean age 38.8, baseline qHPV+ 17.3%) with no prior history of genital warts and fewer than 5 lifetime sexual partners. In this subset there were 3 cases within 237.9 person-years of follow-up resulting in an incidence rate of 1.3 per 100 person-years (95% CI: 0.3-3.7) compared to published data from the HIV-negative cohort (mean age=20.2, baseline qHPV+=14.3%) which reported an incidence rate of 0.7 per 100 person-years.

Conclusions: When evaluating the development of genital warts post-vaccination in our HIV-positive cohort, the incidence rate was 3 times greater than those seen in the placebo arms of HIV-negative vaccine trials. However, when comparing a lower risk subset of our HIV-positive cohort that is more comparable to the HIV-negative participants, the incidence was 2 times greater but this difference was not statistically significant. Further follow up of this cohort is required and is ongoing.

Abstract 47

HIV alters PTSD symptomology and psychophysiology in traumatized women

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Background: HIV-infected individuals are exposed to high rates of trauma that can lead to the development of posttraumatic stress disorder (PTSD). However, it remains unclear how HIV infection influences PTSD presentation in trauma-exposed individuals. Furthermore, the lack of knowledge surrounding how HIV status influences the presentation of PTSD may limit the generalizability of behavioral and pharmacological treatment strategies to PLWH and PTSD. Furthermore, because HIV has been linked to cognitive deficits, we tested the hypothesis that PLWH would show deficits in physiological learning as assessed in a fear-conditioning paradigm.

Methods: All participants (n=42, 25 HIV-, 17 HIV+) were women between 18 and 48 years old recruited from Grady Memorial Hospital in downtown Atlanta, GA, and provided informed consent. All women participated in a clinical interview conducted by a trained clinician on all psychological assessment instruments. Lifetime trauma history was determined by the 14-item Traumatic Events Inventory (TEI), which assesses for experiencing and witnessing traumatic events. Childhood trauma history was assessed via the Childhood Trauma Questionnaire (CTQ). The PTSD Symptom Scale (PSS) was used to determine current overall PTSD symptoms, as well as avoidance, re-experiencing, and hyperarousal sub-clusters. A sub-set of subjects also participated in a fear-potentiated startle (FPS) paradigm to assess for psychophysiological hyperarousal previously described to be present in PTSD, as well as deficits in physiological learning.

Results: Women with HIV (HIV+) exhibited higher levels of re-experiencing (F=12.19, p=0.001) and avoidance (F=8.12, p=0.007) PTSD symptoms compared to the HIV- group, after controlling for trauma exposure. HIV+ women also showed impaired fear conditioning in the FPS paradigm compared to the traumatized controls (interaction effect of HIV and Trial Type, F=7.34, p=0.03). While the HIV- women showed a typical increase in startle magnitude to the CS+ that was previously paired to an aversive stimulus (F=23.75, p=0.003), the HIV+ women exhibited a deficit in fear conditioning, even after controlling...
for trauma exposure (p>0.05). Specifically, HIV+ women did not show FPS to the danger signal (CS+).

Discussion: Taken together, these preliminary data indicate that HIV is associated with altered PTSD symptom presentation and fear learning deficits in traumatized women. Furthermore, these data suggest that HIV is associated specifically with symptoms of re-experiencing and avoiding the traumatic event; rather than more general trauma-related psychopathology such as hyperarousal. The finding that women with HIV also show psychophysiological fear learning deficits also has treatment implications for PLWH, as the most effective evidence-based treatments for PTSD are based on fear learning mechanisms.

Abstract 48

Prevalence and predictors of early menopause in a cohort of HIV-infected climacteric women: comparison with sero-negative patients and effects on BMD

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Background: Worldwide HIV-infected women are living longer as a results of HAART exposure, so that a larger amount of patients are transitioning through menopausal status. Few studies and with controversial results, inferred about the age of onset of menopause in HIV-infected patients compared to uninfected women. The aim of this study was to investigate the differences between climacteric HIV-infected patients and negative controls, to analyze risk factors associated to early menopause and study the effects of this status on bone mineral density.

Methods: A cross sectional study was designed enrolling HIV-infected and uninfected women with a documented menopausal status. Menopause was defined as having more than 1 year since the last menstrual period. Early menopause was defined as the onset of menopause at before 45 years of age; whilst premature menopause at <40 yrs. Patients with surgical menopause were excluded from the analysis. T-test and Chi-square test were used to compare means, and frequencies respectively. Logistic regression was used to find predictors of early menopause and bone loss in both arms.

Results: 150 women were enrolled (71 HIV+ and 79 HIV-). Median age was 54 years (C.I.49-59) and 53 (C.I 51-56.5) in HIV-infected an negative controls respectively (p=0.95); most of them were Caucasian (88.7% of HIV+ vs 98.7% of controls p=0.01 ). As expected we found smoke habit more expressed in HIV+ women (60.4% vs 6.3 p<0.001) and they have a lower BMI (22.6 vs 26 Kg/m² p<0.001). 15.5% of HIV+ were co-infected with HCV, and 12.7% were active intravenous drug users. In our study median age of onset of menopause were similar in both groups (48y, C.I.47-52 in HIV+ vs 49, C.I. 47-52 in controls p=0.08); however we found a higher rate of early menopause in seropositive women as compared to controls (33.8% vs 19.0% p=0.03). Moreover 12.7% of HIV+ were diagnosed with premature menopause (vs 5.1% of controls). At logistic regression HIV+ status was independently associated to onset of early menopause (OR 2.34 C.I 1.05-5.21 p=0.03).

Bone disease was high prevalent in both groups, but despite the similar age HIV+ women, had a higher rate of bone loss. In fact at lumbar spine (L1-L4) 74.6% of them had pathological BMD vs 57% of controls (p=0.039). Predictors of spine bone loss in study group were tenofovir exposure (OR 6.15 C.I. 1.46-25.9 p=0.01) and the years from climacteric status (+1yr OR 1.15 C.I. 1.01-1.31 p=0.03) whilst in general population only BMI was associated to pathological spine BMD (OR 0.84 C.I. 0.76-0.94 p=0.002).

Conclusions: Our data show that HIV+ women are at higher risk to experience early and premature menopause as compared to general population. This findings could be explained also with the higher prevalence of risk factors (lower BMI, smoke habit, use of intravenous drugs). Climacteric patients with HIV have also a worse bone outcome, probably because in the multifactorial pathogenesis of bone disease,
exposure to HAART (TDF in particular) is to be considered an additional cause of damage.

Abstract 51

National Study Of HIV Positive Women Living In Australia

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Background: Women comprise 10% of the HIV-infected population in Australia, yet there is a paucity of data related to the demographics of this population, their social situation, reproductive history, treatment outcomes, barriers to linkage and retention in care and treatment outcomes.

Methods: Clinicians from every state and territory (including primary care, sexual health clinics and public hospitals) were invited to complete a 58-item de-identified online survey for HIV+ women in their care. A descriptive analysis of the interim results was completed.

Results: Interim analysis of 323 surveys completed shows of the 323 women, 52 different countries of birth were represented, with 133/323 (41%) speaking a language other than English at home (22 different languages). Most (87%) cohabit. The majority live in private rental (36%) followed by home ownership (30%). One-third of women worked full time, and 20% reported their occupation as home duties. Nearly two thirds (191/323 59%) were in a long term relationship, 40% with an HIV- partner and 17% with a HIV+ partner. More than 50% care for dependent children. Almost half (156/326) have had a HIV peer support group recommended but have declined to engage. 306/323 (95%) of women were on treatment, and 93% had a viral load <50 copies/mL. Of the women on treatment, 60% started with a CD4 count <350 cells/uL. 81/323 (25%) had at least one treatment interruption and 235/323 (73%) have had at least one switch to their antiretroviral regimen, most commonly for side effects followed by simplification, and 9% for virological failure. 246/323 (76%) have been pregnant at least once, the most recent pregnancy from unprotected intercourse with their HIV- partner in 29% or with their HIV+ partner in 17%; very few conceived via self insemination (3%) or assisted reproduction (1%). More than half have had a cervical smear within 12 months and only 3% of women have never had a smear. The time between diagnosis and linkage to care was <28 days for 65% of women. Barriers to linkage to care included fear of disclosure, transport, financial, geography and language barriers. Most (70%) had been retained in care (defined as seen twice in the past 12 months). 73% of women had not missed an appointment in the last 12 months; reasons for missed appointments included family commitments, work commitments and transport difficulties. Of the women not retained in care; carer responsibilities were identified as the predominant reason.

Conclusion: This is the largest, most comprehensive study dedicated to HIV + women in Australia to date, covering demographic, social, reproductive and HIV-related care issues including linkage and retention in care. HIV+ women in Australia are a diverse group, who are relatively immunosuppressed prior to commencing treatment but who can achieve high rates of virological suppression and excellent rates of engagement with care despite the challenges of carer responsibilities, work commitments, transport and financial issues.
### Abstract 52

**HIV Care Continuum Outcomes In Ethiopia: Surrogates For Unaids 90-90-90 Targets**

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**Background:** Ethiopia has pledged to the UNAIDS 90-90-90 targets of ending HIV/AIDS by 2020. How the target is progressing was not assessed. We assessed HIV care continuum outcomes as surrogate markers for the 90-90-90 targets.

**Methods:** Data were collected from a 13 years retrospective cohort from anti-retroviral therapy (ART) clinic at Jimma University Teaching Hospital, Southwest Ethiopia. For measuring the UNAIDS diagnosis target, prevalence rate of delayed HIV diagnosis was considered as a surrogate marker. For the treatment target, number of people on pre-ART, number of people who discontinued from ART or transferred out, and number of people who had fair or poor adherence were used as surrogate markers. For the viral suppression target, number of CD4 counts and/or WHO clinical stages were used to assess immunological, clinical and treatment successes and to further show the extent of viral suppression. Summary statistics, trends and estimated survival time reported.

**Results:** 8172 patients were enrolled for HIV cares in the period between 2003-2015. For the diagnosis target, 34.5% patients knew their status early (females contributed for 35.7%). For the treatment target, 65% patients received ART, 1154 (21.9%) patients discontinued from ART (females accounted for 54.8%), 1015 (19.3%) patients on ART transferred out to other sites (females accounted for 54.6%), 916 (17%) of patients on ART had fair or good adherence. For the virological suppression target, 80.7, 80.3 and 65.8% of patients had immunological, clinical and treatment success displaying an estimated 66% of patients achieved the target.

**Conclusions:** The finding reflects that an estimated 35% of patients knew their status timely, 65% of diagnosed patients received treatment and 66% of patients on ART achieved viral suppression. This is very far from the UNAIDS 90-90-90 targets underscoring the need for rigorous innovative methods such as unmanned aerial systems (or drones) for transporting laboratory specimens, immediate or same day ART initiation, community distribution of ART, runaway packs during conflict, and use of GenXpert for HIV viral load testing would significantly help to hit the target.

### Abstract 53

**Incidence of autoimmune diseases in Female HIV/AIDS patients: a nationwide population-based study in Taiwan**

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**Background** When human immunodeficiency virus (HIV) infects a host, it could induce production of autoantibodies due to molecular mimicry between HIV protein and self-antigens, which may contribute to the development of autoimmune diseases. However, it is not known if the incidences of autoimmune diseases are higher in female individuals living with HIV infection or acquired immunodeficiency syndrome (AIDS). In this study, we investigated the incidences of autoimmune diseases among female people living with HIV/AIDS (PLWHA) in Taiwan during 2000–2012.

**Methods** The Taiwan National Health Insurance Research Database was used to identify female
The incidence densities of systemic and organ-specific autoimmune diseases were calculated, and age-, sex-, and period-adjusted standardized incidence rates (SIRs) were obtained by using 2 million people from the general population as controls. To examine the effects of highly active antiretroviral therapy (HAART) on the incidence of autoimmune diseases, the incidence densities and SIRs of autoimmune diseases were calculated after stratifying PLWHA by HAART status.

Results Of the 1,724 female PLWHA identified, the overall mean (SD) age was 29.2 (10.9) years. As compared with the general population, SIRs were higher for incident Sjögren syndrome (SIR = 2.29; 95% CI: 1.48-3.38), systemic lupus erythematosus (SIR = 3.50; 95% CI: 1.67-6.43), and polymyositis (SIR = 7.39; 95% CI: 1.59-23.07), and autoimmune hemolytic anemia (SIR = 31.25; 95% CI: 10.07-72.93). When the effect of HAART on incident autoimmune diseases was considered, female PLWHA who received HAART had higher SIRs for autoimmune hemolytic anemia (SIR = 37.50; 95% CI: 7.54-109.57). However, female PLWHA who did not receive HAART had higher SIRs for Sjögren syndrome (SIR = 4.23; 95% CI: 2.65-6.41), rheumatic arthritis (SIR = 2.23; 95% CI: 1.25-3.68), systemic lupus erythematosus (SIR = 6.15; 95% CI: 2.65-12.13), polymyositis (SIR = 15.00; 95% CI: 3.01-43.83), autoimmune hemolytic anemia (SIR = 22.22; 95% CI: 2.50-80.23), and Hashimoto's thyroiditis (SIR = 5.08; 95% CI: 1.86-11.07).

Conclusions Female PLWHA had higher risks of incident Sjögren syndrome, systemic lupus erythematosus, polymyositis, and autoimmune hemolytic anemia.

Abstract 54

The use of a Mathematical Model and Risk Ratio to estimate the impact of HIV/AIDS intervention programs on FSW and their communities: The Nigerian Experience

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Introduction: Having determined that Female Sex workers are one of the most important drivers of the HIV epidemic in Nigeria, a combination prevention program for Female Sex Workers (FSWs) was recently launched. As part of the evaluation of the impacts of these programs, a mathematical modelling Technical Working Group (MMTWG) was set up. The MMTWG developed a mathematical model to estimate the impact of the intervention programs on the rate of new infections among FSWs and their communities.

Objectives: The objective is to develop a mathematical model to estimate how many indirect HIV infections will be inverted among FSWs, their clients and the general population, attributable to prevention programs targeting female sex works in Nigeria. The model was to also estimate the number of infections averted in all the intervention Local Government Areas ((LGAs), not only those in the Impact Evaluation (Control) areas. The mathematical model includes a risk ratio used to estimate the impact of the programme on new HIV infections among FSWs, number of new HIV infections in clients and members of the general population that were averted as a result of the effect of the intervention among the sex workers.

Methodology: A mathematical model was developed, using python programming language. Current values of the variables served as baseline inputs to the model. The variables include initial prevalence of HIV among FSW, their clients; proportion of sex acts that are protected; Initial population of the target group; duration of the intervention; number of sexual contacts per FSW and average number of sexual acts. A specific risk equation was developed for the FSW, incorporating the current values and projected values of the variable at the end of the program. Three Scenarios of the model was estimated over
a period of five years. Putting all infected FSWs on treatment, irrespective of their CD4 or WHO staging and keeping other variables constant; Putting only eligible FSWs on treatment and increasing condom distribution; and universal access to treatment for all FSWs and their clients.

**Results:** It was observed that if the status quo (37% of eligible positive FSW on treatment) is maintained, the new infection rate will gradually increase to 3.6 in five years’ time. Putting 80% of eligible positive FSWs on treatment will avert 2789 new infections in the same duration and reduce the current rate of new infections to 0.7. A slight decrease of 0.3% would be experienced in the general female population. Putting all FSWs on treatment returns a 89.7% reduction on the number of new infections among clients of FSW.

**Conclusion and Recommendations:** The mathematical model reveals the efficiency of treatment in reducing the rate of new infections among FSWs, their clients and general female. The models reveal the importance of the investing in the FSW intervention programs now, rather in the future. The model outputs can be used to calculate the Quality Adjusted Life Years (QALY) to be gained during the intervention. Further modelling scenarios are required to effectively infer on the efficiency of the intervention programs.

**Results:** Among 137 transgender women (mean age: 24.0 [SD: 4.5]), two-thirds reported living in the Kingston area. Overall, 25.2% reported being HIV-positive. Approximately half (n=71; 51.82%) reported any sex work involvement, this included sex in exchange for: money (n=64; 47.06%); survival needs (n=27; 19.85%); and drugs/alcohol (n=6; 4.41%). In multivariable analyses, paid sex and transactional sex were both associated with depression (paid sex: adjusted odds ratio [AOR] 1.71, confidence interval [CI] 1.14-2.59; transactional sex: AOR 2.22, CI 1.49-3.29), forced sex (paid sex: AOR 6.85, CI 2.29-20.56; transactional sex: AOR 13.66 CI 3.58-52.16), childhood sexual abuse (paid sex: AOR 3.57, CI 1.34-9.52; transactional sex: AOR 3.87, CI 1.13-13.30), intimate partner violence (paid sex: AOR 3.00, CI 1.11-8.10; transactional sex: AOR 4.19, CI 1.33-13.11), multiple partners (paid sex: AOR 5.50, CI 1.32-22.86; transactional sex: AOR 14.67, CI 2.73-78.88), transgender stigma (paid sex: AOR 1.74, CI 1.37-2.20; transactional sex: AOR 1.34, CI 1.07-1.67), and unemployment (paid sex: AOR 4.95, CI 1.41-17.40; transactional sex: AOR 6.75, CI 1.80-25.27). Participants reporting transactional sex also reported increased odds of incarceration (AOR 5.27, CI 1.32-21.02), and lower resilience (AOR 0.84, CI 0.73-0.96), in comparison with participants reporting no sex work involvement.

**Methods:** In 2015 we implemented a cross-sectional survey using modified peer-driven recruitment with transgender women in Kingston and Ocho Rios, Jamaica, in collaboration with a local community-based AIDS service organization. We conducted multivariable logistic regression analyses to identify factors associated with paid sex and transactional sex. Exchanging oral, anal or vaginal sex for money only was categorized as paid sex. Exchanging sex for survival needs (food, accommodation, transportation), drugs or alcohol, or for money along with survival needs and/or drugs/alcohol, was categorized as transactional sex.

**Results:** Among 137 transgender women (mean age: 24.0 [SD: 4.5]), two-thirds reported living in the Kingston area. Overall, 25.2% reported being HIV-positive. Approximately half (n=71; 51.82%) reported any sex work involvement, this included sex in exchange for: money (n=64; 47.06%); survival needs (n=27; 19.85%); and drugs/alcohol (n=6; 4.41%). In multivariable analyses, paid sex and transactional sex were both associated with depression (paid sex: adjusted odds ratio [AOR] 1.71, confidence interval [CI] 1.14-2.59; transactional sex: AOR 2.22, CI 1.49-3.29), forced sex (paid sex: AOR 6.85, CI 2.29-20.56; transactional sex: AOR 13.66 CI 3.58-52.16), childhood sexual abuse (paid sex: AOR 3.57, CI 1.34-9.52; transactional sex: AOR 3.87, CI 1.13-13.30), intimate partner violence (paid sex: AOR 3.00, CI 1.11-8.10; transactional sex: AOR 4.19, CI 1.33-13.11), multiple partners (paid sex: AOR 5.50, CI 1.32-22.86; transactional sex: AOR 14.67, CI 2.73-78.88), transgender stigma (paid sex: AOR 1.74, CI 1.37-2.20; transactional sex: AOR 1.34, CI 1.07-1.67), and unemployment (paid sex: AOR 4.95, CI 1.41-17.40; transactional sex: AOR 6.75, CI 1.80-25.27). Participants reporting transactional sex also reported increased odds of incarceration (AOR 5.27, CI 1.32-21.02), and lower resilience (AOR 0.84, CI 0.73-0.96), in comparison with participants reporting no sex work involvement.

**Social ecological factors associated with sex work among transgender women in Jamaica**

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**Background:** Transgender women are disproportionately impacted by HIV. Transgender women involved in sex work may experience exacerbated violence, social exclusion, and HIV vulnerabilities, in comparison with non sex work involved transgender women. Scant research has investigated sex work among transgender women in the Caribbean, including Jamaica, where transgender women report pervasive violence. The study aim was to examine social ecological factors associated with sex work involvement among transgender women in Jamaica.
Conclusion: This study is among the first to examine factors associated with sex work involvement among transgender women in Jamaica. We found one-quarter of participants were HIV-positive and over half of participants were involved in sex work. Transgender women involved in sex work in Jamaica experience elevated exposure to social and structural drivers of HIV, including forced sex, incarceration, intimate partner violence, and homelessness—with greater risks among transgender women exchanging sex for survival needs, drugs or alcohol. Being involved in any kind of sex work was associated with depression, lower social support, forced sex, physical violence, childhood sexual abuse, and transgender stigma. Transgender women involved in transactional sex also experience high rates of incarceration and forced sex in comparison with non sex workers. Findings can inform multi-level interventions to advance the social determinants of health and HIV prevention and care cascades with transgender women in Jamaica.

Abstract 57

Facilitating PMTCT uptake through private sector partnership

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Background: With a low national PMTCT coverage, it became imperative to facilitate access of pregnant women to HIV and PMTCT services across all levels of health facilities. A large number of public health facilities are PMTCT centers with a close to zero percent private health facilities strengthened to provide this service. In order to increase access to PMTCT services in a resources-constraint setting, a sustainable and implementable approach to the engagement of private health facilities is analysed.

Materials and Methods: The capacity of selected private health facilities were built to contribute to PMTCT uptake among pregnant and breastfeeding women in Lagos state. A RMNCH/HIV project in Lagos supported the implementation of PMTCT program in private health facilities including Dunia Hospital Agege. Driven by the passion to increase access of pregnant women to PMTCT services, the management initiated a facility-based HIV Counseling and Testing (HCT) outreach services to pregnant women in nearby maternity (faith and traditional) birth homes. The homes are highly patronized by pregnant women and women seeking the fruit of the womb due to cultural, religious and socio-economic reasons. The affairs of the homes are however coordinated by the State Government through the Traditional Medicine Board.

A hub and spoke approach was used; closeby birth homes were clustered to Dunia Hospital for service uptake. The facility management and staff were responsible for the identification of testing sites, logistics arrangement, and health talk presentation during ANC clinic at the outreach sites, referral and provision of ARV and counseling services to HIV-positive pregnant women at the hospital. Over the period of providing PMTCT services at outreach centers, many pregnant women had benefited from the program. Despite the outreach program, facility based HCT services continued. The data presented was collected from routine service coverage data on the National data collection tools and analysed using Microsoft Excel.

Results: Of the total 1621 pregnant and breastfeeding women reached with HCT between June 2015 and May 2016, 1313 (81%) and 308 (19%) were reached during outreach and facility respectively. A total of 29 HIV-positive women were identified; 10 (34%) from facility and 19 (66%) from outreach. 24 HIV-positives were enrolled in care and provided ARV prophylaxis with all 10 from facility and 14 from the outreach. 19 HIV Exposed Infants (HEI) were born and received nevirapine. 14 due for virologic test and cotrimoxazole prophylaxis were provided the services while one HEI was reactive to HIV. All HEI from outreach sites were negative to HIV.

Conclusion: This private sector partnership has increased access of pregnant women and HEI to PMTCT through private informal engagement.
Without doubt, empowering more private hospitals to provide this service will geometrically increase the uptake of HIV services. It is therefore important to partner and strengthen private sector providers to reach out to the underserved pregnant women attending ANC clinic in TBA and Mission Homes settings. Ensuring this will contribute to the National and Global Elimination of Mother to Child Transmission of HIV target.

Abstract 58

Consensus statement: Supporting safer conception and pregnancy for men and women living with and affected by HIV


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Background: Safer conception interventions reduce HIV incidence while supporting the pregnancy goals of men and women living with or affected by HIV. A lack of guidelines endorsing these approaches leaves providers unprepared to counsel patients and HIV-affected men and women uncertain how to safely meet pregnancy goals. We developed a consensus statement to: articulate experiences with and address growing demand for safer conception services, summarize the state of the science, identify information gaps, outline priorities for research and policy, and advocate for action.

Materials & Methods: This statement emerged from a consultative process incorporating input from several meetings, the literature, and ongoing discussions with key stakeholders. To support the consultative process, three co-authors developed a draft outline of the manuscript. This outline was shared, discussed and modified with co-authors, working group members, and other clinical, policy, and community experts in safer conception, HIV treatment and prevention, fertility, and perinatal transmission. Through several meetings and circulated versions of the document, all co-authors and working group members developed and approved the final draft of the consensus guidelines. Subsequently, the guidelines were circulated to key individuals and organizations for their endorsement.

Results: Areas of consensus around the themes of demand, safer conception strategies, and implementation were identified. There is demand for safer conception services yet access is limited by stigma towards people living with HIV (PLWH) having children and by limits to provider knowledge. Scientific evidence regarding efficacy, effectiveness, safety, and acceptability supports a range of safer conception strategies. ART for PLWH is indicated for their own health, and to reduce sexual and perinatal transmission. PrEP for HIV-negative partners, limiting condomless sex to peak fertility, home insemination, male circumcision, treatment of STIs, couples-based HIV testing, semen processing and assisted reproductive technologies, and fertility care, provide additional complementary safer conception options. Service implementation is limited by a lack of guidelines, training, and support for providers. When services are available, demand is high, delivery is feasible, and outcomes are encouraging. Supporting mutual HIV-serostatus disclosure within the partnership is part of safer conception counselling, but disclosure is not a prerequisite for participation. Legal and ethical issues present challenges to the delivery of safer conception care. Key outstanding questions within these themes are also identified.

Conclusions: It is time to widely implement safer conception services. This consensus is supported by the state of the science, consumer demand, and global goals to eliminate perinatal transmission. We recommend that providers offer available safer conception services to HIV-
affected men and women, and health program administrators integrate safer conception services into existing HIV and reproductive health programs. Answers to key outstanding questions will improve care, implementation, and policy but these questions do not need to be answered before offering services based on current knowledge. In the current treatment era where HIV is a chronic disease, it is time to seize the opportunity to empower people affected by HIV to utilize safer conception strategies to achieve their pregnancy goals with negligible risk of HIV transmission.

Abstract 59

M48U1 and Tenofovir microbicide combination inhibits HIV infection in activated PBMCs and cervicovaginal histocultures

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Microbicides are considered a promising strategy for preventing HIV-1 infection in women. Recently, it has been proposed that combined treatment with two or more drugs targeting different phases of the HIV-1 replication cycle could increase the antiviral effects of microbicides. MiniCD4 M48U1 is a peptide that inhibits HIV-1 infection by binding gp120, with higher affinity than soluble CD4. This drug may represent a good microbicide candidate, because previous observations in simian model demonstrated that M48U1 formulated in hydroxyethylcellulose (HEC) inhibited HIV-1 infection.

We first analyzed the antiviral activity of miniCD4 M48U1 peptide formulated in HEC on activated peripheral blood mononuclear cells (PBMCs) infected by different HIV-1 strains and on TZM-bl cells infected with two transmitted/founder (T/F) HIV-1 Infectious Molecular Clones. HIV-1 strains were first incubated with different concentrations of M48U1 and/or tenofovir, formulated in 0.25% HEC, and then added to our cellular models. The combined activity of drugs was evaluated by HIV-1 Gag-p24 levels in cellular supernatants and the synergy was determined with isobologram and MacSynergy II program. Moreover, we tested M48U1 alone or in combination with tenofovir in HEC with an organ-like structure mimicking the human cervicovaginal tissue (Epivaginal Tissue model). On the apical surface of each tissue-containing well, we added different mixtures of the two drugs in HEC and subsequently, the wells were challenged with HIV-1 and cervicovaginal tissues were harvested on day 4 post-infection. Total DNA was extracted, purified from tissues and proviral DNA was quantified by Real-Time PCR. The cytotoxicity of the two drugs, was analyzed with MTT ET-50 tissue viability assay, followed by analysis of lactate dehydrogenase (LDH) levels. The inflammatory response was evaluated by measuring proinflammatory cytokine IL-1α release.

A significant decrease in the HIV-1 Gag-p24 content was detectable in all experimental conditions. M48U1 and tenofovir suppressed the infection of PBMCs infected with different laboratory strains and subtype B and C isolates. M48U1 and tenofovir exhibited an antiviral activity also on TZM-bl cells infected with two T/F strains. Data obtained from isobologram and MacSynergy II analysis for several combinations of the two drugs displayed a synergistic antiretroviral activity of Tenofovir and M48U1. The treatment with two different mixture of M48U1/tenofovir in HEC showed a clear inhibition of HIV-1 replication in a organotypic model of cervicovaginal epithelial tissue with a further decrease in HIV-1 proviral DNA amount. None of the combinations exhibited significant effects on the cells viability, suggesting that the synergistic antiviral effect was not associated with
cytotoxicity and LDH and IL-1αp cytokine release was not significantly increased by drugs.

The association of tenofovir and M48U1 is valuable for the assessment of a new microbicide treatment, showing several advantages including the synergy and the absence of toxicity. In particular, the synergy level could determine the use of lower amount of each drug conserving an optimal antiretroviral effect with a possible reduction of drug side effects. In conclusion, these results suggest that M48U1 plus tenofovir treatment in HEC may be considered a useful topical microbicide to counteract the heterosexual transmission of HIV-1 in women.

Abstract 60

Lessons learnt from PMTCT Program implementation in the Private sector in Nigeria

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Background: Nigeria remains the country with the second highest burden of Mother-To-Child Transmission of HIV worldwide. Although efforts have been made to combat this huge public health problem the gains have been slow. This may in part, be due to the fact that the public health sector has been the beneficiary of most health interventions due to its expected ease of access and wide range of health workers compared to the private sector. Studies show that despite high cost of health services, 60% of health seekers in Nigeria favour the private healthcare providers (formal and informal) due to shorter waiting times, an assurance of privacy, flexible payment arrangements, cultural norms, and religious beliefs.

This paper seeks to highlight the lessons learnt from the USAID, Evidence 2 Action PMTCT project implemented in the private sector by Pathfinder International across four (4) states in Nigeria: Akwa Ibom, Cross Rivers, Lagos, and Rivers.

Lessons learnt: Increasing demand, PMTCT services uptake, and retention in care

- Engagement of religious leaders as agents of change in their communities may reduce the perception that HIV/AIDS is a spiritual disease
- Scale-up of more private facilities to provide PMTCT services and establishment of an intra-private facility referral network (hub and spoke) will increase access
- Public health interventions should make provision for the informal private health sector which goes beyond accessing their clients, to include capacity building and some Incentivization for concrete impact in communities
- Price negotiations with private health facility owners in exchange for support for commodities and ARVs may increase access to affordable PMTCT services
- Upgrade of at least one private comprehensive treatment site per LGA to cater for families of PMTCT clients who wish to access care in private facilities, will address the fourth prong of PMTCT and ensure lifelong retention in care

Capacity Building:

- Modification of existing training curriculum and documentation tools to suit the private sector will simplify and improve documentation in PMTCT programs
- Institutional capacity building for the private sector through their associations to update their knowledge to manage or refer identified PMTCT clients as appropriate

Governments’ capacity to manage and coordinate HIV/AIDS programs implemented by private facilities

- Stronger demonstration of data utilization in program planning, advocacy and resource allocation by the government may substantially improve attitude and practices towards data reporting
- Simplification of current National PMTCT tools to suit private health facility providers
- Increased involvement of Government in coordination/supportive supervision will improve participation and compliance of facilities to set guidelines

Conclusion: Although gains have been made in engaging the formal and informal private health sectors for PMTCT, the lessons learnt must be examined and addressed to ensure advancement
in the elimination of MTCT in Nigeria, as the private health sector remains an untapped resource for increasing coverage of PMTCT interventions and improving the health of Nigerians in general.

Abstract 61

Key Interventions and Populations to Target to Facilitate Access and Engagement in HIV Care among Women Living with HIV: Findings from the Canadian HIV Women’s Sexual and Reproductive Health Cohort Study (CHIWOS)


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Background: Linkage and engagement in HIV care are essential to ensuring virologic suppression. The purpose of this study was to determine the proportion of Canadian women living with HIV (WLWH) who have never accessed HIV care, report delayed linkage into HIV care, or are not engaged in HIV care, and to identify their socio-demographic, psychosocial and clinical characteristics.

Methods: We analysed baseline survey data from CHIWOS, a longitudinal multi-site, community-based research study of 1,425 women with HIV from British Columbia, Ontario and Quebec, Canada. The primary outcomes were having never accessed HIV care (by self-report), delayed access to HIV care (defined as the receipt of care > three months after HIV diagnosis) and lack of engagement in care (defined as <1 medical care visit during the previous year). Multivariable logistic regression was used to identify independent correlates of never and delayed access to HIV care, and lack of care engagement. The penalized maximum likelihood estimation logistic regression method was used for never and lack of care engagement to address the issue of separation with rare event outcomes.

Results: Overall, 2.8% of women enrolled in CHIWOS reported having never accessed care, 28.8% reported delayed linkage and 3.7% were not engaged in routine HIV care. In multivariate analyses, Indigenous ethnicity [OR: 4.30 (95% CI: 1.31, 14.13), p<0.05], unstable housing [OR: 4.06 (95% CI: 1.82, 9.06), p<0.01] and racism [OR: 1.04 (95% CI: 1.01, 1.08), p<0.05] were associated with increased odds of never having accessed HIV care while recreational drug use (RDU) [OR: 0.23 (95% CI: 0.09, 0.57), p<0.01] and living with HIV for >6 years (6-14 years [OR: 0.06 (95% CI: 0.02, 0.24), p<0.001] and >14 years: [OR: 0.11 (95% CI: 0.03, 0.42), p<0.001]) were associated with decreased odds of never having accessed HIV care. Factors associated with increased odds of delayed linkage to care included age at time of HIV diagnosis [OR: 1.08 (95% CI: 1.101, 1.15), p<0.05], Indigenous [OR: 2.04 (95% CI: 1.42, 2.92), p<0.001], African/Caribbean/Black [OR: 2.79 (95% CI: 1.95, 3.98), p<0.001] or other ethnicity [OR: 1.76 (95% CI: 1.03, 3.00), p<0.05] compared to White/Caucasian and acquisition of HIV through sharing/contaminated needles [OR: 1.88 (95% CI: 1.33, 2.67), p<0.001] compared to through consensual intercourse. In multivariate analyses, a self-reported detectable viral load was associated with increased odds of not being engaged in care in the past year [OR: 3.00 (95% CI: 1.32, 6.79), p<0.01].

Conclusions: While a small proportion of CHIWOS women have never accessed and do not receive ongoing HIV care (2.9% and 3.7%, respectively), this likely represents an underestimation given our recruitment bias from AIDS Service Organizations and HIV clinics. Conversely, a significant proportion (28.8%) of...
CHIWOS women report delayed access to care. Moving forward, test-and-treat strategies must be prioritized and programmatic efforts that address access to and engagement along the cascade of care for WLWH in Canada should focus on several social determinants of health, including housing insecurity, social exclusion and Indigenous ethnicity.

Abstract 62

Association among Spatial Memory, Brain Derived Neurotrophic Factor, and Hippocampal Volumes in HIV-seropositive (HIV+) women

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**Background:** In the era of combined antiretroviral therapy, HIV-seropositive (HIV+) patient survival has increased. Nevertheless, high prevalence of HIV-associated neurocognitive disorder (HAND) continues to be observed. Memory Island (MI) is a computer-based test that is useful for identifying susceptibility to neurocognitive impairment; specifically, in areas such as spatial learning and memory. This test has the advantage of being non-invasive and easily administered. Because MI is relatively unaffected by culture, it represents a good screening test for HAND, as seen in previous studies. Aside from MI, we used Brain Derived Neurotrophic Factor (BDNF), neuropsychological (NP) tests, the Beck Depression Inventory (BDI-II), and magnetic resonance imaging (MRI) to obtain volumes of the hippocampus. The major aim of this study was to explore associations among spatial memory, BDNF and hippocampal volumes in HIV+ women.

**Methods:** We recruited 61 women: 45 HIV+ and 16 HIV-seronegative controls. HIV+ women were evaluated for viral-immune profiles, MI, NP testing, and BDNF. We determined cognitive performance using the HAND criteria, dividing the HIV+ women into cognitively normal and neurocognitive impaired (stratified into asymptomatic [ANI] and mild neurocognitive impairment [MND]). A subgroup of 19 participants underwent MRI to determine hippocampal volume. Parametric and non-parametric statistics were performed.

**Results:** Relationships of BDNF to spatial learning and spatial memory did not attain significance, but were suggestive of trends (p=0.076 and p=0.065, respectively). Also, we found a slight BDNF increase in the group of HIV+ impaired women vs. women with normal cognition and the control group. Furthermore, we found that hippocampal volumes had a strong inverse correlation with current CD4 in HIV+ women (p <0.05). We observed a significant correlation between spatial memory and volumes of hippocampus (p< 0.05). However, we did not find a significant correlation between hippocampal volume and MI latency (learning).

**Conclusion:** The MI test shows that spatial memory is significantly associated with hippocampal volumes and memory deficits in HIV+ women with HAND. MI may be a new tool that is useful for detecting memory deficits in HIV+ women.

Abstract 63

Anti-Müllerian Hormone Levels in Women Living with Human Immunodeficiency Virus Compared with HIV-Uninfected Women - A Case-Control Study

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Background: Women living with human immunodeficiency virus-1 (WLWH) (HIV) seem to have reduced fertility compared to HIV-uninfected women. Reduced fertility may be explained by low levels of Anti-Müllerian hormone (AMH), a marker of ovarian reserve. This study aimed to measure AMH levels with the new Elecsys AMH immunoassay in white WLWH and age-matched HIV-uninfected control women. Also, we wanted to measure AMH in paired serum- and EDTA samples and find possible covariates associated with low AMH levels.

Materials and Methods: Patients were recruited December 1997-September 2016, through the Danish HIV Cohort, identifying stored EDTA samples of white WLWH, ages 20-40 years, with fully suppressed HIV RNA viral loads for minimum six months, no hepatitis B or C virus co-infection, not pregnant at time of sampling, with no gynaecological cancer or gynaecological surgery and attending either Copenhagen University Hospital, Hvidovre or Rigshospitalet. Ten WLWH were included in a pilot study where AMH was analysed in a paired serum- and EDTA analysis, to assess a potential difference between the two sampling methods, as only serum samples were available for the control women. All WLWH were age-matched (1-3) with HIV-uninfected control women, recruited through the Human Resources Department at Copenhagen University Hospital, Rigshospitalet August 2008-February 2010. Covariates chosen a priori were; age >30 years, CD4 cell count <350 cells/μL, prior AIDS diagnosis, no antiretroviral treatment (ART) and ART regimens (1=Two Nucleoside Reverse Transcriptase Inhibitors (NRTI’s) + one Non-Nucleoside Reverse Transcriptase Inhibitor, 2=Two NRTI’s + one Protease Inhibitor (PI) and 3=other combination).

Results: A total of 84 WLWH and 252 HIV-uninfected control women were included. Median age for the WLWH was 33.5 years and median duration of HIV diagnosis was 6.6 years. A majority of WLWH were on ART (n=76, 91 %), with CD4 cell counts >350 cells/µL (n=71, 85 %).

Mode of transmission was predominantly heterosexual (n=76, 91 %). There was no statistically significant difference in AMH levels between serum- and EDTA samples in the paired analysis (p=0.38, CI -0.27-0.64). Almost 20 % (n=15) of the WLWH had AMH levels below cut-off, which was slightly more than the 12 % (n=29) among the comparison women (p=0.14). The largest proportion of low AMH levels was among the oldest women (35-39 years), where 26 % (n=6) (p 0.67) had levels below cut-off. In the same age group among the comparison women, 22 % (n=15) had AMH levels below cut-off.

None of the covariates; age >30 years (p=0.94), CD4 cell count <350 cells/µL (p=0.63), prior AIDS defining diagnosis (p=0.17), no treatment (p=0.89) or ART regimen (combined p=0.30), were associated with low AMH levels. Having a CD4 cell count >350 cells/µL was not significantly associated with higher AMH levels (OR 0.81, CI 0.16-4.11).

Conclusions: In this case-control study we showed that well-treated, white WLWH, living in Denmark, do not have reduced AMH levels compared to age-matched HIV-uninfected comparison women. Furthermore, we found no covariates associated with low AMH levels, including age >30 years, CD4 cell counts, prior AIDS diagnosis, no treatment or ART regimen.

Abstract 64
Higher Levels of Physical Dysfunction and Higher Levels of Emotional Resiliency in Older Women Living with HIV Enrolled in CHIWOS

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Abstract

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Background: By 2020, the share of persons over the age of 50 living with HIV in North America will exceed 50%. In part driven by the increased life expectancy of individuals utilizing antiretroviral therapy, public health literature suggests that healthcare systems are ill-equipped to manage the unique care needs of older patients. Research suggests that mental health experiences in HIV-positive women are intersectional, with race, socioeconomic status, and age playing significant roles in predicting resiliency and coping ability. As populations age, it will be increasingly important to collect rigorous data exploring how HIV positivity affects the physical and mental states in older women – knowledge that may help healthcare service providers meet the unique needs in this subgroup.

Methods: The Canadian HIV Women’s Sexual and Reproductive Health Cohort Study (CHIWOS) is a prospective cohort study of women with HIV >16 years of age in British Columbia, Ontario and Quebec, Canada. Enrolment occurred between October 2013 and June 2015. Descriptive analyses for sociodemographic variables (e.g. age, income) were presented as frequencies, means and standard deviations (SD) for each variable. The primary outcomes of interest were mental health and physical health score using the SF-12. The exposure of interest was age with the hypothesis that older women (≥50 years of age) will have poorer mental health and physical health states than younger women. Multiple linear regressions were conducted to explore how age contributes to the difference in physical and mental health and associated differences in SF-12 scores were presented as adjusted beta-coefficients and confidence intervals (CI).

Results: Among 1425 women who were included in the analysis, 399 women were ≥50 years with a mean age of 55.8 years (SD=5.25). The 1026 young and middle-aged women (<50 years) had a mean age of 37.8 years (SD=7.4). Bivariate analyses found significant differences between older and young/middle-aged women in immigration status, relationship status, ethnicity background, education level, sexual orientation, household income and number of financial dependents. Interestingly, older women did not differ on mental health state when compared to younger women [mean mental health scores were 42.29 (SD=14.07) vs. 41.52 (SD=14.38); p-value: 0.366]. Older women did score lower on the physical health scores than younger women [38.76 (SD=15.59) vs. 46.19 (SD=13.19; p-value <0.05), respectively]. Amongst the 399 older women, linear regression found that variables associated with lower physical health score included food insecurity (coefficient: 2.55, 95% CI: 0.70-4.42), higher depression scores (coefficient: 0.52, 95% CI: 0.30-0.74) and being married (coefficient: 3.84, 95% CI: 0.05-7.65).

Conclusion: Factors such as food security, depression and marital status need to be further explored when examining poor physical health among older women. In this cohort of HIV-positive women, older women showed significantly lower physical health, when compared to younger woman. Despite this, no differences were observed in mean mental health scores for older women, suggesting substantial resiliency or effective coping strategies. It will be worth exploring what social supports, quality of life metrics, or inherent resiliencies help bulwark older women against the often-challenging mental health impacts of being HIV positive.

Abstract 65

The Mental Health of Women living with HIV in the UK

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Background: In 2015 Public Health England reported that 31,700 women were living with HIV (WLWH) in the UK. HIV is now successfully managed using highly active antiretroviral therapy (HAART). Mental health issues have emerged as an area of concern in women however; there is relatively no guidance on how to manage this.
**Materials & Methods:** To further evaluate this, a literature review was performed. We explored different sources including a report written by women living with HIV in 2009, Public Health England report, non-government organisation (NGO’s) surveys, 2007 Lancet report on Global Mental Health. Plus interviews with an HIV mental health specialist nurse.

**Results:** There is limited literature on this topic. Where data was available the studies were not current. We reviewed two qualitative reports, the first a study conducted from 2003 – 2009 focusing on how the immigration system was affecting the mental health of WLWH. The second focused on the overall psychological needs for PLWH (not exclusive to women) data for this report was collected using focus groups totalling 60 HIV health care professionals (HCP). We also evaluated a quantitative study conducted from April - July 2013 by an NGO based in London which reached 192 participants, 36.5% (n=70) were women. Results showed, 70% (n = 49) of women suffer from mental health problems to include depression, anxiety, post-traumatic stress disorder (PTSD), suicidal thoughts and coping difficulties. HIV clinics are not always able to offer mental health intervention. Where intervention can be accessed barriers including limited financial resources and fears of a mental health condition in addition to HIV were highlighted. Interestingly not all WLWH reported mental health problems. A policy report published 2014 showed that there was evidence of resilience among WLWH. 18/30 women were in control of their mental health or knowing where to assess support vs 12/30 who felt desperately isolated. NGO’s have traditionally led in the support of psychosocial needs for WLW. With limited resources available to NGO’s a universal care plan fully supported by the NHS will ensure continuity and implementation of services to reach every WLWH.

**Discussion:** Studies have not yet been performed analysing WLWH in large numbers and/or from varied social, cultural and demographic backgrounds. Considering mental health is a major issue reported by WLWH and by HCP’s this demonstrates an important research gap.

**Conclusions:** Public Health England reports show that WLWH are clinically living well, most with high CD4 counts and undetectable viral loads. Socio-economic problems have been demonstrated to contribute significantly to the wellbeing of WLWH and can lead to mental health difficulties. However, there are little guidelines on how to treat and manage mental health issues. There is an overarching pattern in literature about this topic and that is the acknowledgement that WLWH are reporting feeling isolated, depression, anxiety, PTSD and suicidal thoughts all very serious mental health conditions. We conclude that there is a real need for more research on the mental health of WLWH in the UK, however future research needs to represent a wider demographic.

**Abstract 66**

**Vulnerability Status Of Households With HIV Infected Caregivers In Lagos State**


**Background:** Vulnerability refers to inability to cope with problems that impact negatively on people’s lives. Vulnerability is dynamic and anyone can be vulnerable at any given point in time as a result of life circumstances or response to illness such as HIV infection. This study thus examined the effect of HIV infection of caregivers on the vulnerability status of different households in Lagos State.

**Materials and Methods:** The cross sectional, descriptive study was carried out in four LGA in Lagos State where a USAID funded project called the Systems Transformed for Empowered Actions and Enabling Responses (STEER) for Orphans and Vulnerable Children is being implemented. Households in project implementation communities were assessed for vulnerability to household vulnerability.
using Household Vulnerability Assessment tool. Other data was obtained through interview method from the household heads and caregivers. Household members were linked to facilities or community structures that render HIV Testing Services. Data was analyzed using Statistical Package for Social Sciences (SPSS) version 17. Chi-square test was used to test for association between HIV status of caregivers and household vulnerability level. The P-value was set at <0.05 for the test statistic.

Results: Majority of the caregivers were females [850 (92.9)] and over 90% were in the age group 18-59 years. HIV positive caregivers were 455 (49.7%), 141 (15.4%) were negative and 319 (34.9%) have unknown HIV status; 88 (9.6) of the households were found to be vulnerable, 759 (83.0%) were in the “more vulnerable” category while 68 (7.4%) were found to be in the “most vulnerable” state. More proportion of the households with HIV positive caregivers (9.5%) were in the most vulnerable state significantly (p < 0.0001) compared to those with negative caregivers (2.8%) and unknown status (6.6%). More proportions of households of the caregivers that were single (16.7%), separated (50.0%), divorced (16.3%) and widowed (13.0%) were also significantly (p<0.0001) in the “most vulnerable” state compared with those that were married (3.0%)

Conclusions: More households with caregivers living with HIV have been found to be in most vulnerable state. This should therefore be considered by policy makers so that the burden of indirect cost of treating HIV on households can be reduced. Locating comprehensive Anti-Retroviral Therapy (ART) sites in strategic places will help reduce the expenditures for travels to health facilities. Health insurance for all and social safety nets for such households should also be considered.

Abstract 67

Data needed to guide therapy post sexual assault for women living with HIV

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Background: High rates of sexual assault and gender based violence has been reported in the US and Africa. Treatment post sexual assault includes screening and prophylaxis for pregnancy and sexually transmitted infections (STI) including HIV and treatment of prevalent infections. Emergency contraception (EC) is recommended in assaults that could lead to pregnancy, but little data exist regarding appropriate EC dosing for women with TB or HIV. Drug-drug interactions between EC and TB or HIV medications may alter EC exposure, and thus reduce EC effectiveness for pregnancy prevention. Counseling needs post sexual trauma may be different in the HIV infected population; for example, non-disclosure of HIV status may lead to inappropriate medical management. Access to culturally appropriate care may be limited.

Materials & Methods: A questionnaire evaluating acceptability of EC in the context of clinical research was administered to the ACTG community listserv. The literature was reviewed for specific recommendations related to HIV infected women and sexual trauma, and drug-drug interaction studies involving EC.

Results: There is paucity of data on drug-drug interaction between commonly used EC and ART/TB treatment. Current clinical guidance is based on expert opinion and limited research. Recommendations for screening for and treating bacterial STIs prophylactically do not differentiate between HIV infected and non-infected women. Post exposure prophylaxis for HIV is recommended in certain circumstances for HIV negative women, there are no data on the concomitant administration of the usually prescribed PEP and emergency contraceptives. There were 32 responses to the community questionnaire, 31 from the US. EC was acceptable to 79% of women surveyed and 70%
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reported they would be more likely to participate in clinical research if EC and condoms were two of the contraceptive options available. One respondent noted, "I rarely have sex that could lead to pregnancy and would not be willing to go on any regular hormonal birth control in order to participate in a clinical trial. I would be willing to use emergency contraception after instances of sex that could lead to pregnancy." Reduced LNG levels in HIV-negative obese women, and observation that obese women have a 4-fold greater risk of EC failure compared to non-obese women demonstrate that PK levels are linked to EC effectiveness. There is a paucity of data describing the relationship between the safe and effective dosing of EC in combination with antiretrovirals or TB treatment, yet EU and UK guidelines recommend double doses of levonorgestrel EC when combined with enzyme inducers such as efavirenz and rifampin. This recommendation was made in the absence of data to confirm that this dose adjustment results in appropriate LNG exposure. We did not find any information describing specific counseling needs for HIV infected women after sexual trauma.

Conclusions: After a sexual assault, HIV-infected women require the same prophylaxis for STIs. Research into the counseling needs for HIV infected women is required. Research needs to be performed to understand the pharmacokinetic relationship between emergency contraception and anti-HIV and TB medications in order to guide appropriate dosing for pregnancy prevention.

Abstract 68

Breast density assessment in women living with HIV/AIDS

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Background: After the introduction of combination antiretroviral therapy (cART), increased survival with consequent prognosis improvement and decreased mortality of individuals with HIV was observed. However, the chronic use of antiretrovirals drugs leads to serious adverse effects, such as metabolic alterations, systemic arterial hypertension, cardiovascular diseases and lipodystrophy. In addition, many studies have described the early aging of people with HIV. Therefore, the objectives this were to evaluate mammographic density in women older than 35 years living with HIV/AIDS and relate breast density to age, time of exposure to cART, CD4+ T lymphocyte count, HIV viral load (VL) and the presence of lipodystrophy with incidence of breast fatty replacement (BFR).

Methods: The study was conducted from January 2012 to December 2014 by means of an observational cohort with random and convenience sampling. The minimum sample size was calculated with basis on both the number of women with HIV/AIDS followed up at a reference regional health care and where the prevalence of mammograms with altered results which is 30.0%. Therefore, 132 participants were included, of whom 59 were infected (G1) and 73 were uninfected with HIV/AIDS (G2), all aged 35 to 72 years. Descriptive measurements were calculated for quantitative variables for all subjects and stratified per group. As regards categorized variables, frequencies and percentages were obtained. The associations between them and the groups were made by means of a contingency table by applying the χ2 test. By considering the BI-RADS categorization and breast density, as an outcome, a logistic-regression model was fitted, including variables lipodystrophy, time of HIV diagnosis, time of cART use, number of pregnancies, age and CD4+ T lymphocyte count as explanatory for each group. All the analyses were performed by software SAS for Windows v 9.3. It was accepted as significant when p ≤ 0.05, with 95.0% reliability and a 10.0% margin of error.

Results: As regards breast density (predominantly and partly fatty), it was observed that 49 (83.1%) women in G1 and 67 (91.8%) in G2 showed BFR. Dense breasts were found in 10 (16.9%) and six (8.2%) women, respectively, in G1 and G2. BFR differences were observed between the groups when they were analyzed by
age ranges, from 35 to 40 years ($p=0.002$) and from 41 to 45 years ($p=0.041$), with a higher proportion in G1 and in G2 at the age ranges of 51 to 55 years ($p=0.046$) and 56 to 60 years ($p=0.005$). The chance of lipodystrophy was 9.3-fold greater after 10 years of cART use, and it occurred in 29 (49.2%) women in G1.

**Conclusions:** Women with HIV/AIDS showed BFR at earlier ages when compared to uninfected women, and no relation to the number of pregnancies, lipodystrophy, having AIDS or asymptomatic infection or CD4+ T lymphocyte count was found.

**Abstract 69**

**Effect of caregiver training on HIV-exposed child neurodevelopment and caregiver mental health: Results from a cluster randomized controlled trial in Uganda**

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**Background:** Exposure to poverty-related cumulative risk in early childhood negatively affects cognitive and emotional developmental trajectories because of limited cognitive stimulation and nutrition. African children are at a particular disadvantage if their care depends on impoverished HIV-infected caregivers, themselves at risk for mental health problems and impaired functioning. Compromised quality of caregiving for such mothers can compound the already serious neurodevelopmental effects of HIV infection and exposure for these children, irrespective of the availability of medical treatment and care. Two caregiver training models were compared with perinatally HIV-exposed uninfected (HEU) impoverished African children in order to evaluate whether such training, coupled with nutrition supplement, could enhance both child development and caregiver mental health.

**Methods:** 221 rural HEU child (2 to 3 years old) and caregiver dyads in 18 geographic clusters in Tororo District, Uganda were randomized by cluster to either to biweekly individualized Meditational Intervention for Sensitizing Caregivers (MISC) training emphasizing cognitive and social development, or to a health and nutrition curriculum (UCOBAC) without this emphasis. Children were evaluated at baseline, six months, one year (training conclusion), and at one-year post-training with the Mullen Scales of Early Learning (MSEL), the Color-Object Association Test (COAT) for memory, the Early Childhood Vigilance Test (ECVT) of attention, and the Behavior Rating Inventory of Executive Function (BRIEF-parent). The Caldwell HOME was completed by observers to gauge caregiving quality from training. Caregiver depression/anxiety, perceived psychosocial support, means of coping with stress, and functionality for activities of daily living were also evaluated. All evaluations were done by assessors blinded to intervention arm.

**Results:** MISC caregivers had significant treatment arm effects in a repeated-measure ANOVA for few functionality problems ($F=6.12$, $P=0.014$, partial eta squared=0.032, average mean difference=0.13), HSCL Depression ($F=5.32$, $P=0.022$, partial eta squared effect=0.028, average mean difference=0.21), and better Caldwell HOME quality of caregiving scores ($F=32.03$, $P=0.001$, partial eta squared effect=0.14, average mean difference=2.2). HSCL anxiety main effect treatment-arm difference was not significant. This enhanced caregiving mediated a significant benefit on children’s receptive language ($MEAN_{adj.diff}=1.63$, 95% CI 0.08, 6.18), although this benefit did not persist to one-year follow-up. MISC caregivers reported less functional impairment at one-year follow-up ($MEAN_{adj.diff}=-0.80$, 95% CI -0.28, -0.01). They also reported more problems on the BRIEF for their child ($P<0.01$), perhaps because of greater sensitization to their child’s conduct.
Conclusions: MISC training resulted in less functionality problems and depression symptoms and better strategies of coping with daily stress. The developmental advantage of MISC training for the children was limited to receptive language as mediated in part by improved caregiver functionality. This is likely because of the emphasis of MISC training on maternal interactions with the child during day-to-day household activities. MISC-improved language development can better prepare impoverished HEU children for schooling. By sensitizing the mother to the needs of the child in responsive caregiving, stronger mother-child attachment is encouraged and may also mediate better maternal emotional wellbeing. We are now exploring ways of incorporating ARV adherence strategies and medical support services into the caregiver training model for mothers with HIV.

Abstract 70

Persistently Elevated Macrophage Activation in HIV+ Women Reporting Heavy Alcohol Use

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Background: Alcohol consumption is common in HIV infected women. Heavy alcohol consumption has been associated with accelerated HIV disease progression and poor health outcomes, mainly attributed to inadequate antiretroviral adherence. We hypothesized heavy alcohol consumption alters macrophage activation and inflammation and independently influences HIV disease progression.

Methods: Women’s Interagency HIV Study (WIHS) participants who were hepatitis C seronegative were stratified into 4 groups: HIV+ and HIV- with the heaviest chronic alcohol consumption and abstainers, 50/group. Participants were matched on age, race, and education. Soluble macrophage activation marker (sCD163) and sTNF-RII, a marker of inflammation/activation, were measured using ELISA in a subset of n=25/group at 4 time points over 10 years (2001-11). ANOVA was used to examine differences between groups in soluble markers and multivariable random effects logistic and random linear regression models examined associations.

Results: Across the study period, drinkers reported a mean of 21 drinks/week. Adjusting for HAART use, duration and self-reported adherence, HIV+ heavy drinkers (> 7 drinks/week) were more likely to have a CD4 count<350 cells/mm3 (OR=3.67, p=.005) and detectable viral load (OR=1.65, p=.051) than non-drinkers. sCD163 (mean ng/mL + sd) at baseline was highest in HIV+ drinkers 2098 (1582) compared to HIV+ abstainers 1355 (743), HIV- drinkers 1216 (551), and HIV- abstainers 1349 (673) (F=10.61, p<.001). sTNFRII expression at baseline (mean pg/mL + sd) was higher in both HIV+ drinkers 2692 (889) and HIV+ abstainers 2659 (1093) compared to HIV- drinkers 1697 (557) and HIV- abstainers 1893 (451) (F=4.21, p=.008). Both sCD163 & TNFRII did not significantly change over time. In multivariable longitudinal models, HIV+ drinkers had significantly higher sCD163 than other groups (p<.001); both HIV+ drinkers and HIV+ abstainers had significantly higher sTNFRII than HIV- women (p<.001 and p=.006 respectively). Among HIV+ women, both sCD163 & sTNFRII were significantly associated with elevated viral load (sCD163, p<.001; sTNFRII, p=.021) over time; sTNFRII was associated with lower CD4 cell counts (p=.001).

Conclusions: Chronic heavy drinking is independently associated with HIV outcomes (CD4+ count and viral load). Persistently elevated level of sCD163 in HIV+ve heavy drinkers suggests a mediating role of macrophage activation with implications to persistent inflammation in HIV-infected women reporting heavy alcohol consumption.
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Lower Antiretroviral Therapy Use and Lower Rates of Viral Suppression amongst Younger Women Living with HIV Enrolled in CHIWOS

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Background: Given a higher susceptibility to HIV infection due to structural and behavioural factors that augment transmission risk, young women are a uniquely vulnerable age cohort in the context of HIV prevalence and resiliency. Research has shown that young HIV-positive women also suffer from significant stigmatization and barriers to service access. Given that late initiation of antiretroviral therapy (ART) can increase risk of treatment failure or death, these access barriers are particularly important. It is therefore essential to derive age-appropriate insights into life as a young woman living with HIV that can be tailored towards improving resilience, access to services, and improvement in health and wellbeing outcomes.

Methods: The Canadian HIV Women’s Sexual and Reproductive Health Cohort Study (CHIWOS) is a prospective cohort study of women with HIV >16 years of age in British Columbia, Ontario and Quebec, Canada. Enrollment occurred between October 2013 and June 2015. Descriptive analysis of socio-demographic variables (e.g. age, income) was presented as frequencies, means, and standard deviations (SD) for each variable. Multivariable logistic regression models were conducted to estimate the adjusted risk ratio and confidence intervals (CI) for current antiretroviral therapy (ART) use and virologic suppression with age as the primary exposure of interest. The hypothesis and field of inquiry of interest were that younger women (<30 years of age) have poorer ART uptake and lower rates of viral suppression than their older counterparts.

Results: Among 1425 women who were included in the analysis, 137 were <30 years old and had a mean age of 24.4 years (SD=3.4). The 1288 older women (≥30 years) had a mean age of 44.8 years (SD=9.1). Bivariate analysis demonstrated significant differences between younger women and older women in immigration status, relationship status, personal income and number of financial dependents. Multivariable logistic regression revealed that younger women were 2.09 times (95% CI: 1.31 to 3.34) less likely to be currently on ART than older women adjusting for socio-demographic factors (immigrant status, ethnicity background, relationship status and personal income). In addition, younger women were 2.4 times (95% CI: 1.15 to 2.75) more likely to have detectable viral load than older women adjusting for socio-demographic factors (immigrant status, ethnicity background, relationship status and personal income).

Conclusions: In this cohort of HIV-positive women, younger women were less likely to have had ART and be currently using ART compared to older women. Moreover, analysis suggests that younger women present with higher rates of detectable viral loads when compared to older women. Suboptimal adherence to ART may play a significant role. The unique challenges and factors associated with adherence behaviour, including access barriers, may be a fruitful avenue for future research into young women living with HIV.

Abstract 72

Improving postpartum retention in care among women living with HIV: A new approach

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**Background:** Women with HIV in the U. S. (and globally) usually attend prenatal care visits but often drop out of care after delivery. Rates of loss to care range from 39% to 60% (Rana 2010, Siddiqui 2014, Adams 2015). In response to this challenge the Women’s Program within the Harris Health System, Houston, Texas developed an adaptation of Centering Pregnancy, a group prenatal care model, to address the needs of pregnant women living with HIV.

The Centering model includes 10 two-hour sessions per pregnancy; focused activities and discussion of issues in pregnancy, e.g. nutrition, domestic violence, what to expect in labor, changes in relationships, postpartum depression; and women of similar gestational ages grouped together.

**Hypothesis:** We hypothesized more regular attendance at primary HIV care clinician visits in the year after delivery among women who participated in HIV-focused Centering compared to women in traditional one-on-one care as well as a greater reduction in sense of stigma and depression and a greater increase in knowledge and adherence to medication in the group vs. standard one-on-one care.

**Methods and materials:** We added an HIV-related topic to each of the ten sessions: basic HIV facts; disclosure to partners, family, and friends; adherence to medications; safe sex and safe conception; the importance of and logistics of retention in care; and baby testing after delivery.

**Findings:** Preliminary data on 46 women (26 in Centering) demonstrate a significant difference in the attendance at postpartum visits (2.0 vs. 1.3; p<.02) and a trend in the direction of increased attendance at primary care HIV provider visits in the year after delivery (1.6 vs. 1.17; p<.2). Qualitative data suggest a strong preference for the group model over one-on-one care and a sense of empowerment among the participants.

**Conclusions:** Group prenatal appears to contribute to increased knowledge, positive self-image and likelihood of remaining in care after delivery.

**Abstract 73**

**Sexual orientation differences in health and wellbeing among women living with HIV in Canada: Results from a national community-based cohort study**

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**Background:** Scant research has examined wellbeing among sexual minority women (SMW) with HIV despite well-documented sexual minority health disparities. The objective was to examine sexual orientation differences in clinical, psychosocial and structural outcomes among women living with HIV (WLH) in Canada. We hypothesized that SMW with HIV would experience poorer health and wellbeing than heterosexual WLH.

**Methods:** Cross-sectional baseline data was analyzed from a national Canadian cohort study conducted with WLH between August 2013 and May 2015. Analyses included 1,420 participants (SMW: n=180; heterosexual: n=1240). SMW participants (median age: 38 years, IQR: 13) included bisexual (58.9%), lesbian (17.8%) and other sexualities (gay, queer, two-spirit, questioning) (23.3%). We assessed sexual orientation differences in clinical, psychosocial and structural outcomes between SMW and heterosexual WLH. We also assessed differences in outcomes between SMW identities. Univariate and multivariate logistic regression analyses were conducted to determine the adjusted risk ratio for sexual orientation.

**Results:** SMW were younger than heterosexual participants (median age 38 years vs. 43 years; p<.001). Caucasian was the highest reported ethnicity category for heterosexual and SMW participants (40.4% and 46.1%, respectively); the second most frequent ethnicity was African,
Caribbean or Black among heterosexuals (31.9%) and Indigenous among SMW (35.6%). A higher proportion of SMW (73.5%) compared to heterosexual women (64.3%, p<0.05) reported an annual household income <$20,000. Multivariate logistic regression analyses controlling for age, poverty, education, and ethnicity revealed that compared to heterosexuals, SMW reported clinical (<80% ARV adherence vs. 100% ARV adherence, adjusted odds ratio [AOR]: 2.57, 95% CI: 1.45-4.56), psychosocial (childhood violence [AOR: 2.93, 95% CI: 1.83-4.70]; sex work involvement ever [AOR: 2.87, 95% CI: 1.71-4.81]; current IDU [AOR: 4.54, 95% CI: 2.70-7.61] and previous IDU [AOR: 2.35, 95% CI: 1.51-43.65] vs. never IDU; depression [AOR: 1.06, 95% CI: 1.03-1.08]; lower resilience [AOR: 0.96, 95% CI: 0.95-0.98]), and structural (barriers to HIV support services [AOR: 1.76, 95% CI: 1.15-2.69]; unstable housing [AOR: 1.72, 95% CI: 1.11-2.69]; gender discrimination [AOR: 1.04, 95% CI: 1.02-1.06]; racial discrimination [AOR: 1.03, 95% CI: 1.02-1.05]) outcome differences. In multinomial logistic regression analyses controlling for age, poverty, education, and ethnicity, bisexual women had 8 times the odds (AOR: 8.36, 95% CI: 1.88-37.21), and women of other sexual orientations 6 times more likely (AOR: 6.37, 95% CI: 1.17-34.76), of sex work involvement ever relative to lesbians. Bisexual women were 8 times more likely (AOR: 8.23, 95% CI: 2.49-27.18), and women of other sexual orientations 7 times more likely (AOR: 7.43, 95% CI: 1.58-34.97), to report adult violence compared to lesbians. Bisexual women were less likely to report barriers to HIV medical care relative to lesbians (AOR: 0.20, 95% CI: 0.05-0.79).

Conclusions: This is among the first quantitative studies to highlight important health outcome differences between WLH of different sexual orientations. SMW with HIV experience social and health disparities relative to heterosexual WLH. SMW living with HIV reported lower ARV adherence, possibly associated with multiple challenges reported in this study, including IDU and food/housing insecurity. Tailored interventions are needed to promote health equity among SMW with HIV.

Courses of the emotional and sexual lives of women living with HIV: from biographical disruption to reconstruction

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Background: The efficacy of antiretrovirals has considerably increased the life expectancy of women living with HIV (WLHIV) and allowed them to recover their desire for a fulfilling sex life. Nevertheless, they face multiple challenges to their sexual health. Undeniably, living with HIV, a highly stigmatized disease, disrupts the sexual and emotional dimensions of women’s lives. The objective of this project is to document the emotional and sexual lives of a group of WLHIV who participated in the evaluation of the Plurielles program. This program includes group discussions and personal development for WLHIV who wish to exchange with other women about issues related to their love and sex lives.

Methods: This community-based study enlisted the participation of sixty WLHIV aged from 23 to 70 years old (M = 48 years) with diverse ethnic origins (Canada, Africa, Haiti, Venezuela, Columbia). Most of these women are mothers (79%) and, on average, they have been living with HIV for 12 years. Most were single (70%) and a quarter reported being sexually active. A concomitant mixed-methods triangulated design was used to evaluate the program’s effects (after 6 months) on sexual wellbeing in a group of PLHIV in Quebec (Canada). The analyses presented here are derived from the qualitative component of the study, namely, semi-structured interviews lasting approximately 90 minutes conducted at baseline. A typological analysis producing ideal-types (Schapper, 2005) was chosen to identify typical courses in the lives of PLHIV, grouping together similar experiences within the women’s individual sexual and emotional lives.

Results: From this analytical process three typical courses were identified: 1) HIV as a
biographical disruption: life courses marked by discontinuity and adversity; 2) isolation for self-preservation: life courses characterized by stigmatization, rejection and confinement; 3) openness to new perspectives on relationships: life courses that lead to biological reversal or reconstruction. The issue of disclosure, at the heart of biographical organization, crosscut the life courses of all participants.

**Conclusions:** These results provide a greater understanding of the specific realities and needs of WLHIV in regards to sexual health and are relevant for the design of interventions that are better adapted to them.
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