HIV Anti-virals and Vaccines / Antiviraux et vaccins contre le VIH

O001

IMMUNOGENICITY OF VARICELLA ZOSTER-SIV VACCINES IN THE SIV MACAQUE MODEL

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A fundamental problem of current HIV vaccine candidates is poor or short-lived immunogenicity. Varicella Zoster Virus (VZV) is an attractive, persistently replicating viral vector with the potential to deliver life-long immunity. Here we outline the development and testing of a novel vaccine vector for HIV based on VZV. VZV, a herpesvirus, is the causative agent of chickenpox. The Oka strain (VZV-Oka), a live, replicating, attenuated vaccine strain of VZV, has been used safely in humans since 1974. VZV establishes a life-long infection in the host, with evidence of periodic reactivation and immunogenicity even in healthy individuals. This ability to self-boost makes it unique among the vectors currently in HIV trials. Furthermore, VZV-Oka induces broad reacting cellular and humoral immune responses and can induce mucosal immunity even following intradermal inoculation. In contrast to some attenuated SIV vaccine candidates, VZV is a non-retroviral, non-integrating persistent viral vector and can be used without fear of reversion to pathogenic vaccine virus variants.

The work here comprises the preliminary stages of a comprehensive preclinical challenge trial in primates of Varicella Zoster Virus-SIV (VZV-SIV) constructs as candidate prophylactic HIV vaccines. We vaccinated a cohort of 16 MHC-matched cynomolgus macaques (*Macaca fascicularis*) with VZV-SIV or control vector and assessed the immunogenicity of the immunogen with respect to both the expressed SIV antigens and the backbone vector. Furthermore, we have analyzed the level of cellular activation following vaccination in the periphery and mucosal tissues. We will test the protective efficacy of VZV-SIV by challenging immunized animals and controls with low dose SIVmac239 intrarectally and assessing sterilizing immunity and/or modulation of disease pathogenesis.

The goal of this research program is to utilize the cynomolgus macaque-SIV model to investigate the potential of exploiting the unique safety, immunogenicity and long-term persistence inherent in Varicella Zoster Virus as a vector for eliciting protective immunity from pathogenic SIV challenge.

O002

INTRACELLULAR ATP CAN TRAP NUCLEOTIDE-COMPETING HIV REVERSE TRANSCRIPTASE INHIBITORS AT THE ACTIVE SITE

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BACKGROUND AND OBJECTIVES: Nucleotide-competing reverse transcriptase inhibitors (NcRTIs) represent a new class of compounds associated with a novel mechanism of action. Previous studies have shown that the prototype compound INDOPY-1 can compete with natural nucleotide pools. Unlike dNTPs, INDOPY-1 traps the post-translocated complex also in the absence of divalent metal ions. Here, we demonstrate that binding of the inhibitor is markedly enhanced in the presence of ATP. This finding is surprising in that ATP is a poor substrate for HIV-1 RT, although it can bind to the pre-translocated complex and act as a pyrophosphate donor. In this study, we aim to decipher the biochemical mechanism through which ATP enhances INDOPY-1 action.

METHODS: Wild type and mutant HIV-1 RT enzymes were expressed and purified for biochemical experiments. Structure-activity relationships were assessed for molecular derivatives of INDOPY-1 and ATP in gel-based DNA synthesis inhibition assays.

RESULTS: Mutational analyses and site-specific footprinting experiments reveal that both INDOPY-1 and ATP bind together to the post-translocated complex; however, its orientation is consistent with an orientation in complexes that permit excision of incorporated nucleotide analogues. Mutations at positions 70, 75, 219, and 228 do not affect the inhibitory effects of INDOPY-1, but eliminate the enhancing effects of ATP. Experiments with derivatives of INDOPY-1 and ATP, respectively, along with docking studies provide a structural model of the inhibitor:enhancer complex. The data together suggest that the bound ATP "caps" the inhibitor and prevents its dissociation.

CONCLUSION: This study validates the post-translocated complex of HIV-1 RT as a specific target for the development of novel classes of RT inhibitors. The binding sites the NcRTI:ATP complex, respectively, may provide hints for small molecule optimization.

O003

CHARACTERIZATION OF NOVEL CLADE A HIV EPITOPES: MEASURING POLYFUNCTIONAL RESPONSES AND PROLIFERATIVE CAPACITY

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The limited success of HIV vaccine candidates to date highlights our need to better characterize protective cell-mediated immunity (CMI). While HIV-specific CD8+ T cell responses have been largely defined by measuring IFN-γ, these responses are not always protective, and it is unclear whether the same epitopes would predominate if other functional parameters were examined. Previously, we measured polyfunctional CD8+ T cell responses to clade A1 HIV p24, in a Kenyan commensal sex worker cohort, using an unbiased epitope mapping approach and identified 50 functionally specific-epitopes. Here, we extend our findings and further characterize HIV-specific CD8+ T cell responses by multiparametric flow cytometry, measuring seven CD8+ T cell functions (IFN-γ, CD107a, MIP-1α, MIP-1β, TNF-α, IL-2 and proliferative capacity) in 80 chronically HIV-infected individuals to 11 identified epitopes. Across the data set 202 responses were measured to the 11 epitopes of interest. Consistent with our previous findings most epitope-specific responses were IFN-γ negative (64%) and many responses were polyfunctional (38%). Two of the eleven epitopes were recognized at significantly higher frequencies ($p<0.02$) and we identified epitopes that preferentially elicited specific cytokines ($p<0.02$). Preliminary data suggests that some of these epitopes are significantly more likely to elicit a polyfuntional response. Together, these data suggest that the functional specificity of CD8+ T cell responses differs depending on the epitopes recognized. Furthermore, identification of epitopes that elicit polyfunctional responses reinforces the need for the comprehensive evaluation of HIV vaccine candidates, and may represent novel targets for CMI-based vaccines.

O004

COMPREHENSIVE ELIMINATION OF GLOBALLY DIVERSE HIV PRIMARY ISOLATE INFECTIONS BY HERV-K-SPECIFIC CD8+ T CELLS

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BACKGROUND: The genetic diversity and mutability of HIV represents a paramount challenge in the development of HIV vaccines. Here we provide proof-of-principle for a strategy that circumvents this obstacle by targeting a stable human endogenous retrovirus K (HERV-K) antigen as a surrogate marker of HIV-infected cells. HERV-K element sequences reside in the human genome, representing the remnants of ancient retroviruses. Protein-level expression of HERV-K antigens has not been observed in healthy tissues, but does occur in various malignancies.We hypothesized

that HIV factors would disrupt the cellular control of HERV-K within infected cells, resulting in the expression of HERV-K antigens, and targeting infected cells for elimination by HERV-K-specific CD8+ T-cells.
METHODS: A CD8+ T-cell response to a HERV-K-Env epitope was identified in an HIV-infected individual and T-cell clones specific for this epitope, were obtained. Using flow cytometry based methods, we assessed the ability of this clone to respond to and kill autologous CD4+ T-cells infected with a diverse panel of HIV-1 and HIV-2 isolates. We also assessed the ability of this clone to suppress HIV replication in vitro by p24 ELISA.
RESULTS: The HERV-K-Env-specific CD8+ T-cells specifically responded to cells infected with each virus in the panel resulting in their elimination. HIV-Gag-specific CD8+ T-cell clones showed a restricted breadth of recognition, and CMV-pp65-specific clones – tested as negative controls – did not respond to HIV-infected cells. The HERV-K-Env-specific clone did not recognize cells infected with Vif-deleted HIV, suggesting a role for Vif in HIV-induced HERV-K expression.
CONCLUSIONS: These data support that the induction of HERV-K expression in HIV-infected cells constitutes a marker of infection that can be targeted by HERV-K-specific CD8+ T-cells. As it is the HERV antigen, rather than HIV itself, which is recognized by these T-cells, elimination of infected cells occurred irrespective of HIV sequence variation. Future studies will further probe the mechanisms by which HIV induces HERV-K expression, and will determine whether the presence of these responses in natural infection is associated with control of viral replication.

O005
PREVENTION OF HIV-1 INFECTION, MORE CD8+ EPITOPES MIGHT NOT BE BETTER

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Current HIV vaccine candidates have been based on the conventional views of viral infection and attempt to induce broad T cell responses to HIV-1. Until now, the candidate vaccines based on such approach either failed to provide protection or produced modest effect that is not satisfactory for an effective vaccine. Since these vaccine candidates were not developed based on the correlates of protection against HIV-1, improving such understanding is essential to any successful vaccine development.
A subset of women enrolled in the Pumwani Sexworker Cohort remain uninfected by HIV-1 despite repeated exposures through sex work. This resistance to HIV-1 infection is associated with several alleles of Human Leukocyte Antigens (HLAs) and specific CD8+ and CD4+ T-cell responses. In this study we systematically analyzed HIV-1 clade A and D Gag epitope profiles of two HLA class I alleles associated with different outcomes of HIV-1 infection, A*0101 is significantly associated with slower seroconversion while B*0702 is associated with rapid seroconversion. We screened a Gag peptide library with iTopia Epitope Discovery System to compare the peptide binding capacity of these two alleles. The identified peptides were characterized by affinity and off-rate assays and confirmed by interferon gamma ELISPOT assays using patient peripheral blood mononuclear cells. The antigen-specific CD8+ memory T cells were compared with specific tetramer staining.
Our study showed that the broad epitope recognition and induced immune response correlated to the detrimental outcome of HIV-1 infection, while the more focused epitope recognition is associated with protection from HIV-1 infection. These observations question the current approach for HIV-1 vaccine development and propose a different vaccine development strategy.

O006
HETEROCLITIC PEPTIDES ENHANCE IL-2 PRODUCTION AND RECOGNITION BREADTH OF HIV-SPECIFIC CD8+ T CELLS

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Heteroclitic peptides are peptide sequence variants with enhanced immunogenicity relative to reference or wild type peptides. In therapeutic cancer vaccines, heteroclitic peptides dramatically augment cell-mediated immunity against tumour antigens by activating cytotoxic T lymphocytes (CTL) against tumour-associated self-peptides. Heteroclitic peptides could likewise contribute to human immunodeficiency virus (HIV) immunotherapy by broadening CTL reactivity and/or by selectively stimulating interleukin-2 (IL-2)-production. To investigate this possibility, we screened peripheral blood mononuclear cells (PBMC) from HIV-infected subjects for interferon-γ (IFN-γ) and IL-2 production by ELISPOT with peptide pools spanning the major HIV antigens. Pools stimulating IL-2 production were deconvoluted with peptide matrices to identify the individual 15mers responsible. Nef 83→91, Nef 135→143, Gag 18→27 and Gag 77→85 were confirmed as optimally defined 9mer peptides stimulating IL-2 production by PBMC from two or more HIV-infected individuals in our cohort. Twenty-four potentially heteroclitic variants were generated with conservative and semi-conservative amino acid substitutions at positions 3, 5 and 7 of these 9mers. Forty-six HIV-infected subjects were then tested for CD8+ T cell reactivity against one or more of the variant sets by ELISPOT. Variants that increased IFN-γ and/or IL-2 production in comparison to index peptides were further tested for heteroclitic properties in cell culture. Proliferation, differentiation and breadth of reactivity were assessed by CFSE dilution, surface and intracellular flow cytometry and cytotoxicity assays. In about one third of subjects tested, variant peptides enhanced IL-2 or IFN-γ production, broadened CTL reactivity and/or augmented CD8+ T cell proliferation and differentiation. Heteroclitic properties of particular peptides varied between individuals and, in some cases, even within individuals at different time points. Understanding the context within which particular variants selectively enhance HIV-specific CD8+ T cell functions could facilitate their generalized use in therapeutic vaccines.
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Pregnancy and Pediatrics / Grossesse et Enfance

O007
LACK OF CHANGE IN MITOCHONDRIAL FUNCTION OF HIV/HAART EXPOSED PLACENTAE

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OBJECTIVE: ARV exposure has been associated with mitochondrial toxicity. Mitochondria produce energy through a complex enzyme-cascade, the electron transport chain (ETC). Mitochondrial damage could affect ETC enzyme activity. The enzyme complex-IV (CIV) is partially encoded by mitochondrial (mt) DNA and therefore sensitive to mtDNA alterations. Complex-II (CII) is exclusively encoded by nuclear DNA but its activity can be compromised by oxidative damage resulting from mitochondrial dysfunction. During HIV pregnancies, the placenta is exposed to ARV. We investigated whether placental enzymatic function of ETC enzymes is altered in this context.
METHODS: Placental tissue from both the fetal (F) and maternal (M) sides of the organ was collected from HIV-infected women receiving HAART in pregnancy (study group), and HIV-uninfected unexposed controls, homogenized and stored in liquid nitrogen until used. Complex II and IV activities were tested in 69 study (36M, 33F) and 72 control (36M, 36F) samples by spectrophotometric assays. A housekeeping mitochondrial enzyme, citrate synthase (CS) was also quantified and used to normalize the activities. Spearman's correlation and Mann-Whitney tests were used for statistical analyses.
RESULTS: The enzymatic activity of placental CII and CIV were comparable between study and control groups on both fetal and maternal sides. CII and CIV activities were positively correlated with each other and also between the two sides of the placentae.

	Fetal		
median [IQR]	Study N=36	Control N=33	p value
CII/CS	0.050 [0.041-0.059]	0.052 [0.040-0.063]	0.087
CIV/CS	44.9 [35.5-60.3]	48.7 [37.4-55.4]	0.595
	Maternal		
	Study N=36	Control N=36	p value
CII/CS	0.052 [0.040-0.063]	0.055 [0.047-0.068]	0.248
CIV/CS	44.9 [35.2-57.8]	42.6 [36.0-60.8]	0.986

R [p value]	Study		Control	
maternal vs. fetal	CII	CIV	CII	CIV
	0.373 (0.025)	0.665 (<0.0001)	0.467 (0.007)	0.502 (0.003)
CII vs. CIV	fetal	maternal	fetal	maternal
	0.530 (0.001)	0.557 (0.0005)	0.567 (0.0007)	0.337 (0.031)

DISCUSSION: Placental mitochondrial enzymatic activity is well preserved in HIV/HAART exposed placentae, possibly due to protective mechanisms such as antioxidant enzymes.

O008

EVIDENCE OF HIV CORECEPTOR TROPISM SWITCH DURING PREGNANCY

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BACKGROUND: While multiple studies have focused on viral determinants involved in mother-to-child transmission (MTCT) of HIV-1, little is known about HIV-1 genetic evolution during the course of pregnancy. The aim of this study was to explore the evolution of envelope sequences and coreceptor tropism switch during pregnancy.

METHODS: A longitudinal study of Env sequences was performed in a group of pregnant women infected with HIV-1 of B (n= 10) or non-B subtypes (n=9). PCR amplification of env V1-V3 region was performed on plasma viral RNA followed by subcloning and sequencing. Coreceptor tropism was predicted for each clone with PSSM and evolution of tropism determinants in V3 and V1V2 was analysed.

RESULTS: Viral load decreased progressively during the course of pregnancy. R5X4 and X4 tropism were predicted in 6 subjects independently of HIV subtype, 5 of whom exhibited CD4+ T cell counts <200 cells/mm^3. Subjects in whom X4 variants were detected (X4 subjects) were characterized by lower CD4 cell counts, higher net charge of V3 and longer V2 region than subjects in whom R5 sequences were exclusively predicted (R5 subjects). The frequency of X4 sequences increased with time in 4/6 subjects corresponding to coreceptor switch from R5X4 to X4 in 3 cases and from R5 to R5X4 in one case. Moreover, evidence of subtype specific coreceptor switching was observed. In 5 X4 subjects, increases in the net charge of V3 were observed in conjunction with evolution of V2 and V3 amino acid sequences over time. Finally, in 2 subjects infected with subtype C, coreceptor switch was characterized by elongation of V1V2 and addition of potential N-linked glycosylation sites.

CONCLUSION: These results indicate that HIV coreceptor switch can occur during pregnancy in a manner indistinguishable from that seen in non-pregnant subjects.

O009

ADVERSE HEALTH OUTCOMES IN HIV EXPOSED UNINFECTED CHILDREN (HEU) IN BRITISH COLUMBIA – CIHR TEAM GRANT IN HIV THERAPY AND AGING (CARMA)

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BACKGROUND: Researchers in Europe /Africa have reported increased rates of severe infections in HEUs, prompting questions about underlying risk factors in this population. Little has been reported on the accessibility and health of HEUs in Canada.

OBJECTIVE: To assess the rate of adverse health outcomes in a pilot population of HEUs in BC.

METHODS: The pilot study was conducted at Oak Tree Clinic, the tertiary referral centre for HIV+ pregnant women and children in BC. Families were offered participation in-person or by mail with follow-up phone call. Interviews included living situation, school experiences and health outcomes. Demographic, pregnancy, neonatal, and hospital visit data were extracted from clinical charts.

RESULTS: 103 HEUs were enrolled from 7/09-3/10. Participants, mean age 5.4 (0.6-19.6) years, were ethnically diverse (45.6% caucasian, 21.3% aboriginal, 19.4% black). 36.9% had prenatal exposure to drugs/alcohol, with 10% experiencing neonatal abstinence syndrome requiring therapy. 92% had in utero exposure to ARVs for a mean of 21.5 (2-41) weeks. 23.3% were born premature. 14.6% had ever lived in foster care, and 16.5% required a classroom aide. 21 HEUs (20%) reported outcomes that were of a serious nature or required hospital admission. Severe infant infections in 11 children (10.7%) included meningococcal meningitis and severe RSV infection. Five children have severe developmental problems (autism, oppositional defiant disorder). Other problems included seizure disorder, complications of prematurity, renal cell carcinoma, congenital heart disease and idiopathic arthritis.

DISCUSSION: This vulnerable cohort of HEU children reported high proportion of health problems requiring hospitalization, with infections being the most common. Factors that make this cohort vulnerable include prematurity, narcotic exposure, need for foster care, development and behaviour problems. Enrollment bias is towards families accessing care and morbidities may be underrepresented. These indicators inform the need for more comprehensive study of the entire cohort through provincial population data.

O010

PERVASIVE DEVELOPMENTAL DISORDER IN ANTIRETROVIRAL- AND HIV-EXPOSED, UNINFECTED CHILDREN

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BACKGROUND: The effectiveness of antiretroviral (ARV) therapy in reducing vertical HIV transmission has led to increasing numbers of children being exposed to ARVs in utero. To date, only short term developmental outcomes have been published for HIV-uninfected, perinatally ARV-exposed children. An increasing number of HIV-exposed, uninfected children (HEU) followed by the HIV clinic at CHEO have been diagnosed with autism. The objective of this study was to describe characteristics of these cases and identify potential risk factors for developing autism.

METHODS: A retrospective chart review was conducted amongst ARV-exposed HEU seen by our clinic, born between January 1997 – July 2010. Only children with autism diagnosed by a psychologist or developmental pediatrician were included. Data on demographic, clinical, social and environmental variables were recorded.

RESULTS: Nine cases of autism were identified amongst 158 ARV-exposed HEU. Diagnoses included autism (44%), atypical autism (33%), regressive autism (11%), and autism NOS (11%). The mothers of 6 children (67%) were from an HIV-endemic country (5 East Africa, 1 Haiti); the remainder were Canadian-born. Seven children (78%) had antenatal ARV exposure, including zidovudine and lamivudine with or without other drug(s). One child had prenatal exposure to illicit drugs and alcohol. Mothers' viral loads closest to delivery ranged from <50 to 178,000 copies/ml. Six children (67%) were born via c-section, with 3 cases having experienced perinatal complications. Zidovudine was administered postnatally to all 9 children. One case had a first degree relative with a diagnosis of autism.

CONCLUSIONS: A high rate of autism was found in ARV-exposed HEU children seen at our clinic (5.7% vs. 0.6% in the general population). The long term impact of perinatal exposure to ARVs on neurodevelopment remains poorly characterized. This study identifies the need for further comparative investigation to determine the possible developmental effects of perinatal ARV exposures on HEU children.

O011

IS THE BONE HEALTH OF HIV-INFECTED CHILDREN AND ADOLESCENTS COMPROMISED?

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OBJECTIVES: To evaluate whether bone mass and strength of HIV-infected children/adolescents is compromised compared with same age and sex non-infected peers.

METHODS: We assessed bone mineral content (BMC, g) at the proximal femur, lumbar spine and total body (TB) and TB lean mass (g) using dual energy X-ray absorptiometry (DXA) in perinatally HIV-infected (HIV+) children/adolescents (n=30; 12 girls) who were 8-18 years (mean 13.6y). We used peripheral computed tomography (pQCT) to assess muscle cross-sectional area (MCSA, cm2) and bone parameters [cortical density (mg/cm^3), area (cm^2) and thickness (cm), and polar strength strain index (mg/cm^3)]. We adjusted bone parameters for tibia length and MCSA. We assessed height (cm), weight (kg), physical activity (min/week) and dietary calcium (mg/d; by questionnaire). We compared HIV+ measures to age and sex-specific z-scores derived from the University of British Columbia Healthy Bones Study cohort (controls; n=687; 352 girls).

RESULTS: Four participants were ART-naïve while 26 took ART (median 92 months). HIV+ girls and boys were shorter, had lower fat mass and MCSA z-scores ($p<0.01$) than controls. After adjusting for height and lean mass z-scores, HIV+ had lower BMC than controls at the femoral neck ($p<0.01$). Cortical bone density was higher in HIV+ participants ($p<0.01$). There were no differences between groups for any other measures including bone parameters by pQCT. We were unable to control for ethnicity given the differences in the ethnic diversity of both groups.

CONCLUSION: This study is among the first to evaluate the effect of HIV on the bone geometry and strength of children and youth. While previous studies in HIV+ children showed decreased bone mass of the whole body or lumbar spine, we found femoral bone mass compromise but no decrement in bone geometry or strength. Whether this finding is sustained over the long-term needs to be further explored.

O012

PORTRAIT OF ANTIRETROVIRAL DRUG RESISTANCE IN HIV-1-INFECTED ADOLESCENTS PRIOR TO THEIR TRANSFER TO ADULT CARE: AN EXPLORATORY STUDY

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BACKGROUND: Combination antiretroviral therapy (cART) has reduced morbidity and mortality in HIV-infected children and adolescents. It is essential to characterize drug resistance (DR) in HIV-infected adolescents to prepare transition to adult care and improve long-term outcome. Clinical, immunologic, and virologic status and DR profiles were examined in HIV-infected adolescents prior to their transfer to adult care.

METHODS: Subjects were participants to the CMIS Mother-Child Cohort, CHU Sainte-Justine, Montreal, between 03/1998 and 01/2010 (n = 54; 29 females, 25 males). Clinical and socio-demographic data were reviewed, including year of cART initiation and antiretroviral agents used. Genotypic DR testing was performed. Mutations were examined using HIV resistance interpretation algorithms.

RESULTS: 54 adolescents were transferred to adult care or were in the process. 61.1% were first exposed to mono- or bi-therapy (<1997) prior to receiving cART. At the time of transfer, 41 subjects (75.9%) were asymptomatic, 4 had opportunistic infections and 9 experienced other clinical problems. Viral load (median 2.24 log10 HIV-1 RNA copies/ml) was undetectable in 24 subjects (44.4%). Median CD4 counts were 458 cells/mm^3. 14 of 54 subjects (25.9%) had CD4 counts < 200. Genotypic DR testing was performed in 43 of 54 (79.6%) subjects. Median number of mutations observed in individual subjects was 9 (maximum 38). Analysis revealed that 12 subjects of 43 (27.9%) harboured virus resistant to at least one agent of the 3 major classes, with 3 also resistant to 2nd generation PI and 2 with intermediate resistance to 2nd generation NNRTI. DR was associated with suboptimal initial antiretroviral treatment. 7 patients (13.0%) were on 3TC monotherapy or off treatment due to poor adherence. Outright cART was associated with better immunologic outcome.

CONCLUSIONS: Our main findings are that 1/4 of the subjects were highly immunosuppressed (CD4 < 200) and that around 1/3 of tested subjects harboured multiresistant virus. Upon transiting to adult care, they will group with heavily treatment-experienced patients, with limited therapeutic alternatives. Our results emphasize the need for strategies to improve adherence, including education, counselling and peer-support.

HIV, STI and Sexual Behaviour Among MSM / VIH, ITS et comportement sexuel chez les HASRSAH

O013

TRENDS IN BEHAVIOURS ASSOCIATED WITH SEXUALLY TRANSMITTED AND BLOOD-BORNE INFECTIONS (STBBI) AMONG GAY MEN IN MONTREAL

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OBJECTIVE: Explore the evolution of risk behaviours among Montreal gay men from 2005 to 2008.

METHOD: ARGUS is part of M-Track, an enhanced surveillance system that monitors HIV/STBBIs and risk behaviours among MSM in Canada. Men were recruited through approximately 40 gay venues during both cycles of ARGUS. Subjects completed a self-administered questionnaire. Analyses were restricted to Montreal HIV-negative/unknown men who self-identified as gay. Bivariate analyses assessed associations between selected behavioral indicators and the survey year. For each variable, a multivariable logistic regression model was used to adjust for sample variation (venue type and socio-demographics) from 2005 to 2008. Terms of interaction where included when indicated.

RESULTS: Data were available for 1334 and 1034 subjects in 2005 and 2008, respectively. Respondents in 2008 were more likely to have (past 6 months): looked for sexual partners on the internet once a month or more [OR: 1.78 (95% CI:1.20-2.62)], and to have been at least once under the influence of GHB during sex [1.92 (1.04-3.54)]. Behaviours that appear to have remained consistent since 2005 include: sex with six or more "one-night stand" partners, unprotected anal intercourse (UAI) with a "one-night stand" partner and regular or casual HIV infected or of unknown status partner, and intentional UAI with a "one-night stand". Respondents in 2008 were more likely to have been tested for HIV [1.94 (1.29-2.91)] or for syphilis [2.02 (1.34-3.02)] and to agree (moderately or very much) with the statements: "An HIV-positive man taking medications is less likely to transmit HIV" [1.92 (1.17-3.14)], and "HIV/AIDS has become a controllable disease (like diabetes)" [1.93 (1.14-3.28)].

CONCLUSION: Compared to respondents in 2005, Montreal MSM recruited in 2008 demonstrated no significant decrease in at-risk sexual behaviour. The increase in recent HIV testing is encouraging and perceptions regarding HIV transmission and as a disease may be evolving.

O014

TRENDS IN FACTORS ASSOCIATED WITH RECENT HIV TESTING AMONG MONTREAL MEN WHO HAVE SEX WITH MEN (MSM): RESULTS FROM THE ARGUS 2005 AND 2008 SURVEYS

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BACKGROUND: ARGUS is a cyclical survey of Montreal MSM that monitors the occurrence of HIV and other sexually transmitted and blood-borne infections (STBBI). It is part of M-Track, the Public Health Agency of Canada's national second-generation surveillance system. Data were collected in 2005 and 2008.

OBJECTIVES: To examine trends and correlates of recent HIV testing since 2005.
METHODS: Participants completed a self-administered questionnaire. Analysis was limited to MSM currently living in Montreal, 18 years or older and self-reported HIV-negative or of unknown status. Logistic regression analyses were stratified by year of study and adjusted for age. The outcome of interest was having had at least one HIV test within the previous 6 months. Demographics, sexual behaviours, and knowledge/beliefs on HIV were examined.
RESULTS: In total, 1,741 and 1,051 questionnaires were completed in 2005 and 2008, respectively. In the previous 6 months, 26% of men had been tested for HIV in 2005 and 41% in 2008. Multivariate analyses indicated that in 2005, engaging in risky anal intercourse (e.g., unprotected intercourse with a one-night stand) (OR=1.5 [1.2-2.0]), injecting with used needles (OR=4.1 [1.4-12.1]), looking for/meeting a partner online (OR=1.7 [1.4-2.2]), and number of sexual partners (categorized in groups of 10) (χ^2 test for trend of odds =11.01, $p < 0.001$) were independently and positively associated with the outcome. In 2008, the only significant variables that carried over from 2005 were meeting a partner online (OR=1.5 [1.2-2.1]) and total number of sexual partners (χ^2 test for trend of odds = 10.2, $p < 0.01$).
CONCLUSION: While recent HIV testing by Montreal MSM increased between 2005 and 2008, the profiles of men testing between years differed. The prevalence of most risk factors remained stable across both cycles, yet some high risk-taking behaviours were no longer associated, or not as strongly associated with testing in 2008. This may be due to promotional campaigns emerging after 2005 targeting all MSM to get tested.

O015

PHYSICAL ABUSE BEFORE AGE 17 YEARS INCREASES RISK FOR HIV SERO-CONVERSION IN A COHORT OF YOUNG MEN WHO HAVE SEX WITH MEN IN VANCOUVER, BRITISH COLUMBIA

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BACKGROUND: Vulnerability for HIV infection has been linked to childhood physical abuse (CPA) and childhood sexual abuse (CSA) among heterosexuals, but there is a paucity of similar research among men who have sex with men (MSM). We studied whether CPA or CSA was associated with increased risk for subsequent HIV infection in an HIV incidence cohort of young MSM.
METHODS: MSM aged 15-30 years and HIV-negative at baseline were enrolled in a longitudinal cohort (The Vanguard Project). Participants completed questionnaires and tested for HIV annually. We used logistic regression to examine correlates of CPA and CSA among other commonly measured HIV risk factors, and Cox proportional hazards modeling to examine seroconversion.
RESULTS: 287 participants completed the CPA/CSA questions and had documented HIV test results. Mean age was 45 years (range 21-79); 85% were Canadian-born. 42% of men identified as gay, 36% homosexual and 12% straight. Physical abuse before age 17 years was reported by 76 (26.5%) participants, sexual abuse before age 17 was reported by 70 (24.4%) and both were reported by 36 (12.5%). Less than two-thirds (61.7%) reported no abuse. Reporting CPA was associated with having ever worked in the sex trade (AOR: 2.49 [1.26-4.93]), ever thought about suicide (AOR: 2.73 [1.25-5.97]), CSA (AOR: 4.10 [2.15-7.82]), and seroconverting during the study (AOR: 6.04 [1.79-21.13]), whereas only reporting CPA (AOR: 4.06 [2.23-7.41] was significantly associated with CSA. In the Cox model CSA was not significant, but MSM reporting CPA were 4.89 times more likely (95%CI: 1.65-14.48) to seroconvert after adjusting for high school education and unprotected receptive anal sex with high-risk partners.
CONCLUSIONS: CPA was an important predictor of subsequent HIV seroconversion among young MSM in Vancouver, but CSA was not. CPA was also strongly associated with ever working in the sex trade, ever thinking about suicide, and having experienced CSA. As CPA independently predicted HIV seroconversion even after controlling for other commonly measured risk factors, we recommend that studies include questions on CPA among the risk factors measured.

O016

THE VALUE OF SEX: SEX FOR MONEY, DRUGS OR GOODS AMONG MEN WHO HAVE SEX WITH MEN IN VANCOUVER, BRITISH COLUMBIA

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BACKGROUND: The exchange of sex for money, drugs, goods/services (transactional sex) is a recognised risk factor for HIV infection, particularly among men who have sex with men (MSM). We investigated the extent and correlates of transactional sex among MSM recruited into the Vancouver component of the Public Health Agency of Canada's M-Track second generation national surveillance system of MSM (ManCount).
METHODS: In 2008-2009, ManCount recruited MSM aged ≥19 years through community venues and events catering to MSM to complete a self-administered questionnaire and provide a blood sample for testing for HIV. We examined responses to questions on having given or received money, drugs or goods/services in exchange for sex in the past 6 months (P6M) and used multivariate logistic regression to explore association of seeking and providing transactional sex with a number of recognised HIV risk factors.
RESULTS: Of the 1169 participants, 1130 answered the transactional sex questions with 218 (19.3%) reporting exchanging some consideration for sex P6M: 14.2% having received consideration, 12.5% having given, and 7.1% both. 10.8% received money, 8.9% drugs and 6.6% goods; 7.9% gave money, and 5.6% gave drugs or goods. Table1 shows correlates of receiving and giving transactional sex.

TABLE 1
CORRELATES OF TRANSACTIONAL SEX

		RECEIVED FOR SEX		GAVE FOR SEX	
Variable	Level	Crude OR (95% CI)	Adjusted OR (95% CI)	Crude OR (95% CI)	Adjusted OR (95% CI)
Age in years	30-44	0.8 (0.5-1.1)	-	1.4 (0.9-2.1)	1.2 (0.7-2.1)
(vs <30 years)	45+	0.6 (0.4-1.0)	-	2.5 (1.6-4.0)	2.5 (1.4-4.5)
Sexual orientation	Not "gay"	3.8 (2.6-5.4)	2.9 (1.8-4.7)	2.1 (1.4-3.2)	-
Income	<$10K	5.6 (3.4-9.2)	3.1 (1.5-6.1)	2.6 (1.5-4.4)	-
(vs ≥$40K)	$10K-$39K	2.1 (1.4-3.1)	1.4 (0.9-2.4)	1.4 (1.0-2.1)	-
Education	High school or less	2.6 (1.8-3.8)	1.8 (1.1-3.0)	2.1 (1.4-3.1)	-
STI P6M		2.7 (1.5-4.8)	-	1.5 (0.8-3.0)	-
HIV status	Positive	2.2 (1.4-3.2)	-	1.8 (1.2-2.8)	-
(vs Negative)	Don't know	1.1 (0.6-2.1)	-	0.9 (0.4-1.9)	-
IDU P6M		7.3 (4.3-12.4)	2.2 (1.0-4.9)	5.8 (3.3-10.0)	3.0 (1.5-6.2)
Public sex P6M*		2.8 (2.0-4.1)	-	3.8 (2.6-5.6)	2.4 (1.5-3.8)
Drugs with sex P6M	<Half (1-49%)	3.9 (2.6-6.0)	3.7 (2.3-5.9)	2.1 (1.3-3.2)	1.8 (1.1-2.9)
(vs None)	≥Half (50-100%)	12.8 (7.4-22.2)	4.2 (1.9-9.3)	8.6 (5.0-14.8)	5.3 (2.6-10.8)
Nbr sex partners P6M		1.04 (1.03-1.06)	1.03 (1.01-1.05)	1.03 (1.02-1.04)	-
Risky sex P6M**		2.24 (1.5-3.3)	1.8 (1.1-2.9)	2.1 (1.4-3.2)	1.7 (1.1-2.8)

*Notes: STI=sexually transmitted infection; P6M=past 6 months; IDU=injection drug use (excl. steroids); * Seeking sex in parks, public washrooms, bike paths; ** Unprotected anal sex with a sero-discordant or unknown HIV status partner*

CONCLUSION: The exchange of money, drugs or goods/services for sex is common among MSM in ManCount and may be more prevalent in MSM culture than previously thought. Lower income, education and non-gay identity were associated with receiving consideration whereas older age, IDU P6M and seeking sex in public places were associated with giving. The association of transactional sex with use of injection drugs and use of recreational drugs around sex emphasizes an intimate connection between drug use and sex in the production of HIV risk.

O017

REACH AND TEST MSM: SPOT'S EXPERIENCE AT A COMMUNITY SITE AND AT TWO CLINICS

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BACKGROUND: SPOT is an on-going intervention-research project offering free anonymous rapid HIV testing to MSM in Montreal.
OBJECTIVE: To evaluate SPOT mid-term performance in reaching and testing MSM at risk.
METHOD: A structured questionnaire is staff-administered before HIV counselling and testing and two short ones are self-administered, one while waiting for test results and the other after the meeting. 918 participants were recruited between July 2009 and November 2010. Data analysis compares socio-demographic, psychosexual and behavioural variables between participants seen at the community site and at the two clinical sites.
RESULTS: MSM recruited at all sites are evenly likely to report unprotected anal sex (UAS) with HIV positive partners and HIV unknown status partners in the last three months (36.1% at the community site vs. 37.6% p=0.75). However, MSM recruited at the community site have a different profile from those seen at clinical sites. A higher proportion of them are younger than 35 years old (62% vs. 47.3%; p=0.002), report to have had sex partners with an unknown HIV serological status in the past three months (74.3% vs. 63.2%; p=0.01) and are born outside Canada (35.9% vs. 24.2%; p=0.02). Of the 918 participants, 18 tested positive, 17 at the community site and one at a clinic, for a global diagnostic rate of 2%. It's slightly above or equal to comparable projects in Canada (1.4% at Hassle Free Clinic, Toronto and 2% at L'Actuel, Montreal).
CONCLUSION: At all sites, rapid HIV testing services reach a significant proportion of at risk MSM. Moreover, access to rapid HIV testing in different kind of sites allows reaching and testing at risk MSM with different profiles. SPOT's outcomes demonstrate its success in reaching and testing a diverse population of at risk MSM.

O018

INFECTED DEVIANTS: READING EPIDEMIOLOGY AS BIO-POWER IN MEN WHO HAVE SEX WITH MEN (MSM) RESEARCH

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Since MSM are disproportionately affected by HIV/AIDS, this paper questions if heterosexist assumptions have infiltrated how disease is studied and investigates what the implications could be for sexual minorities. Based on discourse analysis research from a health professional graduate thesis, this paper examines the study of disease as Foucault's concept of biopower by uncovering how power has come to work on the human body. The Canadian Guidelines on Sexually Transmitted Infections produced by the Public Health Agency of Canada is a significant clinical practice tool used in sexual health assessments across the country and is the main text examined in this study. The MSM appendix, specifically the section on epidemiology, describes rising rates of sexually transmitted infections (STIs) including HIV, a significant increase of unsafe sex practices, and recent outbreaks of STIs, most notably syphilis.
With a close examination of the references used to make these claims, this paper suggests discourses deployed through epidemiology define certain groups of people as deviant, particularly MSM. By constructing MSM as deviant through epidemiology, I will show how these diseases also become synonymous with MSM thus constructing STIs as a problem within particular (marginalized) communities. This practice is not unlike the naming of Gay Related Immune Deficiency syndrome (GRID) in the early 1980s, which is now commonly known as AIDS.
Arguing discourses of epidemiology conflate STIs with sexual deviants in MSM research, this paper examines the implications of the study of disease as a form of controlling and regulating people. Using a genderqueer analysis, unacceptable kinds of sex practices, sexual relationships, and sexual risks are explored in relation to MSM. I also expose how the discourses of harm elimination, quarantine, and celibacy are deployed within the Guidelines' epidemiology section on MSM. Finally, I explore the implications of AIDSphobia, heterosexism, racism, colonialism, and classism on MSM in sexual health clinical practice and epidemiology.

Emerging/Current/Significant Issues, Methods and Interventions for and with Aboriginal Communities in Canada / Enjeux émergents/actuels/importants, méthodes et interventions collaboratives auprès des communautés autochtones du Canada

O019

FOSTERING EQUITY IN HIV CARE WITH ABORIGINAL PEOPLE AFFECTED BY SYSTEMIC INEQUITIES IN URBAN CONTEXTS

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BACKGROUND: Contemporary and historic manifestations of colonialism in Canada have resulted in profound health inequities between Aboriginal and other Canadians, exemplified by steadily increasing and disproportionate rates of HIV among Aboriginal people. Healthcare systems continue to be ineffective in meeting the needs of Aboriginal people living with HIV. Alternate approaches within the healthcare system are needed to mitigate the multiple oppressions faced by Aboriginal peoples living with HIV.
PURPOSE: We report on findings from an ongoing community-based study of two urban Aboriginal health centres in Western Canada. This study explores the ways primary healthcare (PHC) services can be provided to meet the needs of people marginalized by systemic inequities. In this presentation, we report on our analysis of PHC strategies tailored to meet the needs of Aboriginal peoples living with HIV/AIDS in an urban context.
METHOD: Using ethnographic methodologies, the following data were collected: (a) individual and group interviews with 72 patients; (b) interviews with 44 staff/providers; (c) over 850 hours of participant observation at both Centres; and (d) analyses of organizational policy documents.
RESULTS: High quality HIV/AIDS care can be achieved in this population. Steps to achieve this include (1) fostering health equity by using relational approaches to mitigate experiences of stigma, discrimination and racism, (2) acknowledging people's individual social contexts, including histories of trauma, and (3) inter-professional teams that can effectively attend to healthcare needs and the social determinates of health/illness. When applied within the context of a Chronic Disease Management approach to HIV, these approaches promote successful engagement in HIV treatment and care.
CONCLUSION: Effective healthcare for Aboriginal peoples living with HIV who are marginalized by systemic inequities must be responsive to the medical, historical, political and socio-economic contexts of people's lives.

O020

BRIDGING THE GAP BETWEEN GENDER VIOLENCE, SEXUAL HEALTH RESEARCH AND THE ABORIGINAL COMMUNITY

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BACKGROUND: Aboriginal peoples are over-represented in HIV and AIDS statistics in Canada. Nearly 50% of new Aboriginal HIV infections are in women and girls. Aboriginal women and girls living with HIV report experiences of sexual violence and related racial discrimination, poverty, social inequality and oppression. In 2009 a CIHR funded research project Our Search for Safe Spaces identified direct and indirect links between sexual violence and HIV infection. Aboriginal women's vulnerability and risk for HIV infection is grounded in the social determinants of health.
Bridging the Gap brings together Aboriginal Women Living with HIV and AIDS (AWHAs), other Aboriginal women and girls, and key stakeholders

in Canada to plan policy action regarding recommendations from Our Search for Safe Spaces. This project also responds to the need for collaboration, capacity building and KTE to address the links between sexual violence and HIV infection.
OBJECTIVES: 1) create collaborative relationships with Aboriginal stakeholders, policy makers and knowledge users; 2) Engage AWHAs and other important stakeholders in policy discussions focusing on resistance of oppression in the context of sexual violence and HIV; 3) Engage knowledge users, researchers and partners in KTE processes; 4) Develop an innovative and culturally relevant policy statement which is relevant to Aboriginal women and girls, addresses the impacts of violence against Aboriginal women and the implications for health management.
OUTPUTS: The research team will create a policy implementation plan following deliberation at the Wise Practices Gathering, March 2011. This final report will represent a seminal document for informing policy change.
OUTCOMES: Participants will enhance their understanding of how research informs policy, and how responses to the implications of gender violence in the lives of AWHAs can be translated into policy.

O021
ENVIRONMENTS OF NURTURING SAFETY (EONS): STRATEGIC DIRECTION FOR SERVICE DELIVERY TARGETING ABORIGINAL WOMEN IN CANADA

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BACKGROUND: In 2008-2010, the Canadian Aboriginal AIDS Network (CAAN) conducted a community consultation with Aboriginal women to develop a five-year strategy addressing barriers to service delivery. Concerned with increasing rates of infections among Aboriginal women (PHAC, 2010), Environments of Nurturing Safety (EONS) – Aboriginal Women in Canada: Five Year Strategy on HIV and AIDS highlights priority approaches and strategic actions. This strategy document addresses both quality of life issues for Positive Aboriginal Women (PAW) and prevention. With increasing numbers of Aboriginal women potentially accessing HIV-related services, strategically and culturally grounding services responses is fundamental to success.
METHODS: Involving 300 Aboriginal women in 11 cities across Canada, the consultations made use of sharing circles premised on egalitarian, supportive, non-confrontational values meant to solicit collective identification of problems and solutions. Sharing circle dialogue focused on barriers to services, experiences accessing services, identification of priority areas and recommendations to improve services. Guided by a national Aboriginal women's committee, hand written notes summarized sharing circle content, was thematically analyzed, and a final report made available. Women participating in sessions were made aware that the consultation was to inform a five-year strategic plan.
DISCUSSION: Findings reveal a lack of Aboriginal women specific programs that were considered 'safe' and supportive environments. Recommendations included the need for culture to be considered in provision of services – and guided by a relational Aboriginal ethic – spaces that support a sense of connection to the broader environment, to community, to family, to Aboriginal men, and to children. The strategy also identifies PAW as integral to the prevention of new infections in recognizing them as 'inner guides'.
IMPLICATIONS: This has implications for service providers who deliver services for PAW and addresses the need for an increase of service delivery models that utilizes Aboriginal approaches to services.

O022
SUPPORTING ABORIGINAL WOMEN INVOLVEMENT: AN EXAMPLE OF WRITING USING COMMUNITY-BASED RESEARCH PRINCIPLES

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BACKGROUND: Grounded by First Nations' principles of ownership, control, access and possession (OCAP) and by models of community-based research (CBR), Aboriginal peoples are reclaiming their right to self-determination in research. Although many examples using OCAP and CBR exist in the literature, few describe this in the context of the writing process. Grounded in an indigenous worldview that supports collective involvement, this presentation highlights a recent writing process and discusses some of the challenges/benefits of participatory writing.
METHODS: Members of the writing team – both community and academics – met face-to-face to discuss analysis/interpretation of research data, created an online space to share emerging drafts, and met regularly via teleconference. All members of the writing team were tasked with writing sections of the publication. Sections were compiled by the academics, grounded in the literature, and feedback was sought from all members of the writing team. An arms-length advisory committee, representative of the Aboriginal women's HIV community, approved the final draft prior to publication.
DISCUSSION: Although the writing process was not without challenges (e.g., time constraints, cost and resources, competing responsibilities and deadlines, etc.), it extends the benefits of CBR. The writing process respected the Aboriginal value of sharing, support for one another, and used group consensus to highlight problems/devise solutions. It is a process that reflected the principles of "'by, for and with' rather than 'on' them," conferred a sense of ownership, a strengthened sense of community, heightened the notion of meaningful engagement in research, and challenged Western notions of knowledge production through co-creation of 'new' Aboriginal knowledge.
IMPLICATIONS: The process described is of value to both community and academics and can be adapted to other CBR projects. Care should be taken to account for additional costs and time, etc. associated with use of this process.

O023
EFFECTIVENESS OF HIV SELF-MANAGEMENT SUPPORT GROUP PROGRAM FOR ABORIGINAL AND NON-ABORIGINAL PEOPLES LIVING IN VANCOUVER'S DOWNTOWN EASTSIDE

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BACKGROUND: Marginalized Aboriginal and non-Aboriginal peoples living with HIV face multiple health challenges. Self-Management Support (SMS) interventions have been shown to improve the management of numerous chronic diseases, but are not well understood in relation to HIV. This presentation presents findings from an ongoing SMS study targeting HIV positive individuals at an urban Aboriginal Health Centre in Vancouver's Downtown Eastside. The intervention is a group program based upon the principles of chronic disease management and Traditional Aboriginal Cultural and Healing practices. The program is staffed by Aboriginal Elders/Traditional Medicine Specialists, nurses, dietitians, HIV positive peer coaches and research assistants.
METHODS: Participants enrolled in a 12-week HIV SMS group program, which met weekly for 1.5 hours to discuss topics related to HIV and to work on goal setting. The effectiveness of the SMS study was measured using a combination of: (1) pre-post surveys measuring HIV self-efficacy, treatment literacy, anxiety/depression, transmission risk behaviours, and community engagement; (2) pre-post semi-structured interviews and focus groups, and (3) laboratory and pharmacy adherence data.
RESULTS: 38 participants enrolled in the first two seasons of the program – 60.39% Aboriginal, 40.58% female and 47.73% with stable housing. 23 semi-structured interviews and 2 focus groups with participants and peer coaches were conducted and analyzed thematically. Interim analyses showed an improvement in ART uptake (87.94% at baseline versus 95.83% post-intervention; 2 participants initiated ART), an increase in ARV adherence (87.94% versus 91.69%) and an increase in viral load suppression rate (83.33% versus 86.36%). Participation was also associated with decreased rates of depression/anxiety and amounts spent on illicit drug use, and subjective improvements in confidence to self-manage HIV.
DISCUSSION: Preliminary analyses suggest that an HIV SMS group program can improve rates of ART uptake, ARV adherence, viral load suppression, and other key behaviours and health aspects related to HIV self-management.

O024

TAKING ACTION! BUILDING ABORIGINAL YOUTH LEADERSHIP IN HIV PREVENTION USING ARTS-BASED METHODS

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BACKGROUND: Canadian Aboriginal youth are already overrepresented in Canadian HIV/AIDS statistics; research indicates that the potential for the virus to spread among Aboriginal youth is enormous. New, culturally appropriate prevention approaches are needed.

METHODS: We partnered with six Aboriginal communities to sponsor workshops with youth (ages 13-18+). Youth participated in sessions about HIV, cultural pride and sexual health and worked with local artists to create pieces that explored the links between structural inequalities, individual HIV risk and indigenous culture(s). One month later, youth were interviewed individually to reflect on their production(s) and key learnings. Interviews and media were inductively analyzed for themes.

RESULTS: Youth created songs, plays, photographs, murals, videos, drawings and paintings that were powerful, engaging and provocative. Some talked about HIV as a grim reaper wrecking havoc on their communities. Others situated HIV in larger discussions of exclusion, harassment, racism and inequality. Many youth connected everything in their lives to colonization: lamenting loss of land, culture and language. These youth associated HIV with the elevated rates of sexual and substance abuse in their communities and the ongoing detrimental impacts of residential schooling. Several youth also connected the isolation experienced on reserve to the loneliness felt by youth who become street involved in urban centres. Others felt disconnected from their traditional ways. Many used humour and cultural symbols to talk about healing and challenge stereotypes. While bereavement held some youth back, others talked about the importance of "moving on."

CONCLUSION: By drawing the links between individual vulnerability to HIV and larger structural inequalities, youth began conversations amongst themselves and their larger communities that challenged dominant HIV prevention strategies. They were able to see the connections between historical structural violence and current inequities, and used humour, fear, resilience and strength to imagine new prevention possibilities.

Host Immunity / Immunité de l'hôte

O025

SELECTIVE INACTIVATION OF HIV-SPECIFIC KIR3DL1+ CD8+ T CELLS

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Certain killer cell immunoglobulin-like receptor (KIR)/major histocompatibility complex (MHC) class I genotype combinations protect against human immunodeficiency virus (HIV) infection or disease progression. Although KIRs are primarily expressed on natural killer cells, they are also found on T cells, especially CD8+ T cells. Therefore, we investigated KIR3DL1/S1+ CD8+ T cell phenotype and function in HIV infection to address their possible role.

The number of KIR3DL1/S1 expressing CD8+ T cells increases in HIV infection ($p = 0.0057$), independently of Bw4 ligand co-expression. In both HIV-infected and uninfected groups, KIR3DL1/S1+ CD8+ T cells had a CD45RA+CD57+ terminally differentiated-like phenotype. Freshly isolated KIR3DL1+ CD8+ T cells did not respond to HIV or cytomegalovirus (CMV) peptides and this non-responsiveness to antigen-specific stimulation was also independent of Bw4 expression. However, responsiveness to CD3 cross-linking indicated intact T cell receptor signaling. Following in vitro culture, KIR3DL1+ CD8+ T cells responded to stimulation with CMV and flu peptides, but not to stimulation with HIV peptides. When cultured with interleukin-7 (IL 7) and IL-2, KIR+CD8+ T cells proliferated robustly and produced interferon (IFN)-γ in response to antigen-specific stimulation with CMV, but not HIV peptides. KIR-CD8+ T cells responded to HIV peptides in all cases.

These results suggest that in vivo inactivation of KIR3DL1+ CD8+ T cells occurs in HIV infection, but is unrelated to the interaction between HLA Bw4 and KIR3DL1. Inactivation of HIV-specific CD8+ T cells appears intransigent, relative to the short-term inactivation of KIR3DL1+ CD8+ T cells specific for other antigens such as CMV. This is another example of CD8+ T cell dysfunction in HIV infection, possibly related to chronic antigen exposure. Further research is required to delineate the functional differences between HIV-specific and non HIV-specific KIR+ CD8+ T cells and to evaluate the role of KIR expression on HIV-specific T cells.

Supported by CIHR.

O026

LOSS OF TRAF1 DURING CHRONIC VIRAL INFECTION DESENSITIZES THE 4-1BB COSTIMULATORY PATHWAY

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Chronic infection places an enormous burden on human health. Regulatory mechanisms, that may have evolved to limit immune pathology, can prevent viral control during persistent infection. Here we show that TRAF1, a signaling adaptor downstream of several TNFR family members, including 4-1BB, is lost from virus specific CD8 T cells during chronic infection with HIV in humans or LCMV clone 13 in mice, but is maintained at a higher level in HIV controllers. TRAF1 expression negatively correlates with HIV viral load during the chronic phase of HIV infection and knocking down TRAF1 in CD8 T cells from viral controllers results in decreased control of HIV suppression and HIV-specific T cell responses. TGFb, a cytokine implicated in immune dysfunction during chronic infection can cause loss of TRAF1, whereas IL-7 can correct the defect in TRAF1 expression during chronic infection in vivo. Combined therapy with IL-7 followed by agonist anti-4-1BB antibody results in TRAF1-dependent expansion of virus specific CD8 T cells and improved clearance of established clone 13 infection. Thus, a combined therapy with anti-4-1BB agonist plus IL-7 represents a promising approach for chronic viral infections in humans.

O027

TIM-3 EXPRESSION CORRELATES WITH CD-8+ T CELLS CYTOTOXICITY IN CHRONIC VIRAL INFECTIONS

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BACKGROUND: CD8+ cytotoxic T cells (CTLs) are important in immune responses against viruses, because they kill virus-infected cells though the upregulation of killing molecules, Perforin and Granzymes. CTLs in HIV infection have been shown to be dysfunctional or exhausted, as they are unable to produce cytokines or proliferate, allowing virus escape. Exhausted cells have been shown to display higher levels of certain receptors on their surface, one of which is a marker known as Tim-3. Tim-3+ T cells are exhausted in regards to their proliferation capacities and cytokine productions; however it is unclear whether their cytotoxic (killing) activity is also reduced.

OBJECTIVES: To assess the cytotoxic or killing activities of Tim-3+ CD-8+ T cells from HIV infected individuals.

METHODS: PBMCs from HIV+ samples were used for surface staining, ICS, Tetramer staining and In Vitro stimulation, CFSE proliferation, and suppression assays. We examined the CD-8+ T cells for 1) resting Perforin levels 2) upregulation of Perforin after degranulation and loss of preformed perforin content after stimulation with cognate antigen 3) cytotoxic activity after Tim-3 blockade with sTim-3 or anti-Tim-3 antibodies indirectly by checking the level of Perforin or directly by Ex Vivo suppression assays.

RESULTS: There are differential expressions of Perf, IFNg and TNFa on CD-8+ T cells. Percentage of Perf+ cells is higher on resting Tim-3+CD-8+ T cells. While both Tim-3+ and Tim-3- CD-8+ T-cells contribute to de novo synthesis of Perforin the expression of this newly formed perforin is still marginally higher on Tim-3+ cells. This is also true for HIV tetramer specific CD-8+ T cells. Surprisingly, In Vitro blockade of Tim-3 pathway leads to lower levels of perforin on proliferated cells and lower cytotoxic activity in HIV specific CTLs

CONCLUSION: These findings suggest a potentially novel function of Tim-3. Tim-3 is upregulated on terminally differentiated CTLs that have lost their ability to proliferate and produce cytokines, however, its expression might be essential perforin up-regulation and hence proper for cytotoxic activity of CD8s.

O028

IL-7 SUPPRESSES TRANSCRIPTION OF THE CD127 GENE IN HUMAN CD8 T-CELLS BY STIMULATING THE EXPRESSION OF A STAT5-INDUCED REPRESSOR

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BACKGROUND: HIV infection disrupts IL-7 signalling both in terms of cytokine production and receptor expression. Since IL-7 is essential for T-cell survival, homeostasis and function, disruption of this cytokine pathway likely contributes to HIV-induced immune deficiency. We have previously shown expression of the IL-7 receptor alpha-chain (CD127) is suppressed on CD8 T-cells in HIV+ patients and that this suppression is mediated by both HIV Tat protein and IL-7. The mechanisms by which IL-7 alone down-regulates CD127 expression have not yet been fully characterized. We elucidate in this study some details of how IL-7 suppresses CD127 gene transcription.

METHODS: CD8 T-cells from HIV-negative volunteers were treated with IL-7 at concentrations ranging from 0.1-10ng/ml in the presence of various inhibitors. CD127 and Gfi-1 transcripts were quantified by qPCR normalizing to 18S expression while protein expression was monitored by Western. STAT3/5 phosphorylation was measured by flow cytometry.

RESULTS: IL-7 down-regulates CD127 transcripts in CD8 T-cells in a time- and dose-dependent manner, and high levels of IL-7 (10 ng/ml) are required to maintain suppression. We found no evidence that IL-7 affects the stability of CD127 mRNA. Further, IL-7 did not suppress CD127 transcripts in Jurkat cells engineered to express the CD127 cDNA downstream of the CMV promoter indicating IL-7 does not decrease stability of the spliced message. We also show that suppression of CD127 transcripts is dependent on JAK kinase activity and phosphorylation of STAT5 but not STAT3. Notably, cycloheximide blocked IL-7's ability to down regulate CD127 transcripts suggesting IL-7 stimulates the de novo synthesis of a repressor which in turn down regulates CD127 gene transcription. Whereas Gfi-1 has been shown to suppress CD127 expression in mice, we found IL-7 does not up regulate Gfi-1 mRNA or protein in human CD8 T-cells.

CONCLUSIONS: Upon binding to its receptor, IL-7 activates JAK kinase and induces phosphorylation of STAT5 which in turn appears to upregulate expression of a transcriptional repressor that suppresses CD127 gene expression. In contrast to mice, Gfi-1 is not induced by IL-7 in human CD8 T-cells.

O029

KIR3DL1+ NATURAL KILLER (NK) CELLS FROM HIV-INFECTED SLOW PROGRESSOR CARRIERS OF INHIBITORY KIR3DL1-HLA-B NK RECEPTOR-LIGAND PAIRS EXHIBIT HIGHER K562 STIMULATED FUNCTIONALITY CHARACTERIZED BY CYTOKINE SECRETION AND DEGRANULATION THAN KIR3DL1-NK CELLS

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BACKGROUND: The KIR3DL1 gene encodes inhibitory Natural Killer (NK) receptors that recognize HLA-Bw4 alleles as ligands. NK cells that carry KIR3DL1 to self HLA ligands should be licensed for elevated function upon encountering targets that have down-modulated ligand such as occurs HIV infection. HLA-B*57/B*27 are Bw4 alleles frequently expressed by HIV-infected slow progressors (SP). We questioned whether NK cells from SP carrying KIR3DL1 homozygotes (hmz) genotype and an HLA-Bw4 ligand had KIR3DL1+ NK cells with higher functional potential than KIR3DL1- NK cells and whether the functionality of these NK subsets would differ in Bw6 hmz with no ligands for KIR3DL1, in whom KIR3DL1 could not participate in NK licensing.

METHODS: The functional potential of NK cells from SP was investigated by stimulating PBMC with HLA-devoid K562. 45 KIR3DL1hmz/Bw4 and 7 Bw6hmz SP were studied. Multi-parametric flow cytometry was used to assess functional potential defined as the percent contribution of KIR3DL1+ and KIR3DL1- NK cells expressing CD107a or secreting IFN-γ or TNF-α to the entire KIR3DL1+ or KIR3DL1- subsets, respectively.

RESULTS: KIR3DL1+ NK had a higher CD107a, IFN-γ or TNF-α functional potential than KIR3DL1- NK cells when from KIR3DL1hmz/Bw4 carriers ($p<0.001$, Wilcoxon test). The functional potential of the KIR3DL1+ and KIR3DL1- subsets from Bw6hmz did not differ from each other for any function tested. KIR3DL1+ NK cells from KIR3DL1*h/*y/B*27 or B*57 carriers had higher functional potential than those from KIR3DL1*h/*y/Bw4 (not B*27/B*57) carriers and Bw6hmz.

CONCLUSION: KIR3DL1 and HLA-Bw4 interact to confer potent educational signals that translate into high functional potential upon encountering targets expressing aberrant ligand levels due to virus-infection. HLA-B*27 and B*57 may be superior to other Bw4 alleles in this capacity. If so, the protection these alleles confer in HIV-infection may be mediated not only through CD8+ T cells but also through NK cells.

O030

KIR/HLA GENOTYPE COMBINATIONS AND NK CELL MEDIATED INHIBITION OF HIV REPLICATION

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BACKGROUND: Natural Killer (NK) cells play a role in early defenses to certain viral pathogens e.g. HIV. Epidemiological studies have implicated co-carriage of Killer Immunoglobin-like Receptors (KIR)/HLA genotype KIR3DS1/HLA-Bw4*80I where the HLA-Bw4 alleles have an isoleucine at aa 80 of the heavy chain (3DS1+80I) in slower time to AIDS. Carriage of the KIR3DS1 homozygotes (3DS1hmz) is associated with protection from infection. NK cells from 3DS1+80I subjects have previously been shown to inhibit viral replication in autologous CD4+ T cells.

HYPOTHESIS: The influence of KIR/HLA genotypes on disease outcome is related to their role in shaping anti-viral NK function. Thus we compared the inhibition of HIV infection/replication in CD4 cells by autologous NK cells from subjects who carry the 3DS1+80I or 3DS1hmz+non80I genotypes to those from Bw6hmz who have no HLA-B alleles that interact with KIR.

METHODS: 16 HIV seronegative individuals were studied. CD4+ T cells were isolated, stimulated and infected with HIV-1JR-CSF (MOI=0.01). After infection purified autologous NK cells were added to T cell. P24 levels in supernatants were detected by ELISA. Viral inhibition was calculated by comparing p24 levels in wells with or without NK cells. Mann-Whitney U tests were used to test the significance of between-group differences.

RESULTS: NK cells from carriers of the 3DS1+80I and 3DS1hmz+non80I genotypes inhibited HIV infection/replication more than those from Bw6hmz. Differences in the potency of inhibition of viral replication were significant for comparisons between 3DS1+80I and Bw6hmz on day 7 and 14 ($p<0.05$ for both comparisons) and for comparisons between 3DS1hmz+non80I and Bw6hmz for day 7 ($p<0.05$).

CONCLUSION: As previously shown for NK cells from 3DS1+80I carriers, those from carriers of 3DS1hmz+non80I also inhibited HIV infection/replication in autogolous CD4 cells more effectively than those from Bw6hmz. This NK mediated anti-viral function may play a role in their reduced risk of HIV infection.

O031

GENES ENCODING KIR2DS4 AND KIR3DL1 ARE FOUND AT HIGHER FREQUENCIES IN HIV-SUSCEPTIBLE THAN IN HIV-EXPOSED SERONEGATIVE INDIVIDUALS

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BACKGROUND: Natural Killer (NK) cells play a key role in clearance of viral infections, serve as a link between innate and adaptive immunity and elicit functions capable of blocking transmission of HIV. The highly polymorphic HLA alleles and the NK cell surface killer immunoglobulin-like receptors (KIR) have been identified as playing a role in both HIV pathogenesis and infection. The KIR genetic region is highly polygenic and polymorphic and can encode up to sixteen genes. KIR, which are either inhibitory or activating are able to sense down-regulation of HLA class I molecules in virally infected cells and target them for killing. Ex vivo cytolytic assays have shown that NK cells from HIV-exposed seronegative (HESN) intravenous drug users (IDU) have higher cytolytic activity than NK cells isolated from HIV seropositive individuals before and after they seroconvert.

METHODS: HESN (n=91) and HIV infected subjects in the Montreal Primary Infection (PI) cohort (n=130) were KIR region typed using a Luminex platform. The frequency of each KIR gene was compared between the two populations. The significance of proportional between-group differences was assessed using a Fisher's exact test; the number of activating KIR was compared by a Mann-Whitney test.

RESULTS: The genes for the activating receptor KIR2DS4 (p=0.0382) and the inhibitory receptor KIR3DL1 (p=0.035) were found at higher frequencies in the PI population. Between-group differences for the frequency of all other KIR genes were similar and were consistent with frequencies previously reported in Caucasians.

CONCLUSION: KIR2DS4 and KIR3DL1 are present at higher frequencies in an HIV-susceptible population. How these observations translate into susceptibility/resistance to HIV-infection merits exploration. Increasing the sample size and comparing between-group differences in KIR/HLA receptor/ligand pairs should elucidate further differences.

O032

HIV ELITE CONTROLLER NEF ISOLATES DISPLAY IMPAIRED CD4 DOWNREGULATION FUNCTION

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BACKGROUND: Recent studies indicate that structural and enzymatic HIV proteins derived from HIV elite controllers (EC) are functionally impaired in vitro. It remains unknown whether EC-derived accessory genes, including nef, are similarly attenuated. Nef enhances HIV infectivity in part through its ability to internalize CD4 protein from the infected cell surface. Here we assessed the CD4 downregulation activity of EC-derived Nefs and compared this to Nef proteins derived from chronic progressors (CP).

METHODS: HIV plasma RNA-derived nef sequences from 54 EC and 52 CP were cloned into a eukaryotic expression vector and co-transfected with a GFP-expression plasmid into CEM T cells. Surface CD4 expression was measured 24 hours later by flow cytometry. Downregulation activity of each patient-derived Nef was expressed as a ratio relative to that of a positive control, NL4-3-derived Nef, such that function greater or less than NefNL4-3 was expressed as >1 or <1, respectively. Empty vector and NefHXB2 (encoding a premature stop codon) were used as negative controls.

RESULTS: We observed a 5-fold reduction in surface CD4 expression for NefNL4-3 compared with negative controls. EC-derived Nefs displayed significantly reduced downregulation activity compared to those derived from CP (median [IQR] of EC vs. CP: 0.88 [0.66-0.95] vs. 1.00 [0.88-1.04]; p=0.0004). Concordance between replicate measurements was robust (R=0.89; p=<0.0001). Impaired function of EC-derived Nef proteins was not associated with host expression of known "protective" HLA alleles (median CD4 downregulation in presence vs absence of protective B*57, B*58, B*27, and B*13 alleles: 0.91 vs 0.94; p=0.49). An exploratory codon-by-codon analysis identified three polymorphisms associated with impaired Nef function: R21K, E93X, and V153X (all q<0.15).

CONCLUSION: These results indicate that Nef-mediated CD4-downregulation is significantly impaired in HIV elite controllers and suggest that Nef function may contribute to reduced plasma viremia and slow disease progression observed in these individuals.

Co-infections / Coinfections

O033

SEROLOGIC RESPONSE TO SYPHILIS TREATMENT AMONG HIV-INFECTED ADULTS

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BACKGROUND: Adequate response to syphilis treatment is often defined as a fourfold decrease in serum RPR titre sustained at 6 months. Whether this is uniformly achieved in HIV-infected persons is unclear. We conducted a single-centre retrospective chart review to characterize serologic responses to syphilis treatment in HIV-infected adults.

METHODS: HIV-infected adults with ≥1 episode of syphilis between 01-Jan-2000 and 31-Dec-2009, RPR>0, and ≥1 follow-up RPR were included. Serologic responses were followed through December 2010. Treatment adequacy was determined using PHAC Guidelines. We used proportional hazards models accounting for repeated measures to identify characteristics associated with time to treatment response, using syphilis episode as the unit of analysis.

RESULTS: 72 patients with 93 episodes of syphilis were included. All but one were male. At first syphilis diagnosis, median (IQR) age was 41 (36-46), median CD4 count was 392 (245-617), and 47% of patients had suppressed viral load. Median initial RPR titre per episode was 1:32 (1:16-1:128). Median follow-up time per episode was 12 (7-27) months. 13% of episodes were primary, 38% secondary, 1% tertiary, 13% early latent and 18% late latent; stage was undefined for 20%. 20% involved neurosyphilis. 51% of episodes received PHAC-recommended treatment, 41% received more and 8% received less. Probability of treatment response was 62% at 6 months. In a multivariable model, variables associated with treatment response included log2 RPR titre (HR=1.16,95%CI=1.06-1.27) and suppressed HIV viral load (HR=1.51,95%CI=0.94-2.42). No statistically significant association with age, CD4, neurosyphilis,or previous syphilis episodes was seen. Three relapses occurred at 5, 9 and 47 months after treatment initiation, the former two in patients receiving one benzathine penicillin injection for early syphilis as per PHAC guidelines, the latter in a patient receiving six months of combination therapy for advanced neurosyphilis.

CONCLUSION: Response to syphilis treatment in HIV-infected adults is often inadequate. Higher RPR titre and suppressed HIV viral load were associated with serologic response to treatment in this cohort of HIV patients. Strategies to reduce syphilis incidence and improve therapeutic success are needed.

O034

RPR TITER DO NOT PREDICT NEUROSYPHILIS IN HIV-INFECTED PATIENTS WITH EARLY SYPHILIS

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BACKGROUND: Early infection with Treponema pallidum can lead to central nervous system invasion. Criteria to decide when to perform a lumbar puncture (LP) in HIV-infected patients with syphilis are controversial. Predictors of neurosyphilis (NS) are often derived from cohorts including all stages of the disease (early and late). The objective of this study was to identify predictive factors of NS in a cohort of HIV-infected patients with early disease (less than one year).

METHODS: We retrospectively reviewed 122 cases of HIV-infected patients with documented early syphilis who underwent a LP to rule out NS. Demographics, clinical findings known to be associated with NS, stage of syphilis and laboratory data (CD4 count, serum rapid plasma reagin (RPR) titers, HIV-1 viral load and cerebro-spinal fluid (CSF) analysis results) were recorded. NS was defined as CSF white blood cell count of ≥20/μL and/or a reactive CSF Venereal Disease Research Laboratory test result.

RESULTS: Thirty of the 122 cases (24.6%) had early NS. Age, presence of headaches, presence visual symptoms, CD4 count <500 cells/μL and uncontrolled HIV-1 viremia (≥ 50 cp/ml) were associated with NS (p=0.033, p= 0.004, <0.001, 0.003, <0.001 respectively) in univariate analysis using Fisher exact test. All factors, but age remained associated with NS in a multivariate model (p= 0.009, <0.001, 0.008, 0.001, respectively). Other clinical manifestations such as hearing loss or tinnitus were not associated with NS. RPR titers were not in any way associated with early NS (p= 0.575) by logistic regression analysis.

CONCLUSION: Visual disturbance, headache, uncontrolled HIV-1 viremia and CD4 count of ≤500 are predictors of early NS in HIV-infected patients. Moreover, serum RPR titers does not seem to have the predictive value for NS it has in later stages of syphilis. We should therefore not decide to perform LP based solely on serum RPR titers in HIV patients with early syphilis.

O035

USING MULTI-STATE MODELS TO ASSESS RISK FACTORS FOR PROGRESSION OF CERVICAL DYSPLASIA OVER TIME IN HIV POSITIVE AND HIGH RISK HIV NEGATIVE WOMEN

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BACKGROUND: The Canadian Women's HIV Study (CWHS) was a prospective, multicentred study of women with HIV or at high risk for HIV (1992-2002) Demographic and clinical data collection, cervical cytology and HPV genotyping were done semi-annually. The objective of this analysis was to model the progression of cervical cytology over time, and to determine the effect of various risk factors. The timeframe of data collection provides a unique opportunity to assess the impact of HAART on the risk of cervical dysplasia in HIV positive women.

METHODS: Multi-state models were used to assess transition probabilities of cervical dysplasia over time in the CWHS cohort. Cytopathology results from each visit were categorized as Normal (N) and Abnormal (A) (included ASCUS, LSIL, HSIL and Cancer). Treatment (T) for cervical dysplasia was a unique transition. Hazard ratios were estimated for N->A, A->N and A->T transitions.

RESULTS: 457 (327 HIV+, 130 HIV-) women with 1576 PAP results from the CWHS were included. Median age was 31, 41% had at least 1 HPV type present at their initial PAP and 35% had at least 1 oncogenic HPV type present. 48 HIV positive women were on HAART for at least 1 study visit. Among the 1119 transitions, 8.5% were Normal to Abnormal, 9.0% were Abnormal to Normal, and 2.2% were Abnormal to Treatment. Presence of any oncogenic type increased the likelihood of a Normal to Abnormal transition (HR: 2.7, p=0.001) and decreased the likelihood of an Abnormal to Normal transition (HR: 0.5, p=0.05). Among HIV+ participants, HAART increased the likelihood of an Abnormal to Normal transition (HR: 3.3, p=0.02). CD4 (assessed as <200, 200-499, >500) was not predictive of PAP transitions.

CONCLUSION: This unique analysis approach demonstrates that HAART improved regression rates of cervical dysplasia among HIV positive women.

O036

FACTORS ASSOCIATED WITH HPV PRESENCE AND PERSISTENCE IN THE HPV VACCINE IN HPV STUDY (CTN236)

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BACKGROUND: Although high rates of HPV infection has been described in HIV positive women, factors associated with oncogenic and non-oncogenic HPV type infection and persistence are not well understood.

METHODS: As part of a longitudinal study, conducted by the Canadian HPV/HIV study group, of the immunogenicity and safety of a quadravalent HPV vaccine in HIV positive women, preliminary data on HPV infection were collected 3 months prior to, at the time of initial vaccination and every 6 months thereafter.

RESULTS: Of 169 women with screening HPV genotype data available, 21% had no HPV infection (A), 28% had only non-oncogenic HPV subtypes present (B), 30% had 1 oncogenic HPV subtype (C) and 21% had more than 1 oncogenic HPV subtype (D). Participants with > 1 oncogenic HPV subtype were younger (median age: A=40, B=39, C=37, D=33; p=0.01), less likely to have suppressed viral load (A: 83%, B: 79%, C: 70%, D:44%; p<0.01) and less likely to have CD4>500 cells/mm^3 (A: 56%, B: 62%, C: 42%, D:33%; p=0.04). There were no differences observed between ethnicity, HIV risk factor, or antiretroviral therapy (ARV). HPV persistence was defined as the same HPV type present at 2 or more consecutive visits. Among 118 women who have HPV genotype data for at least 2 visits, 44% have no persistent HPV types, 22% have only non-oncogenic types that are persistent and 34% have at least 1 persistent oncogenic HPV types. These groups were similar with respect to age, ethnicity, enrolment site, HIV risk factors, viral load suppression, CD4 cell count and ARV treatment.

CONCLUSION: Among this cohort of HIV positive women, 20% had more than 1 oncogenic HPV type present at screening. Age, geographic location and viral suppression were associated with presence and type of HPV infection at screening. No significant factors were associated with HPV persistence.

O037

A DECADE OF EXPERIENCE WITH INVASIVE PNEUMOCOCCAL DISEASE IN HIV PATIENTS

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BACKGROUND: Invasive pneumococcal disease (IPD) has an incidence of approximately 8-11/100,000 person-years in the general population, but occurs more frequently in HIV-infected persons. *Streptococcus pneumoniae* is the most common cause of bacterial pneumonia in HIV patients and is associated with serious complications. The incidence of pneumococcal disease in the current era of highly active antiretroviral therapy (HAART) is not well described.

METHODS: The Southern Alberta Clinic (SAC) and Calgary Laboratory Services (CLS) are the sole providers of HIV care and routine laboratory services in Calgary, respectively. All SAC patients with positive cultures for S. pneumoniae (IPD) between 2000 and 2010 were identified by linking the SAC database to information routinely provided by CLS. Demographic information and relevant comorbidities were analyzed using multivariate logistic regression controlling for age, gender, injection drug use (IDU), and a history of smoking for more than one month.

RESULTS: HIV was diagnosed at the time of IPD presentation in six patients: these cases were excluded from further analysis. There were 37 cases of IPD in 32 HIV-positive patients with over 4.05 million patient-days of follow-up. Four patients died from complications of the infection. The crude incidence rate of IPD was 333/100,000 patient-years. Risk factors for IPD within the HIV population included female gender (p=0.06), older age (p<0.001), aboriginal ethnicity (p<0.01), less than high school education (p=0.06), IDU (p<0.001), a history of smoking (p<0.01), nadir CD4 of <200 cells/mm^3 (p<0.01), hepatitis C (p<0.0001), and lack of pneumococcal immunization (p<0.01). 77% of the *S. pneumoniae* isolates were serotypes included in the PPV-23 vaccine.

CONCLUSIONS: Patients receiving HIV-care in Southern Alberta were almost 30 times more likely to develop IPD than predicted community norms. Despite immunization and advancements in HAART, pneumococcal disease remains a significant cause of mortality and morbidity in HIV patients with traditional risks for IPD.

O038

IMMUNOLOGIC EFFICACY OF PNEUMOCOCCAL VACCINE IN HIV PATIENTS: DELAYED VERUS IMMEDIATE IMMUNIZATION CTN-147

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BACKGROUND: Invasive disease with *Streptococcus pneumoniae* is higher in adults infected with HIV. It is unclear whether immunization with a conjugate or a polysaccharide vaccine results in a better immunologic response and whether patients should be immunized immediately or delay vaccination until after reconstitution of the immune system.

METHODS: We conducted a multicentre controlled trial in which HIV positive patients were randomized to one of four arms: polysaccharide/immediate (n=19), polysaccharide/delayed (n=21), conjugate/immediate (n=23), and conjugate/delayed (n=16). Proportional odds model was used to compare the groups (vaccine type and vaccine timing) on the number of serotypes showing response (2-fold rise in antibody level from pre-vaccination level) at 1, 6 and 12 months post-vaccination between the groups. Opsonophagocytic activities (OPA) of four antibodies were compared between the treatment groups.

RESULTS: 79 HIV patients were included in the trial. Baseline characteristics were similar for the four arms: 78% male, mean age 41 years, mean time since HIV diagnosis 2.26 year, mean CD4 count 79 cells/mm^3, and mean HIV viral load 107,152 copies/mL. For the delayed group, mean CD4 counts at vaccination was 180 cells/mm^3. Results in favor for delayed immunization were observed with respect to the number of serotypes showing response. The proportional odds ratios for delayed vs. immediate are 0.54 (p=0.21), 0.341 (p=0.04) and 0.204 (p=0.004) at months 1, 6 and 12 respectively. No differences were observed between the two individual vaccines. The difference between delayed and immediate was consistent across individual serotypes. There is some evidence to suggest that the OPA of type 23F is different between the two vaccines at month 12 (p=0.07)

CONCLUSIONS: This data provides evidence to support delaying immunization until after reconstitution of the immune system with pneumococcal vaccine. There was no increased immunological response when utilizing a conjugate based vaccine versus that of a polysaccharide vaccine.

O039

UTILITY OF QUANTIFERON GOLD-IN TUBE (QFT-G-IT) TEST FOR TUBERCULOSIS SCREEN IN HIV POSITIVE CHILDREN

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INTRODUCTION: Interferon-gamma release assays (IGRAs), in addition to tuberculin skin tests (TSTs), are recommended for detection of latent tuberculosis infection (LTBI) in immunocompromised patients. In HIV-infected adults, high rates of indeterminate IGRA results, due to anergy (low mitogen responses) have been noted. Data on Quantiferon Gold–in tube (QFT-G-IT) use in HIV-infected children are sparse. The goal of this study was to evaluate the utility QFT-G-IT in HIV-infected children.

METHODS: QFT-G-IT assays and TST's were performed for routine LTBI screening of HIV-infected children attending the SickKids HIV clinic in Toronto. QFT-G-IT results were interpreted according to manufacturer instructions. Where automatic return to clinic for TST reading was impractical parents were advised to return if any swelling was noted within 72 hours of TST placement.

RESULTS: Seventy-three HIV-infected children were evaluated; 44% were male, 68% were Canadian born and 32% had received BCG. The mean age, BMI, CD4 percent (CD4 count) and viral load were 12.2±0.5 years, 20.1±0.53, 31.7±1.1 (831±55 cells/mm^3) and 6075±2064 copies/mL (62% <50 copies/mL). Fifty-nine (81%) were on combination antiretroviral therapy, 4 (5%) were on lamivudine monotherapy and 10 (14%) were antiretroviral treatment naïve. Only one individual was reported to have a positive TST. QFT-G-IT was positive (>0.35 IU/mL) in 16 (22%) and indeterminate (high background IFNγ activity) in one (1.4%). Strong mitogen responses (>10 IU/mL) were observed in 69 patients (95%). There was no correlation between the QFT-G-IT result and country of birth (p=0.29). None of QFT-G-IT-positive children evaluated to date have clinical manifestations or chest x-ray changes suggestive of active pulmonary tuberculosis.

CONCLUSIONS: The strong mitogen responses and lack of indeterminate results contrast with previous studies and suggest that in relatively healthy antiretroviral-treated HIV-infected children the QFT-G-IT may be a useful test.

O040

PREVALENCE, CORRELATES, AND OUTCOMES OF HIV AND HEPATITIS B VIRUS CO-INFECTED PATIENTS IN NORTHERN ALBERTA

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INTRODUCTION: Hepatitis B Virus (HBV) and Human Immunodeficiency Virus (HIV) share common modes of transmission. Previous studies have noted an elevated prevalence of chronic HBV infections amongst HIV-positive individuals. Co-infection has been associated with higher morbidity and mortality due to liver disease. There are currently no Canadian studies on the prevalence, correlates and outcomes of HIV-HBV co-infections.

METHODS: This was a retrospective cohort study using the Northern Alberta HIV Program (NAP) database. Hepatitis B surface antigen (HBsAg) positive patients were identified among all HIV positive patients accessing care at the NAP since 1989. Demographic information was extracted from the database and compared between HBsAg positive and negative individuals. Further information was collected from charts available for 66 HBsAg positive patients.

RESULTS: In total, 143 (5.5%) HBsAg positive patients were identified amongst 2579 HIV-infected individuals in the NAP database who had been tested for HBsAg. HBsAg positive patients were more likely to be male (88% vs 71%, p=0.0001) and less like to be Aboriginal (14% vs 28%, p=0.0003) than the HBsAg negative patients. There were no statistically significant differences by Asian or Black ethnicities. Median age of HIV infection amongst HBsAg positive patients was 32 years (IQR 34.5-47.7 years) and amongst HBsAg negative patients was 34.5 years (IQR 33.4-47.9). Of those with known test results, HBsAg positive patients were less likely to test positive for HCV antibody (26% vs 33%, p=0.05). More than half of HBsAg positive patients had no record of HBV DNA and HBeAg testing. HBsAg positive patients had a higher mortality rate than HBsAg negative persons (34% vs 18%, p=0.0001).

CONCLUSIONS: Amongst HIV-positive individuals in Northern Alberta, a significant proportion of 5.5 % were HBV co-infected. With improved survival of HIV positive patients, it is necessary to improve HBV testing and therapy in the HIV-HBV co-infected.

Risk of HIV in Injection Drug Users / Risque d'infection par le VIH chez les utilisateurs de drogues injectables

O041

IDENTIFYING CHANGES IN DRUG USE AND SEXUAL BEHAVIOUR AMONG PEOPLE WHO INJECT DRUGS IN EDMONTON, ALBERTA

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BACKGROUND: People who inject drugs (IDU) are at risk for acquiring human immunodeficiency virus (HIV) and hepatitis C virus (HCV) via parenteral and sexual transmission. Changes in patterns of drug use and sexual behaviour between 2005 and 2008 among IDU recruited in Edmonton, Alberta were reviewed.

METHODS: Edmonton was one site of a multi-site, national surveillance system called I-Track. In the spring of 2005 and 2008, IDU were recruited and administered a behavioural questionnaire and finger-prick blood samples were collected for assessment of HIV and HCV seroprevalence. Changes in behaviours were assessed using Chi-square or Fisher's exact test for proportions and by the Mann-Whitney for continuous variables.

RESULTS: A total of 523 IDU were recruited. Both groups reported similar demographics; overall 68% were male and 68.3% were Aboriginal. The median age increased from 38 years (IQR: 33-44) in 2005 to 41 years (IQR: 35-47) in 2008. The HIV seroprevalence decreased from 23.9% in 2005 to 13.0% in 2008, while the percent of participants who reported HIV treatment doubled from 40.0% to 80.8%. Lifetime HCV seroprevalence remained unchanged at 67.1% and 69.2%. Changes in drug use included: 1) switching from cocaine injection (73.1% to 46.0%; p<0.001) to smoking crack (22.2% to 41.4%, p<0.001), 2) increases in public injection (25.5% to 44.0%, p<0.001), and 3) increases in use of used needles (8.7% to 20.0%; p<0.001). Changes in sexual behaviour included: 1) reduced condom use (51.9% to 32.9%, p<0.001), 2) reductions in number of casual sex partners (44.6% to 34.0%, p=0.02), and 3) increases in the number of participants who reported only one sexual partner (44.6% to 56.3%, p=0.01).

CONCLUSIONS: Despite a reduction in HIV seroprevalence over time, the observed changes in drug use and sexual behaviours identified in this cross-sectional survey among IDU in Edmonton highlight areas for targeting harm reduction programming.

O042

OUTLIER POPULATIONS: ELEVATED RISK FOR HIV, HCV AND HIV/HCV CO-INFECTION AMONG SOLVENT-USING INJECTION DRUG USERS IN MANITOBA

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INTRODUCTION: Substantial heterogeneity in the prevalence of HIV and other blood-borne pathogens (BBPs) among most at-risk populations (MARPs) has been demonstrated. Examining factors related to heterogeneity can inform targeted programming. In Winnipeg, particularly high risk for HIV and hepatitis C (HCV) has been observed in injection drug users (IDUs) with a history of solvent use (S-IDUs). However, comparisons to other MARPs have been limited. Thus this study examined the association between HIV/BBPs and S-IDUs in comparison to IDUs and other MARPs.

METHODS: Data were from a 2008-2009 cross-sectional study of Winnipeg MARPs (IDUs, sex work- and street-involved individuals); subjects were recruited through respondent-driven sampling (RDS) methods. Adjusted odds ratios (AORs) from multivariable logistic regression models were estimated, examining the risk of HIV, HCV and HIV/HCV co-infection, and corrected for RDS-chain clustering using generalized estimating equations.

RESULTS: Sample was 499, of which 13% recently injected drugs (i.e., last 6 months), 5% recently inhaled solvents, 6% were recent S-IDUs, and 76% did not inject drugs or inhale solvents. HIV and HCV prevalence among recent S-IDU was 21% and 79%, respectively; HIV/HCV co-infection was 18%. In multivariable models, S-IDUs were at highest risk of HIV (AOR: 3.6, 95%CI: 1.6-7.9; p<.001), HCV (AOR: 19.3, 95%CI: 6.8-58.3; p<.001) and HIV/HCV co-infection (AOR: 6.0, 95%CI: 2.5-14.7; p<.001). Comparatively, AORs for IDU-only were 3.3 (95%CI: 1.3,7.6), 3.8 (95%CI: 2.3,7.5) and 4.9 (95%CI: 2.1,14.7). Among lifetime S-IDUs, elevated risk for HIV (AOR: 7.4, 95%CI: 2.3-26.2) and HCV (AOR: 22.7, 95%CI: 11.0-47.0) was observed, but not for HIV/HCV co-infection.

CONCLUSIONS: Solvent use occurs amongst the most marginalized of MARPs, representing unique and complicated drug use trajectories. As the HIV epidemic in Canada becomes increasingly complex, examination of outlier populations such as S-IDU can inform public health by elucidating important pathways by which structural, environmental and individual factors interact to create highest risk for HIV/BBPs.

O043

WOMEN WITH A HISTORY OF INJECTION DRUG USE AT GREATEST RISK FOR POORER CLINICAL OUTCOMES IN A COHORT OF HIV-POSITIVE INDIVIDUALS IN CANADA: A CANOC STUDY

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BACKGROUND: Cohort data examining sex differences in response to antiretroviral therapy (ART) remain inconsistent. In Canada, women represent one of the fastest growing HIV-positive populations, with injection drug use becoming an increasingly more prominent risk factor. This study investigates sex differences in virological responses to ART and mortality among HIV-positive injection drug users (IDU) and non-IDU in Canada.

METHODS: Participants included persons enrolled in the Canadian Observational Cohort (CANOC) collaboration with a follow-up viral load (VL) measure and known IDU history. Piecewise exponential, Weibull, and Cox hazard regression were used to evaluate time to VL suppression (two consecutive measures <50 copies/mL), rebound (>1000 copies/mL after suppression), and mortality, respectively. The primary covariate was sex by IDU status, using a four-level sex/IDU variable (reference group = male IDU).

RESULTS: At baseline, women (818 of 3902 participants) were younger (36 years vs. 41), had higher CD4 counts (199 cells/mL vs. 180), lower VL measures (4.7 log10 copies/mL vs. 5.0), and more frequently reported an IDU history (27% vs. 17%) (all p<0.001). In multivariate analyses adjusted for age, province, baseline CD4 and VL, VL testing rate, year started ART, and third antiretroviral agent, female IDU and male IDU were less likely to suppress than male non-IDU (HR=0.51, 95% CI=0.42-0.61 and HR=0.74, 95% CI=0.66-0.83, respectively) and, in rebound analysis, female IDU (HR=2.96, 95% CI=2.15-4.08), male IDU (HR=1.96, 95% CI=1.52-2.53), and female non-IDU (HR=1.40, 95% CI=1.08-1.83) were more likely to rebound. In adjusted time to death analysis, female IDU and male IDU were at greater risk (HR=1.77, 95% CI=1.22-2.57 and HR=1.64, 95% CI=1.24-2.16, respectively).

CONCLUSIONS: Individuals with an IDU history in CANOC, females especially, are at heightened risk for poor clinical outcomes. Further understanding of the intersections between sex and other factors augmenting risk is needed to develop approaches to retaining IDU in care and maximizing the benefits of ART.

O044

'NEITHER A BORROWER NOR A LENDER BE': HIGH FREQUENCY IN SHARING AND USE OF UNCLEAN INJECTING EQUIPMENT AMONG CANADIAN STREET-INVOLVED YOUTH 1999-2006

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INTRODUCTION: Canadian street-involved youth are likely to be at greater risk for bloodborne infections, such as HCV and HIV, and are more vulnerable to these infections because of their age, socioeconomic status, life course factors, and engagement in high risk behaviours. We will describe trends in self-reported injecting behaviours among this group, using the Enhanced Surveillance of Canadian Street Youth (E-SYS) data.

METHODS: E-SYS is a cross-sectional surveillance system of street-involved youth (15-24 years). Participants from seven urban centres completed an interviewer-administered questionnaire and provided samples for HCV, STI and HIV testing. Data from four cycles (1999-2006) (n=6,052) were analyzed to determine trends in self-reported injecting drug use (IDU) behaviours. Chi-square tests were conducted to investigate sex, age (15-19, 20-24 years) and geographical differences, and Cochran-Armitage tests were performed to assess temporal trends (α=0.05).

RESULTS: Of those who provided biological specimens (n=4697), 0.8% tested HIV-positive, 4.2% tested HCV-positive, 0.3% were HIV/HCV co-seropositive. HCV prevalence increased significantly from 1999 (3.9%) to 2006 (5.2%, p=0.04)

Twenty-one percent of participants reported injection drug use. The rates were significantly and consistently higher in the older age group (20-24 years) over time. Among participants with IDU history, 95.3% had borrowed IDU equipment in the past. Among those who reported using IDU in the past three months (9.7%), 31.8% reported inconsistent use of clean equipment; inconsistent use was significantly higher among females (p=0.03) and 20-24 year olds (p=0.009).

Although significant geographical variations were observed in HCV prevalence and IDU, use of clean IDU equipment and IDU equipment-borrowing did not differ geographically.

CONCLUSIONS: Youth participating in e-SYS, particularly those who were females or 20-24 years of age continue to report inconsistent use of clean IDU equipment. Given the potential for transmission of bloodborne infections via the injecting route, these results call for targeted interventions to ensure that these behaviours do not become entrenched and geographical variations highlight the need for locally-relevant interventions. Early interventions for street youth are necessary to prevent future HIV and HCV infections.

O045

PREVALENCE AND CORRELATES OF RISK BEHAVIOURS ASSOCIATED WITH HIV SEROPOSITIVITY AMONG PEOPLE WHO INJECT DRUGS IN CANADA: RESULTS FROM I-TRACK PHASE 2 (2005-2008), A SEX-BASED ANALYSIS

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BACKGROUND: I-Track (Enhanced surveillance of HIV and hepatitis C (HCV) risk behaviours among people who inject drugs (IDU) in Canada) conducted Phase 2 data collection from 2005 to 2008 in ten sites across Canada. HIV and HCV seroprevalence as well as risk factors associated with HIV seropositivity were examined among female and male participants.

METHODS: Information regarding demographics, drug-use, injecting and sexual risk behaviours, and HIV and HCV testing patterns were collected in confidential and anonymous face-to-face interviews. A blood or oral fluid sample was collected for antibody testing. Descriptive statistics and univariate odds ratios were calculated for males and females separately. Risk factors significantly associated with HIV seropositivity were entered into sex-based and overall step-wise multivariate models, using a significance level of 0.05.

RESULTS: A total of 3076 IDU participated in I-Track Phase 2 (2084 males, 992 females). The average age was 37.5 (±9.8) and males were significantly older than females (38.8 vs. 34.7 years). Among those who provided a biological sample of sufficient quantity for testing, overall HIV prevalence was 13.7% (ranging from 3% to 21% across sites) and was statistically significantly lower for females (11.6%) than males (14.1%). In sex-based analyses, correlates with HIV seropositivity were similar for males and females; these were also confirmed in a full sample analysis. In a multivariate model controlling for sex, age, ethnicity and site, HIV seropositivity was significantly associated with injecting cocaine most often in the past 6 months (OR:1.5), duration of injection (OR:2.1) and condom use at last sex (OR:2.0).

CONCLUSIONS: In this multi-site pan-Canadian surveillance survey of IDU, risk behaviours associated with HIV seropositivity were similar between males and females. Additionally, consistent condom use was commonly reported among HIV positive IDU, an important finding among this at-risk population where HIV prevalence is high.

O046

THE NEGLECTED REPRODUCTIVE HEALTH NEEDS OF SEX WORKERS WHO USE DRUGS: THE NEED FOR INTEGRATED REPRODUCTIVE HEALTH AND HIV SERVICES FOR WOMEN

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OBJECTIVES: Though the AIDS epidemic is intimately intertwined with sexual and reproductive health through sexual transmission, pregnancy and breastfeeding, the majority of HIV prevention and care efforts among female sex workers (FSWs) neglect the broader reproductive health and mothering needs of women. Our study sought to describe the pregnancy patterns, outcomes and non-barrier contraceptive usage among a cohort of street-based FSWs who use illicit drugs in Vancouver, Canada.

METHODS: Analyses were drawn from a community-based prospective cohort study (2006-2008) of FSWs who use drugs. Of a total of 255 FSWs interviewed, 211 women reported at least one pregnancy (median age=36) and were included in the study. Descriptive statistics were used to estimate pregnancy outcomes and contraceptive usage. Bivariate and multivariate logistic regression analyses evaluated individual and interpersonal risk factors by high number of lifetime pregnancies (stratified at the mean of >4).

RESULTS: Baseline HIV prevalence was 22%, with no differences in number of lifetime pregnancies by HIV or HAART status. Lifetime prevalence of pregnancy was 4 (IQR:2-5), with a mean of 2 live births (IQR:1-3). One third reported a previous miscarriage (median=1, IQR: 1-3) and 36% reported having a previous abortion (median=1, IQR: 1-3). Of concern, access to hormonal and insertive contraceptive usage was limited: 9% used hormonal injection; 1.5% used intrauterine devices and 1% used oral contraceptives. Hysterectomies(7.1%) and tubal ligation (16.6%) were more common, primarily among older women and were found to be associated with greater number of pregnancies (OR=2.76; 95%CI(1.36-5.59) in bivariate and multivariate analyses.

CONCLUSIONS: These findings indicate a critical need to improve FSWs' access to non-barrier contraceptives. Combined HIV programmes integrated within broader reproductive health and maternal support services may be effective in supporting HIV prevention and care for pregnant and parenting mothers, including prevention of unwanted pregnancy and adverse pregnancy outcomes among FSWs.

O047

REVISITING HIV EPIDEMIC APPRAISALS FOR THE DESIGN OF EFFECTIVE PREVENTION PROGRAMS

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BACKGROUND: There is substantial heterogeneity in the size and trajectory of HIV epidemics globally and within countries, driven largely by differences in the population sexual structure which determines the overall transmission dynamics. Two standard methods have been developed to appraise epidemics and guide prevention strategies. The numerical proxy classifies epidemics based on HIV prevalence thresholds. The Modes of Transmission (MOT) model estimates the distribution of incidence over one year among subgroups. Neither approach explicitly captures the drivers of the epidemic and can therefore misguide prevention priorities. Using detailed data from India, we explore the limitations of current methods and propose an alternative approach.

METHODS: We compared outputs of the traditional methods in 5 countries for which results were published, and applied the numeric and MOT model to India and 6 districts within India. We developed an alternative approach based on a qualitative understanding of local epidemic drivers, the Transmission Dynamics Epidemic Classification (TDEC) scheme, and demonstrated its application. Where data permitted, we calculated the population attributable fraction of paid sex for HIV infection among males to assist TDEC classification.

RESULTS: Country and district level analysis illustrated 3 main limitations of the numeric and MOT Methods: (1) their results misinterpreted underlying transmission dynamics and were inconsistent; (2) they were difficult to apply to local epidemics when heterogeneity across districts was present; and (3) the MOT model was highly sensitive to input parameters, many of which required extraction from non-regional sources. The TDEC method offered a logical algorithm to characterize local sexual structures that likely sustain onward HIV transmission; it required minimal but key data.

CONCLUSION: Traditional appraisals of HIV epidemics can misdirect prevention programming if the goal is long-term control. By characterizing local transmission dynamics, the TDEC approach provides a potentially more effective tool with which policy makers can design intervention programs.

O048

LOST IN TRANSITION: DETERMINING HIV PREVALENCE AND RELATED VULNERABILITIES AMONG YOUNG PEOPLE IN POST-CONFLICT NORTHERN UGANDA

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OBJECTIVE: As the guns fall silent in Northern Uganda after more than two-decades of war, over one million Internally Displaced Peoples (IDPs) are returning to their home villages. However, thousands of these IDPs have only made it halfway, moving to transit camps near their villages. This population in transition provided a unique opportunity to analyze the legacy of the conflict on HIV/AIDS, including: identifying which groups are most vulnerable; ascertaining gaps in programming; and assessing the influence of conflict on HIV infection among young people surviving displacement and abduction in post-conflict Northern Uganda.

METHODS: From August to December 2010, a cross-sectional demographic and behavioral survey administered by same-sex Acholi interviewers was conducted with a random sample of 384 young people aged 15-29, residing in transit camps in one of two sub-counties in Gulu District, Northern Uganda. In addition, biological specimens for HIV were collected from consenting participants for Rapid and Confirmatory testing. Log binomial regression analyses, stratified by gender, will be used to: determine the combined and independent effect of covariates of interest on HIV; and analyze gender differences in HIV prevalence and related vulnerabilities.

RESULTS: Of the 384 participants sampled, 192 (50%) were female and 106 (27.6%) were former child soldiers. Overall HIV prevalence was alarmingly high at 12.8%. HIV prevalence among females was 15.6%, 9.9% among males, and 12.3% among former child soldiers. *Further descriptive analyses, and regression analyses stratified by gender are being conducted.*

CONCLUSIONS: With relative peace in the region prevailing, it has been observed that many NGOs focusing on relief that previously supported HIV prevention and care activities have shuttered operations, leaving significant gaps in HIV services and care. This coupled with the strains of post-conflict resettlement has produced a generation of young people 'lost in transition', leaving them at heightened risk of contracting HIV/AIDS.

HIV/AIDS, Risk and Prevention / Le VIH/sida : facteurs de risque et moyens de prévention

O049

ANTIRETROVIRALS AS PREVENTION: INDIVIDUAL AND SOCIETAL BENEFITS

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BACKGROUND: Quebec and US guidelines now recommend that ART may be used to reduce HIV transmission. Does early ART initiation to prevent transmission represent a benefit for the patient or society or both?

METHODS: In focus groups, clinicians, virologists, immunologists, epidemiologists, ethicists, specialists in prevention and HIV-infected spokespersons were asked to evaluate ART as prevention and its ethical justification from 3 different perspectives: HIV+ individuals, their uninfected partner(s), and society. A qualitative analysis of their discourse was performed.

RESULTS: Altruism at both the individual and the societal level was found to be a major justification for ART as prevention. Justifications for each group included:

HIV+ individuals: Reducing HIV infectivity, choosing newer ART combinations to decrease treatment failure; accepting potential side-effects from clinically unnecessary ART; disclosing ART use to partner(s); accepting behaviour-based prevention, such as condoms in certain circumstances.

Uninfected partner(s): Accepting ART's residual risk of HIV transmission, trusting the efficacy of ART and the adherence of their infected partner(s); accepting the non-use of condoms in certain circumstances.

Society: Promoting ART, especially by adopting guidelines, to decrease the viral load in the community; combating stigma and discrimination especially by wider testing and advocacy campaigns; limiting criminalization to cases of intentional transmission with detectable viral load; ensuring the availability of resources (e.g. condoms) for other behaviour-based prevention strategies.

CONCLUSIONS: This study of earlier use of ART shows that altruism by HIV+ individuals, their uninfected partners, and society, may represent a win–win response that can help to control HIV transmission. The potential benefits of ART as prevention can go beyond the control of HIV itself and could include fewer sexually transmitted diseases and unplanned pregnancies.

O050

AT-RISK AND LIVING WITH HEPATITIS C VIRUS, HIV, ADDICTION, AND MENTAL ILLNESS: STORIES FROM A PEER MODEL PROGRAM IN TORONTO

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BACKGROUND: The East Toronto Hepatitis C Program is an innovative program providing education, social services, nursing, medical and psychiatric care to people living with hepatitis C virus (HCV), some with

HIV co-infection and others at-risk of HIV, and many with current or past histories of drug use, incarceration, mental illness, and homelessness. The objective of this research project was to explore the experiences of clients including group participation, impact of illness, treatment, and determinants of health.

METHODS: Phenomenology informed the qualitative approach to this research by using data collection methods of twenty semi-structured open-ended in-depth interviews. Interpretive analysis was an iterative process of capturing the meaning and common features of individuals' lived experiences.

RESULTS: Analysis of the data revealed several broad themes: the group as an agent of transition and change; the program structure and services; the context of clients' lives including experiences with the health care system; and the illness experience related to HCV or HIV/HCV co-infection, physical health, mental illness and emotional well-being. Participation in the group provided opportunities for socialization, support, normalization, and development of self-confidence through its peer model. Clients described factors that impacted their ability to cope with their illness and treatment, including lack of social determinants of health and challenging experiences with medical and social services. All clients described the stigma associated with their illness and the impact the disease had on their quality of life. Finally, all clients described the process of "getting ready" for treatment and the role the group and program played in supporting them through their decision-making process.

CONCLUSION: Findings suggest that this integrated peer-based educational model can successfully treat people living with HCV or HIV/HCV co-infection. These findings will enhance the quality of the existing program and evaluate it as a model for other agencies and for Canadian health policy.

O051

WOMEN'S STRUGGLES TO FIND SAFE, SECURE AND NON-EXPLOITATIVE HOUSING IN CANADA'S POOREST POSTAL CODE: GENDERED HIV RISK ENVIRONMENTS

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BACKGROUND: Unstable housing is linked to elevated HIV prevalence and incidence, through increased risky sexual and drug practices. Dominant male-centred housing models have the potential to further marginalize women, particularly those who exchange sex for survival. This study explored the role of housing environments in shaping women's sense of agency and control in negotiating safety and HIV risk reduction in Vancouver.

METHODS: A series of focus groups with 6-8 women each were conducted with women living in a range of housing environments in Vancouver, including homeless shelters, transitional housing, co-ed and women-only single-room occupancy hotels. All discussions were co-facilitated by a sex worker and researcher, audiotape recorded and transcribed verbatim. Transcripts were coded for key themes and emergent categories followed by thematic and context analyses.

RESULTS: Women continue to be vulnerable to marginalization and increased HIV-risks resulting from the physical, structural and social environments of current male-dominant housing models. Physical environment: Women avoided housing that was in poor physical conditions and infested with bedbugs and rats, instead choosing unstable housing options. Structural environment: Many residences enforced strict curfews and guest policies that forced women to accept risky dates to meet curfew or work outdoors where their ability to negotiate safety and condom use are limited. Certain policies, however, mitigated women's abilities to reduce safety and HIV risks when selling sex, such as flexible curfews and being able to bring dates home. Social environment: Women living in co-ed buildings experienced violence by male residents and cited discrimination by male building staff. When residing in women-only buildings, women developed support systems with other working women that resulted in safer work practices.

CONCLUSION: Women continue to be vulnerable to marginalization, exploitation and increased HIV-risks resulting from the environments of current male-dominant housing models. The results of this study illustrate an urgent need for the increased availability of long-term, non-exploitative housing for women.

O052

SAFE WORKS ACCESS PROGRAM – HARM REDUCTION THROUGH EDUCATION AND SAFE NEEDLE EXCHANGE

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BACKGROUND: High-risk practices related to injection drug use can result in a variety of infections and illnesses such as HIV, hepatitis, abscesses, endocarditis, blood poisoning and others.

The AIDS Committee of Newfoundland & Labrador (ACNL) recognized and acknowledged the potential risks that can result from injection drug use. This abstract will assess the impact and effectiveness of promoting harm reduction while reflecting, and being respectful of, individual and community needs.

METHODS: With provincial government funding, ACNL undertook to implement a program of education and safe needle exchange. The program, which is titled 'Safe Works Access Program' (SWAP) operates on the east coast in St. John's and on the west coast in Corner Brook. In St John's, there are four satellite locations. All locations provide community outreach services to meet participants where they are on the continuum of health by acknowledging their ability to make their own health choices. SWAP services are provided in a private, confidential and non-judgemental environment. The education component of SWAP includes advocacy, support and referrals.

RESULTS: SWAP needle exchange and harm reduction services have contributed to improved education for injection drug users and others at susceptable to high-risk behaviours. SWAP, through its advocacy services, has assisted clients with finding financial aid, emergency housing and access to other community services. SWAP's needle exchange provides clean needles, injection equipment, crack pipes and other materials.

CONCLUSIONS: SWAP has been successful in providing the tools and information required to reduce the risk of harm related to injection drug use. SWAP's needle exchange program has proven to be a successful harm reduction strategy. Further discussion of the benefits and challenges of the SWAP project is warranted.

O053

A MULTIDISCIPLINARY APPROACH FOR INVESTIGATING SOCIAL AND BIOLOGICAL FACTORS CONTRIBUTING TO HIV RISK IN SOLVENT USERS

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INTRODUCTION: Sunshine House is a community-based drop in centre in Winnipeg, MB that provides services to street involved individuals, many of whom are Aboriginal and involved with solvent use. MB has a unique population of solvent users that differs from the typical solvent user defined in the limited, existing literature. Observational evidence suggests that there is an over-representation of HIV rapid progression within this population. Since HIV disease involves a disruption of the integrity of mucosal barriers as well as a state of chronic immune activation, solvent use associated destruction of upper respiratory and GI mucosa may have important consequences on HIV disease susceptibility and progression in solvent users. This may be further compounded by social factors, such as increased risk-taking behavior.

OBJECTIVE: To investigate the social and biological factors contributing to HIV risk in Winnipeg's solvent using population through the establishment of a cohort at Sunshine House.

APPROACH: This project will use a multidisciplinary approach merging community-based participatory research and basic science methodologies. Essential preludes to recruiting a cohort and conducting further studies involving this population require understanding social characteristics and unmet needs of solvent users as well as establishing relationships between the University of Manitoba and Sunshine House. This will be done through focus groups and individual qualitative interviews. Next steps include assaying for microbial translocation and immune activation.

TALKING POINTS AND QUESTIONS: The process of building trust with a stigmatized group so that highly sensitive questions can be asked; The process of formulating a set of theoretical questions to arrive to a set of biological samples; Is REB certification enough to protect a cohort from research exploitation? What measures should be considered to protect the Researchers? What lessons can be learned from the research experience of working with other highly stigmatized populations?

O054

"FOR ME SELF DETERMINATION... THAT'S THE ONLY THING THAT KEEPS ME GOING": THE ROLE OF SELF DETERMINATION THEORY (SDT) IN CONCEPTUALIZING AND IMPLEMENTING HIV PREVENTION INTERVENTIONS FOR AFRICAN, CARIBBEAN AND BLACK CANADIAN (ACB) WOMEN IN ONTARIO

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BACKGROUND: Behavioural prevention interventions (BPIs) are highly dependent on an individual's motivation to initiate and maintain behavioral change/modification. Empirically tested and theoretically informed HIV BPIs for ACB women who are disproportionately infected with HIV are virtually absent from the Canadian landscape. Health research literature reports that motivation is mediated by: the social determinants of health (SDoH), individual supports and systemic stigma and discrimination, racism, sexism heterosexism and HIV related stigma. SDT is concerned with the processes and components, as well as cultural and social facilitators and or/ inhibitors that impact on acquiring the motivation to initiate and maintain behaviour change. SDT and research have identified that; autonomy, competence and relatedness are the primary domains/components for motivation initiation and maintenance of behavioural change.

METHODS: Four focus groups of women living with HIV who self identified as African, Caribbean and/or Black, Francophone, non francophone, heterosexual and/or LGBTQ were conducted in Ottawa and Toronto. Focus groups were digitally recorded, transcribed, entered into NVivo, examined with narrative thematic analysis and constant comparative theory. We used a semi structured interview guide, to explore the perceptions and lived experiences of ACB women living with HIV.

RESULTS: Focus group participants (n=34) included: Ottawa (n=9), Toronto (n=25), francophone (n=7), non-francophone (n=27), LBTQ (n=7). Participants described that SD is not acknowledged, understand or integrated into the development of research, service provision and BPIs. The lack of awareness among researchers and service providers of SD inhibits ACB women from access to appropriate supports and BPIs.

CONCLUSIONS: Participants described SD as an intrinsic personal resource; and that SDoH, individual supports, stigma and discrimination act as facilitators and/or inhibitors. The absence of integrating SD and SDT means that much needed supports to enhance facilitators and decrease inhibitors within BPIs for ACB women in Canada will be lacking. Harnessing ACB women's SD, and applying SDT domains: relatedness, competence and autonomy to supports and BPIs have implications for successfully conceptualizing and implementing tailored interventions.

O055

GENDER AND THE RISK ENVIRONMENT FOR PEOPLE IN OTTAWA WHO SMOKE CRACK

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Knowledge of HIV and Hepatitis C (HCV) risks and the availability of safer inhalation resources do not necessarily translate into safer drug use practices for all people, particularly for women who smoke crack. In fact through qualitative research carried out among men, women and youth in Ottawa who smoke crack, a variety of structural barriers to HIV and HCV prevention were highlighted, many of which are of particular concern for women.

A series of 10 focus groups and 10 in-depth interviews were carried out with men and women in Ottawa who smoke crack, half of which were held specifically with women. Participants were asked about the context in which they smoke crack, HIV and HCV risk behaviours and experiences in accessing and use of safer inhalation materials and resources.

The role of power dynamics in gendered relationships was highlighted as a major factor influencing HIV and HCV risk behaviour among women who smoke crack. These power dynamics often involved coercion and violence and were heightened during sexual encounters, particularly when crack was being exchanged for sex. Women also reported that crack use increases sexual drive while lowering inhibitions thereby contributing to the likelihood of greater risk-taking during sexual encounters. Women spoke, as did MSM, of how they are damaged by the cyclical nature of crack use and sex work and the paucity of resources available to help people break this cycle. Women and girls spoke of their experiences of stigma and discrimination when accessing medical services and abuse at the hands of police, all of which contributed to their hesitance to access health and support services.

This research demonstrates the need for gender specific harm reduction and support services, particularly those targeted towards women and towards men involved in sex work and women in conflict with the law who experience unstable housing as they may face additional barriers to practicing HIV and HCV prevention.

O056

HARM REDUCTION IN A CONTRADICTORY CONTEXT: THE 'MORAL COMPASS' DIVIDE

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Harm reduction programming for drug use has been implemented across Canada, based on experiential and empirical evidence of its effectiveness in reducing the spread of HIV and hepatitis C, among other potential harms. Often provided by under-resourced community organizations, these programs operate in relative discord with the country's predominantly punitive stance on drugs. These two positions, largely separated by morality and compassion, may serve to divide our efforts along the harm reduction continuum. This ideological and practical divide demands a closer examination of how setting our 'moral compass' determines our approaches to harm reduction in Canada.

Informed by a qualitative study of injection drug users in Atlantic Canada, and key studies and commentaries from the literature, this presentation will explore the 'moral compass' divide as the lens through which harm reduction is promoted and practiced in the current "War on Drugs" era. Many drug users live and use drugs with the fear of arrest, labeling, and stigma. While some services and individuals are more accepting (e.g., harm reduction staff, select police officers), these typically exist as isolated segments of support in a broader context of moral judgment and legal persecution. Even within organizations and institutions, individual moral assessments can influence the interpretation of harm reduction policies and subsequent interactions with drug users. Often, the social and legal context of drug use contradicts harm reduction rhetoric and practices (e.g., rushing to inject in public or dispose of equipment, or not carrying clean equipment, all to avoid arrest).

The experiences and perceptions of drug users in Atlantic Canada have highlighted the contradiction of offering harm reduction programming within a political context overwhelmingly based on a moral stance favoring criminalization. This contradiction has social justice and public health implications, and must be resolved in order to realize the full benefits of harm reduction.

HIV Transmission and Mucosal Immunology / Transmission du VIH et immunologie des muqueuses

O057

GP120 INDUCES TYPE I INTERFERON AND PRO-INFLAMMATORY CYTOKINE PRODUCTION BY PRIMARY GENITAL EPITHELIAL CELLS, INDEPENDENT OF HIV-1 INFECTION

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Although women constitute 50% of HIV-1 infected population globally, the early events involved in heterosexual transmission of HIV-1 in the female genital tract are not well understood. Recently, we showed that HIV-1 could directly interact with genital epithelial cells (GECs) leading to impairment of mucosal barrier and viral and bacterial crossing of epithelium. We have further examined the anti-viral factors and inflammatory cytokines produced by GECs in direct response to HIV attachment and determined if HIV surface glycoprotein is sufficient for eliciting these responses. GECs isolated from hysterectomy samples were grown to polarized, confluent monolayers and exposed to HIV (R5-ADA) or envelope gene deleted HIV mutant or recombinant Gp120, the HIV surface glycoprotein. Pro-inflammatory cytokines including IL-1alpha, IL-6, TNF-alpha and chemokines including IL-8 and MCP-1 were all significantly upregulated in apical supernatants of GECs within 1-4 hours of HIV exposure. Exposure to env-deleted HIV mutant failed to induce cytokine responses, while exposure to recombinant gp120 induced significant cytokine and chemokine production. Exposure of primary GECs to HIV also induced production of Type-1 interferon. While GECs produced Type I interferon in response to both WT and UV inactivated HIV-1, exposure to env-deleted mutant did not lead to any upregulation in production of Type I interferon. To confirm that Type I interferon production was directly related to viral surface glycoprotein, confluent monolayers of primary ECs were treated with Gp120 protein. Significant upregulation of Type I interferon was noted and this effect was abrogated when neutralizing monoclonal antibody to Gp120 was present. These results indicate that HIV-1 envelope glycoprotein gp120 can initiate signaling inside GECs within an hour of exposure and these responses are independent of infection. Both pro-inflammatory cytokine and anti-viral pathways are initiated. Understanding of the intracellular pathways in the genital tract following HIV exposure can lead to better intervention strategies.

O058

MUCOSAL ASSOCIATIONS OF ISOLATED SEMEN HIV RNA SHEDDING IN INDIVIDUALS TAKING EFFECTIVE ANTIRETROVIRAL THERAPY

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BACKGROUND: Highly Active Antiretroviral Therapy (ART) generally suppresses HIV RNA in blood and semen to below the level of detection. However, some individuals intermittently shed HIV RNA in semen despite complete suppression of viremia, a phenomenon called isolated semen HIV shedding (IHS). Since the semen of an HIV-infected man is the most common vector for HIV sexual transmission, understanding the correlates of IHS is a public health priority.

METHODS: Paired blood and semen samples were collected from HIV-infected therapy naïve men prior to starting therapy (baseline) and at weeks 2, 4, 8, 12, 16, 20 and 24 after starting ART. HIV RNA levels in blood and semen were measured by branched DNA (bDNA) assay and RT PCR. Blood and semen plasma antiretroviral drug concentrations were measured by HPLC/MS, and cytokine levels (IL-1b, IL-6, IL-7, IL-8, IL-10, RANTES, IP-10, MCP-1 and MIG) were assayed by multiplex ELISA. T-cells in blood and semen were evaluated by multiparamater flow-cytometry.

RESULTS: Twenty-five participants were followed for at least 6 months on therapy and IHS was documents in almost half (48%). IHS was independent of antiretroviral drug concentrations and cytokine levels in blood and semen plasma. CMV reactivation in semen was very common, but neither this nor HSV-2 serostatus were associated with IHS. IHS was not associated with increases in semen T-cell number, but there was a dramatic up-regulation of T cell activation within the semen compartment that was not evident in blood.

CONCLUSIONS: Isolated HIV semen shedding in men on effective ART is independent of common co-infections, ARV drug class and semen cytokine levels. IHS is clearly associated with localized mucosal T-cell activation, but the cause of this activation is unknown. A better understanding of this phenomenon will have important public health implications.

O059

TH22 CELLS CONSTITUTE A HIGHLY HIV SUSCEPTIBLE T CELL SUBSET THAT IS ASSOCIATED WITH EPITHELIAL INTEGRITY IN THE SIGMOID MUCOSA

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BACKGROUND: Th22 cells produce IL-22 and have recently been identified as a unique CD4 T-cell subset with tissue repair and regenerative properties. During HIV infection, substantial structural and immunological damage in the gut contributes to microbial translocation, systemic immune activation and may drive HIV disease progression. Here we investigate the impact of HIV infection and antiretroviral therapy (ART) on Th22 cells in the blood and gastrointestinal mucosa, and their association with gut epithelial integrity.

METHODS: Participants were recruited at the Maple Leaf Medical Clinic, Toronto and included: HIV uninfected men (HIV-; n=6), HIV infected therapy-naïve men (HIV+Rx-; n=6), and HIV infected long-term treated men (HIV+Rx+; n=16). Blood and sigmoid mononuclear cells were stimulated with PMA/ionomycin and characterized by multi-parameter flow cytometry. Th22 cells were defined as non-Th1 and non-Th17 CD4+ T-cells producing IL-22. Epithelial integrity was quantified by immunohistochemistry of tight junction protein ZO-1 and microbial translocation markers were measured from blood plasma.

RESULTS: The frequency and the absolute number of sigmoid Th22 cells were dramatically depleted in untreated HIV infection, but were comparable in uninfected and ART-treated participants. Neither Th17 or Th1 subset depletion was apparent in the sigmoid, and Th22 frequencies were not altered in the blood. ART-treated participants demonstrated improved epithelial integrity compared to HIV+Rx- on immunohistochemistry, and there was a positive correlation between epithelial integrity and gut %Th22 cells. Th22 cells expressed a higher frequency and density of the HIV co-receptor/binding molecules, CCR5 and α4β7 respectively, compared to other CD4 T-cell subsets, strongly suggesting enhanced HIV susceptibility in this subset.

CONCLUSIONS: Our data suggest that Th22 cells constitute a preferential target for HIV replication, leading to their selective depletion in ART-naïve individuals. While the subsequent loss of gut epithelial integrity may drive persistent immune activation and HIV disease progression, reconstitution appears feasible after long-term ART.

O060

LONGITUDINAL ANALYSIS OF A4B7+CD4+ T-CELL SUBSETS AND THEIR RELATIONSHIP TO INTERLEUKIN-7 LEVELS DURING PRIMARY HIV INFECTION

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BACKGROUND: T-cell depletion in the gut mucosa is an early pathogenic event following HIV infection. The gut-homing integrin a4b7 was identified on CD4+ T-cells, as a receptor for HIV entry. However, change in the frequency of a4b7 T-cell subsets following primary HIV infection

remains unknown. We assessed the frequency of a4b7 T-cell subsets in relation to time of infection.
METHODS: Immunophenotypic analysis was performed on samples obtained from 22 untreated patients infected less than 3 months (AP; n=7) or 3 to 6 months after infection (EP; n=15). CD4+ and CD8+ T-cell subsets including naïve, central, effector, transitional and late differentiated memory T-cells were identified based on the differential expression of 8 surface markers at baseline and at months 6, 9, 12 and 24. Comparisons were performed using ANOVA and paired t test and the Spearman's correlation assessed association among study variables.
RESULT: Total CD4+ but not CD8+ T-cells expressing a4b7, were significantly reduced in patients compared to healthy controls (p=0.006). Memory CD4+ T-cell subsets expressed lower levels of a4b7 compared to CD8+ T-cell subsets (p=0.0001). Compared to EP, subjects in AP showed significantly decreased frequencies of a4b7 CD4+ memory T-cells, with the most significant differences observed in effector cells (p= 0.008). The frequency of a4b7 CD8+ T-cell subsets did not change over time, whereas the percentage of a4b7 CD4+ T-cell subsets gradually decreased (p=0.05). Interleukin-7 (IL-7) levels were elevated in patients compared to healthy controls but did not change over time. Interestingly, inverse correlations between IL-7 levels and the frequency of a4b7 CD4+ T-cell subsets were observed and reached significance only with central memory a4b7 CD4+ T-cells (r=-0.48, p=0.02).
CONCLUSIONS: During the first 3 months of infection a rapid decrease in a4b7 CD4+ T-cell subsets mainly in effector memory cells, was observed and remained stable thereafter. Strategies using recombinant cytokines to enhance a4b7 CD4+ T-cells are warranted.

O061
ROLE OF INTESTINAL MEMBRANE TRANSPORTERS IN ANTIRETROVIRAL DRUG ABSORPTION AND DRUG-DRUG INTERACTIONS

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BACKGROUND: Antiretroviral drugs (ARVs) used for the treatment of HIV display many clinical drug-drug interactions. We examined the role of membrane drug carriers expressed in the intestine in facilitating or restricting the absorption and bioavailability of ARVs and their potential contribution to clinical drug-drug interactions using an in vitro model of human intestinal epithelium, Caco-2 cell line.
METHODS: Gene and protein expression of SLC and ABC transporters in Caco-2 cells was evaluated by real-time RT-PCR and immunoblot analysis, respectively. Drug permeability across Caco-2 monolayers, grown on Transwell inserts, was evaluated in the absence or presence of specific transporter inhibitors and other drugs. pH dependence of drug uptake by Caco-2 cells was examined by altering extracellular pH, through NH_4Cl intracellular acidification experiments.
RESULTS: PIs demonstrated potent inhibitory interactions with OATP2B1 influx transporter in Caco-2 cells at clinically relevant IC50 concentrations for ritonavir (0.93µM), atazanavir (2.2µM), lopinavir (1.7µM), tipranavir (0.77µM), and nelfinavir (2.2µM). A proton gradient was identified as the driving force of estrone-3-sulfate (E3S) uptake by OATP2B1 with a H+:E3S stoichiometry of 1:1. Although the uptake of PIs, atazanavir and ritonavir, by Caco-2 cells was stimulated by acidic extracellular pH, this process was not mediated by OATP2B1. The uptake of atazanavir by Caco-2 cells was inhibited by OATP family inhibitors E3S (IC50=4.8µM), probenecid (3.8µM), MK571 (5.3µM), rifamycin SV (18µM), and pravastatin (4.3mM), as well as ritonavir (0.5µM), amprenavir (1.4µM), and tipranavir (2.1µM). Furthermore, P-glycoprotein (MDR1) was found to play a major role in limiting atazanavir permeability across Caco-2 monolayers.
CONCLUSIONS: Antiretroviral drugs such as PIs can interact with several intestinal influx and efflux transporters at clinically relevant concentrations. Since many drugs are known to be substrates for these carriers, including statins and other antiretrovirals, these transporters may be implicated in clinically significant drug-drug interactions at the intestinal mucosa.

This study is funded by the Canadian Foundation for AIDS Research (CANFAR); Olena Kis is a recipient of an Ontario HIV Treatment Network (OHTN) studentship award.

O062
IMPRINTING FOR GUT-HOMING IN CCR6+ BUT NOT CCR6- CD4+ T-CELLS IS ASSOCIATED WITH INCREASED PERMISSIVENESS TO HIV REPLICATION AT ENTRY AND POST-ENTRY LEVELS

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BACKGROUND: Gut-associated lymphoid tissues (GALT) are major sites for HIV replication and CD4+ T-cell depletion in HIV-infected individuals, with Th17 cells playing a critical role in HIV pathogenesis. CCR6 is a marker for Th17 cells highly permissive to HIV infection. CCR6+ T-cells have the potential to migrate into the GALT via the gut-homing integrin alpha4beta7, a newly identified HIV-gp120 binding receptor. Here we investigated whether memory T-cells co-expressing CCR6 and integrin beta7 are selective HIV targets and whether retinoic acid (RA)-induced imprinting for gut-homing selectively increases CCR6+ T-cell permissiveness to infection.
RESULTS: Memory beta7-R6+ and beta7+R6+ but not beta7-R6- and beta7+R6- T-cells were permissive to R5 HIV, produced Th17 cytokines, and expressed the highest CCR5, and LFA-1 levels. The frequency of beta7-R6+ and beta7+R6+ T-cells was decreased in the peripheral blood of HIV-infected compared to uninfected subjects despite high CD127 and Bcl-2 expression. ATRA upregulated integrin alpha4 and beta7 co-expression in both CCR6+ and CCR6- T-cells, but increased HIV permissiveness solely in CCR6+ T-cells via entry (CCR5 upregulation) and post-entry mechanisms. Finally, superior permissiveness to HIV replication in CCR6+ compared CCR6- T-cells coincided with higher TNF-alpha production, increased NF-kappaB activity, and superior ability to proliferate upon TCR triggering. Genome wide transcriptional profiles in CCR6+ versus CCR6- T-cells will be presented and the identification of new HIV restriction and permissiveness factors will be discussed.
CONCLUSION: These results demonstrate that CCR6, but not the integrin beta7, is a discriminative marker for memory T-cells imprinted with a transcriptional program favorable to HIV replication. Given the ability of integrin beta7 to regulate migration into the GALT and to bind HIV-gp120, CCR6+ T-cells co-expressing integrin beta7 might have an extraordinary ability to disseminate HIV from the portal sites of entry. Understanding the molecular mechanisms of memory CCR6+ T-cell differentiation will be critical for the design of new therapeutic strategies that should interfere with viral permissiveness but not Th17 lineage commitment and gut-homing potential in CCR6+ T-cells.

Challenges of ART & Non-AIDS Morbidities / Défis liés aux TAR et causes de mortalité autres que le sida

O063
PREVALENCE OF TRANSMITTED DRUG RESISTANCE MUTATIONS AMONG PERSONS UNDERGOING TREATMENT-NAÏVE HIV GENOTYPING IN ONTARIO, CANADA, 2002-09

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OBJECTIVE: To estimate the prevalence of transmitted drug resistance (TDR) among HIV-positive persons in care in Ontario.
METHODS: We analyzed data from the OHTN Cohort Study, an open dynamic cohort of HIV+ persons recruited from HIV clinics and primary

care practices across Ontario. Data were obtained from medical chart extractions, interviews, and the Ontario Public Health Laboratories which performs almost all viral load and genotypic resistance testing (GRT). We restricted the analysis to persons diagnosed in 2002-09 who underwent GRT testing while treatment-naïve, defined as (1) absence of a record of ART use and (2) detectable viral load. We used the Stanford University HIV Drug Resistance Database to identify TDR mutations. We used descriptive statistics to characterize the prevalence of TDR and report results with 95% confidence intervals (CI).

RESULTS: Of the 533 eligible participants, half (51%, 274) underwent GRT while treatment-naïve. This proportion increased significantly with year of diagnosis from 29% in 2002 to 73% in 2009 (p<0.0001, chisquared test for trend). The mean age of tested participants was 39 (SD 10.1); 12% were female, 65% MSM, and 63% white. The median baseline viral load count was 4.5 log10 copies/mL (IQR 3.9-5.0) and the median baseline CD4 count was 384 cells/mm^3 (IQR 240-530). Overall, 13.5% (CI 9.5-17.6%) had 1+ drug resistance mutations, and 9.1% (CI 5.7-12.5%), 5.1% (CI 2.5-7.7%) and 2.6% (CI 0.7-4.4%) had mutations conferring resistance against NRTIs, NNRTIs, or PIs, respectively. TDR against 2+ drug classes was observed in 2.9% (CI 0.9-4.9%). The most common mutations were T215 revertants, M41L, and K103N in the RT gene. Participants diagnosed in 2008-09 had a higher proportion of NRTI mutations (23.1% vs 5.9%, p=0.0005) and NNRTI mutations (11.5% vs 3.6%, p=0.03) than those diagnosed earlier, whereas PI mutations declined with time (p=0.04).

CONCLUSION: GRT ordering for treatment-naive HIV+ persons increased dramatically since 2002. Our finding of a recent increase in NRTI and NNRTI mutations is concerning but requires confirmation, ideally in a random sample of specimens from newly diagnosed individuals.

O064

INCIDENCE OF METABOLIC REGIMEN-SPECIFIC ABNORMALITIES WITHIN A MULTI-SITE CANADIAN COHORT OF INDIVIDUALS ON HAART: A CANOC INITIATIVE

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BACKGROUND: There is greater risk of dyslipidemia and hyperglycemia associated with PIs compared to NNRTIs, and kidney dysfunction has been linked to tenofovir (TDF)-containing NRTI backbones versus those with abacavir (ABC). This study sought to determine the incidence of these regimen-specific complications within the Canadian Observational Cohort (CANOC).

METHODS: Data were analyzed from adults initiating triple combination ARV therapy in CANOC between January 2000 and December 2009. Complications were defined as: total cholesterol (TC) >5.2 mmol/L, LDL >3.5 mmol/L, HDL <1.00 mmol/L, triglycerides (TG) >2.5 mmol/L, fasting glucose >5.7 mmol/L, creatinine >120 µmol/L, phosphate <0.8 mmol/L. Subjects presenting with a complication at pre-ARV baseline were excluded.

RESULTS: Incidence rates of complications are displayed in the table. LDL elevations were significantly increased in patients taking NNRTIs (p=0.003), while TG elevations were increased in those taking PIs (p=0.02). Elevated creatinine was more common in patients taking PIs (p=0.02) but no significant differences in phosphate were observed (p>0.05). PI-based regimens were 71% atazanavir and 25% lopinavir while 83% of NNRTI-based regimens were efavirenz compared to 17% nevirapine. Neither creatinine nor phosphate complications were more common in the TDF group (both p>0.05). All NRTI backbones were either lamivudine (3TC) or emtricitabine/TDF or 3TC/ABC.

CONCLUSIONS: Incidence of laboratory abnormalities is high in patients taking current ARV therapies. Lipid abnormalities, with the exception of TGs, were not more frequent in patients taking PIs. Tenofovir-containing NRTI backbones show no increased risk of kidney complications over those containing abacavir.

O065

SENSE OF COHERENCE (SOC) AND TOBACCO USE AMONG PEOPLE LIVING WITH HIV (PLWHIV)

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OBJECTIVE: According to Antonovsky, the Sense of Coherence (SOC) is a key determinant of health, providing someone with the ability of perceiving stressors as comprehensible, manageable, and meaningful. The SOC plays a moderating role between stress and health but its association with health behaviours needs further research. Our aim is to assess if tobacco use is associated with a lower SOC among PLWHIV.

METHODS: Data were gathered from the 661 participants who had completed all 4 visits of MAYA, a longitudinal study on the quality of life of PLWHIV, and had no missing data for the SOC (mean age = 44.2 years; 18.9% women). Multiple logistic regression analyses were performed to assess the association between SOC and tobacco use, controlling for known potential confounders.

RESULTS: Among the participants, 352 (53.3%) reported tobacco use during the 6 months prior to the last questionnaire. Results show that PLWHIV in the lowest quartile for the SOC compared to those in the highest quartile had an Adjusted Odds Ratio (AOR) for using tobacco of 2.40; 95% Confidence Interval (95%CI) = 1.46-3.94. In addition PLWHIV using tobacco tended to be male (AOR=7.08; 95%CI=3.51-14.28), to report being heterosexual (AOR=4.93; 95%CI=2.76-8.82), to only have a High school diploma or less (AOR=1.95; 95%CI=1.37-2.78), not to be from a endemic country (AOR=9.58; 95%CI=4.20-21.88), and to be younger (AOR=0.97; 95%CI=0.95-0.98).

CONCLUSION: Prevalence of tobacco use in PLWHIV is more than twice the prevalence in the general population. Non-smoking interventions should target PLWHIV that are male, heterosexual, less educated, younger and not born in countries where HIV is endemic. The impact of interventions increasing the SOC on smoking should be studied.

O066

THE IMPACT OF CART AND CNS PENETRATION EFFECTIVENESS ON NEUROPSYCHOLOGICAL OUTCOMES IN PERSONS LIVING WITH HIV: FINDINGS FROM THE OHTN COHORT STUDY

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OBJECTIVE: Despite the introduction of combination antiretroviral therapy (cART), milder neurocognitive impairments and disorder have remained high (40-50%), and continue to have a significant impact on everyday functioning. Recent work by Letendre (2006, 2010) has shown that cART classified with high CNS penetration effectiveness (CPE) is associated with improved CSF viral load response and neurological outcomes.

METHODS: As part of the ongoing OHTN Cohort study, 385 persons with HIV received neuropsychological testing that assessed working memory (Spatial Span), complex psychomotor efficiency (Digit Symbol), dexterity (Grooved Pegboard), and verbal learning/memory (Hopkins Verbal Learning Test). Antiretroviral therapy agents were assigned a score based on CPE (Letendre 2006 and 2010 criteria) and summed to generate a Total CPE score. Based on previous studies, we dichotomized the 2006 CPE scores into low (i.e., CPE score ≤2) and high (i.e., CPE score >2) effectiveness. In this sample, 75% of participants were on ARV regimens with CPE scores of ≤2 and we matched these group proportions to dichotomize the 2010 CPE scores into low (i.e., CPE score ≤9, 78% of participants) and high (i.e., CPE score >9) effectiveness. Linear regression models were used to determine whether CPE rank of current ARV regimen was associated with neuropsychological functioning adjusting for age, education, gender, CD4 nadir, present CD4 count, and time since HIV diagnosis.

RESULTS: The mean age and education of participants was 48.2 and 14.0 years, respectively. The majority of the sample were male (84%) and had

HIV for a mean of 11.8 years. The mean current CD4 count was 530 cells/ml and approximately 2/3 participants had a nadir CD4 count of ≤200. After adjusting for covariates, there was no significant association between neuropsychological test scores and 2006 or 2010 CPE scores (i.e., low vs. high).
CONCLUSIONS: In this first Canadian cross-sectional study, there was no impact of cART and CPE of current ARV regimen on neuropsychological outcomes. Ongoing work will assess the effects of complete ARV history, aging, and other covariates on neuropsychological outcomes.

O067
COMPUTERIZED TESTING AUGMENTS PENCIL-AND-PAPER TASKS IN TARGETING HIV-ASSOCIATED MILD COGNITIVE IMPAIRMENT

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BACKGROUND: Existing tools for rapid cognitive assessment in HIV+ individuals with mild cognitive deficits lack sensitivity or do not meet psychometric requirements for tracking changes in cognitive ability over time.
METHODS: Seventy-five non-demented HIV+ patients were evaluated with the Montreal Cognitive Assessment (MoCA), a brief battery of standardized neuropsychological tests, and computerized tasks evaluating frontal-executive function and processing speed. Rasch analyses were applied to the MoCA data set and subsequently to the full set of data from all tests.
RESULTS: The MoCA was found to adequately measure cognitive ability as a single, global construct in this HIV+ cohort, although it showed poorer precision for measuring patients of higher ability. Combining the additional tests with the MoCA improved the psychometric properties of the battery and resulted in better targeting of the range of abilities in this cohort.
CONCLUSION: This application of modern test development techniques shows a path toward a quick, quantitative, global approach to cognitive assessment with promise both for initial detection and longitudinal follow-up of cognitive impairment in HIV.

O068
FOUR-YEAR FOLLOW-UP OF POLYALKYLIMIDE GEL USE FOR THE TREATMENT OF HIV-ASSOCIATED LIPOATROPHY

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BACKGROUND: Delayed adverse events have been a recent concern when polyalkylimide gel (PAIG, Bio-Alcamid®) has been used to treat HIV-associated facial lipoatrophy (FLA). Delayed infections have been reported and are of particular worry but have yet to be fully characterized. We report on the 4 year follow up after the use of PAIG in the treatment of FLA as part of a randomized control trial (RCT).

METHODS AND MATERIALS: Five patients were treated with PAIG in a pilot study, and 31 patients were subsequently enrolled in an open-label, RCT of immediate (week 0 and 6) or delayed (week 12 and 18) PAIG injections. Endpoints included proportion of participants with complications including infection and their management, changes in FLA severity (FLSS), quality of life (QoL), depression and anxiety, and satisfaction scores. Infections were classified as "confirmed" if purulent material was extracted and/or an organism cultured. Infections were classified as "possible" if only the clinical signs were present including erythema, oedema and pain without purulent discharge or an identified organism.

RESULTS: Year 4 results were available for 5 pilot and 27 full-scale study participants. Delayed complications included 5 confirmed infections (15.6%) occurring a median of 2.8 years from baseline injection, 3 possible infections (9.4%), nodules (25%) and bleeding (3%). No significant changes were observed between years 2 to 4 in patient-graded FLSS, QoL, depression and anxiety scores. All patients with confirmed infections had prior dental procedures. While 94% of participants were satisfied with their overall treatment and 78% would recommend PAIG treatment, only 69% were satisfied with PAIG treatment specifically.

CONCLUSION: In conclusion, while PAIG treatment was associated with delayed complications including confirmed and possible infections and nodules, most patients were still satisfied with their treatment. Dental procedures were common prior to the development of infectious complications and potentially warrant antibiotic prophylaxis.

HIV in Aboriginal Populations / Le VIH chez les populations autochtones

O069
PUBLIC HEALTH RESPONSES MUST ADJUST TO MEET THE CHANGING HIV PREVENTION NEEDS OF AT-RISK ABORIGINAL ADOLESCENTS

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BACKGROUND: There has been little empirical evidence regarding the individual, social and structural needs among at-risk Aboriginal adolescents with respect to preventing HIV infection.
METHODS: At-risk (defined as aged <30 years and recent use of drugs other than marijuana) Aboriginal youth were recruited into the Cedar Project between May 2003 and 2008. Aboriginal interviewers administered baseline and follow-up questionnaires every six months. Venous blood samples were drawn and tested for HIV and HCV-antibodies. We used contingency table analysis comparing baseline individual, social and structural barriers between adolescents (aged <19 years) and older (>19 years) participants. For longitudinal data, we used generalized estimating equations (GEE) to determine factors associated with being an adolescent in the prior 6-months throughout the follow-up period.
RESULTS: In comparison with older participants (N=472), adolescents (N=133) were more likely at baseline to: use non-injection crystal methamphetamines (46% vs. 28%; p=<0.001); have been taken into foster care (72% vs. 63%; p=0.024) and; less likely to be HIV (2% vs. 10%; p=0.002) and; HCV-positive (13% vs. 39%; p=<0.001). In GEE analysis, adolescents had significantly elevated proportional odds of having an STI (OR: 1.72 [CI: 1.13-2.62]); being involved in sex work (OR: 1.50 [CI: 1.07-2.10]); and using non-injection crystal methamphetamines (OR: 2.46 [CI: 1.86-3.27]).
CONCLUSIONS: Vulnerable Aboriginal adolescents are a distinct group in comparison to their older counterparts and require a tailored public health response. Adolescents were more likely to be involved in the foster care system and in sex work, less likely to use injection drugs but more likely to utilize non-injection crystal methamphetamines. Drug treatment interventions that combine traditional healing opportunities and western medical interventions must be developed in collaboration with Aboriginal adolescents that address the holistic nature of vulnerability including crystal methamphetamine use, sex work and the trauma associated with removal from families of origin to the foster care system.

O070
THE CEDAR PROJECT: VULNERABILITIES ASSOCIATED WITH HIV INCIDENCE AMONG YOUNG ABORIGINAL PEOPLE WHO USE INJECTION AND NON-INJECTION DRUGS IN TWO CANADIAN CITIES

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[1]Vancouver; [2]Enderby; [3]Vancouver and Prince George, BC

BACKGROUND: Among people who use drugs in Canada, Aboriginal people are becoming HIV positive at twice the rate of non-Aboriginal people. This study presents data on the rate of infection among young Aboriginal people who use drugs.
METHODS: We analyzed data from an ongoing prospective study of Aboriginal people who use drugs aged 14-30 (Cedar Project, Vancouver and Prince George, Canada). Participants completed baseline and follow-up questionnaires every six months. Blood samples were obtained and tested for HIV and HCV antibodies. Participants HIV negative at baseline (n=547 of 595) and who had completed at least one of the first five fol-

low-up visits (October 2004 to January 2009) were included in the analysis. Median time to follow-up was 3.7 years (IQR: 1.9, 4.5).
RESULTS: As of December, 2010, seroconversion had occurred in 25 participants, yielding a crude incidence of 5.7% (95%CI: 2.2, 3.6), incidence density 1.8 cases per 100 person years. Among injectors only, seroconversion occurred in 22 participants, yielding a crude incidence of 7.9% (95%CI: 3.2, 4.8), incidence density 2.5 cases per 100 person years. In univariable Cox regression analysis among participants who reported injection only, frequent opiate injection was associated with HIV incidence (RR: 2.6, 95% CI: 1.12, 6.02).
CONCLUSION: This study stresses the troubling high rates of HIV incidence rate of among Cedar Project participants who inject drugs and has demonstrated its association with injection of opioids. Efforts towards expanding addiction treatment services that are culturally safe and based on Indigenous values are urgently required.

O071

THE CEDAR PROJECT: INTENSE CRACK SMOKING AND HIV VULNERABILITIES AMONG YOUNG ABORIGINAL PEOPLE IN TWO CANADIAN CITIES

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OBJECTIVE: To explore vulnerabilities associated with high intensity crack cocaine smoking among young at-risk Aboriginal people.
METHODS: The Cedar Project is a cohort study of Aboriginal young people in Vancouver and Prince George who use injection and non-injection drugs. High intensity crack cocaine smoking was defined as participants using crack on a daily or more basis. Venous blood samples tested for HIV and HCV antibodies. Generalized estimating equation (GEE) modeling identified factors associated with high intensity crack smoking (smoking crack daily or more) over the study period (October 2003-July 2009). Unadjusted and adjusted odds ratios (AOR) and 95% confidence intervals (CI) were calculated.
RESULTS: In total, 605 participants contributed 2619 observations over the study period. The prevalence of high intensity crack cocaine smoking decreased from 54.5% in 2003 to 35.1% in 2009. In multivariable analysis, high intensity crack cocaine smoking was associated with female gender (AOR: 1.57, 95%CI: 1.18-2.08), living in Vancouver (AOR: 1.63, 95%CI: 1.27-2.09), having had a parent who attended residential school (AOR: 1.28, 95%CI: 1.02-1.64), having unstable housing the previous six months (AOR: 1.58, 95%CI: 1.29-2.95), smoking heroin on a daily or more (AOR: 3.5, 95%CI: 2.25-5.44) and less than daily basis (AOR: 1.84, 95%CI: 1.29-2.63) in the last six months, incarcerated in the last six months (AOR: 1.46, 95%CI: 1.17-1.81), sex work involvement in the last six months (AOR: 2.04, 95%CI: 1.56-2.67) and having a regular sexual partner who injects drugs in the last six months (AOR: 1.54, 95%CI: 1.14-2.07).
Among only participants who reported injection drug use, high intensity crack cocaine smoking was associated with injecting heroin daily or more (AOR: 2.94, 95%CI: 2.12-4.06), injecting cocaine daily or more (AOR: 2.53, 95%CI: 1.86-3.44) having difficulty finding new rigs (AOR: 1.42, 95%CI: 1.09-1.84) and needing help injecting (AOR: 1.42, 95%CI: 1.08-1.87).
CONCLUSIONS: The risks associated with high intensity crack smoking among Cedar Project participants are alarming. Developing interventions based on Indigenous strategies for healing that incorporate historical trauma and harm reduction approaches are essential for the safety of these young people.

O072

UNEQUAL BURDEN: COMPARISON OF HIV DIAGNOSIS RATES AMONG ABORIGINAL AND CAUCASIAN POPULATIONS IN CANADA

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OBJECTIVE: To compare the HIV diagnosis rates in the Aboriginal and Caucasian populations in Canada.
METHODS: National surveillance data between 1999 and 2008 provided HIV diagnoses for people self-identifying as First Nations, Inuit and Métis (Aboriginal) and Caucasian in 11 provinces and territories (excluding ON and QC). Using population data from Statistics Canada as denominators, we estimated average annual diagnosis rates for the time periods 1999-2003 and 2004-2008.
RESULTS: HIV diagnosis rates were consistently higher among Aboriginal peoples than among Caucasians. The overall rate among Aboriginal men in 1999-2003 was 41.1 per 100,000 and 35.6 per 100,000 in 2004-2008, which was 4.3 and 3.6 times higher than among Caucasian men. At 31.0 per 100,000 during 1999-2003 and 35.7 per 100,000 during 2004-2008, the overall average annual rate among Aboriginal women was respectively 14.1 times and 19.7 times higher than among Caucasian women.
Disparities were more pronounced in younger age groups. During 2004-2008, the average annual rate for Aboriginal women aged 15-19 was 21.6 per 100,000, compared with 0.7 per 100,000 among Caucasian women. Similarly, the rate for Aboriginal men aged 15-19 years was 5.38 per 100,000 during the same time period, compared with 0.38 per 100,000 for Caucasian men aged 15-19.
The HIV diagnosis rate attributed to injection drug use was significantly higher among Aboriginal women and men compared with Caucasian women and men for both time periods. The rate attributed to heterosexual contact for both Aboriginal women (11.9 per 100,000 during 2004-2008) and men (9.5 per 100,000 during 2004-2008) surpassed the diagnosis rates of all exposure categories among Caucasians.
CONCLUSION: High rates of HIV diagnoses are observed among Aboriginal peoples, particularly related to injection drug use and heterosexual contact. These findings will inform policy and programme review to address the growing epidemic among Aboriginal peoples in Canada.

O073

COMPARISON OF LATE HIV DIAGNOSIS AS A MARKER OF CARE FOR ABORIGINAL VERSUS NON-ABORIGINAL PEOPLE LIVING WITH HIV IN ONTARIO

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BACKGROUND: Studies found Aboriginal people living with HIV (APHAs) are more likely to receive poorer HIV-related care, but that with proper care, clinical outcomes are similar to non-APHAs. This study looks at timeliness of HIV diagnosis as a marker of care, comparing APHAs and non-APHAs in the Ontario HIV Treatment Network Cohort Study (OCS).
METHODS: This is a cross-sectional analysis of data from 1997 to 2009. Proportion of participants receiving a late diagnosis of HIV were compared using Chi square test. Late diagnosis was defined as: HIV diagnosis within 3 months of the onset of an AIDS-defining illness (ADI), and CD4+ count <200 cells/mm^3 at diagnosis. Logistic regression models were used to determine the effect of Aboriginal status on the probability of late diagnosis.
RESULTS: Significant differences were noted in socioeconomic characteristics. Aboriginal participants were more likely to have lower levels of income, education and employment. No statistically significant difference was noted in proportions receiving a late HIV diagnosis as defined by ADI (Aboriginal 5.2%, non-Aboriginal 6.3%, p=0.40). Multivariate logistic regression analysis, adjusting for age, gender, HIV risk factor and hepatitis C found APHAs more likely to have CD4+ count <200 cells/mm^3 at diagnosis (OR=1.56, p=0.04). A sub-analysis by geographic region found similar rates of late HIV diagnosis among Aboriginal peoples living in Toronto and in other regions of Ontario.
CONCLUSIONS: The APHAs and non-APHAs in our cohort had differences in socioeconomic characteristics and outcomes of late diagnosis as defined by CD4+ count. These findings highlight the need for targeted interventions to reduce structural barriers to health and to improve HIV-related care for Aboriginal peoples. Much work is also needed to address the needs of many APHAs who are not receiving care, who were not represented in this study as the OCS recruits from primary and tertiary care centres.

Addressing HIV Stigma and Discrimination in Ethnoracial Communities / Enjeux relatifs à la stigmatisation et à la discrimination liées au VIH dans les communautés ethnoraciales

O075

ENGAGING ETHNORACIAL FAITH, MEDIA AND SOCIAL JUSTICE LEADERS IN HIV STIGMA REDUCTION: CHALLENGES AND OPPORTUNITIES

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Immigrants and refugees of ethnoracial minority backgrounds represent a growing proportion of Canada's overall population. Since 2005, immigrants and refugees from racial minority communities have comprised close to 20% of new HIV infections in Canada, while representing less than 1% of the total population. Furthermore, over 40% of people from 'endemic' countries of origin who tested positive for HIV contracted the virus after their arrival in Canada. These data show that culturally relevant and community driven HIV Prevention initiatives are critical in reducing health disparity in these communities. While faith-based organizations, ethnic media, and social justice advocates have traditionally contributed to improving the quality of life among newcomers, their engagement in HIV prevention and support is limited. In 2009, the Committee for Accessible AIDS Treatment (CAAT) undertook a community-based research to explore the barriers and opportunities in engaging ethnoracial minority faith, media and social justice leaders in HIV stigma reduction and HIV prevention efforts. An advisory committee made up of 22 leaders from the three aforementioned sectors guided the study. A total of 23 PHA and 22 non-PHA leaders participated in 7 focus groups.

The study identified complex challenges: (1) dominant religious and moral discourses perpetuate HIV stigma and reinforce the perception of HIV as a gay disease; (2) potential backlash and ostracization discourage HIV championship among faith leaders; (3) lack of visible ethnoracial PHA and non-PHA champions undermines the communities' emotional connection to HIV/AIDS; and (4) resource constraints and competing priorities limit the engagement of media and social justice leaders in addressing complex HIV issues. However, the study also identified strategies for collective action, including cross-sector collaboration, community dialogue to promote emotive connections to HIV issues; and engaging young leaders in HIV championship. These results informed the development of innovative pilot HIV stigma reduction interventions in the communities that combines psychotherapeutic and capacity building strategies to support the development of community HIV champions.

O076

RACISM, SEXISM AND HIV-RELATED STIGMA: AN INTERSECTIONAL APPROACH TO UNDERSTANDING PREDICTORS OF DEPRESSION AMONG AFRICAN CARIBBEAN WOMEN LIVING WITH HIV IN ONTARIO, CANADA

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BACKGROUND: The deleterious mental health impacts of HIV-related stigma, sexism and racism have been widely documented, yet most research has examined these forms of stigma separately. The increased HIV infection rate among African Caribbean women in Canada underscores the importance of understanding health effects of intersectional forms of stigma. We used a critical feminist epistemology to examine the influence of intersecting stigmas on depression among African Caribbean women living with HIV in Ontario.

METHODS: A multi-method approach, triangulating qualitative and quantitative methods, was employed to investigate stigma experienced by women living with HIV. The qualitative phase involved 15 focus groups with diverse women living with HIV (n=104) in five cities across Ontario. Participants described the convergence of racism, sexism and HIV-related stigma negatively impacted mental health. The quantitative phase utilized a cross-sectional survey design to further examine the influence of stigma(s) on depression among African Caribbean women living with HIV in three cities in Ontario. Bivariate correlations and multiple linear regression (MLR) analyses were conducted using SPSS 17 to measure associations between independent (racism, sexism, HIV-related stigma) and dependent (depression) variables.

RESULTS: Survey participants (n=163; mean age=41 years; ethno-racial identity: 50% African, 50% Caribbean) reported experiences of racism, sexism and HIV-related stigma. Over one third of participants (39.1%) reported moderate/severe depression scores. Racism, sexism and HIV-related stigma scores were significantly correlated with each other and with higher depression scores. In MLR analyses, racism, sexism and HIV-related stigma predicted higher depression scores, adjusted $R2=0.22$, $F(1, 106)=16.22$, $p<0.001$.

CONCLUSIONS: Results highlight widespread racism, sexism and HIV-related stigma and substantial levels of depression among African Caribbean women living with HIV. The associations between racism, sexism, HIV-related stigma and depression highlight the salience of utilizing an intersectional approach to understanding stigma. Findings may inform mental health practice as well as multi-dimensional stigma reduction interventions.

O077

"THESE ARE SOME OF THE THINGS WE NEED": WOMEN LIVING WITH HIV DISCUSS ISSUES IN THEIR DAILY LIVES AS RESEARCH PRIORITIES

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BACKGROUND: Historically, women have been excluded from research due to reproductive and hormonal related concerns. Additionally, insufficient resources have been directed to research on the social and economic factors, an issue of concern as the rate of HIV infection among women continues to rise. The objective of this study was to determine which research topics are priorities to women living with HIV (WLWH) across Ontario.

METHODS: We conducted 15 focus groups with WLWH across Ontario including: Aboriginal, African/Caribbean, sex worker, injection drug user (IDU), lesbian/bisexual, and transgender women. Four focus groups were implemented with HIV service providers and researchers in Ottawa, Hamilton and Toronto. A semi-structured interview guide was used to explore the research priorities of WLWH. Focus groups were digitally recorded, transcribed, entered into NVivo 8 and examined with narrative thematic techniques from grounded theory.

RESULTS: Participants (n=104; mean age=38 years; 23% lesbian/bisexual; 22% transgender; 69% ethnic minority) and service providers (n=48) described issues of daily survival, mental health and physical health as research priorities:

a) Poverty: Inability to meet basic needs and as a barrier to adherence to antiretrovirals and accessing healthcare
b) Employment barriers: Inflexible disability benefit policies, fluctuating health concerns, and vocational capacity building needs
c) Mental health/emotional issues
d) Social isolation and fear of disclosure
e) Physical health: Cure for HIV, lipodystrophy, co-infections, pregnancy/pregnancy planning, gender/ethno-racial-specific medication side effects, etc.

CONCLUSIONS: Though our aim was to discuss research priorities, issues of daily survival for WLWH and their children emerged as the first priority. The influence of stigma on mental health and social isolation suggests the need for support and stigma reduction interventions. Participants highlighted the need for gender and ethno-racial specific research that engages WLWH in all parts of the research process with effective KTE strategies to inform programs, interventions, policies and women's daily lives.

O078

A HOUSE IS NOT A HOME: THE HOUSING EXPERIENCES OF AFRICAN AND CARIBBEAN MOTHERS LIVING WITH HIV

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BACKGROUND: There is a dearth of research that has taken an ethnocentric and gendered lens to explore issues of housing instability amongst African and Caribbean mothers living with HIV, thus little is known about their experiences of housing instability in the face of intersecting issues of motherhood, poverty, sexism, immigration status, and HIV-related stigma and discrimination. This presentation will share findings from the HIV, Housing and Families community-based research study in order to highlight the unique and complex housing issues facing African, and Caribbean mothers living with HIV in Toronto.

METHODS: A Community-Based Research framework was guided by a community advisory board of people living with HIV (PHAs) and service providers. In-depth qualitative interviews with 30 participants explored the experiences of accessing housing services, and obtaining and maintaining housing that attended to the needs of families affected by HIV. This paper is based on interviews with 17 HIV-positive mothers from Africa and the Caribbean.

FINDINGS: Housing challenges are intensified for HIV-positive mothers from African and Caribbean communities due to the multiple and unique housing needs and experience that this population continues to face. This is exacerbated for African and Caribbean newcomer HIV-positive mothers due to the ethnocentric shelter and housing practices that they experience as they attempt to navigate housing, health and social care systems. HIV related stigma in the context of these women's lives is a particularly challenging barrier to housing stability due to issues related to disclosure, social isolation, and intimate partner violence.

CONCLUSIONS: HIV-positive mothers have intersecting identities and social positions that result in multiple sites of marginalization and oppression. This has a detrimental impact on their experiences of housing and housing stability. Addressing these intersecting issues calls for the development of HIV affected family-centered housing models that integrate and coordinate housing, health, cultural and social programs.

O079

OVERWHELMING UNCERTAINTIES AND CONTESTED THREATS: A CONTEXTUAL UNDERSTANDING OF THE HIV RISK FACED BY CHINESE IMMIGRANTS IN CANADA

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The experience of risk is a matter of uncertainty threatening desired outcomes. Yet it is unclear how HIV risk is responded to by those who confront multiple, often contested, uncertainties in their daily lives. Drawing on data from a larger CIHR-funded research project on HIV risk faced by immigrant communities in Canada, this paper examines the impacts of immigration processes, including the rise in transnational living spaces, on Chinese immigrants' perceptions of risk, as well as their rationales for, and actual practice of, risk responses. We argue that immigration processes not only exposed this group to HIV risk they did not face in China but also compromised their capacity to engage in effective evaluation of and response to the risk due to the lack of familiarity with and access to the resources in Canada. In light of various challenges in their post-immigration lives, HIV risk was neither the only nor the most urgent uncertainty they were facing, and thus their responses to it were a result not simply of their knowledge about HIV/AIDS, but of a complex decision-making process mediated by various contextual aspects, such as changed life priorities, traditional norms of family and marriage, sociocultural meanings of sex, desire for intimacy, and pursuit of sense of control. To address their vulnerability to HIV, therefore, more attention should be given to the intersections between immigrants' vulnerability to HIV and settlement processes, and to holistic approaches to HIV interventions that take into account the changing contexts and dynamics of HIV risk.

O080

ETHNO-RACIAL MINORITY YOUTH AND SEXUAL HEALTH IN THE IMMIGRANT CONTEXT: EXPLORING ISSUES AND RESEARCH APPROACHES

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Sexual health and sexuality related issues faced by newcomer racial minority youth in smaller urban centres in Canada is an important yet under-examined issue. In a new cultural environment, social stigma, discrimination and racism play a significant role in the lives of this youth, and moreover impacts upon their sexual health, including the transmission of STIs and HIV/AIDS.

This presentation focuses on a project aimed at raising issues faced by African youth in Winnipeg, Manitoba as related to HIV/AIDS. The objectives of the project were to ascertain youth understandings about sexuality and sexual health, and to obtain youth guidance on the priority issues. Another aim was to learn about the best approaches to involve youth in community-based research. Male (12) and female (6) youth from different African communities attended gender-specific meetings to discuss their experiences and views.

The youth were highly motivated to discuss their sexuality, and they believed that research on these matters was relevant and necessary. Ideas of "freedom," stemming from Canadian sexual culture, and experiences resulting from this newfound concept appear to be at the core of risk and prevention. Male and female youth were interested in learning about each other's perspectives and were interested in participating in a research project that involves both genders in the process. While research should address African youth experiences, in order to better understand the dimensions of race and racism in the formations of sexuality within newcomers' lives in Canada, the inclusion of other groups in this kind of research is also very important.

Our initial exploration with African newcomer youth on the issues they face has led us to develop a comprehensive research agenda with immigrant youth.

Pathogenesis / Pathogénie

O081

THE ROLE OF PP60^{C} -SRC SIGNALING IN EARLY HIV-1 INFECTION OF CD4^{+} T-CELLS

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BACKGROUND: During early infection of CD4^{+} T lymphocytes, the phosphoprotein c-Src (pp60$^{c\text{-}src}$) tyrosine kinase becomes activated within minutes of HIV-1 infection. Previous studies have suggested that src-family kinases, including Fyn and Lck, may provide some protection to HIV-1 infection. If c-Src kinase has a protective role, we hypothesize that reducing its activity with drugs, or overexpressing a dominant negative, inactive c-Src protein, will increase early HIV-1 infection in CD4^{+} T-cells.

METHODS: We pre-treated Jurkat C or Jurkat E6-1 T-cells with the c-Src kinase inhibitor SU6656, and then infected these T-cell lines with a pseudoenvelope-typed HIV-1 virus (VSV-G/HIV). This virus is replication deficient, yet still able to integrate into the host genome, and also carries a luciferase gene. We also used negative selection to purify CD4^{+} T-cells from human peripheral blood and pre-treated these cells with additional src-family kinase inhibitors (PP1 or PP2) before HIV-1$_{IIIB}$ infection. To complement these drug experiments, we used adenovirus-vector gene transduction to overexpress wild-type c-Src (WT c-Src) or a dominant-negative, inactive c-Src protein (DN c-Src) in Jurkat E6-1, HuT 78 or KIT 225 T-cells.

RESULTS: When pre-treated with SU6656, both Jurkat C and Jurkat E6-1 cells showed increased luciferase activity compared to their non-drugged counterparts two days after VSV-G/HIV infection. Ex vivo CD4^{+} T-cells pre-treated with PP1 or PP2 and then infected with HIV-1$_{IIIB}$ showed increased p24 levels by ELISA on day six while a negative control drug, PP3, showed similar p24 levels as non-drugged cells. In the adenovirus-vector experiments, Jurkat E6-1, HuT 78 and KIT 225 T-cells overexpressing DN c-Src, but not WT c-Src, showed increased luciferase activity after VSV-G/HIV infection.

CONCLUSIONS: These findings suggest that reduced c-Src activity increases HIV-1 integration and/or transcription, and that high c-Src activity seen in early HIV-1 infection may be a cellular response to slow or prevent infection in CD4$^+$ T-cells.

O082

HIV TAT AND IL-7 DOWN REGULATE SURFACE EXPRESSION OF THE IL-7 RECEPTOR α-CHAIN THROUGH OVERLAPPING PATHWAYS

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BACKGROUND: IL-7 signaling is important for CD8 T-cell homeostasis and function, and we have previously shown decreased expression of the IL-7R α-chain (CD127) on CD8 T-cells in HIV+ patients. Suppression of CD127 is mediated by both the HIV Tat protein and IL-7, both of which are elevated in the serum of HIV+ individuals. We show here Tat and IL-7 both decrease surface CD127 protein and may act through a common mechanism.

METHODS: Purified CD8 T-cells from healthy donors were incubated with Tat and/or IL-7 and surface CD127 expression was determined by flow cytometry. Total protein and post-translational modifications were monitored by western blot.

RESULTS: IL-7 and Tat both down regulate CD127 surface protein independent of transcription. Indeed, Tat has no effect on CD127 mRNA levels. While IL-7 does suppress CD127 gene transcription, CD127 surface protein can be down regulated by IL-7 while maintaining CD127 transcription with dexamethasone or from a surrogate CMV promoter. IL-7 and Tat both down regulate surface CD127 protein in a dose- and time-dependent manner, increasing the rate at which CD127 is removed from the cell membrane and sent to the proteasome for degradation. Internalization of CD127 in the presence of IL-7 or Tat is reduced by dynasore, an inhibitor of dynamin. While CD127 is phosphorylated at tyrosine 449 in the presence of IL-7 and may undergo the same modification with Tat, IL-7 induced down regulation of CD127 is dependent on JAK kinase whereas Tat-induced down regulation is not.

CONCLUSIONS: We have previously shown Tat and IL-7 down regulate CD127 surface expression independently and synergistically. We show here that this down regulation at the cell membrane occurs independent of transcription and that Tat and IL-7 may act at the cell surface through overlapping pathways. Given the important role IL-7 plays in CD8 T-cell homeostasis and activity, restoring or preserving CD127 expression in HIV infection may at least partially restore immune function. Such therapies would be designed to target Tat's effect without compromising IL-7 signaling.

O083

ACQUISITION OF HOST-DERIVED CD40L BY HIV-1 IN VIVO AND ITS FUNCTIONAL CONSEQUENCES IN THE B-CELL COMPARTMENT

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Aberrant activation of the B cell compartment and hypergammaglobulinemia were among the first recognized characteristics of HIV-1-infected patients in the early 1980s. It has been previously demonstrated that HIV-1 particles acquire the costimulatory molecule CD40L when budding from activated CD4+ T cells. In this paper, we confirmed first that CD40L-bearing virions are detected in the plasma from untreated HIV-1-infected individuals. In order to define the biological functions of virus-associated CD40L and fully characterize its influence on the activation state of B cells, we conducted a large-scale gene expression analysis using microarray technology on B cells isolated from human tonsillar tissue. Comparative analyses of gene expression profiles revealed that CD40L-bearing virions induce a highly similar response to the one observed in samples treated with a CD40 agonist, indicating that virions bearing CD40L can efficiently activate B cells. Among modulated genes, many cytokines/chemokines (CCL17, CCL22), surface molecules (CD23, CD80, ICAM-1), members of the TNF superfamily (FAS, A20, TNIP1, CD40, LTA, LTB), transcription factors and associated proteins (NFKB1, NFKBIA, NFKBIE), second messengers involved in CD40 signaling (TRAF1, TRAF3, MAP2K1, PI3K) and the resulting activation of B cells (AICDA) were identified. Moreover, we show that soluble factors induced upon exposure of B cells to CD40L-bearing virions can exert chemoattractant properties toward CD4+ T cells. We thus propose that a positive feedback loop involving CD40L-bearing HIV-1 particles issued from CD4+ T cells productively infected with HIV-1 could play a role in the virus-induced dysfunction of humoral immunity by chronically activating B cells through sustained CD40 signaling.

O084

THE ESSENTIAL ROLE OF IL-7 SIGNALLING IN CD8+ T-CELL ACTIVITIES

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BACKGROUND: Anti-viral CD8+ T-cell responses become impaired in HIV infection in part due to decreased T-cell survival, function and memory cell development; aspects mediated largely by the cytokine IL-7. In progressive HIV infection, decreased expression of the IL-7 receptor α (CD127) and impaired IL-7 signalling, despite increased IL-7 production, may contribute to failing T-cell activity. This study examines the effects of IL-7 on a panel of signalling pathways and investigates how these pathways mediate IL-7-related activities in CD8+ T-cells.

METHODS: Activation of intracellular signalling pathways (eg. Jak-STAT, PI3K, MAPK) in isolated CD8+ T-cells cultured with increasing concentrations of IL-7 was measured. In addition, IL-7-related activities (Bcl-2 production, proliferation, glucose uptake, Ca++ uptake, perforin release) were evaluated. The effect of inhibiting IL-7-induced signalling on IL-7 activities was assessed.

RESULTS: Low concentrations of IL-7 (10 pg/ml) were sufficient for maximum activation of the Jak-STAT and PI3K signalling pathways, while higher concentrations (500-1000 pg/ml) were required to induce Bcl-2 production and glucose uptake. Even higher concentrations of IL-7 (10,000 pg/ml) were needed to induce cell proliferation and perforin release. Inhibition of Jak activation reduced Bcl-2 and perforin production in response to IL-7, confirming recent findings in a murine model. In addition, the inhibition of Jak or PI3K signalling decreased IL-7-induced proliferation.

CONCLUSIONS: The activation of intracellular signalling pathways by IL-7 in human CD8+ T-cells has now been comprehensively described by this research and these pathways are associated with specific IL-7-induced functions. Furthermore, the kinetic and optimal concentrations of IL-7 required for the induction of these functional outcomes suggest a complex control of IL-7-associated functions. Future work will further clarify which signalling pathways and associated functions are impaired in HIV infection, providing insight into the use of IL-7 as a therapy to improve the immune status in HIV+ individuals.

O085

MOLECULAR CHARACTERIZATION OF THE HIV TAT PROTEIN AND ITS ABILITY TO DOWN REGULATE CD127 ON CD8 T CELLS

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We have previously shown that soluble HIV Tat protein down regulates expression of the interleukin-7 receptor alpha-chain (CD127) on CD8 T-cells and that this down regulation results in impaired T-cell proliferation and cytolytic capacity. Tat enters CD8 T-cells by endocytosis and once in the cytosol interacts with the CD127 cytoplasmic tail inducing receptor internalization and proteosomal degradation. The objective of this study was to define which domain(s) of Tat are required to down regulate CD127.

A series of Tat deletion mutants were generated as 6xHis-tagged proteins. These proteins were added to primary human CD8 T-cells and CD127 surface expression was monitored by flow cytometry. In parallel, a lentiviral system was used to express wild-type and Tat mutants endogenously in primary CD8 T-cells. Post-translational modifications of CD127 following

treatment with Tat or IL-7 were examined by Western blot.
Removal of amino acids 22-26, the core (aa. 38-46), glutamine-rich (60-72), or carboxyl-terminal (aa. 72-86) domains had no effect on Tat's ability to suppress CD127 expression. Deletion of amino acids 17-21 within the N-terminal domain prevented Tat from down regulating CD127 at the cell surface. Deletion of the basic domain (aa. 48-59) prevented extracellular Tat but not endogenously-produced Tat from down regulating CD127, indicating the basic domain is required for Tat's entry into the cell but not for its interaction with CD127. Preliminary evidence suggests Tat induces phosphorylation of CD127, mimicking the effect of IL-7.
Amino acids 17-21 of Tat are required for CD127 down regulation and likely comprise the site of receptor binding. Alternatively this site could interact with CD127 indirectly by binding to the endosomal machinery. The basic domain of Tat is required for membrane transduction but is dispensable for CD127 down regulation. Finally, Tat may induce receptor internalization by phosphorylating CD127 in a manner similar to IL-7.

O086

A NOVEL STRATEGY BY SIVAGM TO EVADE TETHERIN RESTRICTION

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Tetherin (a.k.a. BST-2, CD317 and HM1.24) is an interferon-inducible cellular protein that is able to retain fully formed viral particles to the cell surface. This effectively prevents the release of a wide range of viruses including HIV-1 and SIV. As a result, many viruses have evolved mechanisms to overcome tetherin. For example, HIV-1 encodes Vpu that down-regulates tetherin from the cell surface and several studies have shown that SIV may use Env and/or Nef to counteract tetherin. In this study, we provide evidence that suggests an additional mechanism SIV from African Green Monkey (SIVagm) employs to overcome tetherin.
In an experiment where we infected the African Green Monkey kidney cell line, COS-7, with SIVagm or HIV-1 and then treated cells with interferon α2b to induce the expression of simian tetherin, SIVagm infection resulted in a dramatic decrease in the expression of tetherin mRNA whereas HIV-1 infection exerted no effect. Additionally, HIV-1 or SIVagm infection of HeLa cells did not affect the levels of interferon-induced human tetherin mRNA. These observations point to a unique species-specific mechanism by SIVagm to overcome tetherin at the mRNA level. Results of further experiments show that SIVagm infection reduces expression of other interferon-stimulated genes in addition to tetherin such as IFITM3. Taken together, this study suggests a novel mechanism employed by SIVagm to overcome tetheirn restriction, which may extend to include other ISGs as well.

O087

DRAMATIC CHANGES TO T-CELL NUCLEAR ENVELOPE COMPOSITION INDUCED BY HUMAN IMMUNODEFICIENCY VIRUS TYPE 1

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Human immunodeficiency virus type 1 (HIV-1) commandeers host proteins and cellular machineries to its advantage at every step of its replication cycle. Previously, we showed that HIV-1 infection promoted the cytoplasmic retention of heterogeneous nuclear ribonucleoprotein A1 (hnRNP A1) and that this effect was dependent on the nuclear export of the unspliced viral genomic RNA (vRNA) and to alterations in the abundance and localization of nuclear pore-associated, nucleoporin p62 (Nup62). Moreover, hnRNP A1 co-localized with vRNA in the cytoplasm and acted as an internal ribosomal entry site trans-acting factor to up-regulate internal ribosome entry site-mediated translation initiation of the HIV-1 vRNA. To characterize how HIV-1 infection leads to the cytoplasmic retention of hnRNP A1, nuclear envelopes (NEs) were isolated from mock- or HIV-1-infected T-cells for a comparative mass spectrometry study. The magnitude of compositional changes of proteins at NEs by HIV-1 infection was surprisingly extensive. HIV-1 caused a 50% decrease in the abundance of anchoring, scaffolding and core nucleoporins in purified NEs. Transmission electron microscopy (EM) analyses revealed that the loss of Nups mediated by HIV-1 infection was not accompanied by changes to the general structure of NEs or nuclear pore complexes. However, immunogold EM analyses revealed the scattering of Nups from NEs into and across the cytoplasm and their localization in assembling viruses at the plasma membrane. Purification of cell free viruses revealed that Nup62 was selectively encapsidated, suggesting that it is not simply ejected from the NEs of HIV-1 infected cells but rather, plays an important role during HIV-1 replication. Consistently, siRNA-mediated depletion of Nup62 led to decreased virus yield (23.7±18.6%) and infectivity (54.8±25%) of progeny virus. The effects on Nup62 localization were again dependent on nucleocytoplasmic trafficking of the vRNA, suggesting that the transit of the vRNA RNP shears host components from the nuclear pore for downstream functions in the HIV-1 replication cycle.
Supported by a CIHR Doctoral Award to A.M. and a CIHR grant (MOP-56794) to A.J.M.

O088

MULTIPLE CELLULAR PROTEINS CONTRIBUTE TO PKR INHIBITION DURING HIV REPLICATION IN LYMPHOCYTES.

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BACKGROUND: Human immunodeficiency virus (HIV)-1 translation is modulated by the activation of the interferon-inducible Protein Kinase R (PKR), which phosphorylates the eukaryotic initiation factor 2 (eIF2α). The consequence of this activation is an inhibition of viral replication. In lymphocytic cell lines and in peripheral blood mononuclear cells (PBMCs), HIV-1 replicates actively, suggesting that PKR is not activated or that its activation is reversed by viral and cellular factors. Our hypothesis is that PKR may be regulated at multiple levels to ensure high viral replication.
METHODS: We have infected Jurkat T cells and PBMCs with HIV. We have followed viral replication, PKR and eIF2α activation during the infection. We have performed immunoprecipitations to determine which proteins form a ribonucleoprotein complex with PKR during viral replication. We analyzed the activity of these proteins on PKR activation and HIV replication.
RESULTS: We found that PKR is transiently activated in Jurkat and in PBMCs early after HIV infection and that the activation is reversed during high replication. At the peak of HIV infection, we identified a ribonucleoprotein complex around PKR, which contains the double-stranded RNA binding proteins adenosine deaminase acting on RNA (ADAR)1, TAR RNA Binding Protein (TRBP) and PKR Activator (PACT). In cells transfected with an HIV molecular clone, TRBP, ADAR1 and PACT inhibited PKR and eIF2α phosphorylation and increased HIV-1 protein expression and virion production. In contrast to its previously described activity, PACT appears as a new PKR inhibitor in HIV-infected cells.
CONCLUSIONS: HIV has evolved to replicate in cells that express high amounts of TRBP, to increase the expression of ADAR1 and to reverse the activity of PACT, which results in the inhibition of PKR activation and an enhancement of viral replication.

Vaccines, Immunotherapies and Natural History / Vaccination, immunothérapie et histoire naturelle

O089

IMMEDIATE AND LONG-TERM IMMUNOGENICITY AND EFFICACY OF ADJUVANTED PANDEMIC H1N1 2009 VACCINE (AREPANRIX) WITH OR WITHOUT BOOSTER: A RANDOMIZED TRIAL IN HIV INFECTED ADULTS

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INTRODUCTION: More severe influenza disease and poor vaccine efficacy in HIV necessitate improved immunization strategies to maximize

vaccine efficacy.
METHODS: A phase III, randomized, multi-centered, controlled, vaccine trial was conducted at 4 PCRIN sites. Two dosing strategies were assessed in HIV-infected adults (20–59 years) during the second wave of the 2010–2011 $H1N1_{2009}$ pandemic. A single antigen, killed split adjuvanted (AS03) influenza vaccine (Arepanrix) was utilized. Vaccine was administered at baseline and at 21 days as follows: Group 1–standard dose followed by booster; Group 2–single standard doses. Serum hemagglutinin inhibition (HAI) titres were measured to assess immunogenicity according to EMEA criteria at days 21 and 42, and month 6.
RESULTS: 150 participants received at least one injection. Baseline parameters were similar between groups: 83% male, 85% on HAART, median CD4 = 519 cells/mm^3, and 84% with HIV RNA < 50 copies/mL. 93% and 82% in groups 1 and 2 received flu vaccine the previous year.

Immunogenicity Measure	Randomized Group	Day 21	Day 42	Month 6
Seroprotection	1	83% (73,91)	94% (85,98)	44% (32,58)
	2	77% (66,86)	73% (60,83)	36% (24,49)
		p=0.41	*p<0.01*	*p=0.36*
Seroconversion	1	76% (65,86)	86% (75,93)	32% (21,45)
	2	73% (61,83)	66% (53,77)	22% (12,34)
		p=0.71	*p=0.01*	*p=0.24*
HAI Geometric Mean Titre	1	103 (74,144)	156 (118,206)	28 (21,37)
	2	126 (85,187)	97 (63,147)	19 (13,28)
		p=0.44	*p=0.06*	*p=0.12*
HAI GMT Ratio	1	12.5 (9.0,17.6)	18.7 (14.0,25.1)	3.5 (2.6,4.6)
	2	14.5 (10.1,20.8)	11.6 (7.9,17.1)	2.4 (1.7,3.4)
		p=0.56	*p=0.05*	*p=0.11*

Five influenza-like illnesses (ILI) (3 PCR confirmed) were reported over the 42 day period of assessment. Three influenza infections were analysis of nasopharygeal swabs collected at the time of ILI. ILI and PCR positive results were evenly distributed between groups. All dosing strategies were well tolerated. Neither of 6 SAEs was immunization-related.
CONCLUSION: Single dose and booster dose Aperanrix was well tolerated in HIV patients. Compared to historical data evaluating conventional influenza vaccines, immunogencity was increased considerably with a single dose of this adjuvanted vaccine. All key measures of immunogenicity were improved with standard dose plus booster compared to standard dosing at day 42 and month 6. Use of this adjuvanted vaccine and booster represent an important approach to increasing immunogenicity in this vaccine hyporesponsive population.

O090
IMMUNOGENICITY OF AS03-ADJUVANTED H1N1 PANDEMIC INFLUENZA VACCINE IN HIV-INFECTED CHILDREN

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INTRODUCTION: HIV-infected children are at risk of severe influenza infection. A novel AS03-adjuvanted pandemic H1N1 influenza A vaccine (Arepanrix™) was used in Canada and although it had excellent immunogenicity in healthy children, its safety and efficacy in HIV-infected children is unknown.
METHODS: We prospectively assessed vaccine responses for children in 2 pediatric HIV clinics in Ontario, Canada. HIV infected children <10 years of age received 2 intramuscular (IM) doses of 0.25 mL 3 weeks apart; older children received a single IM dose of 0.5 mL. Hemagglutination inhibition (HI) and microneutralization (MN) titres were performed at baseline, 8 weeks and 6 months post-vaccination. Rates of seroprotection (titre ≥1:40) and seroconversion (≥4-fold rise in titre to ≥1:40) were determined.
RESULTS: Seventy-eight children were evaluated; 49% female, 79% taking combination antiretroviral therapy (ART). Median age, CD4 count, and viral load (VL) were 13.2 years (33% <10 years), 659 cells/mm3 and <50 copies/mL (59% <50), respectively. Seroprotective HI titres were demonstrated in 56%, 69% and 68% at baseline and 8 weeks and 6 months post-vaccination; the corresponding seroprotection rates for MN were 32%, 72% and 68%. Four-fold or greater rises in HI and MN titres were observed in 44% and 64% at 8 weeks, and 37% and 56% at 6 months, respectively. Seroprotection rates at 6 months differed significantly between study sites (94% vs. 61%; p=0.008). VL was moderately predictive of MN seroprotection at 2 months (univariate, p=0.07; multivariate, p=0.10). No serious vaccine related adverse events were observed; mild side effects seen in 85%, injection site pain being most common (75%).
CONCLUSIONS: HIV-infected children responded suboptimally to Arepanrix™, with only 69-72% achieving seroprotective titres post-vaccination. VL was the only variable found to be potentially predictive of seroprotection. Alternate vaccination strategies should be evaluated in HIV-infected children in order to determine the optimal approach.

O091
PHASE 2 STUDY OF AN AUTOLOGOUS DENDRITIC CELL IMMUNOTHERAPY (AGS-004/CTN 239) WITH POSITIVE OUTCOMES FOR VIRAL LOAD CONTROL AND IMMUNOGENICITY PROFILE IN SUBJECTS UNDERGOING STRUCTURED TREATMENT INTERRUPTION

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BACKGROUND: Immunotherapy consisting of dendritic cells (DC) electroporated with autologous RNA encoding HIV antigens (AGS-004) is able to induce CD8+ T cell immunity. This open label, multicenter Phase 2 trial (CTN 239) was designed to assess the efficacy, safety and immunogenicity of AGS-004 during a 12 week structured treatment interruption (STI).
METHODS: Subjects on ART with VL <50 copies/mL and CD4 ≥450 cells/mm^3 received four monthly doses of AGS-004 followed by two additional doses during the 12 week STI. Primary endpoints assessed the effect of AGS-004 on viral control during the 12 week STI and immunologic response was assessed by the change in proliferative capacity of HIV specific CD8+ T cells. Of the 29 subjects enrolled, 24 were eligible to enter the 12 week STI
RESULTS: Eight of 24 subjects (33%) met the criteria for the primary endpoint, of 3 instances of VL <1,000 copies/mL. Three subjects were unable to complete the STI due to a decrease in CD4 cell counts <350 cells/mm^3. At week 12 of the STI, 16/24 subjects responded with a mean reduction of −1.2 log in VL compared to their pre-ART VL value (p=0.001 by paired t-test). During the STI, a delay in the median time to VL rebound (≥50 copies/ml) and to peak VL was observed (3.9 and 8.3 weeks respectively, after STI). Polyvalent multifunctional T cell responses, consisting primarily of HIV antigen-specific central and effector memory T cells, were induced in 13/19 evaluable subjects (68%).The induction of these effector memory T cells prior to STI, correlated with the level of viral control during STI.
CONCLUSIONS: Subjects treated with AGS-004 showed significant reduction in viral load compared to pre-ART levels, which correlated with the induction of memory CD8+ T cells. These data support the implementation of a NIH randomized clinical trial.

O092
PREDICTORS OF CD4:CD8 RATIO NORMALIZATION IN THE ERA OF COMBINATION ANTIRETROVIRAL THERAPY

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BACKGROUND: HIV infection typically inverts the CD4:CD8 ratio as immune dysregulation progresses. Immune recovery usually results from

successful combination antiretroviral therapy (cART) but CD4:CD8 normalization is thought to be rare. We examined the incidence and predictors of CD4:CD8 normalization in the era of effective cART.

METHODS: Data was analyzed on 4588 adults with CD4:CD8 <1.2 prior to and with at least two CD4:CD8 measurements after starting cART from a Canadian multisite cohort seen between 2000 and 2010. Normalization was defined as a CD4:CD8 ≥ 1.2 on 2 consecutive measures. Predictors of normalization were assessed using adjusted Cox proportional hazards models.

RESULTS: 4588 individuals (81% men) were studied for a median duration of 2.86 years, with the median year of cART initiation in 2005. Baseline median age = 40 years, CD4 = 190 cells/μl, and log10 viral load (VL) = 4.9 copies/ml. 22% had HCV co-infection; 41% were men who have sex with men (MSM). 321 (6.9%) of the cohort normalized during the study period. In a multivariable model adjusting for gender, injection drug use, province, and rate of CD4 measurement per year, factors associated with normalization are shown below:

Variable	HR	95% CI	PI
cART regimen			
Triple NRTI	ref	---	---
NNRTI based	1.91	0.96-3.81	0.06
Single PI	2.04	0.97-4.27	0.06
Boosted-PI	2.15	1.06-4.38	0.03
Baseline CD4 count			
CD4 < 200	0.22	0.16-0.31	<0.0001
CD4 200-350	0.50	0.37-0.68	<0.0001
CD4 > 350	ref	---	---
Higher time dependent viral load	0.78	0.68-0.91	0.001
MSM as a risk factor	0.57	0.42-0.78	0.004

CONCLUSIONS: Compared with previous studies, an increasing number of HIV+ individuals normalize CD4:CD8 ratios after initiating cART. Use of boosted PI-based regimens and better virologic control were associated with normalization. MSM and those with CD4 < 350 cells/μl were less likely to normalize. It will be important to determine if ratio normalization is associated with improved health outcomes over the long term.

O093

PREDICTORS OF T-CELL HOMEOSTASIS RESTORATION IN THE ERA OF COMBINATION ANTIRETROVIRAL THERAPY

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BACKGROUND: Healthy individuals maintain homeostasis of their immune system. T-cell homeostasis fails in late HIV disease, shortly before the onset of AIDS. Although combination antiretroviral therapy (cART) can restore CD4 T-cell numbers, the loss of T-cell homeostasis often persists. In this study, we assessed the incidence and predictors of T-cell homeostasis restoration with effective cART.

METHODS: The study group included 1278 adults with CD3 T-cell percents <65% and >85% prior to antiretroviral (ARV) treatment. All patients were enrolled in the Canadian Observational Cohort (CANOC), which comprises 5798 initially ART-naïve adults seen between 2000 and 2010. T-cell homeostasis was defined as a peripheral CD3 T-cell percentage of 75 (± 10) % on 2 consecutive measures. Predictors of restoration were assessed using adjusted Cox proportional hazards models.

RESULTS: 1278 individuals (80% men) were studied for a median duration of 2.92 years, with median year of cART initiation in 2005. At baseline: median age = 41 years, CD4 = 160 cells/ml, log10 viral load = 5.0 copies/ml, 26% had HCV co-infection and 41% were men who have sex with men (MSM). 796 (62.3%) individuals normalized during the follow-up period. In a multivariable proportional hazards model, higher rates of T-cell homeostasis restoration were associated with (Hazard Ratio; p-value): baseline CD3 percents = 50-65% (2.48;<.0001) and baseline CD3 percent > 85% (2.74;<.0001) relative to baseline CD3 percents <50%. Data were adjusted for gender, baseline regimen, year of ARV initiation, province, frequency of CD3 measurement per year, CD4:CD8 normalization and interaction of CD4:CD8 normalization with viral load.

CONCLUSIONS: Restoration of T-cell homeostasis was associated with higher baseline CD3 percentages. Individuals with severe loss of T-cell homeostasis (CD3 percent < 50%) at baseline were less likely to recover homeostasis, possibly due to an extensive impairment of homeostatic mechanisms at this stage of the disease.

O094

PREDICTING HIV DISEASE PROGRESSION ON A POPULATION BASIS USING HLA-B ALLELE FREQUENCIES: IDENTIFYING VULNERABLE POPULATIONS

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INTRODUCTION: The course of HIV infection is characterized by ongoing loss of CD4 cells which determines disease progression and susceptibility to opportunistic infections. The rate of CD4 decline is influenced by both viral and host factors. Several HLA-B genes have been shown to predict rate of HIV disease progression; HLA-B homozygocity, B53 and HLA B35 being associated with rapid CD4 decline and HLA B27 and B57 associated with a slower rate of decline.

METHODS: Since 2006, HLA B screening for the presence of HLA-B*5701 is done as a standard of care for HIV positive patients in Canada. We examined the frequency of HLA-B among HIV positive patients in care in Manitoba (MB).

RESULTS: We analyzed the results for eight hundred sixty one tests. Self reported ethnicity was: Caucasians comprised 369 (42.8%), African descent 154 (17.8%) and Aboriginal 291(33.8%). The frequency of HLA B35 among the MB population tested was 171 (19.86%) compared to a reported rate of <10%. The rate of homozygocity was 13.6% compared to 6.8% among North American populations and the prevalence of HLA B*5701 was 4.3% (37/861) in Manitoba, lower than the reported national rate of 6.3%. HLA B-35 and homozygocity are over-represented among individuals of Aboriginal ethnicity and HLA B*5701 is under-represented. We used the information to construct a hypothetical Kaplan-Meier (KM) survival curve that projects 8.78 vs. 10.19 years to a CD4 decline <200 cells/mm^3 among individuals of Aboriginal ethnicity.

CONCLUSIONS: The high prevalence of HLA B35 and homozygocity along with the decreased rates of HLA B*5701 predict a 1.4 year decrease in the time to CD4 <200 cells/mm3. This hypothetical prediction needs to be validated in a prospective study but provides important information for understanding of the natural history of disease among different populations.

O095

DIFFERENTIAL IMPACT OF GENETIC DIVERSITY ON DISEASE PROGRESSION IN TREATMENT-NAÏVE HIV-1 INFECTED ADULTS: A SYSTEMATIC REVIEW OF GLOBAL EVIDENCE

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BACKGROUND: About 29 million HIV-1 infected adults in resource limited settings are infected with non-B subtypes. Knowledge of differential disease progression informs decisions on timing of HAART-initiation, and clinical management.

OBJECTIVE: We conducted a systematic review for the period 1996 to 2010, to synthesize global evidence on disease progression in naive Non B subtypes with a critique of quality.

METHODS: Two reviewers independently searched 11 electronic global databases, abstracted data and assessed quality. Full text articles, abstracts, letters and conference proceedings were included. Indicators of disease progression, time to AIDS or death, time to suppression of viral load and changes in CD4 count were documented.

RESULTS: Of 24 studies in the final review, 19 were conducted in developing settings and 23 were cohort studies.

Compared to subtype A, C and G subtypes were more likely to develop

AIDS with twice the risk of death. Compared to subtype B, Subtypes C and E were associated with higher viral loads and greater CD4 decline, while infection with multiple subtypes was associated with a higher rate of developing CD4 counts <250 cells/mm^3. No difference in disease progression was documented in CRF_02AG compared to other non-B subtypes. Study quality was moderate to high.
CONCLUSION: Although naïve non-B subtypes exhibit variability in risk of disease progression, death, VL response, co-receptor usage, and CD4 declines, D and C subtype, and co-infection with multiple subtypes report faster progression compared to subtype A. Different subtypes used as comparators at baseline limited the pooling of data. Evidence of response to ART regimens and resistance from sub Saharan settings is needed.

O096
COMPARISON OF THE SLOPE OF CD4 DECLINE IN HIV+ SLOW PROGRESSORS ACCORDING TO VIROLOGICAL CONTROL (CTN 247)

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OBJECTIVE: To evaluate whether the level of virological control affects the rate of disease progression in HIV-infected individuals who naturally control their infection (Slow Progressors).
METHODS: We compared the difference in slope of CD4 in 126 subjects enrolled in the Canadian HIV Slow Progressor Cohort according to four defined groups: elite controllers (EC) (VL < 50 c/ml), virologic controllers (VC) (VL between 50 and 3000), non-virologic controllers (NVC)(VL > 3000), and normal controls (NC). The slopes were compared from time of first known CD4 determination as well as from the point at which the patients presented to the study. Data was analyzed using linear mixed effects model analysis. Additional analyses were conducted to examine and adjust for the impact of covariates such as age, sex, race, co-infection and HIV risk factors on the slopes.
RESULTS: The rate of CD4 decline per year was 6.7, 18.1, 28.3, and 39.2 cells/mm^3 for EC, VC, NVC and NC respectively. The differences between the elite controllers and virologic controllers were statistically significant compared to the normal control group. The observed differences between groups were unaffected by adjustment for covariates. The magnitude of the slopes of the prospective decline since the time of inclusion in the study was 34.8, 16.6, 74.4 and 45.1 cells/mm^3 for EC, VC, NVC and NC respectively, the only statistically significant difference being between VC and NVC.
CONCLUSION: Virological control plays an important role in the physiological process of HIV disease progression but does not completely explain the protective effect in regards to CD4 decline in our cohort. Our prospective data are more limited because of fewer data points.

Prevention Programs and Evaluation / Programmes de prévention et d'évaluation

O097
HIV- AND HCV-RELATED PRACTICES DECLINE AMONG PEOPLE WHO SMOKE CRACK FOLLOWING IMPLEMENTATION OF CONTROVERSIAL SAFER INHALATION PROGRAM

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BACKGROUND: Among stimulant users, smoking crack is becoming the preferred method of drug administration over snorting and injecting due to its low cost, ease of ingestion and efficiency. Emerging evidence suggests that people who smoke crack experience burns, blisters and open sores on the lips and in the oral cavity – injuries which promote the parenteral transmission of HIV and HCV when smoking devices are shared among users. The potential for people who smoke crack to attain their right to optimal health may be enhanced through the availability of safer inhalation resources such as glass stems and mouthpieces distributed by a Safer Inhalation Program. In this paper, we examine the impact of the availability of safer inhalation materials through Ottawa's Safe Inhalation Program (SIP) on the HIV- and HCV-related practice of the multi-person use of devices to smoke crack.
METHODS: Three rounds of interviews were conducted, each with approximately 250 street-recruited active crack smokers in Ottawa, and representing smoking practices before SIP implementation and at two, six and 11 months post-SIP implementation. Univariate analysis determined differences in practices between pre-implementation and 11-month post-implementation data.
RESULTS: Significant declines in the multi-person use of smoking devices were observed. 53% of post-implementation participants compared to 65% of pre-implementation participants reported smoking with a previously-used pipe or other smoking device ($p \leq 0.01$). Additionally, 49% of post-implementation participants compared with 64% of pre-implementation participants reported passing on their own used smoking device ($p \leq 0.001$).
CONCLUSION: SIPs exist in very few jurisdictions in Canada and elsewhere and experience challenges in implementation and political acceptability. These data clearly demonstrate the utility of further investigation of SIPs as one means to enhance the right to health of people who smoke crack by reducing their HIV- and HCV-related transmission risks.

O098
CONSTRUCTING PUBLIC DISCOURSE IN THE AFTERMATH OF AN EARLY HIV VACCINE TRIAL TERMINATION

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BACKGROUND: In addition to medical experiments to inform evolving bioscience, clinical trials are complex social phenomena. Despite the early termination of several biomedical HIV prevention trials, there has been scant attention to these trials as social processes. The purpose of this analysis is to utilize the early termination of an HIV vaccine trial as a case study to explore community narratives about the trial, and underlying beliefs and experiences in regard to medical research.
METHODS: We designed and implemented a qualitative investigation in partnership between a university and seven community-based organizations. We conducted nine focus groups, including African Caribbean women, MSM, female sex workers, injection drug/crack using men and women, and Aboriginal men and women, and six key informant interviews with community advocates and healthcare providers. All groups/interviews were digitally recorded, transcribed, and analyzed using NVivo and narrative thematic techniques.
RESULTS: Focus group participants' (n=72) mean age was 39.5 years. Most (60%; n=43) were women and half (50%; n=36) self-identified as gay, lesbian or bisexual. One-third (33%) identified as white, one-fifth Aboriginal, one-fifth Caribbean, 15% African, 7% Latino, 3% Asian, and 2% mixed ethnicity. Mean monthly income was $1272. Individuals from marginalized communities construct personal and social interpretations of clinical trials based on coherent principles—just not the same principles used in biomedical research. We uncovered a series of disjunctures between public and biomedical interpretations of the same phenomena (e.g., trial recruitment, informed consent, HIV infections among trial participants, dissemination of results) that reveal a coherent counter-narrative to biomedical discourse.
CONCLUSIONS: Public discourse on HIV vaccine trials reveals a productive means of interpreting complex clinical trial processes and outcomes in the context of existing beliefs, conceptions and experiences vis-à-vis HIV vaccines, medical research and historical disenfranchisement. Understanding public discourse on HIV vaccine trials can facilitate knowledge translation and community engagement in biomedical HIV prevention research.

O099

POST-EXPOSURE (PEP) AND PRE-EXPOSURE (PREP) PROPHYLAXIS USE AMONG MSM: BASELINE DATA FROM THE MONTREAL HIV RAPID TESTING, COMMUNITY-BASED INTERVENTION SPOT

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OBJECTIVE: To describe PEP and PrEP use among Montreal MSM and associated demographics, psychosocial variables and sexual behaviours.

METHODS: Cross-sectional data from 918 MSM enrolled between July 2009 and November 2010 in the Montreal SPOT project were used. Data were gathered through structured interviews and self-administered questionnaires.

RESULTS: 13.5% of the MSM reported PEP use, mostly in the last 36 months and only once for 77% of them. Only 0.2% reported PrEP use. PEP users were more likely to report being born outside Canada (43.1% vs 33.8%) and being homosexual/gay (94.1% vs 83.1%); not difference regarding age, education and income were observed. They were more numerous to have been tested for HIV and STIs in the last 12 months (63.3% vs 46.2%) and to report a history of STI (58.5% vs 38.0%). Regarding condom use, they were more likely to report to have removed it during intercourse (21.1% vs 11.1%); no difference in condom breakage was reported. They were more likely to report unprotected anal sex (UAS) with any type of partners (67.2% vs 56.8%), including HIV+ and HIV? partners (45.9% vs 34.7%). PEP users were more likely to report intentional UAS with anonymous partners in the last 3 months (34.8% vs 16.9%). They also scored higher on tiredness toward monitoring their sexuality to avoid risk, and lower on self-efficacy using condom when facing problems in their life, when feeling trust or intimacy with their partners, and when assuming their partners are HIV-. All differences were significant at $p < .05$.

CONCLUSION: PrEP is very rare in MSM recruited trough the Montreal SPOT project. PEP is more prevalent and associated with a pattern of HIV-risk behaviours and frequent HIV testing. This combination suggests that testing and PEP are seen as preventive strategy *per se* by some PEP users. Safer sex strategies must also be promoted among MSM PEP users.

O100

USE OF MAKESHIFT PIPES TO SMOKE CRACK DECLINES FOLLOWING THE DISTRIBUTION OF SAFER INHALATION SUPPLIES IN OTTAWA

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BACKGROUND: Burns, blisters and open sores on the lips and mouth occur frequently among crack smokers as a result of using makeshift devices or old splintered glass stems to smoke crack. Evidence suggests that these wounds may facilitate the transmission of HIV and HCV when smoking devices are shared. The Ottawa Safe Inhalation Program (SIP) provides harm reduction services to people who inhale drugs to reduce the risk of HIV and HCV infection. These services include the distribution of new glass stems, protective mouthpieces, screens, push sticks, and harm reduction education and support for women and men in Ottawa who smoke drugs. In this paper, we examine the impact of the availability of safer inhalation materials through Ottawa's SIP on the use of recommended and non-recommended smoking materials.

METHODS: Three rounds of interviews were conducted, each with approximately 250 street-recruited active crack smokers in Ottawa, and representing crack-smoking practices before SIP implementation and at two, six and 11 months post-SIP implementation. Univariate analysis determined differences in practices between the pre-implementation and 11-month post- implementation data.

RESULTS: Comparing pre-implementation data with 11-month post-implementation data, the reported use of non-recommended smoking materials declined significantly ($p \leq 0.001$), including the use of metal pipes (40 to 11%), car antennae (7 to 1%), pop cans (42 to 15%) and inhalers (44 to 17%). In addition, the use of the recommended glass stems to smoke crack increased from 89 to 93% over the course of the evaluation ($p=0.09$).

CONCLUSION: These data demonstrate the utility of a program that distributes safer crack-smoking resources in reducing the use of makeshift devices to smoke crack which are associated with HIV- and HCV-related risk behaviors and practices.

Accessing Care and MTC Transmission / Accès aux soins et enjeux liés à la transmission de la mère à l'enfant

O101

TRENDS IN ADVANCED HIV DISEASE AT THE TIME OF HIV DIAGNOSIS IN BRITISH COLUMBIA AND ASSOCIATED CHARACTERISTICS

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OBJECTIVE: The presence of advanced HIV disease (AHD) at the time of HIV diagnosis may indicate barriers to accessing timely testing and appropriate clinical care, and missed opportunities for prevention of HIV transmission. We assessed trends in AHD and associated characteristics in BC using provincial HIV and AIDS surveillance data.

METHODS: Among individuals with a new diagnosis of HIV, we defined AHD as a first CD4+ <200 cells/mm3 or receipt of an AIDS case report within 12 months of HIV diagnosis. We described provincial trends (January 2004-December 2008) and used multivariate logistic regression to evaluate characteristics associated with AHD.

FINDINGS: During this period, 322 (17%) of 1,939 individuals with a new diagnosis of HIV in BC had AHD, with stable trends over time. Individuals with AHD were more likely to be male (AOR 1.57 [1.05, 2.35]), in an older age group (35-44 years AOR 3.92 [1.84, 8.33]; 45-54 years AOR 4.28 [1.98, 9.25]; >= 55 years AOR 5.74 [2.58, 12.77]), heterosexual with no identified risk factors (AOR 2.15 [1.39, 3.32]), tested nominally compared to non-nominally (AOR 1.73 [1.25, 2.40]), not previously tested (AOR 2.52 [1.89, 3.35]), and not report an HIV-positive partner (AOR 2.11 [1.41, 3.16]). Overall, 76% of individuals with AHD had identified risk factors for HIV infection.

DISCUSSION: Improving access to testing and reducing the number of individuals with AHD at diagnosis will improve clinical outcomes and may contribute to decreasing HIV transmission at a population level. As most individuals with AHD had identified risk factors expanding current targeted approaches to HIV testing is important; however, broader population-based approaches may be necessary to reach individuals without identified risk factors or at lower perceived risk for HIV infection.

O102

CORRELATES OF HIV TREATMENT INTERRUPTION IN A COHORT OF HIV-POSITIVE INDIVIDUALS IN BRITISH COLUMBIA, CANADA

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BACKGROUND: In British Columbia (BC), persistent gaps exist in the care and treatment of HIV-positive individuals. Treatment interruptions (TIs) limit the therapeutic success of HAART and are associated with higher morbidity and mortality. We hypothesize that individuals dealing with concurrent health issues, lack of access to care and competing life demands (addictions, substandard housing and depression) are more likely to interrupt treatment.

METHODS: The LISA cohort is a prospective study of individuals on HAART in BC. Interviewer-administered surveys collect information regarding housing, drug use, utilization of health services and other clinically relevant socio-demographic factors. Clinical variables, such as CD4

cell counts, are obtained through linkages with the Drug Treatment Program at the BC Centre for Excellence in HIV/AIDS. The LISA cohort over-sampled women, Aboriginal persons, and injection drug users. We defined a TI as a non-medically supervised interruption in treatment of at least 90 days during the 12 months preceding or following the study interview.
RESULTS: Of 861 participants included in the study, 28% had a recorded TI. In the multivariate model, TIs were significantly associated with: CD4 cell count at interview <200 cells/uL vs. >350 cells/uL (Adjusted Odds Ratio [aOR]: 4.6, 95% Confidence Interval [CI]: 3.0-7.0); daily (aOR: 2.3, 95% CI: 1.2-4.3) or weekly (aOR: 3.1, 95% CI: 1.7-5.9) use of support services versus no use; female sex (aOR: 2.0, 95% CI: 1.4-2.9); and age at interview (per 10 year increment) (aOR: 0.6, 95% CI: 0.5-0.8).
CONCLUSION: Older age, male sex and higher CD4 cell counts may be protective against treatment interruptions. Regular use of supportive services such as food banks and methadone treatment were associated with TIs, suggesting that populations most vulnerable to TIs are accessing these services. Greater understanding of barriers to treatment retention is required in order to support the continuous engagement of patients in care.

O103

CANADIAN PERINATAL HIV SURVEILLANCE PROGRAM (CPHSP): PERINATAL HIV TRANSMISSION, TREATMENT IN PREGNANCY AND DEMOGRAPHICS IN CANADA

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OBJECTIVES: To describe vertical transmission (VT) rates, treatment during pregnancy and demographics of mother-infant pairs (MIP) in the Canadian perinatal HIV surveillance cohort from 1990 to 2009.
METHODS: Maternal and infant data are collected annually from 22 pediatric and HIV centres across Canada. VT rates are obtained from the "perinatally identified cohort" defined as MIP delivered in Canada and identified within 3 months of birth. Data are submitted via a secure web-based system and analyzed by the Canadian HIV Trials Network. Data includes antiretroviral therapy (ART), maternal characteristics, mode of delivery and infant outcome.
RESULTS: Of the 181 HIV-positive women giving birth in Canada in 2009, 73% had acquired HIV heterosexually and 14% through IDU. 4 mothers acquired their infection perinatally; 57% of mothers were black (mostly immigrants) and 19% were aboriginal. 39% of identified MIP were from Ontario, 24% from Quebec, 25% from the Prairies, and 12% from BC. 86.2% of mothers received HAART, and there were 2 cases of perinatal transmission amongst these women (1.3%); poor adherence to HAART was noted for both cases. 8.8% of women received no ART during pregnancy, and aboriginal women (8/34, 23.5%) and women whose risk factor was IDU (4/26, 15.3%) were overrepresented amongst this group. Among 2448 MIP identified perinatally between 1990-2009, overall VT rates were 5.3% compared to the 2009 rate of 1.1%. In the HAART era (1997-2009), the overall VT rate was 2.9% (2073 MIP) but only 0.9% in MIP receiving HAART (1447 MIP, 70%).
CONCLUSIONS: The number of infants with VT of HIV in Canada has remained low over the last 10 years. There are pregnant women who remain untreated, and aboriginal women and IDUs are overrepresented in this group. Efforts must continue to identify and support pregnant HIV-positive women to enhance their health and that of their infants.

O104

EVALUATING PMTCT BEYOND "PROGRESS INDICATORS" IN AN HIV-ENDEMIC SETTING: SUBSTANTIAL DISCORD BETWEEN REPORTED COVERAGE RATES AND ACTUAL RECEIPT OF PER-GUIDELINE ANTIRETROVIRAL REGIMENS

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BACKGROUND: In 2009, the WHO reported 73% prevention of mother-to-child transmission (PMTCT) coverage among HIV-positive pregnant women in South Africa. However, the PEARL study documented actual nevirapine use of just 54%, through cord blood analysis. These data suggest that traditionally reported PMTCT "progress indicators" fail to capture important dimensions of care, underscoring the need for more nuanced examination of services. The objectives of this study were to 1) identify mothers of recently HIV-infected infants and assess whether the mother-infant pair (MIP) received complete per-guideline PMTCT antiretroviral (ARV) regimens, and 2) qualitatively explore contextual factors contributing to these PMTCT failures and MTCT risk.
METHODS: This mixed-methods study was conducted at the Perinatal HIV Research Unit in Soweto in 2009. Participants, birthmothers of HIV-infected infants born from December 2008 - June 2009, completed an interviewer-administered questionnaire and then participated in a focus group discussion (FGD) or structured interview (SI). FGD and SI questions were organized around three general topic areas: antenatal care (ANC) clinic experiences, delivery experiences, and infant feeding. Qualitative data were analysed using a grounded theoretical approach.
RESULTS: Participating mothers (n=45) had a mean age of 28.7 years (SD=5.4) and mean parity of 2.4 (SD=1.1). The mean infant birth weight was 2.7 kg (SD=0.7), 38 infants (84%) were exclusively formula fed, and 39 (87%) were delivered in a hospital or clinic setting. Through triangulation of quantitative and qualitative data, it was determined that 29 MIPs (64%) did not receive per-guideline PMTCT ARV regimens, despite an ANC attendance rate of 93%. Of the 42 ANC attendees, 13 mothers received either no or an incorrect regimen, and 10 received correct regimens but for an inadequate duration. Important issues identified include preterm birth, operational difficulties implementing PMTCT, facility-related barriers, treatment refusal, and HIV-related stigma.
CONCLUSIONS: Translating the scientific advances of PMTCT into practical successes in resource-constrained areas remains challenging. While improved PMTCT regimens are now available in South Africa, social and structural factors must be addressed to optimise uptake.

Critical Responses to HIV Interventions / Mesures cruciales dans les interventions liées au VIH

O105

INHERENT CONTRADICTIONS: A CRITICAL DISCOURSE ANALYSIS OF SELECT CANADIAN AND INTERNATIONAL GIPA DOCUMENTS

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BACKGROUND: The greater involvement of people living with HIV/AIDS (GIPA) is an internationally recognized principle meant to underpin HIV responses. From its inception, GIPA has been promoted by NGOs, ASOs, and advocates as a 'best practice'. However, there exist few monitoring mechanisms to ensure the meaningful implementation of GIPA. With a few notable exceptions, there has been little scholarship in this area. GIPA remains under-theorised, and in need of a critical appraisal. The objective of this paper is to investigate the assumptions that guide the GIPA discourse and contribute to existing neo-liberal critiques of the HIV response.

METHODS: The paper uses the techniques of critical discourse analysis and draws on Foucauldian 'governmentality' ("the conduct of conducts") to inform a close reading of select Canadian and international GIPA related documents produced following the signing of the Paris Declaration, 1994. These 'texts' include UN, international NGOs, and Canadian produced policies, guidelines, and training manuals. The authors examined the texts through an iterative inductive approach to surface implicit meanings and agendas.
RESULTS: Two forms of GIPA emerge in our findings: a) GIPA that aims to emancipate people living with HIV, and b) a GIPA that is instrumentally aimed at ensuring the efficiency of the HIV response. These two GIPAs are often conflated and used interchangeably within a single document. What results is a GIPA which claims to empower through 'capacity building' while simultaneously promoting the disciplining techniques of active citizenship and self-regulation.
CONCLUSIONS: As GIPA became recognized by governments and multilateral institutions, the emancipatory goals increasingly became subsumed within corporatist rationalities of efficiency and effectiveness. Situating GIPA within a neo-liberal apparatus illustrates how the 'will to empower' may unintentionally become a tool of domination. Greater theorising of GIPA is needed to ensure its original emancipatory aims are not lost through the process of implementation.

O106

USING SOCIAL MEDIA AND AN INTERACTIVE FACEBOOK APPLICATION TO INCREASE THE VISIBILITY AND UPTAKE OF THE "IF I WERE HIV POSITIVE" ANTI-DISCRIMINATION CAMPAIGN OF THE COALITION DES ORGANISMES COMMUNAUTAIRES QUÉBÉCOIS DE LUTTE CONTRE LE SIDA (COCQ-SIDA)

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BACKGROUND: For World AIDS day, the Quebec AIDS Coalition launched a social marketing campaign directed at the general public to increase awareness about the negative impacts of stigma and discrimination on people living with HIV. Four posters featuring Quebec personalities asked variations of the following question: « Would you see me differently if I were HIV positive? »
OBJECTIVE: Increase uptake and visibility of the campaign by using social media and a Facebook application that allows users to create their own poster using their photo and personal message.
METHOD: We tracked site visits, the use of the Facebook application and analysed the various messages users chose to talk about stigma and discrimination. We also drew comparisons with the Stop Serophobia campaign, another site of the Coalition without interactive content.
RESULTS: Within four days, between November 29th and December 2nd, the campaign page was visited by 16 847 visitors with a peak of 8 552 visits on December 1st. This was four times the traffic during the first month of the previous campaign. Over 2 500 people created a personal message which they posted on their Facebook profile. A thematic analysis of the messages will be presented at the conference.
LESSONS LEARNED: In order to increase awareness about HIV and stigma, a strong and interactive social marketing campaign using social media is a cost effective strategy to increase chances for greater visbility, uptake of the campaign and media coverage, in comparison to a campaign where the target audience receives passive messages. By inviting people to join in a virtual community and engaging them to feel personally concerned about social issues, social media can constitute a promising medium to promote safer environments with less stigma and discrimination. Further research is needed to describe the effect of this type of campaign on people's attitudes.

O107

HIV-AGING: A CONCEPTUAL FRAMEWORK MODEL FOR HEALTH QUALITY

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Due to the advent of antiretroviral therapy, HIV is now viewed as a chronic and manageable disease. This new shift will have implications for the health quality for the marginal population living with HIV. The aim of this project was to construct a conceptual framework model for health quality resulting from the intersection between HIV and aging. The model incorporates a qualitative literature review and quantitative results from a CIHR-funded Positive spaces, Healthy Places study. The model demonstrates that a complex cycle of physiopathologies occurs during the HIV progression and aging process, leading to immune dysfunction, complicating AIDS and non-AIDS defining illnesses and increasing chronic inflammatory markers. In addition to the interactions of HIV and the aging process, are other health risk factors like drug abuse/addiction, co-infection with hepatitis B and C, depression, or low socio-economic status that may affect health quality. While treatments are required, toxicities associated with pharmacotherapies exacerbate multi-organ injuries and system failures in the long term. Consequently, these lead to poor health quality, and eventual death. Implications from this conceptual framework model may provide new directions for future HIV research on health quality.

O108

WHAT ARE THE RELATIONSHIPS BETWEEN DIMENSIONS OF DISABILITY? A STRUCTURAL EQUATION MODEL USING DATA FROM THE ONTARIO HIV TREATMENT NETWORK COHORT STUDY

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PURPOSE: Our aim was to ascertain whether measures used in the Ontario HIV Treatment Network Cohort Study (OCS) represent the construct of disability and to assess the relationships between dimensions of disability among adults living with HIV.
METHODS: We hypothesized that disability was comprised of four dimensions in the Episodic Disability Framework: physical symptoms/impairments, mental health symptoms/impairments, difficulties with day-to-day activities, and challenges to social inclusion. First, we established a measurement model, which mapped existing OCS measures onto disability dimensions, using confirmatory factor analysis. We considered variables with factor loadings >0.30 as representing a given dimension, and considered a Root Mean Square Error of Approximation (RMSEA) of <0.05 as an overall indication of model fit. Next, we established a structural model, which assessed the relationships between the dimensions of disability, using path analysis. We classified standardized path coefficients of >0.2-0.5 as a medium effect and >0.5 a large effect. All models were built with Mplus statistical software.
RESULTS: The measurement model included 43 OCS variables measured with 913 adults living with HIV. The model had good overall fit (RMSEA=0.048). The structural model indicated that physical symptoms/impairments was a direct and strong predictor of difficulties with day-to-day activities (standardized path coefficient: 0.803). Difficulties with day-to-day activities was a direct medium predictor of challenges to social inclusion (0.285). Physical symptoms/impairments had an indirect effect on challenges to social inclusion that was mediated by difficulties with day-to-day activities (0.229). Mental health symptoms/impairments was a direct strong predictor of challenges to social inclusion (0.543). Physical and mental health symptoms/impairments covaried (0.791).
CONCLUSIONS: Measures in the OCS represent dimensions of disability. Challenges to social inclusion are directly predicted by mental health symptoms and indirectly by physical health symptoms through influencing difficulties carrying out day-to-day activities. These findings provide a basis for conceptualizing and measuring disability among people living with HIV.

O109

PEER CASE MANAGEMENT: A RECIPE FOR RECIPROCITY

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INTRODUCTION: Multidisciplinary care networks including case management have been generated to address the needs of HIV-positive women. An example of this is the 'Women's HIV Empowerment Through Life Tools for Health' (wHEALTH) intervention. This presentation will highlight qualitative findings from a mixed methods community-based research project studying how peer-delivered, strengths-based case management, via the wHEALTH intervention, affects the quality of life of HIV-positive women.

METHODS: Seventeen wHEALTH participants actively engaged in Peer Case Management (PCM) from April 2009 until July 2010 participated in a one-hour, semi-structured in-depth interview to understand the connection between service delivery, peer support and quality of life. Women were asked to describe their experience participating in the PCM sessions. Interviews were recorded and transcribed verbatim. Thematic analysis was conducted by three members of the research team followed by peer debriefing.

FINDINGS: PCM affected women's perceptions of social support, connectedness, and setting short and long term goals. PCM was a unique form of peer-based support that broke down the dichotomy between informal support versus formal support or professional expertise, as well as the public-private dichotomy in the accessing of support. PCM enabled women who felt unable to access community-based services due to stigma and fear to receive support on her terms, which helped to normalize her HIV status. This normalization emerged out of a mutual partnership with the PCM who had been through similar circumstances, but was at a different place in her HIV trajectory.

CONCLUSIONS: This project provides evidence for developing innovative and culturally relevant support services for HIV-positive women through linking women to community services, reducing social isolation, and improving access to care. Peer case management can be a mutually empowering experience for both the client and PCM, facilitating a unique level of sharing compared to traditional case-manager client relationships.

O110

THE CRIMINALIZATION OF HIV NON-DISCLOSURE AND WOMEN

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OBJECTIVES: To track criminal charges for non-disclosure of serostatus, assess the impact on women of the increasingly expansive use of criminal law with respect to HIV exposure, and develop an effective research and advocacy agenda.

METHODS: Review of primary legal sources, legal literature and media reports, with a human rights analysis. Literature review. Social and legal analysis of the potential impact of criminalization of HIV non-disclosure on women, especially women living with HIV.

RESULT: The criminalization HIV exposure without disclosure has been widely debated in recent years, however the impacts of this legal development on women remain poorly understood. While justified as a means to protect women, research indicates that the application of assault charges for HIV non-disclosure may not only fail to protect women from infection, it may also make some women more vulnerable to coercion and unhelpfully divert that law of sexual assault from its original purpose. For women vulnerable to gender-based based violence, socioeconomic insecurities, instability in terms of immigration status, or who face other challenges related to drug use or sex work, the criminalization of HIV non-disclosure may have particular problematic effects.

CONCLUSION: There remains a need for research and evidence-based policy discussion about the impacts of criminal sanctions for non-disclosure on the rights of women living with HIV and on HIV prevention efforts. Research and advocacy efforts in relation to the criminalization of HIV non-disclosure must include a gender analysis and challenge the expansive use of criminal laws under the guise of protecting women.

O111

"AGING OUT": FROM PEDIATRIC TO ADULT MODELS OF HIV CARE

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OBJECTIVES: For youth living with perinatal HIV, transition from childhood to adulthood is also a transition from child to adult HIV health care clinics. This study explored transitions from child to adult HIV clinics through personal experiences of youth infected by perinatal transmission.

METHODOLOGY: Using a qualitative design, 18 youth (13-22 years) participated twice in semi-directed interviews within a three-year interval at CHU Sainte-Justine in Montreal. At the second interview, 8 participants were 18 years or older. Among these, six participants were attending an adult HIV clinic and two were lost to follow-up. Questions focussed on experiences with HIV including treatments and relations to caregivers. Interviews were transcribed verbatim, data was organized using Atlas-ti v.5 software, and analysis used interpretive qualitative techniques within a constructivist framework.

RESULTS: Antiretroviral medication and the meanings attributed to it were found to be a salient issues during care transitions. Youth for whom the medications made sense (it saved my life, allowed me to be independent) reported continuous trajectories in terms of treatment plan and medical follow-up from pediatric to adult care. In contrast, youth for whom medication is an indicator of their difference from their peers reported trajectories that were marked by setbacks: they underwent treatment changes in adult care involving heavier dosage regimens and more serious side effects, and in many cases they had interruptions in treatment. In addition, relationships with caregivers play an important role in clinical transition processes. Youth who reported good treatment adherence and uninterrupted follow-up described the same trusting relationship and closeness with their new physician and health care team.

DISCUSSION: Particular attention should be paid to youth encountering difficulties of adherence during their critical transition period to adult clinics. Interventions aimed at helping youth through the transition process should focus on the meaning attributed to their medical follow-up.

O112

CHALLENGES IN MEETING THE PSYCHO-SOCIAL NEEDS OF OLDER YOUTH LIVING WITH HIV SINCE CHILDHOOD: SEX, HAART AND DISCLOSURE

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BACKGROUND: Oak Tree Clinic is the tertiary centre for HIV+ children and youth in British Columbia. The clinic team is currently working with a significant number of youth living with perinatally acquired HIV. Behavioural, cognitive, psychiatric, and concurrent substance use issues are prevalent within this group. There is little data on effective psycho-social interventions for this diverse population.

METHODS: A thematic summary of issues of engagement in care, medication adherence, sexual health, and disclosure are reported. Video interviews with HIV+ youth highlight the experience of living with HIV, stigma, disclosure and negotiating first sexual experiences.

RESULTS: Our inter-professional team is currently delivering care to 42 adolescents and youth (median age 15.7y, range 11-21). 83% are on HAART and over half experience adherence-related issues.

KEY PSYCHO-SOCIAL THEMES INCLUDE:

- Isolation within their own communities and within the HIV community. Reluctance to connect with HIV+ peers challenges the development of a sense of belonging.
- Multiple losses throughout their lives and profound experience of issues related to grief and bereavement.
- Balancing HIV infection and the developmental stages of adolescence (physical changes, building a sense of self and sexual identity, rebellion and experimentation).

- Treatment fatigue with poor adherence, often coinciding with first sexual contacts.
- Social rejection following disclosure; HIV criminalization.
- Fears of mortality and uncertainty of long-term health and well-being.

DISCUSSION: The support needs of HIV perinatally-infected youth are unique and require individual-level interventions. There is a need to expand services for these youth, and to identify innovative approaches within the system of care, including harm reduction counseling, ongoing discussions regarding transmission and treatment resistance, sexual health counseling in the context of stigma and social isolation. Future plans are to develop: 1) a youth sexual health workshop in partnership with two community-based HIV organizations, 2) expansion and evaluation of the use of cell phones/text messages as a mechanism for strengthening engagement in care, 3) a pilot program for an outreach worker to provide individual psycho-social support on harm-reduction, adherence, engagement in care and transition to adulthood.

BASIC SCIENCES

Anti-retroviral Drugs, Microbicides, and Vaccines (Preclinical)

P001
ENHANCING IMMUNOGENICITY OF HIV-1 ANTIGENS USING B-CELL IMMUNOGENS

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BACKGROUND AND RATIONALE: Failure of Envelope-based HIV vaccines to induce broadly neutralizing antibody responses can be attributed to the lack of gp160 immunogenicity. One strategy to improve immunogenicity involves using antigens that mimic the functional envelope oligomer; use of trimerization domains have been shown to increase the homogeneity and stability of soluble envelope trimers. However, heavy envelope glycosylation further contributes to its lack of immunogenicity by shielding potential neutralizing proteinaceous epitopes. Previous studies have shown that TNFSF proteins CD40L, BAFF and APRIL, induce B-cell signalling resulting in somatic hypermutation, class-switching, and enhance development of antibodies directed against carbohydrates. While previous studies have shown that covalently linking CD40L to the appropriate HIV-1 antigen can enhance the antibody response, there are no reports on the use of BAFF or APRIL as HIV vaccine adjuvants.

HYPOTHESIS: Fusion of APRIL, BAFF or CD40L with soluble, trimeric HIV-1 envelope will enhance the immunogenicity of HIV-1 envelope as a vaccine strategy to elicit a broadly neutralizing antibody response.

METHODS: Twelve fusion protein constructs were created, each with a protease resistant YU-2 gp140 fused to different combinations of four trimerization domains and the three TNFSFs. Following expression in HEK293Ts, the constructs were assessed for proper expression, gp140 folding, and trimerization, via protein gel electrophoresis/western blotting, immunoprecipitation, and gel filtration/Blue Native (BN)-PAGE, respectively.

RESULTS: Protein gel electrophoresis and western blotting have shown that the constructs containing the bacteriophage fibritin Foldon (F) domain were properly expressed. Anti-HIV envelope antibodies from the sera of chronic HIV-1 patients were able to recognize each fusion proteins, and BN-PAGE and gel filtration revealed that most of the protein is stably trimeric.

CONCLUSIONS: We have successfully designed and developed four vaccine candidate antigens, gp140-F-APRIL, gp140-F-BAFF, gp140-F-CD40L, gp140-F Control, which have been shown to mimic the natively folded, trimeric state of the HIV-1 envelope protein. Following TNFSF functional assays, these candidate proteins will be used in a mouse DNA prime protein boost vaccination strategy to assess their abilities to elicit broadly neutralizing class-switched antibodies.

P002
SILENCING HIV-1 EXPRESSION THROUGH MANIPULATION OF SR KINASE FUNCTION: USE OF SMALL MOLECULES TO ALTER HIV-1 RNA PROCESSING

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Following integration into the host cell DNA, HIV-1 replication is highly dependent upon appropriate processing of the primary HIV-1 transcript. From a single 9 kb transcript over 40 mRNAs are generated through suboptimal splicing falling into 3 categories; unspliced (US), singly spliced (SS) and multiply spliced (MS) HIV-1 mRNAs. Either oversplicing or undersplicing of the initial transcript leads to loss of factors critical for the assembly or regulation of viral gene expression, respectively.

Recent studies in our laboratory have focused on the role of host SR proteins in modulating viral RNA metabolism with emphasis on the effect of specific members of the Cdc-2 like (CLK) kinase family that phosphorylate SR proteins. Studies determined that the four members of this kinase family (CLK1, CLK2, CLK3 and CLK4) had very distinct effects of HIV-1 gene expression. While CLK1 overexpression enhanced viral Gag synthesis, CLK2 dramatically suppressed HIV-1 structural protein expression by altering viral RNA metabolism. Subsequent testing of small molecular inhibitors of CLK function identified two compounds, chlorhexidine and digoxin, that significantly reduced HIV-1 gene expression by altering HIV-1 RNA processing. Both compounds induced oversplicing of HIV-1 RNAs, reducing US HIV-1 levels while enhancing MS HIV-1 RNA accumulation. Furthermore, analysis of HIV-1 splice site use revealed that digoxin induced a marked and selective reduction in RNA encoding Rev, a factor essential for viral RNA export to the cytoplasm. Subsequent western blot confirmed the loss of Rev protein without any marked changes in HIV-1 Tat protein levels. The anti-viral activity of these compounds were subsequently confirmed in the context of HIV-1 replication in PBMCs. Current efforts are directed at defining the mechanism by which these drugs induce such dramatic changes in HIV-1 RNA processing and screening of chemical derivatives to identify those with greater potency. The demonstration that these compounds, already in use in humans for unrelated conditions, can potently suppress HIV-1 gene expression validates this approach for the development of new treatment strategies.

P003
GENE THERAPY USING SECRETED SCD4-17B AND SCAB PRO140 TO INHIBIT HIV-1 ENTRY IN UNMODIFIED AND MODIFIED TARGET CELLS

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HIV-1 entry into target cells is a highly sequential process that requires the interaction of viral Env gp120 with cellular CD4 and either the CXCR4 or CCR5 co-receptor. Previous studies investigating the potential for chimeric proteins and monoclonal antibodies (mAbs) targeting these proteins, have shown promise in clinical trials. A drawback of these approaches is that the patients are required to receive intravenous or subcutaneous administration of antiviral proteins at frequent intervals. We seek to address this limitation by developing gene therapy as an alternative mode of administration of these therapeutic proteins. Therefore, we modified the chimeric protein sCD4-17b and a single chain antibody (scAb) version of the mAb PRO140 for secretion from genetically modified producer cells. The chimeric protein sCD4-17b would bind to viral Env gp120 and inactivate HIV virions, while scAb PRO140 would mask cellular CCR5 and render the target cells resistant to R5-tropic HIV-1 infection. Lentiviral vectors expressing genes encoding these proteins were utilized to stably transduce U373-MAGI-CCR5E cells. Infection with HIV-1 EnvJRFL-pseudotyped lentiviral (LJM2) vector particles encoding dsRed.M1 showed a marked reduction in viral entry. HIV-1 EnvJRFL-pseudotyped LJM2 vector particles were also used to infect unmodified U373-MAGI-CCR5E cells in the presence or absence of secreted antiviral proteins purified from transduced HEK293T cells. sCD4-17b was shown to prevent infection of unmodified target cells; experiments with the scAb PRO140 are in progress. In summary, sCD4-17b secreted from genetically-modified cells could neutralize HIV-1 and prevent entry into unmodified target cells. Furthermore, the genetically-modified cells expressing scAb PRO140 were resistant to HIV-1 infection; the secreted scAb PRO140 is likely to also render the unmodified target cells resistant to HIV-1 infection. These results are encouraging and suggest that development of gene therapy using this strategy should be promising.

P004
POKEWEED ANTIVIRAL PROTEIN INCREASES SPLICING OF HIV-1 GAG/POL MRNA

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Pokeweed antiviral protein (PAP) is an N-glycosidase of plant origin that inhibits the proliferation of several viruses; however, its mechanism of

action has not been clearly defined. Previous work has shown that PAP removes purine bases from HIV-1 genomic RNA in vitro. In the current study, we expressed PAP in 293T cells with an HIV-1 proviral clone, to test for the effect of the enzyme on virus propagation. We show that PAP significantly reduced the level of viral particles released from cells, as measured by p24 ELISA. This decrease was not seen in cells expressing the enzymatically inactive form of PAP. We observed an increase in the level of fully spliced viral RNAs, relative to full-length genomic RNA, in cells expressing PAP, suggesting that the enzyme may be inhibiting Rev. Moreover, enhanced levels of Rev did not rescue the splicing ratio back to normal. Immunoblot analysis indicated a substantial decrease in Rev expression in cells co-transfected with plasmids encoding PAP and Rev. Taken together, these preliminary results suggest that PAP targets Rev and consequently alters the ratio of spliced to unspliced viral RNAs. The lower abundance of full-length gag/pol mRNA, relative to fully spliced mRNAs, likely contributed to the observed decrease in Gag protein levels. In addition, the translational efficiency of gag/pol mRNA, measured as amount of p24 in cells relative to gag/pol mRNA, was reduced in PAP-expressing cells. We are currently testing whether the reduction in fitness for translation is due to depurination of this mRNA by PAP. Our results suggest that PAP inhibits HIV-1 particle production by altering the splicing ratios of viral RNAs and by reducing their translation.

P005

IN VITRO AND IN VIVO INHIBITION STUDIES OF HUMAN TELOMERASE BY HIV REVERSE TRANSCRIPTASE INHIBITORS

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Telomerase is a specialized reverse transcriptase (RT) that maintains telomeres, the nucleoprotein structures found at the ends of linear chromosomes. Short telomeres limit the replicative capacity of individual cells and the regeneration capacity of most human tissues. A disruption in telomerase activity can accelerate the rate of telomere attrition, thereby compromising tissue regeneration capacity and leading to premature tissue failure. Strong structural and mechanistic similarities exist between HIV RT and telomerase RT (TERT, the catalytic subunit of telomerase). We hypothesized that HIV RT inhibitors (RTIs) also inhibit telomerase with similar mechanisms of action. We tested our hypothesis using two approaches. First, an in vitro telomerase activity assay was used to assess both the potency and mechanisms of inhibition of common HIV RTIs. The thymidine analogs azidothymidine triphosphate (AZT-TP) and stavudine triphosphate (d4T-TP) inhibited telomerase in a dose-dependent manner with apparent IC50s of 61 µM and 47 µM, respectively. Adenosine analog tenofovir diphosphate (TFV-DP) and guanosine analog carbovir triphosphate (CBV-TP) inhibited telomerase in a range similar to AZT-TP and d4T-TP, but with a mixed type of inhibition pattern. Non-nucleoside RTIs (NNRTIs) nevirapine and efavirenz were both tested against telomerase and neither showed any indication of inhibition at the maximum concentration tested (1 mM). In the second approach, growth characteristics and telomere maintenance were measured in human, telomerase-positive HT29 cells cultured in the presence or absence of AZT. Long-term treatment of HT29 cells with 125 µM AZT led to a continuous loss of telomeric DNA over 20 population doubling levels (approx. 45 days) at a rate of approximately 185 base pairs (bp) per population doubling. Our data provide evidence that telomerase inhibition by NRTIs could potentially lead to treatment complications in current antiretroviral therapy.

P006

CHARACTERIZATION OF THE ANTI-HIV ACTIVITY OF TRAPPIN-2/ELAFIN

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Trappin is an eutherian-specific molecule present in the eutherian genome which shows anti-proteolytic and antimicrobial activities. Trappin-2/elafin, a multifunctional host-defense peptide, is a well characterized innate immune protein present in the female reproductive tract (FRT) that possesses anti-bacterial activity against Gram positive and negative bacteria. Trappin-2/elafin has been found to be significantly at higher concentrations in FRT mucosa of individuals resisting to HIV infection in high risk populations such as commercial sex workers.

We tested the antiviral activity of trappin-2/elafin against HIV-1 laboratory strains. Different tissue culture models were used to investigate the mechanism of the anti-HIV activity of trappin-2/elafin. Viral replication was monitored by the quantification of β-galactosidase release in TZM-bl cells and by p24 ELISA assay in SupT-1 and THP-1 cells. In order to elucidate the mechanism of action of trappin-2/elafin, data obtained from tissue culture models including cell-to-cell fusion assay with HeLa-env-tat and TZM-bl cells, were compared with two well characterized anti-HIV drugs: azidothymidine (AZT) and enfuvirtide (fuzeon, T20).

Both HIV-1 IIIB and HIV-1Ba-L pre-incubated with of trappin-2/elafin for one hour before the infection significantly blocked viral infection in cellular models. On the other hand, when cells were first infected with either HIV-1 IIIB or HIV-1Ba-L, prior to incubation with of trappin-2/elafin for 24 hours, no inhibition of viral replication was observed. In our cell-to-cell fusion experiments, elafin failed to block fusion as AZT, where in contrast T20 blocked cell fusion in this same model. Flow cytometry analyses also confirmed that elafin does not bind to viral glycoproteins gp120 and gp41 or CD4, CXCR4 and CCR5 receptors.

These results suggest that trappin-2/elafin might act at an earlier stage of viral infection before invading the target cells. Hence, trappin-2/elafin could be developed as a topical microbicide against HIV at entry level.

P007

MARAVIROC MAY CAUSE AN OVER-ESTIMATION OF PLASMA VIRAL LOAD

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BACKGROUND: C-C chemokine receptor type 5 (CCR5) is a receptor expressed on the cell surface that R5-tropic HIV-1 utilizes to gain entry into target cells. Maraviroc (MVC), the first FDA-approved CCR5 antagonist, prevents R5-tropic HIV-1 from entering the cell. Plasma viral load is the most common clinical method for monitoring HIV-1 disease progression. We hypothesize that virus blocked from entry by MVC is returned to plasma where it artificially increases viral load measurements as opposed to other antiretroviral drug (ARV) classes that act intracellularly.

METHODS: We infected PM-1 cells with CCR5-tropic HIV-1 BaL in the presence of inhibitory concentrations of MVC (500 nM), efavirenz (EFV) (1 µM), raltegravir (RAL) (500 nM), and enfuvirtide (T-20) (250nM). All ARVs were incubated with PM-1 cells for 1 hour before infection. Supernatant viral load and reverse transcriptase (RT) enyzme activity were measured at several time points up to 5 days post-infection. HIV-1 intracellular DNA measurements were analyzed qRT-PCR at the same time points.

RESULTS: Analysis of plasma viral loads revealed that MVC-treated cells had a higher amount of virus in supernatant versus all other ARVs tested. At 8 hours post-infection, we observed an significant increase in the viral load of MVC-treated cells. At 24 hours, viral load supernatant was significantly higher that all other drug classes. This effect was also observed with supernatant RT activity, although to a lesser degree.

CONCLUSIONS: This in vitro model indicates that MVC does have an inflationary effect on viral loads. Alternatively, other ARV classes act intracellularly, their antiviral effect coming only after virus has entered the target cell, thereby lowering viral load. Based on these results, MVC's effectiveness as an ARV is misjudged when viral load is used as the sole metric of clinical success.

P008
THE EFFECT OF POKEWEED ANTIVIRAL PROTEIN ON HIV-1 GENE EXPRESSION

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Pokeweed Antiviral Protein (PAP), extracted from the leaves of Phytolacca americana is an N-glycosidase that has been shown to remove purine based from HIV-1 RNA in vitro. Data from our laboratory have shown substantially reduced HIV titers in HEK 293T cells co-transfected with PAP and a pro-viral clone, with no reduction in cellular viability. Additionally, decreases in viral protein levels appear to occur without a reduction in the level of viral mRNA transcribed.

As such, the goal of this study was to observe HIV-1 gene expression and to determine if PAP was regulating HIV-1 transcription and transcript stability. Our preliminary northern blot and qt-PCR results suggest that PAP may actually be increasing the amount of mRNA transcript made from the pro-viral DNA in HEK 293T cells. These increases are thought to be due to the activation of two cellular transcription factors; NF-κB (nuclear factor kappa-light-chain-enhancer of activated B cells) and SP-1 (specificity protein 1) as both factors are known to activate HIV-1 transcription. Additionally, antibody microarray data along with immunoblot analyses suggest that PAP may be activating NF-κB and SP-1 by activating the PI-3K and ERK pathways, respectively. Finally, even though there is an increase in the amount of viral transcription due to the activation of cellular signalling pathways, it is effectively nullified by an approximately 40 fold decrease in the level of viral proteins produced. We hypothesize that these decreases in protein levels may be due to PAP depurinating HIV-1 mRNA in vivo.

By determining how PAP affects HIV-1 gene expression in vivo we are able to identify the cellular transcription factors that are responsible for controlling HIV-1 transcription. These data further substantiate the use of PAP as a potential antiviral therapy and may help identify new cellular targets for antiviral treatments against HIV-1.

P009
SEQUENCE ANALYSIS OF MHC CLASS I B GENES OF CYNOMOLGUS MACAQUES FROM GENOMIC DNA AND CDNA

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INTRODUCTION: Cynomolgus macaque (Macaca fascicularis, Mafa) is an important nonhuman primate model for HIV vaccine development. Despite this there is relatively little data available on its Major Histocompatibility Complex (MHC) class I B genes. Studies have shown that the MHC class I genes of macaques are far more complex than humans due to multiple expansion and duplication events, which have resulted in an undefined number of MHC B loci. This has severely hindered the research community's ability to interpret the results of T-cell based vaccine trials due to the important role of MHC molecules in the adaptive immune response against pathogens by presenting peptides to CD8+ T cells. In this study we investigated the Mafa-B gene family from both a genomic DNA and mRNA perspective.

METHODS: We developed a novel intron based "universal" MHC B primer set to amplify all Mafa-B loci from the genomic DNA of individual macaques. TOPO TA cloning and sequencing are used to resolve the resulting mixed pool of PCR amplicons. Alleles are confirmed after reproducing the sequence in a second PCR reaction. The expression of identified alleles is confirmed by cDNA analysis.

RESULTS: Analysis of the MHC-B region of 28 cynomolgus was carried out with respect to the polymorphic antigen presenting region (exons 2 and 3). We have confirmed 43 alleles (26 novels) from gDNA and an additional six expressed alleles (1 novel). We are in the process of validating all sequences identified and confirming their expression.

CONCLUSIONS: Analysis of both genomic sequences and cDNAs give us a unique perspective on the organization and expression of Mafa-B genes in cynomolgus macaques. The identification and validation a large number of novel functional Mafa-B alleles will provide better interpretation of past vaccine results and help to better design future vaccine studies.

P010
VEROTOXIN/SHIGA TOXIN A SUBUNIT PROVIDES A PROPHYLACTIC MEANS TO PREVENT PRIMARY LYMPHOID CELL HIV INFECTION IN VITRO

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Verotoxin (VT1 or Shiga toxin) is an A1B5 E. coli derived subunit toxin which binds to its receptor glycolipid, globotriaosyl ceramide (Gb3) within target cell plasma membrane lipid raft domains to mediate internalization and retrograde trafficking to the ER where the A subunit translocates into the cytosol to induce protein synthesis inhibition and cell death. Gb3 is also known as CD77, a marker of human germinal center B cells. Gb3 is also expressed by a minor T cell subset and the synthesis of Gb3 is increased following PHA/IL2 activation of PBMC CD4 T cells. Since we have associated increased cellular Gb3 with decreased sensitivity to HIV infection in vitro, the effect of VT1 on PHA/IL2 activated PBMC T cell susceptibility to X4 HIV infection in vitro was determined. Surprisingly, activation of PBMC T cells in the presence of VT1, rendered these cells completely resistant to subsequent HIV infection. VT1 binding to Gb3 is mediated by the B subunit pentamer, whereas the A subunit mediates protein synthesis inhibition and cell cytotoxicity. Cells which do not express Gb3 are not susceptible to VT1 cytotoxicity. The protective effect of VT1 on primary lymphoid cell HIV susceptibility was found to be independent of Gb3 since the A subunit (without the associated receptor binding B subunits) was as effective as holotoxin to protect activated T cells against HIV infection. This efficacy against HIV infection was verified using the Gb3 negative Jurkat T cell line. The VT1 A subunit reduced PBMC T cell proliferation by approximately 50% without effect on viability. We speculate that VT1 A subunit may provide the basis of a benign approach to the restriction of HIV cell susceptibility.

P011
CD40L ADJUVANTED ALVAC-HIV VACCINE ELICITS STRONGER CD8+ T CELL RESPONSES THAN DNA PRIME-ALVAC BOOST HIV-1 VACCINE REGIMEN

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BACKGROUND: ALVAC HIV-1 vaccine is an HIV-1 vaccine based on canarypox vector. Previous clinical trials showed that ALVAC HIV-1 vaccine was safe but weak in immunogenicity when used alone. A phase III clinical trial in Thailand finished recently (RV144) showed that an ALVAC HIV-1 vaccine prime-gp120 protein boost vaccination regimen could modestly protect persons from HIV-1 infection. We have shown CD40L could enhance CD8+ T and CD4+ T cell responses in homologous ALVAC prime-boost HIV-1 vaccine regimen. DNA prime-virus vector boost has been shown to be superior to virus vector prime-boost in inducing CTL responses.

METHODS: For DNA prime-ALVAC boost regimen, female Balb/c mice were primed twice with 50ug HIV-1 Env DNA vaccine plus 50ug DNA vector expressing CD40L, or 50ug empty DNA vector, and boosted with 1E7 pfu ALVAC HIV-1 vaccine and 1E7 pfu empty virus vector ALVAC. For CD40L adjuvanted ALVAC HIV-1 vaccine regimen, female Balb/c mice were vaccinated with 1E7 pfu ALVAC HIV-1 vaccine and 1E7 pfu ALVAC expressing CD40L. Six weeks after the last vaccination, mice were sacrificed and splenocytes were collected and analyzed with flow cytometry for cytokine production and proliferation.

RESULTS: We found CD40L adjuvanted ALVAC prime-ALVAC boost regimen induced the strongest CD8+ T cell responses in terms of cytokine production, proliferation, and polyfunctionality (IFN-γ/TNF-α dual positive cells). CD40L-adjuvanted DNA prime-ALVAC boost vaccinations trended to increase CD8+ T cell cytokine responses compared with non-adjuvanted DNA prime-ALVAC boost. CD40L-adjuvanted DNA prime-ALVAC boost vaccinations decreased CD8+ T cell ex vivo proliferation compared with

non-adjuvanted DNA prime-ALVAC boost and CD40L adjuvanted ALVAC prime-ALVAC boost. CD40L adjuvanted ALVAC prime-ALVAC boost regimen trended to increase cytokine production of CD4+ T cells. However, DNA prime-ALVAC boost, especially CD40L adjuvanted DNA prime-ALVAC boost induced stronger CD4+ T cell proliferation.
CONCLUSION: CD40L adjuvanted ALVAC HIV-1 vaccine elicits stronger CD8+T cell responses than DNA prime-ALVAC boost HIV-1 vaccine regimen. DNA prime-ALVAC boost preferentially elicits CD4+ T cell proliferation. CD40L adjuvanted ALVAC HIV-1 vaccine might be better than DNA prime-ALVAC boost to control HIV-1 replication.

P012
CYNOMOLGUS MACAQUE ENDOGENOUS RETROVIRUS EXPRESSION IS MODULATED FOLLOWING SIMIAN IMMUNODEFICIENCY VIRUS INFECTION

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The hypervariability of HIV is the leading challenge in the development of a successful HIV vaccine. A vaccine which targets HIV-infected cells rather than highly mutating HIV antigens may overcome this problem. Recently, it has been shown that human endogenous retroviruses (HERVs), DNA remnants of ancient retrovirus infections that are now encoded in the germline and thus not afforded the same ability to mutate, are upregulated in the plasma of HIV-infected individuals. Targeting the immune system to recognize stable HERV antigens on HIV-infected cells may overcome HIV's capacity to escape immune recognition. In a non-human primate model, our aim is to generate a vaccine capable of priming the immune response to target cynomolgus macaque endogenous retroviruses (CyERVs) expressed on SIV-infected cells. We have found that CyERV Gag and Env mRNA expression is downregulated in PBMCs isolated from a cohort of 12 SIV-infected cynomolgus macaques during the acute phase compared to chronic SIV-infected cynomolgus macaques. CyERV transcript levels inversely correlate with SIV viral load and positively correlate with CD4 T cell count. To further investigate the direct effect of SIV infection on the cells and to compare the results we observed at a global level in bulk PBMCs, we are performing in vitro SIV infection studies to evaluate CyERV mRNA expression. This study represents the first evaluation of ERV expression in cynomolgus macaques following SIV infection, in an effort to assess the utility of using unique antigens that may have the capacity to significantly impact HIV acquisition through the proposed protection against HIV irrespective of the infecting strain.

P013
THE 89T MUTATION IS PREFERENTIALLY SELECTED BY ATAZANAVIR IN A AND C SUBTYPES AND CRF01_AE

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BACKGROUND: Limited in-vitro information has been reported on emerging resistance mutations in HIV-1 non-B subtypes despite their overwhelming global prevalence. Therefore, we performed a protease inhibitor (PI) selection study with subtypes A, B, C, D, and CRF1_AE clinical isolates to observe emergence of PI resistance mutations.
METHODS: Three subtype A, two CRF2_AE, one B, and one D clinical isolates were cultured in MT-2 cells under increasing pressure of nelfinavir (NFV), amprenavir (APV), lopinavir (LPV), atazanavir (ATV) or darunavir (DRV). Viral replication was assessed by visually-detecting cytophatic effect in MT-2 cells. Furthermore, six subtype C and three subtype B isolates were cultured in cord-blood-mononuclear-cells (CBMCs) under increasing pressure of LPV, ATV or DRV. All isolates were genotyped at the end of the selection experiments. Full-length subtype C and CRF02_AG molecular clones were used to generate L89T viral mutant cones. Drug susceptibilities of all PI-selected and mutated molecular clones were measured.
RESULTS: High levels of drug exposure were achieved in NFV, APV, LPV and ATV, but not DRV, selected isolates. The 89T mutation only emerged in subtype C and A and CRF01_AE (but not in B or D) clinical isolates grown under increasing ATV pressure. It emerged usually in combination with other resistance mutations (e.g 33I/F, 46I/L). The 89T mutation did not significantly reduce susceptibility to ATV when introduced into a CRF02_AG clone. No viruses grown under increasing DRV pressure developed high level of resistance to DRV. An early DRV mutational pathway emerged with the mutations 38F and 39A in subtype A and CRF01_AE isolates.
CONCLUSIONS: The 89T mutation emerges in C, A, and CRF01_AE isolates following ATV exposure. Non-B subtype isolates did not develop marked resistance to DRV. Cross resistance studies are warranted to define the impact of the 89T mutation on other PIs.

P014
DISCOVERY AND CONFIRMATION OF GENOMIC AND EXPRESSED MHC CLASS I-A ALLELES IN THE CYNOMOLGUS MACAQUE

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OBJECTIVES: Cynomolgus macaques (Macaca fascicularis, Mafa) have become an important animal model for vaccine studies including vaccine development for HIV-1. To effectively utilize Cynomolgus macaques as a vaccine model, the MHC class I region needs to be properly classified in order to better understand immune responses to candidate vaccines. However, little is known about the MHC class I A (Mafa-A) region as the current database of confirmed sequences is relatively small. This has severely hindered our ability to properly interpret the results of vaccine studies. The goal of our study is to investigate the diversity of the MHC class I region of Cynomolgus macaques using genomic DNA and cDNA.
METHODS: PCR primers based on orthologous human MHC sequences (HLA-A and HLA-C), were used to amplify highly similar, but polymorphic sequences from genomic DNA of 12 cynomolgus macaques. Primers were also developed using the sequenced genomic products to confirm their expression with cDNA. TOPO TA cloning was used to clone the PCR products and clones were sequenced using ABI3700 Genetic Analyzer. Sequencher 4.10 was used to align and assemble sequences. MEGA 4.0 was used to for phylogenic analysis and classifying sequences.
RESULTS: We have identified 30 new Mafa-A alleles using the combined genomic and cDNA approaches including 10 previously published Mafa-A alleles. The Mafa-A genes are much more diverse than previously reported. Using this approach we expect to gain a better understanding of Mafa-A genes and their role in immune response in vaccine studies.
CONCLUSIONS: We have established a method to identify and confirm new Mafa-A sequences in Cynomolgus macaques. These sequences will help in establishing a more complete database, which will be crucial for studying the relationship between Mafa-A genotypes and the immune response to vaccines.

P015
INHIBITION OF HIV-1 INTEGRASE BY 1ST AND 2ND GENERATION INTEGRASE INHIBITORS

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BACKGROUND: HIV integrase (IN) mediates the insertion of the viral HIV genome into host genome leading to productive infection. Viral resistance to primary integrase inhibitors (INIs) Raltegravir (RAL) and elvitegravir (EVG) has been described. Two second generation INIs are MK-2048 (MK) (Merck) and S/GSK-1349572 (S/GSK) (Shiniogi and GlaxoSmithKline). MK is a prototype INI and S/GSK is in stage IIb clinical trial.
OBJECTIVE: Identify differences in resistance between first and second generation INIs.
METHODS: Strand-transfer and IN inhibition were evaluated using a microtiter plate assay. Dose-response curves were prepared for the inhibition of wild-type and variant IN by INIs. In silico modeling of the catalytic domains of IN and INI-resistant IN initiated using Protein Homology fold

Recognition Engine (PHYRE), whilst INI docking into homology models will be done using AUTODOCK TOOLS and AUTODOCK VINA.
RESULTS: In silico simulations indicate that G118 facilitates slight secondary structural changes upon binding MK, displacing D64 coordination with Mg2+. We have identified a novel resistance mutation, G118R that confers resistance to MK-2048. The biological significance of this mutation has been confirmed by site-directed mutagenesis in live pNL4-3 HIV. G118R, appears to interfere with coordination of Mg2+ by MK, due in part to the stearic hindrance presented by a larger side-chain and in part to electrostatic interactions between R118 and MK, thereby allowing coordination of Mg2+ by D64. Biochemical characterization of wild-type and variant IN enzymes and their inhibition by first and second generation INIs will be presented supported by more extensive in silico analysis of different binding modes of primary and secondary INIs.
CONCLUSION: The second generation HIV-1 integrase inhibitors S/GSK-134972 and MK-2048 are expected to inhibit HIV-1 integration using different mechanisms and resistance pathways from first generation INIs, RAL and EVG.

P016
FUNCTIONAL EXPRESSION OF ATP-BINDING CASSETTE (ABC) TRANSPORTERS AT THE BLOOD-TESTIS BARRIER (BTB): RELEVANCE TO ANTIRETROVIRAL DRUG (ARV) PERMEABILITY

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The BTB, composed of Sertoli cells, is responsible for protecting developing germ cells from xenobiotic exposure. In the context of human immunodeficiency virus type 1 (HIV-1) therapy, several ARVs reach very low concentrations in the seminal fluid of HIV-1 infected men. Many ARVs are substrates and inhibitors of ABC drug efflux transporters i.e., P-glycoprotein (P-gp), Breast cancer resistance protein (Bcrp) and the multidrug resistance proteins (Mrps) and have been shown to restrict ARV permeability at blood-tissue barriers (i.e., blood-brain barrier). However, it is unclear if these transporters are expressed at the BTB, and if they can restrict the distribution of ARVs in Sertoli cells and seminal fluid.
Two cell culture systems are used to investigate the BTB: i) an immortalized mouse Sertoli (TM4) cell culture system, known to retain morphological and biochemical characteristics of in vivo BTB and ii) primary cultures of human Sertoli cells (HSEC). Quantitative real-time PCR (qPCR) and immunoblotting analysis were applied to determine mRNA and protein expression, respectively. Transport assays using specific radio-labeled and fluorescent substrates for each of the transporters of interest were performed to characterize transporter function and ARVs accumulation in a Sertoli monolayer cells.
QPCR and immunoblotting analysis confirmed gene and protein expression of P-gp, Mrp1, Mrp4 and Bcrp in TM4 cells. In HSECs, Mrp1 and Mrp4 expression was also detected. Using specific substrates and inhibitors for each transporter, we demonstrated that P-gp, Mrps and Bcrp are functional in TM4 cells. Furthermore, we observe that ARV drugs such as the HIV PI and NRTIs can interact/inhibit each of the transporters in TM4 cells.
These data suggest that P-gp, Mrps (Mrp1 and Mrp4) and Bcrp are functional in an in vitro Sertoli cell system. Future in vivo studies will help elucidate if these transporters can restrict the distribution of ARVs into the seminal fluid and testes and contribute to the formation of a viral sanctuary.
This study is funded by the Ontario HIV Treatment Network

P017
CELL-TO-CELL TRANSMISSION OF HIV-1 IS SUSCEPTIBLE TO ENTRY INHIBITION AND INVOLVES VIRAL ENDOCYTOSIS

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BACKGROUND: Infection by HIV-1 requires specific interaction between the viral envelope glycoprotein, the cellular receptor CD4 and a chemokine coreceptor to initiate membrane fusion and the events that lead to entry of the virus into the cytosol. Therefore, this process is susceptible to inhibition by inhibitors of CD4 binding, chemokine coreceptor binding and virus-host membrane fusion.
Recent understanding of HIV-1 entry suggests that a majority of virus are transmitted via direct cell-cell contacts rather than through interaction between free virus and the cell. Cell-cell transmission is a more efficient means of transmitting virus but current data are contradictory in regard to the sensitivity of cell-cell transmission to inhibitory agents. It is also unclear to what extent cell-cell transmitted virus engages the cellular machinery described for cell-free entry.
METHODS: We infected donor PM1 cells with GFP reporter virus and used these cells to infect pre-stained target PM1 cells. Target cells were treated with the CCR5 antagonist Maraviroc, the fusion inhibitor T-20, the reverse transcriptase inhibitor Efavirenz, the anti-CD4 antibody B4, the neutralizing anti-gp120 antibody 2F5 or the fusion inhibitor T-20. Transfer of virus was assayed via staining for intra-cellular p24 in target cells, whilst infection was assayed by viral expression of GFP in target cells.
RESULTS: Our results show that all drugs and antibodies tested inhibited infection of target cells. In the case Maraviroc and T-20, this inhibition occurred despite significant transfer of p24 to the target cell. Additional analysis found such virus to be in a trypsin resistant intra-cellular compartment and that treatment of target cells with the dynamin-mediated endocytosis inhibitor Dynasore resulted in a reduction of infection.
CONCLUSIONS: Collectively our data demonstrate that direct cell-cell transmission is susceptible to entry inhibition and antibody neutralization, but additionally shows that this process involves endocytosis of virus in the target cell.

P018
PRELIMINARY CHARACTERIZATION OF A NOVEL NON-HUMAN PRIMATE CYTOMEGALOVIRUS FOR ITS DEVELOPMENT AS AN SIV VACCINE VECTOR

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Cytomegaloviruses (CMVs) are ubiquitous, highly species-specific DNA viruses. CMVs have been isolated from numerous primate species, including Rhesus macaques (RhCMV). Rhesus macaques are used extensively in biomedical research and vaccine evaluation, particularly in HIV research, however the increased usage and high demand for these animals has resulted in a supply shortage. One of the best alternatives, particularly for HIV vaccine evaluation and immunopathogenesis studies is the use of cynomolgus macaques (macaca fascicularis).
Cytomegalovirus (CMV) is a promising viral vector to evaluate as a replicating HIV/SIV vaccine vector with the potential to elicit substantial mucosal-oriented, persistent, and functional immune responses. The highly species-specific nature of cytomegaloviruses restricts the conduct of their study to their target species. Here we report the isolation and characterization of cytomegalovirus from cynomolgus macaques. The virus was isolated from urine samples collected from a healthy captive-bred monkey of Indo-Filipino origin. The virus was identified as a CMV by its characteristic growth properties in cell culture, PCR amplification and sequencing of the viral DNA polymerase and its virion morphology as assessed by electron microscopy (TEM). Electron microscopic analysis identified the presence of unique intranuclear protein crystals in infected MRC-5 cells. The full-length glycoprotein B (gB) of CyCMV was PCR-amplified, cloned and sequenced. CyCMV gB shows 77% identity and 88% homology to RhCMV gB, and 58% identity and 76% homology to HCMV gB. Like other CMVs, CyCMV also has the capacity to downregulate MHC class I expression on infected cell surfaces in a variety of human and primate cell lines. CyCMV-specific immune responses in our cynomolgus macaque colony were estimated by ELISA, ELISPOT, ICS and proliferations assays. As cynomolgus monkeys are ever increasing as an animal model for a variety of human diseases, transplant models and HIV vaccine studies, the identification and characterization of this endogenous virus will be informative in many regards. We are currently completing the complete genomic sequence analysis of this virus in a directed effort at employing CyCMV as an HIV/SIV vaccine vector.

P019

POKEWEED ANTIVIRAL PROTEIN ALTERS HIV-1 TRANSLATION AND PACKAGING

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Pokeweed antiviral protein (PAP) is a plant derived N-glycosidase that removes specific adenine bases from target RNAs in a process called depurination. When expressed in mammalian cells, PAP displays antiviral activity against a number of viruses without causing cell toxicity. Human immunodeficiency virus 1 (HIV-1) is one such viral target. PAP does not reduce the level of HIV-1 mRNA but it does reduce the amount of HIV-1 proteins made in mammalian cells. This phenomenon is accompanied by a striking reduction in virus particle release. The molecular mechanism responsible for the reduction of viral proteins and particles is not clear. Accordingly, the objective of this study was to determine how PAP affects HIV-1 translation and packaging. This study tested the hypothesis that the observed effects of PAP on HIV-1 are due to depurination of HIV-1 mRNA. This depurination is thought to inhibit ribosome loading and may alter the vRNAs' ability to interact with viral/host proteins, affecting translation and packaging efficiency. To determine the effect of PAP on HIV-1 mRNA translation, polysome analyses were carried out, identifying allocation of viral mRNA when expressed from a proviral clone in 293T cells in the presence of the antiviral protein. Furthermore, the ability of HIV-1 RNA to participate in ribonucleoprotein interactions was investigated to determine whether PAP is able to disrupt interactions that direct RNA for packaging or translation. Overall, this study supports the potential use of PAP as a novel therapeutic agent against HIV-1 as it can inhibit the translation and packaging of this virus without causing cytotoxicity.

HIV Structure, Function and Genetics

P020

TOWARDS CHIMERIC TRANSCRIPTION FACTOR REPRESSION OF HIV-1: MUTATING A HIGHLY CONSERVED CIS-ELEMENT ABLATES HIV-1 ACTIVATION

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In the absence of the HIV-1 Tat protein the LTR-directed transcription elongation complex (TEC) aborts. The classic view is that Tat forms a ternary complex with P-TEFb and a nascent stem-loop RNA structure termed TAR at the 5'-end of transcripts. The P-TEFb-Tat-TAR ternary complex permits CDK9 to hyper-phosphorylate the carboxy terminal domain (CTD) of the catalytic subunit of RNA Polymerase II (RPII). This switches the RPII-machinery from an abortive TEC to a processive TEC. In contrast inactive P-TEFb is segregated in association with 7skRNA. Contrary to the classic view (that active P-TEFb contains only CDK9 and Cyclin T), we previously purified an active P-TEFb-containing complex (under stringent protein-protein association conditions) containing not only CDK9 and Cyclin T, but also multiple factors including a protein, that we named Major CDK9 Elongation Factor-associated protein (MCEF, also known as AF5Q31 and as AFF4). We also cloned the cognate MCEF cDNA and have published some of its characterization, including our finding that ectopic expression of recombinant MCEF (rMCEF) in HeLa cells, represses HIV-1 replication and LTR-directed Tat-transactivation of transcription elongation by 60%. We have previously proposed using MCEF to repress HIV-1, by tethering MCEF to a conserved cis-element within the HIV-1 LTR. Here we show that mutation of this highly conserved cis-element, ablates HIV-1 activation, suggesting that tethering MCEF to this cis-element could block both Tat-transactivation, as well as activation from latency in the absence of Tat. We further report that MCEF has two repressive domains, consistent with recent reports that MCEF interacts with both ELL2 and P-TEFb, orchestrating a biomodal complex, containing both CTD phosphorylation and 3'-OH alignment activities. These results contribute to the elucidation of a novel mechanism for both Tat-dependent and Tat-independent HIV-1 activation, that has implications for latency.

P021

ANALYSIS OF THE QUASISPECIES DIVERSITY OF FULL-LENGTH HIV-1 BY HTP PYROSEQUENCING AND COMPARISON WITH TRADITIONAL CLONING AND SANGER SEQUENCING METHODS

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OBJECTIVE: To investigate the quasispecies diversity of full-length HIV-1 proviral genome using high throughput pyrosequencing approach and comparison with traditional cloning and Sanger sequencing methods.

METHOD: Genomic DNA extracted from PBMC, buffy coat and whole blood from HIV-1 positive patients from the Pumwani cohort were used as templates for the PCR amplification of the HIV-1 proviral genome by nested PCR. The resultant amplicons were gel purified for pyrosequencing using 454 technology, as well as for molecular cloning and sequencing using Sanger sequencing. The sequences generated will be assembled using the assembly software that has been developed in house and phylogenetic analysis will be conducted using Mega 4.0. The quasispecies diversity as well as the assemblies generated by the two different methods will be compared.

RESULT: Eighteen full-length HIV-1 proviral genomes have been generated to date by nested PCR from HIV+ patient samples. An additional 30 HIV-1 proviral sequences were also amplified by 3 overlapping PCR reactions. These amplified PCR products are currently being sequenced by 454-pyrosequencing technology. We are simultaneously generating a hundred clones from each of the 10 selected full-length HIV-1 proviral PCR products and these clones will be sequenced using Sanger sequencing technology. The sequences generated by these two approaches will be compared and we are expected to generate new information related to quasispecies diversity and to identify compensatory mutations with this approach.

P022

PROMOTION OF THE NEUTRALIZATION-COMPETENT STRUCTURE OF THE HIV-1 GP41 MEMBRANE PROXIMAL EXTERNAL REGION WHEN TETHERED TO ITS NATIVE TRANSMEMBRANE DOMAIN, AND EXPRESSED IN THE CONTEXT OF THE PLASMA MEMBRANE: IMPLICATIONS FOR VACCINE DESIGN

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The highly conserved membrane proximal external region of HIV-1 gp41 (MPER), a target of three broadly neutralizing (bNt) monoclonal (M) antibodies (Abs), is an attractive target of vaccine design. However, the limited success of MPER-based immunogens in eliciting bNt MAbs reflects the difficulty of mimicking the neutralization-competent structure (NCS) of the MPER. Here, we determine the contribution of the amino-acid sequence and the transmembrane domain (TM), to the antigenicity of the MPER in the context of the plasma membrane. A series of DNA constructs encoding various gp41 ectodomain fragments, and the TM of either the platelet-derived growth factor receptor (PGDFR), or that of gp41, were produced and transiently expressed in COS-7 cells. Constructs expressing the MPER tethered to the gp41 TM followed by a 27-residue cytoplasmic tail fragment, MPER-TM1, produced optimal binding of MAbs 2F5, 4E10 and Z13e1. A series of 24 single amino-acid substitutions in the MPER–TM1 revealed critical binding residues for the three MAbs; similar substitutions were previously shown to ablate Ab-mediated viral neutralization. Neutralization-incompetent 2F5 Fab and 4E10 IgG mutant Abs failed to bind MPER-TM1, yet retained the ability to bind to peptide epitopes, indicating the plasma-membrane expressed MPER-TM1 closely approaches the NCS of the MPER. Substitution of the TM of gp41 with that from the PGDFR reduced binding by MAb 4E10 (60.1% (TM) vs. 21.9% (PDGFR), $p<0.001$), but not MAbs 2F5 or Z13e1. Immunization of rabbits with a DNA

vaccine encoding the MPER-TM1 fragment, elicited low-titre Abs that cross-reacted weakly with the MPER. Future studies will employ MPER-expressing, liposomal-based synthetic vaccines to boost Ab titres. Our studies reveal that the gp41 TM appears to play a pivotal role both in orienting the 4E10 epitope, and, to act more globally, in affecting exposure of the MPER epitopes for all three bNt MAbs, indicating the importance of this domain and the surrounding lipid environment for the NCS of the MPER.

P023

EXPRESSION PROFILING OF GENES INVOLVED IN TRANSENDOTHELIAL LEUKOCYTE MIGRATION IN HIV-1 RESISTANT WOMEN IN THE PUMWANI SEX WORKER COHORT

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OBJECTIVE: A group of sex workers in the Pumwani Sex Worker Cohort, located in Nairobi, Kenya, remains HIV-1 uninfected, as determined by PCR and serology, despite heavy exposure to the virus through sex work. Successful HIV-1 infection is contingent on the virus' ability to infect susceptible leukocytes that migrate to the site of acute infection. Delayed migration of susceptible cells may slow the onset of systemic infection, potentially allowing innate and adaptive immune responses to clear the infection. The aim of this study is to identify genes involved in transendothelial leukocyte migration that are differentially expressed between HIV-1 resistant and susceptible women.

DESIGN: The expression level of 90 genes involved in transendothelial migration were examined in 38 resistant and 37 susceptible women using a custom RT2 ProfilerTM PCR Array (SABiosciences). RNA was isolated from whole blood using the PAXgene Blood RNA Kit (Qiagen). The cDNA was synthesized and amplified using the TransPlex® Complete Whole Transcriptome Amplification Kit (Sigma-Aldrich). The level of gene expression was compared between HIV-1 resistant and susceptible women.

RESULTS: We identified 23 genes, which were differentially expressed in HIV-1 resistant women compared to susceptible women. The following genes were significantly up-regulated in HIV-1 resistant women: RBL2 (p=0.000498), ITGB1 (p=0.000668), CDK6 (p=0.000677), PIK3CA (p=0.00249), RASA1 (p=0.00347), DPP4 (p=0.00357), MAPK7 (p=0.00869), MAP4K1 (p=0.0104), MAP3K4 (p=0.0106), MAP2K1 (p=0.0110), CTNNB1 (p=0.0134), SHC1 (p=0.0153), PTPN11 (p=0.0195), RPS6KB1 (p=0.0206), CLTC (p=0.0240), TICAM1 (p=0.0256), TIMP1 (p=0.0307), and VCAN (p=0.0380). In contrast, the following genes were significantly down-regulated in the HIV-1 resistant group: LEP (p=0.0112), TSC2 (p=0.0135), NFKBIA (p=0.0209), MAPK3 (p=0.0215), and MMP13 (p=0.0478).

CONCLUSIONS: The results showed that the expression level of many key genes involved in leukocyte migration in HIV-1 resistant women are different from women who are susceptible to HIV-1 infection. They may represent novel targets for HIV-1 prevention.

P024

KNOCKDOWN OF DDX17 INHIBITS HIV-1 PRODUCTION

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RNA helicases comprise a large family of proteins that modulate RNA structures using energy derived from hydrolysis of NTPs and are thus required for virtually every step of RNA metabolism. Being cell parasites, viruses depend on helicases to replicate their genomes in cells. Some viruses such as hepatitis C virus encode their own helicase, whereas other viruses such as human immunodeficiency virus type-1 (HIV-1) do not carry their own helicases and therefore exploit cellular helicases. Indeed, several helicases have been reported to play a role in HIV-1 replication, these include DDX1, DDX3, DDX24, WRN, RHA, DHX30, and MOV10.

With the aim to gain a more comprehensive understanding of the role of cellular helicases in HIV-1 replication, we have performed a shRNA-based screening study and tested 130 cellular helicases for their possible effect on HIV-1 production in SupT1 cells. Among the candidates is DDX17, also known as p72, whose knockdown diminishes HIV-1 production by 3 to 5 fold. In support of this observation, exogenous expression of DDX17 mutants that have its helicase's active site DEAD or GKT mutated to DQAD or GRT, respectively, led to up to 7 fold decrease in the production of infectious HIV-1 virions. Further analysis suggests that DDX17 plays a regulatory role in HIV-1 splicing and virus assembly. Relevant findings will hopefully lead to the identification of new targets for the development of new therapeutic strategies to treat HIV infection.

P025

BIOCHEMICAL CHARACTERIZATION OF STAUFEN1 HIV-1-DEPENDENT RNPS (SHRNPS) IN HIV-1 EXPRESSING CELLS

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BACKGROUND: The host protein, Staufen1, plays a significant role in RNA localization, translation and mRNA decay and functions in the context of ribonucleoprotein complexes (RNPs). Staufen1 RNPs are mobile. which is considered an important characteristic to carry out its role in cells. Previously, we showed that Staufen1 interacts with Gag and regulates its assembly. Modulation of intracellular Staufen1 levels leads to increased genomic RNA encapsidation. We also demonstrated that HIV-1 induced the assembly of specific RNPs, namely Staufen1 HIV-1-dependent RNPs (SHRNPs) of which Gag and the genomic RNA are constituents. Herein, we investigated how HIV-1 induces the assembly of SHRNPs.

METHODS: HeLa cells were transfected with proviral and Staufen1-HA DNAs or siRNAs to deplete endogenous Staufen1. Cytoplasmic RNPs were fractionated by sucrose density gradient sedimentation. RNA slot blot was used to determine the sedimentation profile of Staufen1, Gag and RNA. The cellular localization of Staufen1 in relationship to genomic RNA and Gag was examined using combined immunofluorescence/fluorescence in situ hybridization analyses (IF/FISH).

RESULTS: HIV-1 expression induced the sedimentation of Staufen1 RNPs to more dense gradient fractions along with Gag and this shift in apparent density was determined to be RNA-dependent. The genomic RNA was distributed in the heavier ribosomal fractions, corresponding to the SHRNPs distribution in the gradient. The depletion of Staufen1 lowered steady-state Gag expression levels. We also showed that Staufen1 co-localizes with Gag and genomic RNA in HIV-1 expressing cells by IF/FISH.

CONCLUSIONS: While we observed larger Staufen1/Gag/genomic RNA punctae in Staufen1-depleted cells (Abrahamyan et al., 2010), these gradient analyses reveal that the larger punctae represent accumulations of multiple, smaller SHRNPs and not the formation of a supraphysiologic-sized RNPs. This work provides evidence that Staufen1-containing RNPs are dynamic, are modulated by HIV-1 and likely play roles in the fate of genomic RNA in the cytoplasm.

P026

HIV-1 UP-REGULATES TYPE 1 LONG-INTERSPERSED NUCLEAR ELEMENTS RETROTRANSPOSITION BY VIF AND VPR

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BACKGROUND: Type 1 long-interspersed nuclear elements (L1s) are autonomous retrotransposable elements that retain the potential for activity in the human genome. Many cases of genetic disease have been traced to gene disruptions caused by L1s retrotransposition events in germ-line cells. Here, we report that L1 copy numbers progressively increase in the genomic DNA of HIV-1-infected primary T cells. This increase of L1 results from the up-regulation of L1 retrotransposition in infected cell, and is dependent upon HIV-1-Vif and Vpr.

METHODS: L1 copy numbers in the genomic DNA of HIV-1-infected primary T cell were measured by qPCR. L1s retrotransposition in HIV-1 infected cells was measured by an in vitro retrotransposition assay. The effect of HIV-1 Vif and Vpr on up-regulating L1s retrotransposition were analyzed.

RESULTS: We consistently observe that the increase of L1s copy numbers is synchronized with the increase of L1s retrotransposition in HIV-1-

NL4 3-infected cells. HIV-1 NL4-3 Vif or Vpr deficient virus shows decreased L1s retrotransposition activity than HIV-1 NL4-3 wild type, while transfection of Vif or Vpr protein is sufficient to increase L1 retrotransposition.

CONCLUSIONS: These data indicate that HIV-1 up-regulates L1s expression through increasing L1s retrotransposition. This is controlled by HIV Vif and Vpr, while Vpr plays a more important role in it. These data further provide a novel mechanism for HIV-1 pathology and have important implication for understanding interactions between exogenous retroviruses, endogenous retroelements and their hosts.

Innate and Adaptive Immune Responses to HIV Infection and Co-Infection

P027
DIFFERENTIAL SURFACE EXPRESSION OF GLUCOSE TRANSPORTER-1 PROTEIN IN HIV RESISTANT COMMERCIAL SEX WORKERS IN THE PUMWANI COHORT

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Resistance to HIV-1 among commercial sex workers who are continuously exposed to HIV-1 yet remain uninfected by the virus has been reported. (Fowke, et al, 1996; Plummer, et al, 1999; Fowke, et al, 2000; Ball, et al, 2007) A gene expression analysis showed differential regulation of the glycolysis/gluconeogenesis pathway in HIV-1 resistant women. (Songok, et al, 2010, accepted)

A functional immune response requires rapid cell growth and proliferation. Lymphocytes are crucial for this and it is vitally important to understand how normal lymphocyte function is regulated and fuelled. T cells use glucose and glutamine as their primary fuel source. (Fox et al, 2005; MacIver et al, 2008) Activated T cells have increased metabolic requirements provided by glycolysis. The first critical regulatory step in glucose metabolism is glucose entry into cells through facilitated diffusion by proteins of the glucose transporter (GLUT) family. (Frauwirth et al, 2002; Jacobs, et al, 2008)

The study population was drawn from the Pumwani Sex Worker Cohort, Nairobi. Study size was HIV resistant; new HIV-negative; HIV-positive and low risk antenatal women (n=10 each). Freshly isolated PBMCs were surface stained with GLUT1 antibody (R & D Systems, Inc, USA) to determine baseline cellular surface expression of GLUT1 protein by flow cytometry; and analyzed using FlowJo. (Tree Star, Inc, Ontario) Statistical analysis was performed using the Mann-Whitney U Test. Differences were considered to be significant if $P<0.05$.

CD8+ T cells of HIV resistant women showed significantly higher surface expression of Glut-1 when compared to the uninfected yet susceptible sex workers (new negatives) ($p=0.0340$) and the low risk controls ($p=0.01$). Interestingly, there was no significant difference in the expression level of Glut-1 in CD4+ T cells where the expression was relatively low in all the study groups. Following studies will determine Glut 1 expression and function after following stimulation with various stimuli.

P028
ASSESSMENT OF THE FEASIBILITY OF A DIFFERENT HIV VACCINE APPROACH

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An effective vaccine to prevent HIV-1 infection is a public-health priority. The failure of Merck STEP and Phambili trials and the modest effect of RV144 trials emphasize the importance of understanding the correlates of protective immunity and the need to test different approaches for vaccine development. Our study showed that HLA alleles associated with protection from HIV-1 infection in the Pumwani sex worker cohort has a narrowly focused epitope recognition, whereas the allele associated with rapid seroconversion recognizes a much broader spectrum of epitopes. In this study we test the feasibility of a vaccine approach that focuses on the key sites of HIV-1, the protease cleavage sites. Since the protease cleavage sites of HIV-1 are highly conserved among major subtypes of HIV-1, direct immune responses against these cleavage sites would yield two major advantages. First, the host immune response could destroy the virus before it can establish itself permanently in the host. Second, the vaccine could force the virus to accumulate mutations eliminating the normal function of the HIV protease thus eliminating viable virions. We determined the immunogenicity of protease cleavage peptides using iTopia Epitope Discovery system and population coverage using IFNγ ELISPOT assays screened PBMCs from over 100 women of the Pumwani sex workers.

P029
THE INFLUENCE OF HLA CLASS I GENES AND HLA-G ON PERINATAL HIV-1 TRANSMISSION: AN UPDATE

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OBJECTIVES: Previous studies of mother to child HIV-1 transmission (MCH) have found concordance of human leukocyte antigen (HLA) genes between mother and child increase the risk of MCH transmission. HLA-G is primarily expressed in trophoblast cells at the mother-child interface and speculated to have a role in maternal-fetal tolerance. This unique nature of HLA-G makes it a prime candidate for studies in MCH transmission. This study was conducted to investigate the effect of both HLA class I and non-classical class I HLA-G in perinatal HIV-1 transmission.

DESIGN: HIV positive mothers and their children were selected from a MCH cohort located in Nairobi, Kenya. Genomic DNA was isolated from PBL, blood spot and whole blood samples. The 2nd and 3rd exons of HLA-A, -B, -C and -G of 322 mothers and 268 of their children were amplified by PCR, sequenced, and then genotyped by CodonExpressTM. Statistical analysis was conducted using SPSS 15.0.

RESULTS: HLA-A*34:02 ($p = 0.034$) and HLA-B*07:02:01 ($p = 0.027$) were found to be independently associated with increased perinatal transmission of HIV-1, while HLA-C*08:02 ($p = 0.009$) and HLA-G*01:03 ($p = 0.037$) were independently associated with decreased perinatal HIV-1 transmission. B*18:01:01 ($p = 0.039$) and B*08:01:01 ($p = 0.009$) were enriched in the HIV-1 infected children. HLA-G concordance between mother and child was associated with an increased risk of HIV transmission ($p = 0.028$).

CONCLUSIONS: Several HLA alleles were associated with either lower or increased risk of perinatal HIV-1 transmission in this cohort. HLA-G concordance increased the risk of perinatal HIV-1 transmission.

P030
EFFECTS OF HIV-1 ON THE MATURATION, ANTIGEN PRESENTATION, AND MAPK ACTIVITY OF MONOCYTE DERIVED DENDRITIC CELLS

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BACKGROUND: Dendritic cells (DC) are mediators of the adaptive immune response responsible for antigen presentation to T-cells in secondary lymph organs. The effects of HIV-1 on DC maturation are not well established and conflicting results have been reported. The objective of this study was to evaluate the effects of in vitro HIV-1 infection on the maturation of monocyte derived dendritic cells (MDDCs).

METHODS: Monocytes isolated from (peripheral blood mononuclear cells) PBMC were differentiated into immature MDDCs (iMDDCs) using established methods. iMDDCs were incubated with HIV-1, and then cultured with or without a maturation-inducing cocktail (TNF-α, IL-1β, IL-6 and PGE2) prior to flow cytometric analysis for CD14, DC-SIGN, CD80, CD83, CD86, CD40, CCR7, MHC I and MHC II expression. Following incubation of iMDDCs with HIV and FITC-conjugated dextran, endocytosis was measured by flow cytometric analysis. Mitogen activated protein kinase pathway (MAPK) activation was measured by immunoblot analysis after HIV-infection and (lipopolysacharride) LPS stimulation of MDDCs. Antigen presentation was measured by co-culturing HIV-infected iMDDCs with CFSE stained autologous PBMCs for 7 days. Co-cultures were then

stained with PC5-CD8 antibodies and cellular proliferation (CFSE dilution) was measured by flow cytometry.
RESULTS: HIV infection caused an increase in DC-SIGN expression and decreased cytokine-induced CD80, CCR7 and MHC II expression. Both endocytosis and antigen presentation to CD8+ T-cells were decreased after infection of iMDDCs with HIV. However, MAPK responsiveness to LPS as measured by phosphorylation of p38, JNK, and ERK1/2 was unaffected by HIV-1 infection.
CONCLUSION: In vitro HIV-1 infection of iMDDCs alters maturation, endocytotic activity, and antigen presentation of MDDC without interfering with MAPK pathways. Understanding the mechanisms of dendritic cell dysfunction in HIV infection will provide further insight into HIV immune pathogenesis.

P031
MILK MATTERS: PREDOMINANT NATURAL FORMS OF SOLUBLE TOLL-LIKE RECEPTOR 2 (STLR2) VARY SIGNIFICANTLY IN SIZE AND FUNCTION IN BREAST MILK

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Natural soluble Toll-like receptors (sTLRs), such as sTLR2, play a critical role in preventing excessive triggering of membrane-bound TLRs. Breast milk (BM) contains a high concentration of sTLR2, which is believed to be important in reducing inflammation in the newly colonized infant gut. However, the full extent of how critical sTLR2's negative regulation will be to infants that are consuming HIV+ BM is not fully understood. Our initial data indicated that predominant sTLR2 polypeptides in BM varied significantly from previously published data, possibly indicating genetic background differences among cohorts. We further showed that natural sTLR2 polypeptide forms in BM vary among women, and thus we hypothesize that differences in sTLR2 forms may be critical in controlling inflammation in the infant's gut and may help reduce mother-to-child transmission of HIV through BM. We demonstrate that natural sTLR2 polypeptides in human BM differ immunologically and further show significantly reduced production of pro-inflammatory cytokines in functional studies using TLR2-specific pattern associated molecular patterns (PAMPS), Pam3CSK4 compared to recombinant protein. Specific to HIV-infected BM, we have observed hyperglycosylated sTLR2 band patterns compared to HIV-uninfected samples. It remains unclear, however, whether the hyperglycosylation of natural sTLR2 forms is caused by the infection itself and/or differences in sTLR2 forms that were present in BM prior to infection. The results of our studies indicate that differences in natural sTLR2 forms may be important for both maternal and infant health. Importantly, observations from HIV-infected BM indicate a strong variation in sTLR2 forms, and thus warrant further detailed characterization and functional testing of the role of sTLR2 in vertical HIV-transmission.

P032
INCREASED EXPRESSION OF INHIBITORY RECEPTOR LAG3 ON IMMUNOREGULATORY CELL SUBSETS DURING HIV INFECTION

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INTRODUCTION: Lymphocyte activation gene 3 (LAG3) is an inhibitory receptor recently recognized as an immune exhaustion marker similar to PD-1 and Tim3, which are known to be involved in the immune dysregulation that occurs during chronic HIV infection. Although LAG3 expression on human T cells, invariant NKT (iNKT) and NK cells has been described in healthy individuals, there has been no characterization of LAG3 during HIV infection. This study investigated LAG3 expression in HIV infection, with a particular emphasis on immunoregulatory cell subsets, including iNKT and NK cells.
METHODS: Multi-colour flow cytometry was used to characterize LAG-3 expression on T cells, iNKT cells (marker 6B11) and NK cells in conjunction with activation (CD69, HLA DR) and exhaustion markers (PD-1, Tim3). PBMC were obtained from healthy and HIV-infected participants in the Pumwani sex worker cohort in Nairobi, Kenya.
RESULTS: Compared to uninfected individuals, LAG3 was upregulated on both CD4 and CD8 T cell subsets in HIV infection, particularly among patients on ARV therapy. Interestingly, LAG3 expression correlated with acute activation markers among the ARV naive patients, but with chronic activation and exhaustion markers among ARV recipients. Although LAG3 expression was relatively low on T cells, it was highly expressed on iNKT cells, and significantly upregulated on CD4+ iNKTs among HIV+ patients. Additionally, CD56hiCD16- NK cells strongly upregulated LAG3 during HIV infection.
CONCLUSIONS: Our study has shown, for the first time, that LAG3 is upregulated among many immune subsets during HIV infection, and that it is most highly expressed and upregulated among immunoregulatory iNKT and CD56hi NK cells. Although dysregulation of iNKTs has been described during HIV infection, the mechanisms and consequences are unknown. Our results suggest that investigating the functional consequences of LAG3 expression on this and other subsets will be important in understanding their role in HIV control and pathogenesis.

P033
HIV EXPOSED SERONEGATIVE PEOPLE EXPRESS LOWER LEVEL OF IFN-G INDUCTIBLE CHEMOKINE IN THEIR CERVICO-VAGINAL LAVAGES

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Over three-quarters of HIV/AIDS cases occur through heterosexual transmission. However, little is know about the factors influencing the susceptibility to HIV infection and the immune response in the female genital tract (FGT). Studies, including those with female sex worker (FSW), have reported natural resistance to HIV-1 infection. Reduced levels of immune activation, termed immune quiescence, has been associated with this resistance. The aim of this study is to analyse immune mucosal factors that could be implicated in the susceptibility to HIV infection.
METHODS: 213 CVL from FSW from the Majengo clinic in Nairobi, Kenya (57 new negatives (NN); 68 HIV+ and 55 highly exposed non infected (HESN)) and 33 HIV uninfected low risk women were analysed for the presence of cytokines and chemokines.
Our results show a significant difference between the three groups for the chemokines CXCL-9 (MIG) and CXCL-10 (IP_10). MIG and IP-10 were decreased in the CVL of the HESN compared to the other groups (anova $p=0.0002$ and $p<0.0001$ respectively).
CONCLUSION: These results suggest a decreased of the immune activation in the FGT of the HESN consistent with the immune quiescence hypothesis. This study will allow us to furthering our understanding of the mechanisms involved in the host immune response vs. HIV.

P034
HIV INDUCES IMBALANCE BETWEEN IL-18 AND ITS ANTAGONIST THAT ADVERSELY AFFECTS BOTH INNATE AND ADAPTIVE IMMUNE RESPONSES

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IL-18 is a pro-inflammatory, multifunctional and pleiotropic cytokine belonging to the IL-1 family. Its activities, in vivo, are normally kept under control by a naturally produced antagonist called IL-18 binding protein (IL-18 BP). We have previously reported an imbalance between the production of IL-18 and of its antagonist in HIV-infected individuals, as the serum concentrations of the cytokine are increased concomitantly with a decrease in the concentrations of IL-18BP in HIV-infected individuals. We show here that HIV infection, at least in part, is responsible for this imbalance. In vitro infection of human macrophages with a macrophage-tropic or with a dual tropic HIV strain induces an increase in the production of IL-18. However, the infection decreases production of IL-18BP from these cells. The viral replication is necessary for the effects of the virus on the production of these two soluble

mediators from the human cells. The enhanced biological activities of the cytokine increase HIV replication and adversely affect innate and adaptive immune responses in HIV-infected persons. We have previously shown that increased biological activities of the cytokine induce fratricide of Natural Killer cells via inducing FasL expression in these cells. Now, we show here that increased biological activities of the cytokine also affect differentiation and maturation steps of dendritic cells and affect their capacity to prime T cells. Taken together, these studies highlight a contribution of the enhanced biological activities of the cytokine towards the virus-induced AIDS.

P035
THE POLYMORPHISMS OF THE APOBEC3H GENE IN THE PUMWANI SEX WORKER COHORT AND THE ASSOCIATIONS WITH THE SUSCEPTIBILITY/RESISTANCE TO HIV-1

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BACKGROUND: Human APOBEC3H has the capability to interfere with the replication of HIV-1 by mutating the negative strand of the viral DNA after reverse transcription. Studies have shown that single nucleotide polymorphisms (SNPs) and alternative splicing influence APOBEC3H protein characteristics: anti-HIV activity and resilience to HIV-1 viral protein Vif.

OBJECTIVES: To examine whether SNPs in the APOBEC3H gene play a role in the resistance to HIV-1 infection observed in a subgroup of women in the Pumwani sex worker cohort (PSWC).

METHODS: The region between exon 2 and intron 4 were amplified, sequenced, and genotyped from genomic DNA samples of women (n=1029) enrolled in the PSWC. Genotyping results were statistically analyzed using SPSS-13.0, and linkage disequilibrium and haplotype frequencies were analyzed using Helixtree®. The influence of SNPs on alternative splicing and exonic splicing enhancers (ESE) were analyzed in-silico using Alamut v1.54.

RESULTS: Novel SNP+321C>T (F107F) was enriched in the HIV-1 infected group (P=0.022, odds ratio: 0.288, 95%CI: 0.094-0.888) and associated with faster seroconversion (P=0.000638, Log Rank: 11.66). SNP rs77993299 (+315C>T,G105G) was enriched in the HIV resistant women (P=0.005, odds ratio: 2.662, 95%CI: 1.315-5.388) and showed a trend towards slower seroconversion (P=0.336). In-silico analysis predicted SNP+321C>T to abolish an ESE site while SNP rs77993299 had no effect. Both SNPs were predicted to not have any effects on splicing.

CONCLUSION: SNP rs77993299 and novel SNP+321C>T are associated with HIV-1 resistance and susceptibility, respectively. ESEs are binding sites for proteins that recruit splicing machinery and/or antagonize nearby silencer elements. The abolishment of an ESE by SNP+321C>T may decrease splicing accuracy or efficiency of APBOBEC3H, thus providing an explanation for the association with HIV-1 infection.

Molecular Epidemiology of HIV and the Influence of Host Factors on Drug Resistance, Immune Evasion and Viral Evolution

P036
RECOMBINANT VIRUSES ENCODING CHRONIC HIV-1 INTEGRASE SEQUENCES EXHIBIT A NARROW RANGE OF REPLICATION CAPACITIES AND MODEST ASSOCIATIONS WITH HLA CLASS I SELECTION PRESSURE

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BACKGROUND: HLA-restricted CTL responses select escape mutations that compromise HIV-1 fitness, most notably in Gag. However, the extent to which HLA-associated defects are observed in other viral proteins remains unclear.

METHODS: We generated recombinant viruses encoding plasma HIV RNA Integrase sequences in an NL4-3 background from 304 antiretroviral-naïve, chronically subtype B-infected individuals. Viral replication capacity (RC) was assessed in duplicate 7-day GFP-reporter T-cell assays and normalized to wild type NL4-3 controls.

RESULTS: Integrase recombinant viruses displayed a relatively narrow, normally distributed range of RC values (mean 1.0; SD 0.07; range 0.7-1.3). Mean variation between replicates was ±0.05. Recombinant Integrase sequences were highly concordant with the original plasma sequence (median # full amino acid differences=0), but exhibited decreased quasispecies diversity (median # amino acid mixtures 1 [IQR 0-3] vs. 2 [IQR 1-4] in recombinant vs. plasma viruses; $p<0.0001$). No correlation was observed between RC and plasma viral load ($R=0.03$; $p=0.6$) or CD4 count ($R= -0.03$; $p=0.6$). Expression of HLA-A*23, B*58 or C*12 was associated with lower RC; A*29 and B*07 were associated with higher viral RC (all $p\leq0.05$; $q<0.4$). A modest negative correlation was observed between the number of HLA-B associated Integrase polymorphisms and RC ($R= -0.17$; $p=0.003$), although this effect was not driven by escape mutations restricted by protective alleles. An exploratory analysis of Integrase amino acid variation identified the HLA-C*05-associated S119R mutation as being associated with lower RC ($p=0.0001$; $q=0.06$). Recombinant viruses encoding Gag-Protease were previously constructed for a subset of samples (N=284), however no correlation between Integrase and Gag-Protease RC was observed ($R=0.03$; $p=0.6$).

CONCLUSIONS: Results support modest effects of HLA-associated selection on Integrase function during chronic infection, which do not appear to be mediated by classical protective HLA alleles. The lack of correlation between Integrase and Gag-Protease RC supports an independent effect of HLA selection on these proteins.

P037
SYSTEMATIC ANALYSIS OF POPULATION-BASED HIV-1 GENETIC AND FUNCTIONAL DATASETS ILLUMINATES POTENTIAL REGIONS OF INTEREST FOR VACCINE DESIGN

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BACKGROUND: HIV adapts to HLA at the population level. However, the patterns and properties of immune escape within CTL epitopes, and their relationship with CTL targeting, remain incompletely understood.

METHODS: HLA-associated polymorphisms occurring within ±3 amino acids of optimally defined HIV-1 epitopes (except gp120) were identified in a chronically-infected, treatment-naïve cohort (n=1000) using phylogenetically-informed methods. Multiple tests were addressed using q-values. The frequency of epitope targeting was measured by IFN-g ELISpot in an independent cohort of acute/early-infected individuals (n=428).
RESULTS: HLA-associated polymorphisms were observed in 131 of 219 (60%) epitopes at q<0.05. In an analysis of 127 9-mer epitopes, mutations at position 2 and the C-terminus were most frequent (p<0.00001; n=212 escape variants). Mutations at epitope flanking sites were relatively infrequent. The median strength of association was higher in epitopes restricted by protective HLA alleles (B*13, B*27, B*51, B*57, B*58; OR=18.1; n=31 epitopes) vs. non-protective HLA alleles (OR=7.2; n=90 epitopes) (p<0.001). The strength of the association correlated with the frequency of epitope targeting in acute infection (R=0.59 p<0.0001). Analysis of residuals yielded HIV epitopes that deviated from this relationship, revealing an enrichment of mutationally constrained epitopes in Gag (p<0.001) compared to other HIV proteins.
CONCLUSION: Results confirm strong proteome-wide CTL selection pressure by protective HLA alleles. Frequently targeted epitopes displaying relative mutational constraints may represent useful vaccine immunogens. Despite enrichment of escape at HLA anchor residues, inclusion of mutational variants in vaccine design may be justified, particularly in regions harboring multiple overlapping epitopes.

P038

QUASI ANALYSIS OF THE HIV-1 NEGATIVE REGULATORY FACTOR (NEF) SEQUENCES IN THE LOS ALAMOS NATIONAL LABORATORY HIV SEQUENCE DATABASE: PATTERN AND DISTRIBUTION OF POSITIVE SELECTION SITES AND THEIR FREQUENCIES OVER YEARS

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BACKGROUND: Nef protein of Human Immunodeficiency Virus type 1 (HIV-1) plays an important role in enhancing the pathogenicity of the virus within the host through different mechanisms such as decreasing the surface expression of CD4 and Major Histocompatibility Complex protein, and interfering with T cell receptor signaling pathways. As with other segments of the HIV genome the nef sequence of HIV-1 is also under immune selection pressure and this gives rise to positively selected (PS) mutations. Identifying these PS sites overtime at population level will allow us to monitor HIV-1 evolution that is essential for vaccine design. In this study we analyzed PS sites of nef using a bioinformatics approach: Quasi analysis.
METHODS: In this study 161 clade A1, 3093 clade B, 647 clade C and 115 clade D HIV-1 nef sequences from the Los Alamos National Laboratory Database were obtained and aligned using MEGA 4.0. The sequences from each clade were grouped based on the year of collection and geographical region. Quasi analysis was then used to identify PS amino acids and PS sites between different clades were compared.
CONCLUSION: An increase in the frequency of PS site was observed for clades A1, C and D over time; for clade B however, the frequency of PS was stable. We speculate that this difference is due to smaller sequence collection for clades A1, C and D. Since the host immune system, specifically HLA class I restricted CD8+ T cells, is the major driving force for the PS of the virus and host population genetic makeup is stable, a large sample of sequences (in the case of clade B) can identify all possible PS in the population and therefore, PS appears stable. This shows that mutation of the HIV genome is restricted by the relatively stable HLA allele frequencies in the population.

Pathogenesis and Cell Biology of HIV Infection and Co-infection

P040

HNRNP D/AUF1 ISOFORMS REGULATE HIV-1 REPLICATION

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To examine the possible roles of members of the hnRNP family in regulating HIV-1 replication at the post-transcriptional level, my laboratory has examined the effect of depleting several hnRNP proteins (hnRNP A1, A2, C, D, H, I and K) on HIV-1 RNA metabolism. Loss of hnRNP A1, A2 and C resulted in increased expression of HIV-1 structural proteins (Gag, Env) through distinct mechanism suggesting that they act largely to suppress HIV-1 replication. In contrast, depletion of hnRNP D/AUF1 resulted in a marked reduction in HIV-1 Gag and Env levels without any alteration in abundance of the corresponding viral RNAs. Rather, loss of hnRNP D resulted in a selective block in the cytoplasmic accumulation of HIV-1 Gag and Env mRNAs without effecting cytoplasmic levels of viral RNAs encoding Tat, Rev and Nef. This observation indicates that hnRNP D plays an important and specific role in either the export of viral mRNAs via exportin-1 or the cytoplasmic stability of mRNAs transported by this pathway.
To evaluate which domains of hnRNP D were involved in mediating the regulation of HIV-1 expression, we analyzed the effect on HIV-1 expression of overexpression of naturally occurring isoforms of this factor. Two isoforms of hnRNP D (p37, p40) lacking exon 7 were found to significantly suppress HIV-1 Gag and Env synthesis while isoforms containing exon 7 (p42, p45) slightly enhanced expression of these viral proteins. Effects at the protein level were reflected in changes in the abundance of the encoding viral mRNAs; p37 and p40 reducing Gag RNA abundance while p42 and p45 had little or no effect. In contrast, all hnRNP D isoforms had a similar effect on the multiply spliced HIV RNAs encoding Tat, Rev and Nef. The differential effect of hnRNP isoforms on HIV-1 RNA metabolism suggests that the relative abundance of each isoform may determine the permissiveness of particular cell types for the replication of this virus.

P041

INVESTIGATING THE ROLE OF SR PROTEINS IN REGULATING HIV-1 RNA PROCESSING

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Balanced production of the more than 40 different mRNAs from a single primary viral transcript is essential for HIV-1 expression. Under- or oversplicing of the viral RNA results in the loss of key regulatory or structural proteins essential to new virus assembly. Control of HIV-1 RNA processing is regulated by the interaction of splicing regulatory sequences in the viral RNA with host proteins (SR and hnRNPs) which regulate assembly of the splicing machinery. To understand how individual host SR proteins impact HIV-1 RNA processing and gene expression, we analyzed the effect of increasing or reducing individual protein levels on the processing and translation of HIV-1 RNAs. Analysis of the overexpression assays revealed that different SR proteins had opposing effects on HIV-1 gene expression. While increased levels of SRp20, SRp40 and Tra2beta was associated with marked decreases in HIV-1 Gag expression, both SRp30c and 9G8 enhanced synthesis of the same viral proteins. Effects at the protein level were mirrored by changes in viral RNA abundance, SRp20 and Tra2beta overexpression reducing accumulation of the 9 kb viral RNA coding for Gag, while 9G8 increased abundance of all viral RNAs. Similarly, depletion of SRp20, 9G8 or TRa2beta reduced HIV-1 Gag and Env expression. Changes in viral protein levels were paralleled by alterations in accumulation of the respective HIV-1 RNA but, in addition, only SRp20 induced changes in the pattern of HIV-1 splice site use. These analyses identified both SRp20 and 9G8 as key regulators of HIV-1 RNA processing and virus assembly. Understanding how these factors exert their effect will guide our efforts in developing strategies to interfere with HIV-1 RNA processing and arrest replication of this virus.

P042

CHARACTERIZATION OF HIV-1 IN & IMPα3 INTERACTION: THE MOLECULAR MECHANISM OF INTERACTION AND ITS REQUIREMENT FOR HIV-1 CDNA NUCLEAR IMPORT

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INTRODUCTION: The cDNA nuclear import is an important requirement for HIV-1 replication in both dividing and non-dividing cells. Although recent studies have highlighted the key viral and cellular factors involved in HIV-1 cDNA nuclear import, the precise molecular mechanism with which these factors carry out their function is not fully understood. In a previous study, we have demonstrated the critical role of Imp α3 in HIV-1 cDNA nuclear import and/or replication, and its interaction with HIV-1 Integrase (IN). In the present study, we investigated the molecular mechanism involved in the IN/Imp α3 interaction, and studied its importance for HIV-1 cDNA nuclear import.

METHODS AND RESULTS: By using cell based chemiluminascent co-immunoprecipitation assay, the tri-lysine regions (INKK215.9AA, INKK240.43AA and INRK263.4AA) in IN C-terminal domain (CTD) were examined for their interaction with Imp α3. Our preliminary data showed a reduced interaction for INKK215.9AA and INRK263.4AA mutants. Moreover, further investigation revealed a severely defective interaction when double NLS mutant, INKK215.9AA/RK263.4AA, was tested. Interestingly, IN double NLS mutant is also defective for interaction with Imp α1. Additionally, we determined that while IN double NLS mutant impaired for Imp α1 and α3 interaction, has still retained its interaction with Integrase interactor 1 (Ini1) and Transportin 3 (TNPO3). To determine the regions within Imp α3 required for IN interaction, the previously described Imp α3 NLS binding groove mutants, Imp α3 WN179.183AA and Imp α3 WN348.352AA, were tested for their interaction with IN. Our results indicated that both major and minor NLS binding grooves of Imp α3 are involved in interaction. Finally, by using real time PCR for HIV-1 replication kinetics, we confirmed a significantly lower proportion of 2LTR circle DNA in INKK215.9AA/RK263.4AA mutant virus infected cells, indicating defective HIV-1 cDNA nuclear import.

CONCLUSIONS: Our study has demonstrated that HIV IN/Imp α3 interaction is mediated through 211 KELQKQITK 219 and 262 PRRKVKI 268 regions of IN and NLS binding grooves of Imp α3, and disruption of IN/Imp α3 interaction will significantly affects HIV-1 cDNA nuclear import and replication.

P043

THE ROLE OF CYTOPLASMIC LOCALIZATION OF HNRNP-C ON HIV-1 GENE EXPRESSION

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HIV-1 gene expression is divided into two temporally distinct stages, differentiated by HIV-1 RNA export. Early in infection, fully spliced HIV-1 RNAs are exported via the standard (TAP/Nxf1) nuclear exporter. However, expression of HIV-1 Rev promotes interaction between incompletely spliced and unspliced RNAs and an alternate nuclear export pathway (Exportin-1/Crm1). Our group has demonstrated that Rev-dependent nuclear export of RNA is regulated at the level of translation in a manner distinct from TAP-exported RNA. Our previous work showed that overexpression of a C-terminal truncated human Sam68 protein (Sam68ΔC) specifically blocked Rev-dependent gene expression, without impairing normal gene expression, while further N-terminal truncation of this protein (Sam68Δ28ΔC) ablated this effect. Both of these proteins are expressed in the cytoplasm and Sam68ΔC disrupt Rev-dependent gene expression at the level of translation. To examine the interactions of each of these mutants, I performed immunoprecipitation of Sam68ΔC and Sam68Δ28ΔC in the presence of HIV-1 RNA and identified the co-precipitated proteins by mass spectrometry. This analysis revealed an interaction between the nuclear hnRNP-C and the cytoplasmic Sam68Δ28ΔC but not Sam68ΔC. RNAi-mediated knockdown but not overexpression of hnRNP-C had a dramatic impact HIV-1 Rev-dependent gene expression. Subsequent analysis suggests that some fraction of hnRNP-C is relocalized to the cytoplasm where it may be involved in regulating HIV-1 late gene expression. Such hnRNP-C relocalization has been observed in cell undergoing cell stress or cell cycle arrest but our experimental system showed no signs of stress granule formation or cell cycle arrest following HIV-1 induction. This study reports an important role for hnRNP-C in HIV-1 Rev-dependent gene expression and examines the potential impact of cytoplasmic hnRNP-C on coordinating viral gene expression.

P044

THE EFFECT OF UNTREATED HIV INFECTION ON MALARIA: DOWN-REGULATING INNATE INFLAMMATORY RESPONSES

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The majority of malaria cases, like HIV, occur in sub-Saharan Africa, where many individuals are infected with both pathogens. Co-infection with Plasmodium falciparum malaria and HIV is a growing concern, as co-infected individuals experience worse clinical outcomes, including accelerated HIV replication (potentially increasing transmission) and the development of higher parasite burdens and complications caused by severe malaria. However, the underlying mechanisms responsible for the adverse clinical outcomes in co-infected individuals have yet to be fully investigated.

Severe malaria is characterized by robust pro-inflammatory host immune responses to infection. We hypothesized that HIV co-infection compromises the function of immune cells in response to malaria. Our aim was to examine the phagocytic capacity and inflammatory response of peripheral blood mononuclear cells (PBMCs) from therapy naïve HIV-infected donors to malaria parasites.

Freshly isolated PBMCs from therapy naïve HIV- and HIV+ individuals were cultured in the presence of P. falciparum over the course of four days. Compared to HIV- individuals, PBMCs from patients with chronic HIV infection showed a marked decrease in the production of TNF and IFN-γ in response to malaria parasites. Moreover, monocyte-derived macrophages from HIV+ patients displayed a significant reduction in phagocytic capacity for P. falciparum parasitized erythrocytes versus those from HIV- individuals.

HIV-1 may therefore impair the inflammatory and phagocytic capacity of innate effector cells to P. falciparum malaria and contribute to higher parasite burdens and ineffective immune responses in co-infected individuals.

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P045

GLOBOTRIAOSYLCERAMIDE EXPRESSION IN RELATION TO HIV-1 PATHOGENESIS OF CD4+ T-CELLS

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BACKGROUND: The cell-membrane-expressed glycosphingolipid, globotriaosylceramide (Gb_3/CD77/Pk) has been suggested as a natural resistance factor against HIV-1 infection. Peripheral blood mononuclear cells (PBMCs) from rare individuals who naturally express Gb_3 and PBMCs from Fabry disease patients who accumulate Gb_3 expression showed resistance towards HIV-1 infection. Use of pharmacological agents and synthetic analogues of Gb_3 also confirmed the protective effect of Gb_3. However, whether normal human $CD4^+$ T-cells express Gb_3 or can be induced to express Gb_3 has not yet been determined. We have now investigated Gb_3 expression on $CD4^+$ T-cells in vitro.

METHODS: Multi-colour flow cytometry was utilized on PBMCs that were stimulated with PHA, PHA with IL-2, anti-CD3, anti-CD3 with IL-2 or PMA with ionomycin. Gb_3 expression was assessed by either a rat IgM (38-13) antibody or a purified bacterial natural ligand, verotoxin-1-derived B subunit (VT1B). Gb_3-expressing $CD4^+$ T-cells, T regulatory cells ($CD4^+CD25^+FoxP3^+$) and NKT cells ($CD4^+CD56^+FoxP3^-$), were charac-

terized. Furthermore, a method utilizing VT1B-FITC and anti-FITC-immunomagnetic beads was developed for purification of Gb_3^+ cells.
RESULTS: Gb_3 expression in unstimulated PBMCs was negligible. Activation of PBMCs with different stimulators upregulated expression of Gb_3 in $CD4^+$ T-cells although the expression levels remained less than 5%. Further analysis on Gb_3-expressing $CD4^+$ T-cells revealed that ~80% were of the T regulatory cell phenotype and ~20% were likely NKT cells. Purification using immunomagnetic beads confirmed these results.
CONCLUSIONS: Our results demonstrate that Gb_3 expression is negligible on unstimulated human circulating $CD4^+$ T-cells; however, its expression can be upregulated by activation. The activated cells expressing Gb_3 appear to be NKT and, mostly, T regulatory cells. The observed low percentage of Gb_3-expressing cells and the apparent phenotype of these cells make it difficult to explain how Gb_3 expression inhibits HIV-1 infection. Further studies will examine whether these Gb_3 expressing $CD4^+$ T-cells are key to HIV-1 resistance.

P046
PURIFICATION AND IDENTIFICATION OF HIV-1 INTEGRASE-ASSOCIATED CELLULAR PROTEINS

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Human immunodeficiency virus type-1 (HIV-1) infection is one of the leading causes of death worldwide. Current anti-HIV-1 therapy, referred to as highly active antiretroviral therapy (HAART), is based on the use of a combination of drugs directed against viral enzymes, mainly reverse transcriptase and protease and more recently integrase. Indeed, HAART has dramatically improved the clinical course of the disease. However, the emergence of multidrug resistant virus strains during treatment highlights the urgent need to develop novel antiretroviral drugs against new HIV-1 targets.
HIV-1 is able to hijack cellular machinery for its replication through protein-protein interactions between viral and host cell factors and a rising strategy against HIV-1 infection is to inhibit key virus-cell interactions. Integrase that catalyzes HIV-1 viral DNA integration into the host cell genome is currently a focus for the development of new drugs. Several cellular partners of integrase have been identified using different methods.
Based on a different stategy, our study aimed to identify new integrase cellular partners. We used a biotinylated oligonucleotide derived from the viral U3 LTR end as bait to isolate integrase in streptavidin beads magnetic separation. Proteins co-purified with integrase were analyzed by mass spectrometry. Interestingly, our method allowed the identification of new cellular proteins notably p72 and p68 RNA helicases and histone deacetylase 1 (HDAC1) as integrase partners in addition to proteins already reported in the literature. The confirmation of interaction of p72, p68 and HDAC1 proteins with integrase by co-immunoprecipitation and the effect of their knockdown with specific siRNA on HIV-1 integration, replication and infectivity will be presented.

P047
CERVICAL TH17 CELLS EXPRESS MULTIPLE MARKERS THAT SUGGEST AN IMPORTANT ROLE IN HIV ACQUISITION

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CD4+ T cells secreting IL-17 (Th17 cells) are a recently described helper T cell subset that plays a key role in immunity to extracellular infections, particularly in mucosal tissues. In the context of an HIV-infected individual, these cells are also believed to be important target cells for viral replication in the gut mucosa. We hypothesized that this T cell subpopulation might also be an important early target during HIV acquisition. To explore this hypothesis we have characterized the frequencies, functional profile, and correlations of Th17 cells in the cervix of female sex workers from Nairobi, Kenya. Cervical Th17 frequencies were enhanced compared to blood (7.02 vs. 1.24%; p<0.0001); in addition these cells were highly activated and preferentially co-expressed $\alpha4\beta7$ and CCR5. Cervical Th17 cells produced more IFN-γ and IL-22 than those in blood (p<0.0001 and 0.07), but lower levels of TNFα (p<0.0001). In keeping with the hypothesis that these cells are preferential HIV targets, cervical Th17 cells were almost completely depleted in HIV+ women (p=0.037). Current work is examining whether Th17 cells preferentially bind and/or are infected by HIV ex vivo, as well as the clinical correlates of their frequency and phenotype. An improved understanding of highly susceptible CD4+ T cell subsets at sites of HIV exposure may lead to new HIV prevention strategies.

P048
CYCLOPHILIN A-MX FUSION PROTEINS INHIBIT HIV-1 REPLICATION

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Mx (myxovirus resistance) are interferon-inducible proteins that inhibit the infection of a wide range of viruses including influenza viruses, bunyaviruses, vesicular stomatitis virus and Semliki Forest virus. Interestingly, retroviruses including human immunodeficiency virus type 1 (HIV-1) are not the target of Mx proteins, which is speculated to result from the failure of Mx proteins to recognize HIV-1 RNA/protein complex. To test this possibility, we appended cyclophilin A to the C-terminus of human Mx1 and Mx2 proteins. Consistent with previous report, Mx1 and Mx2 themselves did not affect HIV-1 infection. However, expression of the Mx1-CypA and Mx2-CypA fusion proteins in HEK293 or SupT1 cells inhibited HIV-1 infection by more than 10 fold. Further studies showed that the levels of integrated HIV-1 DNA, but not the viral DNA products of reverse transcription, were reduced. These data suggest that when fused to cyclophilin A that is able to recognize HIV-1 capsid protein, Mx1 and Mx2 are capable of targeting the incoming HIV-1 core and interfering with a step after viral reverse transcription but before integration. Our studies also demonstrate that the Mx2 protein, which has long been known not to exhibit antiviral activity, is able to inhibit viral infection if being targeted to viral replication complex.

P049
CHARACTERIZATION OF FREM1, A NOVEL CANDIDATE GENE FOR THE HIV-EXPOSED SERONEGATIVE (HESN) PHENOTYPE IN THE PUMWANI SEX WORKER COHORT

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The Pumwani sex worker cohort in Nairobi, Kenya is well known for a small group of HESN individuals who remain HIV-1 seronegative despite repeated exposure to HIV-1 through active sex work. A low resolution genome-wide association study compared 43 HESN individuals with 41 HIV-1 susceptible controls. A significant association (P<2.23 x 10-5) was identified between SNP rs1552896 (C/G) and the HESN phenotype and was confirmed by genotyping 627 women enrolled in the Pumwani cohort (P<0.0005), as well as 783 individuals in a low risk cohort (P<0.04). rs1552896 occurs in the gene FREM1. Affymetrix U133 microarray analysis of mRNA from whole blood showed higher FREM1 expression in HESN individuals (1.4 fold, p<0.007). FREM1 is expressed in relatively high levels in cervical tissue and immunohistochemical analysis shows FREM1 localization to the epithelial layer of the ectocervix. Furthermore, higher levels of FREM1 protein expression were detected in the genital secretions of individuals carrying the HESN associated allele. To assess the implications of differential FREM1 expression we over-expressed FREM1 in a cervical epithelial cell line (HeLa) and conducted gene expression analysis. Over-expression of FREM1 influenced expression of many key genes involved in immune regulation, suggesting an immunomodulatory role for FREM1 in the context of resistance to HIV-1 infection.

P050

GP120 INTERACTION WITH SGG AND SGC MAY LEAD TO HIV-1 INFECTION OF NON-CD4 EXPRESSING CELLS

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BACKGROUND: HIV-1 infection in women occurs primarily through vaginal intercourse. The exact mechanisms of viral transmission from semen through the vaginal mucosa are still poorly understood. HIV and/or gp120 can interact with non-CD4 T-cells through binding with glycolipids such as sulfogalactosylceramide (SGC), heparan sulfate and the mannose receptor. This study examines the potential binding of HIV-1 to non-CD4 expressing cells through the interaction with two sulfolglycolipids: SGC and sulfogalactosylglycerolipid (SGG). In semen, HIV-1 can be in the form of free virions and/or cell associated. Further, some previous results reveal the association of HIV-1 with sperm, which may then act as viral carriers through the vaginal/cervical (V/C) mucosa.

OBJECTIVE: To understand alternative mechanisms of HIV-1 transmission to non-CD4 expressing cells, such as sperm and V/C cells.

METHODS: ELISA was used to study the kinetics of gp120 binding to SGG and SGC with or without the sulfonate analog. The presence of SGG and SGC on sperm and V/C cells was determined by thin layer chromatography and mass spectrometry of extracted cellular lipids. HIV-1 binding to sperm was shown by co-incubation of HIVcs204 with live sperm, followed by p24 ELISA. Following exposure of V/C cells to HIVcs204, infection was shown by the presence of HIV-1 DNA in V/C cells by nested PCR.

RESULTS: SGG and SGC was present on the surface of sperm and V/C cells, respectively. gp120 specifically interacted with SGG and SGC and this interaction was inhibited by a sulfonate analog. HIV-1 was shown to bind to sperm and also infect V/C cells possibly through the interaction with SGG/SGC.

CONCLUSION: gp120 interacts with SGG/SGC. This may be an alternative mechanism of HIV-1 infection of non-CD4 expressing cells. Determining the mechanisms of HIV-1 transmission and HIV binding partners on sperm and V/C cells could lead to potential therapeutic drug for preventing HIV-1 transmission.

CLINICAL SCIENCES

Adherence

P051

THE CO-LOCALIZATION POTENTIAL OF HIV-SPECIFIC CD4+ AND CD8+ T-CELLS IS MEDIATED BY INTEGRIN BETA7 BUT NOT CCR6: RELEVANCE FOR THE CONTROL OF HIV REPLICATION IN THE GUT

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BACKGROUND: Imprinting for gut-homing in CCR6+CD4+ T-cells is associated with HIV permissiveness. Given the antiviral properties of CD8+ T-cells, we hypothesized that the co-localization potential of HIV-specific CD8+ and CD4+ T-cells into the gut mucosa is required for controlled HIV replication. We investigated the gut-homing potential of HIV-specific T-cells in HIV-infected subjects and explored the role of retinoic acid (RA) pathway in HIV-specific T-cell imprinting for gut-homing.

METHODS: Five untreated HIV-infected individuals were studied: median CD4 counts of 670 cells/µl, viral load of 3.27 log10 HIV-RNA copies/ml, and 15 years of infection. Antigen specific T-cells were identified using the CFSE assay. PBMC loaded with CFSE were stimulated with Nef, Gag, or Pol HIV peptides, full-length HIV-p24 protein, or CMVpp-65 protein for 6 days in the presence or absence of RA or the RA antagonist LE540. The expression of CD3, CD4, CD8, beta7, CCR5, CCR4, CXCR3, and CCR6 on HIV-specific cells was analyzed by flow cytometry.

RESULTS: The frequency of HIV- and CMV-specific CD8+ T-cells was significantly higher compared to CD4+ T-cells. HIV-specific CD4+ and CD8+ T-cells expressed significantly higher levels of integrin beta7 and CCR5 compared to CMV-specific cells, while CCR6 was expressed at the highest levels on HIV-specific CD4+ T-cells. The expression of beta7 and CCR5 but not CCR6 was upregulated by RA and decreased by LE540 on HIV- and CMV-specific CD4+ and CD8+ T-cells.

CONCLUSION: The co-localization of excess HIV-specific CD8+ over CD4+ T-cells into mucosal sites via integrin beta7 and CCR5 is dependent on RA pathway and may result in controlled HIV replication. In contrast, recruitment of HIV-specific CD4+ T-cells into mucosal sites via integrin beta7 and CCR6 (e.g., Peyer's patches) might facilitate HIV replication, as the frequency of HIV-specific CCR6+CD8+ T-cells is low and CCR6+CD4+ T-cells are highly permissive to HIV replication. Thus, the ability of HIV-specific CD8+ T-cells to co-localize with CCR6+CD4+ T-cells might be essential for a robust control of HIV replication in situ. These aspects should be considered for future HIV vaccine strategies.

P052

TREATMENT BELIEFS, ILLNESS PERCEPTIONS, AND ADHERENCE TO ANTIRETROVIRAL THERAPY IN A DIVERSE PATIENT POPULATION

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BACKGROUND: Ethnic diversity is increasingly encountered in the HIV-infected population. The relationship between patient adherence to antiretroviral therapy and ethnicity is unclear. It is also unknown if beliefs surrounding illness and treatment differ in an ethnically diverse Canadian population. Our objectives were (1) to determine whether illness perceptions and treatment beliefs regarding HIV differ based on ethnicity, and (2) to determine if adherence to antiretroviral therapy varies between ethnic groups.

METHODS: Patients were included if they had been on antiretroviral therapy for ≥ 3 months and could read and write in English. Patients were approached by clinic staff during scheduled visits over March and April 2010. Participants completed a self-administered survey on adherence, treatment beliefs, and illness perceptions. Clinic records were reviewed for demographic and treatment information, including most recent viral load. An ANOVA and covariate analysis were performed to measure variation of beliefs and adherence between groups.

RESULTS: Sixty-five patients were enrolled; 43 males (66%), 22 females (34%). The median age was 46 years; 34 patients were Caucasian (52.3%), 23 Aboriginal (35.3%), and 8 (12.3%) were from other ethnic groups. Mean adherence was high (96%) and a majority of patients (78.5%) had viral loads <40 copies/mL. Treatment beliefs, illness perceptions, and adherence did not vary between ethnicities ($p>0.05$).

CONCLUSION: This study did not find any significant difference between ethnic groups in terms of antiretroviral treatment beliefs or self-reported adherence, however the overall rate of adherence was very high in this patient group. Clinicians should continue to address patient-specific concerns around HIV and its treatment. Further research is needed about non-Caucasian, non-Aboriginal populations and patients with lower rates of adherence.

P054

FACTORS ASSOCIATED WITH MEDICATION ADHERENCE IN A COHORT OF URBAN HIV-POSITIVE INDIVIDUALS ON HIGHLY ACTIVE ANTIRETROVIRAL THERAPY (HAART) IN BRITISH COLUMBIA, CANADA

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BACKGROUND: Among those accessing treatment, HAART has transformed HIV into a chronic and manageable condition. However, high levels of adherence are required to derive a sustained long-term clinical benefit. The objective of this study was to examine the predictors of adher-

ence among persons on HAART in British Columbia, Canada.
METHODS: The LISA project is a prospective study of persons on HAART in BC. Interviewer-administered surveys collect information regarding socio-demographic factors. Clinical variables are obtained through linkages with the Drug Treatment Program at the BC Centre for Excellence in HIV/AIDS. Adherence estimates are based on refill compliance, calculated as the number of days of medications dispensed, divided by the number of days of follow-up during the 12 months prior to interview date, and expressed as a percent. Patients were dichotomized into adherent and non-adherent groups using 95% prescription refill compliance as the cutoff point. Variables with significant P-values (<0.05) in bivariate analysis were considered to be potential factors associated with adherence and were entered into a multivariate logistic regression model.
RESULTS: Of 566 total participants, 316 (55.8%) were optimally (≥95%) adherent to HAART. Independent predictors of optimal adherence were increasing age, male gender and being enrolled in a comprehensive adherence assistance program. Having an annual income <$15,000 and both former and current injection drug use were independently associated with suboptimal (<95%) adherence.
CONCLUSION: Adherence to HAART depends on a complex interaction between sociodemographic, structural and clinical factors. A thorough understanding of these factors is required for improvements in clinical care for those not achieving optimal adherence. Comprehensive adherence assistance programs, such as Maximally Assisted Therapy (MAT), may represent a means of achieving optimal adherence, particularly among disadvantaged groups.

P055
DOES INDIVIDUAL SELF-MANAGEMENT SUPPORT COACHING INCREASE ANTIRETROVIRAL ADHERENCE?

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BACKGROUND: Marginalized Aboriginal and non-Aboriginal peoples living with HIV face numerous health challenges and often lack the voice or power to effect meaningful change. Self-management support interventions have been shown to improve the management of numerous chronic diseases but have not been well examined in HIV. This presentation reports on the outcomes of a randomized controlled trial examining the impacts of an individual HIV self-management support (PSMS) program among marginalized HIV positive people at an urban Aboriginal health centre in Eastside Vancouver. The interventional program was based on the principles of chronic disease management and Traditional Aboriginal healing theory. The program utilized both HIV positive peer and medical professional self-management coaches.
METHODS: Participants were randomized to one of three groups: (1) peer based coaching using a PSMS program or (2) medical professional based coaching or (3) standard care. Participants in the interventional groups participated in 10 weekly 30-minute coaching sessions focused on developing personal goals and action plans. Adherence scores (based on the past 3 months of ARV pharmacy data) were measured at baseline, and again for the 3 months post PSMS intervention. An intention to treat analysis was employed.
RESULTS: 180 patients were enrolled – 52% Aboriginal, 29% female, 49% with stable housing. At baseline, the median CD4 was 338, 88% were on ARVs, 72% had an undetectable viral load and the average adherence score was 71%. For those in the intervention arms, there was a 10% increase (P<0.05 compared to baseline) in ART adherence compared to a 6% increase in the control group (p=0.18).
DISCUSSION: PSMS improved rates of ART adherence in a highly marginalized patient population. The mechanism for this increase is probably multifactor, but likely relates to increased HIV self-efficacy, adoption of a healthier lifestyle, and strengthened relationships with peers and health professionals.

ARV Clinical Trials and Other ARV Studies

P056
THE 5 YEAR SAFETY AND EFFICACY OF THE ONCE DAILY ANTIRETROVIRAL-NAÏVE PATIENT REGIMEN OF EFAVIRENZ (EFV)/EMTRICITABINE (FTC)/TENOFOVIR DISOPROXIL FUMARATE (TDF)

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BACKGROUND: The goal of highly active antiretroviral therapy (HAART) is to suppress HIV RNA to undetectable levels over many years and is primarily dependent on adherence, which is aided by using a once daily regimen with good tolerability and low pill burden. In Study 934 the time to discontinuation for the twice daily regimen of EFV qd + zidovudine/lamivudine bid was significantly shorter than for the once daily regimen (EFV+FTC+TDF) (p=0.003). Herein are the 5 year safety and efficacy data for this once daily regimen.
METHODS: 160 subjects (89% male, 64% white, mean age 41 yrs) in Study 934 originally randomized to the once daily regimen of EFV+FTC+TDF who completed 144 weeks agreed to switch to the single tablet formulation (EFV/FTC/TDF) and remain on study for an additional 96 weeks for a total of 240 weeks.
RESULTS: At baseline (BL), mean HIV RNA= 5.03 log10 c/mL, mean CD4 count= 243 cells/mm3, and 88% had symptomatic HIV or AIDS. After 240 weeks of follow-up: 87% had HIV RNA <400 c/mL and 84% <50 c/mL (M=F); mean CD4 cell increase from BL= 346 cells/mm3. The mean (range) adherence rate was 97% (83-100%). Seventeen subjects discontinued EFV/FTC/TDF: withdrew consent (6); lost to follow-up (5); adverse events (2: osteoporosis (1) and anal cancer (1)); incarceration (2); non-adherence (1); and relocated (1). No patient discontinued due to renal adverse events. Mean change from BL in estimated glomerular filtration rate (e-GFR) by Cockcroft-Gault was -7 mL/min (Mean BL e-GFR, 129 mL/min).
CONCLUSION: Through 240 weeks, the once daily HAART regimen of EFV+FTC+TDF (dosed as single tablet regimen, EFV/FTC/TDF, from Week 144-240) demonstrated durable antiretroviral efficacy and immunologic recovery in antiretroviral-naïve patients. The decline in e-GFR was mild and not clinically significant.

P057
THE SINGLE-TABLET REGIMEN OF ELVITEGRAVIR/COBICISTAT/EMTRICITABINE/TENOFOVIR DISOPROXIL FUMARATE (EVG/COBI/FTC/TDF; QUAD) MAINTAINS A HIGH RATE OF VIROLOGIC SUPPRESSION, AND COBICISTAT (COBI) IS AN EFFECTIVE PHARMACOENHANCER THROUGH 48 WEEKS

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BACKGROUND: Suppression of HIV depends on adherence to HAART, which is aided by using a single-tablet once daily regimen. COBI is devoid of anti-HIV activity and boosts the integrase inhibitor EVG and atazanavir (ATV) equivalent to ritonavir (RTV). These two Phase 2 studies compared the efficacy of two single-tablet regimens and two boosting agents.
METHODS: Eligible subjects (HIV-1 RNA ≥5,000 copies/mL; CD4 >50 cells/mm3; no resistance or exposure to NRTIs, NNRTIs, or PIs) for 2 prospective, double-blind, active-controlled studies were randomized 2:1 (stratified by HIV RNA ≤ or >100,000 c/mL) to receive: Quad or Efavirenz (EFV)/FTC/TDF, or ATV boosted by either COBI (ATV/co) or RTV (ATV/r) each with FTC/TDF.
RESULTS:

WEEK 48	QUAD (N=48)	EFV/FTC/TDF (N=23)	ATV/CO (N=50)	ATV/R (N=29)
HIV RNA < 50 c/mL (ITT, M=F)*	90%	83%	82%	86%
HIV RNA <50 c/mL (ITT, M=E)	96%	95%	91%	96%
Increase in Mean CD4 cells/mm^3	240	162	230	206
Drug-related AEs (Grades 1-4)	46%	57%	36%	48%
eGFR**: Mean change, ml/min (Mean % change)	-20 (-14%)	-6 (-4%)	-13 (-12%)	-14 (-11%)
Discontinuations (any)	3	3	5	3
Discontinuations due to AEs	0	1	2	1

**HIV RNA stratum-weighted differences at WK 48: (Quad - EFV/FTC/TDF) = 8.4% (95% CI: -8.8% to 25.6%); (COBI - RTV) = -4.6% (95% CI: -21.7% to 12.5%) **Estimated glomerular filtration rate by Cockcroft-Gault*

CONCLUSIONS: Quad was well tolerated and maintained a high rate of virologic suppression (90%) that was non-inferior to EFV/FTC/TDF (83%). ATV/co + FTC/TDF was safe with efficacy similar to ATV/r + FTC/TDF through 48 weeks. In treatment arms receiving COBI, early changes in eGFR seen through 24 weeks were stable and similar to that seen in the arm receiving ritonavir.

P058
DRUG DEVELOPMENT RISK IN HIV-1 CLINICAL TRIALS: THE EFFECT OF DRUG CLASS

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BACKGROUND: On average, it takes 8 years to bring a drug from bench to bedside in the United States from the start of phase I human trials to market launch. The drug development world in HIV has been shifting in recent years with many bigger companies pulling out of HIV drug R&D. Part of this decreased involvement in the field may rest in the uncertainty regarding the risk of bring a single antiretroviral therapeutic from the start of preclinical research to US FDA approval.
METHODS: All industry sponsored clinical trials (phase I-III) for HIV infection conducted within the United States between January 1st, 1998 and June 30th, 2008 were collected from clinicaltrial.gov and publicly available disclosures. Drugs were excluded if their phase I clinical programs began before 1998, they were tested to treat secondary complications of HIV infection, they were sponsored by the public sector or did not belong to one of the three clinical trial testing phases.
RESULTS: Sixty-six drugs met our screening criteria with eleven of the sixty-six reaching drug approval. Cumulative success rate for drug development in HIV was 16.7% while the comparable industry rate as a whole was 16.5%. This translates into one drug achieving FDA approval for every 5-6 fully funded clinical trial programs, covering phase I to approval. When factoring out commercial causes of failure, cumulative success rates improved from 16.7% to 24.6%. The effect of drug class and their corresponding target varied from as low as 7% for non-nucleoside reverse transcriptase inhibitors to as high as 25% for protease inhibitors.
CONCLUSION: There are clear differences in clinical trial risk for many drug classes and disease areas, with some classes of ARV displaying very high risk in early clinical testing. Knowing this risk may be useful in reducing the anticipated risk of future drug development programs in HIV.

P059
THE 10 YEAR SAFETY AND EFFICACY OF A TENOFOVIR DISOPROXIL FUMARATE (TDF)-CONTAINING ONCE-DAILY HIGHLY ACTIVE ANTIRETROVIRAL THERAPY (HAART)

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BACKGROUND: Study 903 was a Phase III randomized double-blind (DB) 3 year study comparing TDF to stavudine (d4T) each in combination with lamivudine (3TC) and efavirenz (EFV) in HIV-1 infected antiretroviral naïve patients. TDF was associated with durable efficacy and safety (better lipid profile, and less lipodystrophy and peripheral neuropathy). A subset of these patients now provides 10 years of longitudinal efficacy and safety data of TDF-containing once-daily HAART.
METHODS: Subjects in Argentina, Brazil, and the Dominican Republic who completed the 3 year DB period of study were eligible to roll-over into an open-label (OL) study (Study 903E) of the once-daily HAART regimen, TDF+3TC+EFV. At DB baseline 86 subjects were randomized to TDF (62% male, 70% white, mean age 33 yrs, mean HIV RNA=4.9 log10 c/mL, and mean CD4 count=299 cells/mm^3). At OL baseline, 85 subjects (60% male, 64% white, mean age 37 yrs, median CD4=621 cells/mm^3) switched from d4T to TDF. The results reflect only the period of TDF exposure.
RESULTS:

	TDF/TDF* (n=86)	d4T/TDF* (n=85)
Weeks on HAART/TDF	480/480	480/336
HIV RNA <50 c/mL at Week 480 (ITT, M=F)	63%	64%
HIV RNA <50 c/mL at Week 480 (ITT, M=E)	92%	96%
Change in Mean (SD) CD4, cells/mm3	545 (287)	180 (290)
Drug-related Adverse Events (Grades 1-4)	66%	46%
Change in Mean (SD) Creatinine Clearance**, ml/min	+2.5 (23.4)	-10.7 (22.6)
Median Limb Fat at Year 10, kg	10.4	7.5
% Change in Mean (SD) Bone Mineral Density - Spine	-2.44 (5.08)***	0.04 (4.72)
% Change in Mean (SD) Bone Mineral Density - Hip	-2.94 (4.95)***	-1.86 (4.67)***
Discontinuations (Disc) during open-label extension	25 (29.1%)	19 (22.4%)
Disc due to Adverse Events	2 (2.3%)	2 (2.4%)
Disc due to suboptimal virological response	5 (5.8%)	1 (1.2%)
Disc to Nonadherent, Pregnancy, Consent Withdrawn, Death, LTFU****	13 (15.1%)	9 (10.6%)
Disc due to Other	5 (5.8%)	7 (8.2%)

**TDF/TDF results measured from DB BL; d4T/TDF from OL baseline; **Estimated by Cockcroft-Gault equation; ***p<0.01 by Wilcoxon Signed Rank Test; ****Lost to follow-up*

CONCLUSION: Antiretroviral-naïve subjects who received TDF-containing once-daily HAART for up to 10 years demonstrated sustained virologic and immunologic benefit, improved limb fat, stable renal function, and their BMD remained stable after a clinically insignificant decrease that occurred during the first year of TDF therapy.

P060
ABACAVIR/LAMIVUDINE FIXED-DOSE COMBINATION WITH RITONAVIR-BOOSTED DARUNAVIR, A NOVEL REGIMEN FOR HIV THERAPY

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BACKGROUND: The data which led to the licensing of ritonavir-boosted darunavir (DRV/r) as a first-line drug for HIV infection come particularly from ARTEMIS trial were DRV/r was combined with tenofovir/emtricitabine (TDF/FTC). The use of the combination DRV/r with fixed-dose abacavir/lamivudine (ABC/3TC) has not been studied so far. This other choice of NRTI-backbone might be needed, and ABC/3TC is the other preferred backbone regimen for 1st line treatment of HIV in Québec's guidelines. Our objective is to evaluate the combination ABC/3TC/DRV/r in both naive and treatment-experienced patients.
METHODS: Retrospective study of HIV-infected adults followed in a community clinic in Montreal, receiving an open label combination of ABC/3TC/DRV/r. Patients were either treatment-naive or not but without resistance to any component of their regimen. Primary outcomes were proportion of patients with viral load (VL)< 50 copies, CD4 count change and safety parameters through 48W. Here we report the preliminary results for patients reaching at least 24W of follow-up.
RESULT: Forty-three patients were included. 88% were male, MSM 81%, mean age was 43, major risk factor was unprotected sex (86%), IDU (14%) and coming from endemic regions (5%). Fourteen (33%) were treatment-naive. HLA-B*5701 test result was available for 32 patients and were all negative. At baseline, the mean VL was 3.0 log, median CD4 count was

420 and median nadir CD4 was 290. At W24, 85% had VL<50 copies/ml (88% VL<400 copies/ml). The mean CD4 increase was 100 cells. There was no grade 3/4 liver enzyme elevation. Adverse events-related discontinuation occurred in three patients none for virologic failure. There was no hypersensitivity reaction to ABC.

CONCLUSIONS: The new combination of ABC/3TC/DRV/r demonstrates a high rate of antiviral activity with no major toxicity. The drugs were generally safe and well tolerated. Additional studies with greater sample size to evaluate the use of ABC/3TC/DRV/r are warranted.

P061

POOLED WEEK 48 SAFETY AND EFFICACY RESULTS FROM ECHO AND THRIVE PHASE III TRIALS COMPARING TMC278 VS EFV IN TREATMENT-NAÏVE HIV-1-INFECTED PATIENTS RECEIVING FTC/TDF

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INTRODUCTION: TMC278 (Rilpivirine/RPV) can be combined with FTC/TDF into a single tablet regimen (STR). The pooled 48-week primary analysis results of the subset of subjects receiving FTC/TDF as a background regimen in two double-blind, randomized, double-dummy RPV versus EFV Phase III studies, ECHO and THRIVE, are presented.

METHODS: Treatment-naïve adult patients (N=1096) received RPV 25mg qd or EFV 600mg qd in combination with FTC/TDF in ECHO (n=686) and in a subset of subjects in THRIVE (n=410). The primary objective was to demonstrate non-inferiority (12% margin) of RPV to EFV in confirmed virologic response (ITT-TLOVR) at Week 48.

RESULTS: RPV in combination with FTC/TDF was non-inferior to EFV in combination with FTC/TDF across all categories of baseline VL. Adherence was a strong predictor for response. Incidences of the following tolerability measures were significantly lower in the RPV+FTC/TDF group than in the EFV group: adverse events (AEs) leading to discontinuation, grade 2–4 AEs possibly related to treatment, rash, dizziness, abnormal dreams/nightmare, and grade 3/4 laboratory abnormalities for lipids. There were fewer virologic failures in the EFV group.

	RPV 25mg qd +FTC/TDF	EFV 600mg qd +FTC/TDF	Difference between groups
Efficacy (Week 48 outcomes)	**N (%)**	**N (%)**	
VL <50 c/mL (SNAPSHOT) % [95% CI]*	454 (82.5)	441 (80.8)	1.8 [-2.8, 6.4]
VL <50 c/mL (ITT-TLOVR), % [95% CI]*	459 (83.5)	450 (82.4)	1.0 [-3.4, 5.5]
Virologic failures†, %	52 (9.5)	23 (4.2)	NOT DONE (ND)
Never suppressed	32 (5.8)	12 (2.2)	ND
Rebounders	20 (3.6)	11 (2.0)	ND
Discontinued due to AE/death	12 (2.2)	40 (7.3)	ND
Discontinued for other reasons	27 (4.9)	33 (6.0)	ND
VL <50 c/mL (ITT-TLOVR), % [95% CI]* in patients with BL VL ≤ 100,000 c/ml	258/288 (89.6)	217/256 (84.8)	4.8 [-0.8, 10.4]
VL <50 c/mL (ITT-TLOVR), % [95% CI]* in patients with BL VL > 100,000 c/ml	201/262 (76.7)	233/290 (80.3)	-3.6 [-10.5, 3.2]
VL <50 c/mL (ITT-TLOVR), % in patients with > 95% Adherence (M-MASRI)	392/453 (86.5)	375/425 (88.2)	ND
VL <50 c/mL (ITT-TLOVR), % in patients with 90-95% Adherence (M-MASRI)	26/34 (76.5)	34/43 (79.1)	ND
VL <50 sps/mL (ITT-TLOVR), % in patients with < 90% Adherence (M-MASRI)	14/27 (51.9)	17/27 (63.0)	ND
Mean [95% CI] increase from baseline in CD4 count (NC=F‡), cells/mm^3	193 [180, 205]	182 [169, 195]	ND
Safety			
Grade 2–4 AE at least possibly related to treatment	87 (15.8)	170 (31.1)	P < 0.0001
AEs leading to discontinuation	17 (3.1)	43 (7.9)	P < 0.0001
SAEs	36 (6.5)	45 (8.2)	P = 0.3003
AEs of interest at least possibly related to treatment			
Total Neurologic Events of Interest	91 (16.5)	205 (37.5)	P < 0.0001
Dizziness	45 (8.2)	140 (25.6)	P < 0.0001
Total Psychiatric Events	84 (15.3)	136 (24.9)	P < 0.0001
Abnormal Dreams/Nightmare	49 (8.9)	79 (14.5)	P = 0.0047
Rash (any type)	20 (3.6)	77 (14.1)	P < 0.0001
Lipid Parameters (change from baseline), mg/dL, fasted; mean [95% CI]			
Total Cholesterol	-0.4 [-2.8, 2.1]	25.7 [22.7, 28.8]	P < 0.0001
LDL	-2.1 [-4.2, -0.1]	13.3 [10.9, 15.6]	P < 0.0001
HDL	2.9 [2.1, 3.8]	9.5 [8.6, 10.5]	P < 0.0001
Triglycerides	-12.4 [-19.3, -5.6]	11.7 [-1.6, 25.0]	P < 0.0001

CONCLUSIONS: At Week 48, RPV+FTC/TDF demonstrated a high virologic response rate (≥83%) and was non-inferior to EFV+FTC/TDF across a broad range of patients. The incidences of AEs leading to discontinuation were significantly lower in the RPV+FTC/TDF group. There were fewer virologic failures in the EFV group. Overall, the data support the clinical benefit of FTC/RPV/TDF currently in development as a once-daily, STR for the treatment of HIV infection.

Co-infections (including HCV, HBV, HPV, syphilis, TB)

P062

RELATIONSHIP OF CHRONIC HEPATITIS C INFECTION TO RATES OF AIDS DEFINING ILLNESSES IN A CANADIAN COHORT OF HIV SEROPOSITIVE INDIVIDUALS RECEIVING HIGHLY ACTIVE ANTIRETROVIRAL THERAPY

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BACKGROUND: The influence of chronic hepatitis C virus (HCV) infection on the risk, timing and type of AIDS defining illnesses (ADIs) is not well described. To this end, rates of ADIs were evaluated in a Canadian cohort of HIV seropositive individuals receiving highly active antiretroviral therapy (HAART).

METHODS: ADIs were classified into six CDC-defined etiological subgroups: (a) non-Hodgkin lymphoma; (b) viral infection (Cytomegalovirus disease, Herpes simplex infection, Kaposi's sarcoma, Progressive multifocal leukoencephalopathy) (c) bacterial infection (Mycobacterium avium complex, Mycobacterium tuberculosis, Mycobacterium other, Recurrent pneumonia, Salmonella septicemia); (d) HIV-related disease (HIV encephalopathy, Wasting syndrome); (e) protozoal infection (Cryptosporidiosis chronic intestinal, Toxoplasma gondii encephalitis); and (f) mycotic infection (Histoplasmosis, Esophageal candidiasis, Cryptococcosis extrapulmonary, and Pneumocystis jirovecii pneumonia). Generalized Estimating Equation (GEE) Poisson regression models were used to estimate the effect of HCV on rates of ADIs after adjusting for covariates.

RESULTS: Among 2,706 HAART-recipients, 768 (28%) were HCV co-infected. Rates of all ADI combined, and of bacterial infection, HIV-related disease and mycotic infection, were increased in HCV co-infection and among those with CD4 counts <200cells/mm3. HCV was associated with an increased risk of ADIs (rate ratio = 1.38, 95% CI = (1.01, 1.88), p=.04) in univariate analyses and after adjusting for age, baseline VL, baseline CD4 count and region of Canada. However, after further adjustment for HAART treatment interruptions, HCV was no longer associated with an increased rate of ADIs overall (RR=1.11, 95% CI = (0.79, 1.56), p=.56). HCV did remain associated with an increased rate of mycotic infections (RR=1.96, 95% CI = (1.07, 3.59), p=.03), after adjusting for covariates.

CONCLUSION: Although HCV co-infected individuals are at increased risk of developing ADIs overall, our analysis suggests that variables

associated with HCV, including rates of retention on HAART, and not HCV itself, are primarily responsible.

P063

HEPATOCELLULAR CARCINOMA (HCC) SCREENING IN AN HIV-HCV CO-INFECTED COHORT

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BACKGROUND: In HCV-infected individuals, HIV co-infection can hasten progression to cirrhosis and its associated complications, such as HCC. The American Association for the Study of Liver Disease (AASLD) recommends HCC screening every 6-12 months for HCV-infected patients with cirrhosis, using ultrasonography. In co-infected patients, where medical and social issues may complicate access to screening, it is unknown if these recommendations are followed.

METHODS: We examined the frequency of ultrasounds done for co-infected individuals with cirrhosis in a Canadian multisite prospective cohort study. Data was analyzed from 933 patients, 124 with documented cirrhosis (based on biopsy or diagnosis of end-stage liver disease) and 129 with possible cirrhosis (based on laboratory markers of hepatic dysfunction). Multivariate regression analysis accounting for study centre was performed to identify variables associated with screening.

RESULTS: Baseline characteristics of those with documented cirrhosis were similar to the cohort as a whole: median age was 48, duration of HCV infection 18 years, 78% male. In this group, 18% did not undergo abdominal ultrasound (mean follow-up time 24.6 months; mean number of u/s per patient/year 1.0, 95% CI 0.83-1.2; median 0.78). For patients with possible cirrhosis, median age was 44, duration of HCV infection 17 years, and 79% were male; 32% did not have an ultrasound (mean follow-up time 30.8 months; mean u/s per patient per year 0.60, 95% CI 0.49-0.71; median 0.41). In those with documented cirrhosis, females and intravenous drug users were significantly less likely to have had an ultrasound (OR 0.19, p=0.012 and 0.17, p=0.006, respectively). There were 8 new diagnoses of HCC (incidence rate: 0.58/100 person-years; 95% CI 0.18-0.98), among whom 2 had documented ultrasound prior to diagnosis.

CONCLUSIONS: Many at-risk cohort participants did not receive regular abdominal ultrasounds, as recommended by the AASLD. The barriers to screening should be further examined, in order to better incorporate this into routine care for co-infected individuals.

P064

THE EFFECTS OF HIV AND HAART ON THE ACQUISITION AND CLEARANCE OF ONCOGENIC HPV IN HIV POSITIVE AND HIGH RISK HIV NEGATIVE WOMEN

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BACKGROUND: The Canadian Women's HIV Study (CWHS) was a prospective, multicentred study of women with HIV or at high risk for HIV (1992-2002). Demographic and clinical data collection, cervical cytology and HPV genotyping were done semi-annually. The objective of this analysis was to determine the effects of HAART and other risk factors for acquisition/clearance of HPV over time.

METHODS: Multi-state models (MSM) were used to assess transition probabilities of HPV presence over time. At each visit, the HPV genotype results were categorized for 3 outcomes: 0 or >1 oncogenic HPV type present, Type 16 and Type 18. Transition hazard ratios were estimated for 0 to >1 (acquisition) and >1 to 0 (clearance) for each outcome. Variables in the model included age, ethnicity (white vs others), number of sexual partners, HIV status and CD4 count.

RESULTS: 469 (335 HIV+, 134 HIV-) women with 1536 HPV results and 1067 transitions were included. Median age was 31. 41% of women had ≥1 oncogenic HPV type detected. Incidence rates of acquisition were 8.0% for oncogenic HPV, 3.6% for HPV-16 and 1.2% for HPV-18, with clearance rates of 10.1%, 3.8% and 1.5% respectively. Acquisition of any oncogenic HPV type was more likely in HIV+ women (HR=2.3, p=0.01) and decreased with age (HR=0.7 per 10 years, p=0.02). Clearance of all oncogenic HPV types was less likely in HIV+ women (HR=0.4, p<0.001). In HIV+ women, HAART increased the likelihood of clearance of non 16/18 oncogenic HPV (HR=2.1. p=0.01). Factors which predicted HPV-16 acquisition were age (HR=0.5 per 10 years, p=0.002), white ethnicity (HR=2.3, p=0.02), HIV+ women with CD4<200 (HR=4.7, p=0.005).

CONCLUSION: This unique analysis confirms the association between HIV positivity, age and the presence of oncogenic HPV types over time. Among HIV positive women, HAART improved clearance for non 16/18 oncogenic HPV types.

P065

TREATMENT OF HCV IN INJECTION DRUG USERS: INCREASING SVR RATES INDEPENDENT OF HIV CO-INFECTION STATUS

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INTRODUCTION: Treatment of HCV infection in IDUs has only been seriously considered in the past 3-5 years according to clinical guidelines and remains slow to be embraced by the medical community. This is largely due to the lack of proper infrastructure to support it as well as the concern that HIV co-infection will reduce response rates even further. We describe our 3 year experience with a program designed to engage HCV-infected IDUs in care and treatment on Vancouver's Downtown Eastside.

METHODS: Patients are recruited to the Pender Community Health Centre through testing fairs for HCV & HIV and by attendance at peer support groups to discuss HCV held 3 days/week. Eligible patients are offered HCV treatment with pegylated interferon administered weekly by clinic staff and ribavirin dispensed weekly. Clinical and laboratory monitoring is according to current standards, and efficacy (measured by the achievement of an undetectable HCV plasma viral load 6 months after treatment discontinuation, or SVR) is evaluated as a function of baseline parameters, including HIV co-infection status.

RESULTS: Since 2007, we have treated 135 patients for HCV infection, 22% female, 35% genotype 2 or 3, 12% HIV co-infected. Of the latter group, 85% were on CART. Overall, 70% completed the prescribed course of treatment, with 65% treatment discontinuations due to non-adherence or toxicity, the remainder being due to non-response at week 12 in patients with genotype 1 infection. On a modified intent-to-treat basis, SVR was achieved in 65% cases, including 86% patients with genotype 2 or 3 infection, and 68% of those with HIV co-infection.

CONCLUSION: HCV treatment can be successfully undertaken in large groups of IDUs in a structured setting, independent of HIV co-infection status. Our program can serve as a model for the expansion of HIV and HCV services and outreach to our inner city populations.

P066

VITAMIN D SUPPLEMENTATION DOES NOT INCREASE IMMUNOGENICITY OF SEASONAL INFLUENZA VACCINE IN HIV INFECTED ADULTS

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INTRODUCTION: Vitamin D may have an important role in immune function and vaccine immunogenicity. A post hoc analysis of vitamin D on vaccine immunogenicity in HIV was conducted.

METHODS: A phase III, randomized, controlled, vaccine trial was conducted at 12 CTN sites. Three dosing strategies were assessed in HIV-infected adults (18-60 years) prior to the 2008-09 influenza season. A seasonal, trivalent killed split non-adjuvanted influenza vaccine (Fluviral) was utilized. Vaccine was administered at baseline and at 28 days as follows:

Group A-two standard doses; Group B-two double doses; Group C-a single standard dose. Serum hemagglutinin inhibition (HI) activity was measured to assess immunogenicity. Logistic regression was used to examine vitamin D use as a predictor of week 8 seroconversion and seroprotection for the 3 vaccine antigens.

RESULTS: 297 of the 298 participants received at least one injection. Baseline parameters were similar between groups: 90% male, 89% on HAART, median CD4 = 470 cells/mm3, 76% with HIV RNA <50 copies/mL, and 84% had received flu vaccine the previous year. Overall immunogenicity was poor (week 8 seroconversion: A/Brisbane - 28%, A/Uruguay - 37%, B/Florida - 17%; week 8 seroprotection: A/Brisbane (n=198) - 28%, A/Uruguay (n=210) - 39%, B/Florida (n=165) - 19%). 28 of 100 (28%), 38 of 104 (37%) and 32 of 94 (34%) of participants randomized to groups A, B and C were on supplemental vitamin D at the time of immunization. By univariate analysis controlling for treatment effect, seroconversion and seroprotection were not predicted by vitamin D use for A/Brisbane (H1N1), A/Uruguay (H3N2), or B/Florida (p-values ranged from 0.19 to 0.89). Of note, vitamin D doses and formulations varied widely and baseline vitamin D blood levels were not measured.

CONCLUSION: There was no evidence of improved influenza vaccine immunogenicity with vitamin D administration in this exploratory evaluation of HIV seropositive patients.

P067

STATIN USE DOES NOT INFLUENCE IMMUNOGENICITY OF SEASONAL INFLUENZA VACCINE IN HIV INFECTED ADULTS

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INTRODUCTION: Statins have been purported to possess immune modulatory properties that hypothetically could influence vaccine immunogenicity. A post hoc analysis of statins on vaccine immunogenicity was conducted.

METHODS: A phase III, randomized, controlled, vaccine trial was conducted at 12 CTN sites. Three dosing strategies were assessed in HIV-infected adults (18-60 years) prior to the 2008-09 influenza season. A seasonal, trivalent killed split non-adjuvanted influenza vaccine (Fluviral) was utilized. Vaccine was administered at baseline and at 28 days as follows: Group A-two standard doses; Group B-two double doses; Group C-a single standard dose. Serum hemagglutinin inhibition (HI) activity was measured to assess protection from influenza infection. Univariate regression controlling for treatment effect was used to examine statin use as a predictor of week 8 seroconversion and seroprotection. If statin use was an important predictor univariately, multivariable regression models were used for further exploration.

RESULTS: 297 of the 298 participants received at least one injection. Baseline parameters included: 90% male, 89% on HAART, median CD4 = 470 cells/mm3, 76% with HIV RNA < 50 copies/mL, and 84% had received flu vaccine the previous year. Overall immunogenicity was poor (week 8 seroconversion: A/Brisbane - 28%, A/Uruguay - 37%, B/Florida - 17%; week 8 seroprotection: A/Brisbane (n=198) - 28%, A/Uruguay (n=210) - 39%, B/Florida (n=165) - 19%). 22 of 100 (22%), 24 of 104 (23%) and 19 of 94 (20%) of participants randomized to groups A, B and C were on statins at the time of immunization. By univariate analysis controlling for treatment effect, statin use was predictive of seroconversion and seroprotection failure for A/Brisbane (H1N1), but not for A/Uruguay (H3N2), or B/Florida. Statin use was not predictive by multivariable analysis (p-values ranged from 0.25 to 0.80).

CONCLUSION: There was little evidence of statin influence on influenza vaccine immunogenicity in this HIV seropositive population.

P068

IMPACT OF DENTAL CARE IN HIV+ PATIENTS ON HAART, A PILOT STUDY

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BACKGROUND: Initial attack of HIV depletes mucosal tissues of CD4 T-helper cells. This may contribute to declining oral health often seen in this group of patients. The goal of the study was to restore oral health to HIV patients on HAART (V.L.<50).

METHOD: HIV patients in need of dental care seen at the HIV treatment centre's dental clinic of the Montreal General Hospital were invited to participate. Data were collected three times:

1. Baseline visit prior to treatment: comprehensive oral exam/x-rays including measurement of oral health parameters, chief complaint, medical history, dental history, habits, time from diagnosis HIV+, ARV history, dental treatment plan, patient consent, current CD4, V.L., CD4/CD8 ratio.
2. Upon completion of dental treatment above data were repeated.
3. Three months post dental treatment above data were repeated.

RESULTS: Out of 21 patients only 8 completed the study. All males, age range 25-45. Oral health indices inproved from baseline. V.L. remained unchanged. CD4/CD8 ratios were higher at completion of study.

CONCLUSION: Improving oral health in HIV+ patients on HAART may contribute to improving efficacy of potent HAART therapy by reducing inflammation and supporting immune defense.

This study was made possible by a grant from the Pierre Fauchard Foundation.

P069

LIVING WITH SYMPTOMATIC HERPES SIMPLEX VIRUS TYPE 2 (HSV-2) INFECTIONS AND QUALITY OF LIFE: HIV-POSITIVE WOMEN'S EXPERIENCES

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INTRODUCTION: This work was part of a larger mixed methods study exploring the relationship between HSV-2/HIV co-infection and health-related quality of life (HRQoL). This presentation focuses on the qualitative analysis, which shed light on women's unique experiences living with two chronic, sexually transmitted viral infections in reference to their perceptions of self, social and sexual relationships.

METHODS: Seven HIV-positive women with a history of symptomatic HSV-2 infections were invited to participate in an in-depth, semistructured interview. All interviews were recorded and transcribed verbatim. Hermeneutic phenomenological reflection and thematic analysis were employed; significant themes were highlighted to elucidate the meaning of the relationship between HIV, symptomatic HSV-2 and HRQoL.

FINDINGS: HIV affected women's global physical and mental HRQoL; it was associated with a social and historical context and was mapped onto their life trajectories. HSV-2 was more of an immediate concern experienced on an episodic basis, and was relevant to HRQoL dimensions such as day-to-day physical and social functioning, intimacy and relationships with partners. HSV-2 infection was a separate and dominant medical condition that complicated women's experiences with HIV. Women spoke about HSV-2/HIV co-infection as a gendered issue; it affected their ability to navigate social and sexual relationships and take on social roles typically assumed by women including mothers, caregivers and intimate partners. A number of themes were described that both enabled and impeded women from moving forward with their diagnoses and achieving good HRQoL.

CONCLUSIONS: It may be beneficial for service providers to account for HSV-2 as an important medical and psychosocial issue and to discuss with clients how HSV-2 may affect perceived HRQoL. This study adds to the body of knowledge regarding women's experiences living with HIV, adding an important layer regarding co-infections, which are relevant to developing an overall understanding of women's sexual health.

P070

USING QUANTITATIVE AND QUALITATIVE METHODS TO UNDERSTAND HIV-POSITIVE WOMEN'S EXPERIENCES LIVING WITH SYMPTOMATIC HERPES SIMPLEX VIRUS TYPE 2 (HSV-2) INFECTIONS: METHODOLOGICAL CONSIDERATIONS

Ion, Allyson; Smieja, Marek; Greene, Saara
Hamilton, ON

INTRODUCTION: Mixing qualitative and quantitative research methods is appropriate when neither components alone can provide a comprehensive

understanding. Mixed methods are increasingly being used to recognize the complexity of human lives, which are often embedded within intricate contexts. This approach was relevant to understanding HIV-positive women's quality of life in relationship to living with symptomatic HSV-2 infections.
METHODS: A sequential exploratory approach was used, which involved an interpretive phenomenological qualitative phase after an equally weighted cross-sectional analysis. This design enabled a contextualization of the statistical relationships explored yielding an enriched and complementary understanding of HSV-2/HIV co-infection and quality of life.
FINDINGS: Taken together, the quantitative and qualitative findings suggest that symptomatic HSV-2 infection is a construct that influences HIV-positive women's overall physical and mental quality of life because of its influence on physical function and symptoms, performance of social roles and social well-being, and psychological status. HIV/HSV-2 co-infected women defined their illness and quality of life in accordance with a self-regulation of illness model; co-infection was represented in terms of an identity, timeline, consequences, cause and controllability and as an emotional reaction. Co-infected women processed information to control their underlying physical health issues and to control emotional responses elicited by their physical health issues. Operating from the transformative paradigm enabled the combination of quantitative and qualitative methods, but had epistemological and methodological implications for this study. The transformative paradigm recognized the influence of social, political and cultural values on the construction of realities.
CONCLUSIONS: Conceptual models of illness self-regulation are important when integrating statistical and phenomenological findings regarding HIV/HSV-2 co-infection in women. The transformative paradigm qualitative dimension highlights the value of incorporating the community's perspective and voice, while the quantitative dimension provides the opportunity to demonstrate outcomes relevant to both the HIV-positive women's community and academic scholars.

P071

GENDER AND LIVER DISEASE PROGRESSION IN HIV-HEPATITIS C VIRUS (HCV) CO-INFECTION

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BACKGROUND: In HCV mono-infection, male gender has been associated with faster progression of liver fibrosis. We examined the influence of gender on progression of liver fibrosis in HIV-HCV co-infection.
METHODS: Patients were enrolled prospectively between 2003-2009 from 16 Canadian centres. An APRI (AST-to-platelet ratio index) score ≥1.5 was considered to represent significant fibrosis (corresponds to a biopsy score ≥2). HCV PCR+ participants with at least 2 study visits, an APRI <1.5 and no history of end-stage liver disease were analyzed. Multivariate cox regression models were used to determine time to APRI ≥1.5 according to gender, adjusted for baseline APRI, injection drug and alcohol use, duration of HCV infection, cART exposure and time updated CD4 cell counts.
RESULTS: Of 934 participants enrolled, 580 (422 men, 158 women) were included in this analysis. Median follow up was 1.3 years. Baseline CD4 was 393 cells/μL; HIV RNA was <50 c/ml in 55% of participants; 79% received cART.
Women were younger (42 vs. 45 years, p<0.001), more likely to be aboriginal (31 vs. 10%, p<0.001), heterosexual (87 vs. 74% p<0.001), IDU (88 vs. 81%, p<0.05) and less likely to use alcohol (40 vs. 50%, p<0.05).
In total, 71 (12%) developed an APRI score ≥1.5 (9.7/100 person-years; 95% CI, 7.4-11.9); 23 women (11.5/100 person-years; 95% CI, 8.0-19.1) and 48 men (8.5/100 person-years; 95% CI, 6.1-10.9); in multivariate models however, gender was not significantly associated with fibrosis progression (aHR 1.55, 95% CI, 0.90-2.7). Predictors of APRI score ≥1.5 during follow up were: baseline APRI (aHR 4.6, 95%CI 2.5-8.4) and time updated CD4 cell counts (aHR 0.86, 95%CI 0.75-0.98).
CONCLUSION: Socio-demographics and risk behaviours differ between co-infected men and women, which largely seem to explain apparent gender differences in progression of liver disease in the short term.

CVD and Other Issues in the Aging Population

P072

PREVALENCE AND DETERMINANTS OF REDUCED BONE MINERAL DENSITY AND TREATMENT FOR OSTEOPOROSIS IN HIV INFECTED PATIENTS IN MONTRÉAL

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Montréal, QC

BACKGROUND: Decreased bone mineral density (BMD) is frequent in HIV infected patients, leading to increased fracture risks. We sought to analyze the prevalence and determinants of reduced BMD in our population, and the prevalence of treatment for osteoporosis.
METHODS: All consecutive patients who underwent DEXA bone scans in our hospital were included. Data were collected on DEXA results, socio-demographic characteristics, medication history and anthropometric measures through chart revision. Data were analyzed using logistic regression.
RESULTS: 125 HIV infected patients had DEXA scans. Mean age was 51.8 (SD 8.8) years and 97 (78%) were males. 118 (94%) were taking antiretrovirals. 63 (50%) had BMD compatible with osteopenia (T-score <-1.0), and 26 (21%) with osteoporosis (T-score <-2.5). Age greater than 50 was associated with 2.80 times the odds of decreased BMD (95%CI (1.26-6.22), p=0.01). Decreased body-mass index was associated with lower BMD (p for trend 0.05). In 77 patients with available dosage of 25(OH) vitamin D, 42 (55%) had insufficiency. Of the 26 patients with osteoporosis, 20(77%) received calcium supplements, 10(38%) vitamin D supplements and 12 (46%) bisphosphonates. Women with reduced BMD (n=18) had 4.07 times the odds of receiving bisphosphonates compared to men (n=71) (95%CI (1.36-12.15), p=0.01). There were no gender differences in treatments by calcium and vitamin D.
CONCLUSION: Reduced BMD is highly prevalent in our population. Men may be more likely to receive sub-optimal treatment, but more data on actual fracture risk rather than simply BMD is required to determine treatment indications.

P073

PREVALENCE OF LIPODYSTROPHY AND RELATIONSHIP BETWEEN BMI AND TOTAL BODY FAT IN THE HIV INFECTED POPULATION OF MONTRÉAL

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Montréal, QC

BACKGROUND: DEXA scans allow evaluation of body fat distribution. We studied the relationship between gender, body fat distribution, total body fat and body mass index (BMI) in a population of HIV-infected patients.
METHOD: All consecutive patients who underwent DEXA body scans in our hospital were included. Data were collected on DEXA results, socio-demographic characteristics, medication history and anthropometric measures. Presence of lipodystrophy was established using gender-specific criteria described in HIV-infected populations (fat mass ratio ≥1.98 in males and ≥1.33 in females). Total body fat percent was categorized using gender-specific values accepted in the general population (normal range 14-20% in males and 23-30% in females). Data were analyzed using chi-square tests.
RESULTS: 125 HIV-infected patients had DEXA scans. Mean age was 51.8 (SD 8.8) years and 97 (78%) were males. 118 (94%) were taking antiretrovirals. 42(45%) of males and 6(22%) of females met the criteria for lipodystrophy (p-value for difference in proportions between genders =0.03). In males, 29(30%) had low, 29(30%) had normal, and 39(40%) had high percentage of total body fat, compared to 3(11%), 7(25%), and

18(64%) in females (p-value =0.05). In 53 patients with a normal BMI (19-25 kg/m2), 11(20.75%) had supra-normal total body fat. In 56 patients with BMI >25 kg/m2 (overweight), 3(5%) had below normal, and 12(21%) had normal total body fat.

CONCLUSIONS: Lipodystrophy is common in our population and is more frequent in males. Supra-normal total body fat is more common in women. BMI is not a good predictor of total body fat in HIV-infected patients.

P074

VITAMIN D STATUS IN THE CANADIAN HIV VASCULAR STUDY COHORT: HIGHER THAN EXPECTED

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OBJECTIVE: A substantial proportion of Canadians may be vitamin D deficient. We aimed to investigate the vitamin D status of HIV-infected Canadians.

METHODS: We studied the baseline 25-hydroxyvtitamin D_3 (25(OH) D_3) status of participants within the prospective multi-centre Canadian HIV Vascular Study. Plasma 25(OH)D_3 was determined utilizing baseline blood specimens, collected October 2002 through June 2009.

RESULTS: Mean (SD) 25(OH)D_3 of 283 participants (250 males; mean age (SD) 52 (8.3)) was 85.6 (33.0) nmol/L. Overall, 11% of participants were vitamin D deficient (25(OH)D_3, ≤ 50 nmol/L). The prevalence of so-called suboptimal status (25(OH)D_3 < 75 nmol/L) was 41%. By ethnicity, deficiency was present in 11% (25/238) of white participants, 14% (2/14) of black participants, and 13% (4/30) of the remaining ethnic categories combined inclusive of the South Asian, Chinese, and other categories. 25(OH)D_3 levels < 75 nmol/L were present in 39% (92/238) of white participants, 71% (4/10) of black participants, and 43% (13/30) of the combined category. 25(OH)D_3 levels were statistically different across colder (Nov-Apr) and warmer months (May-Oct, P = 0.037); however, actual seasonal variation was minimal: colder and warmer month means (SD) were 82.2 (29.3) and 90.5 (37.4), respectively. Characteristics that differed across seasonally adjusted 25(OH)D_3 quartiles and had greatest representation in the highest quartile were: use of protease inhibitor (PI)-based antiretroviral therapy (P = 0.005), lipid lowering medication use (P = 0.036), and no history of hypertension (P = 0.04). Inverse 25(OH)D_3 quartile associations were exhibited by body mass index (P = 0.024) and parathyroid hormone (P < 0.001).

CONCLUSIONS: The vitamin D status of this Canadian HIV-positive population was higher than expected, exhibited only minimal seasonal variation, and varied by type of antiretroviral class exposure and by other important clinical characteristics.

P075

ADJUSTING THE PARADIGM FOR HIV CARE IN 2011

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BACKGROUND: Family physicians (FPs) play a crucial role in the holistic care of HIV patients. Many patients do not have an FP despite active engagement with HIV specialty care. HIV specialty clinics face a growing challenge with increasing populations of aging patients, with major comorbidities unrelated to HIV, that are ideally managed by an FP. Ineffective management strategies can lead to excessive use of walk-in clinics and emergency rooms, resulting in unnecessary costs and poor continuity of care. We wished to determine the number and demographics of unattached patients to estimate barriers and future need and to assist currently unattached patients connect with FPs.

METHODS: SAC is a specialty outpatient clinic providing HIV care to individuals living within Southern Alberta. A cross-sectional analysis of all active patients was conducted on December 10th, 2010.

RESULTS: 33% of 1344 active patients did not have an FP (Table 1). The median age of the cohort has increased from 39 in 2000 to 44 in 2010. Youth, non-Caucasian ethnicity, and HIV risk factor were all significantly associated with lack of an FP, while gender was not. The prevalence of non-HIV comorbidities increased with age (p<0.0001). 128 patients were contacted by a liaison nurse (AM) and connected successfully to local FPs. Less than 5% of patients contacted declined assistance.

DISCUSSION: Given an aging population with increasing non-HIV related medical needs, strategies to link HIV infected patients with FPs for co-management will be increasingly important for HIV specialty clinics.

		Percent Without A Family Physician	
Gender	Male (n=1025)	33	P=0.21
	Female (n=319)	36	
Age	≤30 (n=148)	55	P<0.0001
	31-45 (n=584)	41	
	46-60 (n=514)	23	
	>60 (n=98)	12	
Ethnicity	Caucasian (n=835)	12	P<0.0001
	Aboriginal (n=99)	48	
	African (n=268)	45	
	Other/Unknown (n=142)	42	
HIV Risk Factor	MSM (n=690)	28	P<0.0001
	IDU (n=122)	35	
	Heterosexual Transmission (n=486)	38	
	Other (n=26)	23	P=0.94
Education	<High School (n=249)	34	
	≥High School (n=1095)	33	
Non-HIV Comorbidity	Comorbidity (n=569)	22	P<0.0001
	No comorbidity (n=775)	42	

P076

PATIENT'S CHARACTERISTICS IN 91 HIV-INFECTED PATIENTS WITH ACUTE MYOCARDIAL INFARCTION FROM 1988 TO 2008

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BACKGROUND: HIV is an important cardiovascular risk factor. We reviewed the cases of acute myocardial infarction (AMI) that happened in our hospital, and studied the differences in cases before and after 1996.

METHOD: We reviewed the charts of all AMI cases in HIV-infected patients in the CHUM. Data were collected on socio-demographic characteristics, cardiovascular risk factors, immune status and medication. Analysis was done using T-tests and Chi-square tests.

RESULTS: There were 91 AMI from 1988 to 2008. Mean age at the time of AMI was 49 years (SD±7.8). Eighty-seven (97%) of patients were males. Prevalence of cardiovascular risk factors was as follows: 74 (83%) smoked, 40 (44%) had a positive family history, 75 (85%) had hypertension, 16 (18%) had diabetes and 44(70%) had dyslipidemia. At the time of myocardial infarction, 26(29%) were naïve to antiretrovirals. Median duration of HIV infection was 11.2 (SD±7.4) years. Patients with AMI before 1996 (n=13) were 6.9 years younger at the time of AMI (95%CI 2.4 to 11.3, p=0.003) than those with AMI after 1996 (n=78). They also had lower prevalence of hypertension (64 vs 88%, p=0.03) and antiretroviral treatment (46 vs 77%, p=0.02). Differences in other risk factors were not significant. Number of AMI per year increased steadily from 1 in 1988 to 16 in 2007.

CONCLUSIONS: HIV-infected patients with AMI have a high prevalence of traditional cardiovascular risk factors. Patients who had myocardial infarctions in the HAART era were older and had more cardiovascular risk factors. A limited number of cases prior to 1996 limited the power of the study.

HIV Prevention

P077
EXPRESSION OF MEMBRANE DRUG EFFLUX TRANSPORTERS IN RECTO-SIGMOID COLON FROM HIV INFECTED MEN WHO HAVE SEX WITH MEN (MSM): POTENTIAL ROLE IN MICROBICIDE PERMEABILITY

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Microbicides have gained significant global attention as a promising strategy for HIV prevention. We propose that mucosal permeability, efficacy and/or toxicity of microbicides may in part be regulated by interactions with drug efflux membrane transporters, P-glycoprotein (P-gp), Multidrug Resistance-Associated Proteins (MRPs) and/or Breast Cancer Resistance Protein (BCRP) that could reduce the levels of these agents at the rectal mucosa. Tenofovir's transport in the kidney is known to be mediated by MRP4; and maraviroc has affinity for P-gp. Very few studies report functional expression of these transporters at the male rectal tract. The objective of this work is to investigate the expression of drug efflux transporters in recto-sigmoid colon explants from HIV (+) treated and naïve MSM, as well as HIV (-) men. Recto-sigmoid colon biopsies were obtained from: HIV naïve MSM, HIV MSM on uninterrupted HAART for at least 4 years (HIV viral load <50 copies/ml), and HIV negative men. RNA and protein expression of drug efflux transporters were measured in samples from the three groups by RT-PCR and immunoblotting respectvely. One-way ANOVA followed by Bonferroni's correction was used for statistical analyses of protein levels between groups. We observed mRNA and protein expression of drug efflux transporters in rectal sigmoid colon tissues of HIV, treated and naïve, as well as healthy individuals. Statistical significant differences in P-gp levels were observed between HIV (+) naïve and HIV (+) treated ($p < 0.01$), as well as in MRP2 protein levels between HIV (-) and HIV (+) naïve ($p < 0.05$). MRP2 and MRP4 expression in the rectum of HIV infected men could alter the permeability and bioavailability of tenofovir, currently in clinical trials as a rectal microbicide. P-gp expression in the sigmoid colon could regulate maraviroc's permeability, another potential microbicide known as a substrate for this transporter. Furthermore, drug transporters' expression can potentially be regulated by HAART and/or HIV disease itself, and could result in alteration of antiretroviral agents' permeability across this mucosa, a highly vulnerable site for HIV transmission.

P078
CAN ETHICS HELP WHEN CHOOSING ANTIRETROVIRAL THERAPY FOR TREATMENT NAIVE HIV-INFECTED ADULTS?

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BACKGROUND: Deciding which of 23 anti-retroviral treatment (ART) medications available in developed countries to use for treatment of treatment naïve adults can be difficult and frustrating. Surprisingly, this process has not been subjected to ethical analysis. So we have analyzed ART choice to learn what guidance ethics can provide when choosing ART drugs for treatment naïve adults.
METHODS: Ethical analysis was based, in great part, on the principles of respect for persons and their autonomy, non-maleficence, beneficence and justice. The analysis examined drug efficacy, safety, cost-effectiveness, regimen acceptability and adherence, medication formulation and dosing frequency, modifiers such as co-morbidity and lifestyle, and data generalizability and limitations.
RESULTS: Randomized ART trials often show small differences between drugs, making choices even more difficult. For example, the mean difference in ITT-TOLVR efficacy in 11 recent trials was 3% after 48 weeks of treatment, with non-inferiority outcomes reinforcing this observation. Nonetheless, ART choice needs to be justified, inter alia, on the basis of regimen efficacy, safety and cost-effectiveness. Guidelines can be useful, but are consensus statements and seldom address cost-effectiveness. Prescribers have to promote their patients' best medical interests, be truthful and provide accurate information, disclose conflicts and incentives, and recommend treatment likely to be successful. This includes not only being the least harmful and most beneficial regimen, but also most likely to be effective, safe, cost-effective and used appropriately by patients. Deciding to begin, continue, change or stop treatment rests with patients to whom treatment benefits should accrue, although treatment to prevent HIV transmission and benefit others may be justifiable, at times.
CONCLUSION: Ethical analysis of ART drug choice shows that ethics can help by providing criteria for justifiable treatment decisions. Criteria include the need to choose ART that is likely to be successful. Thus, ethics can help when choosing ART regimens for treatment naïve HIV-infected adults by informing us how best to choose treatment regimens, but not necessarily what particular medications to choose.

P080
RISK MANAGEMENT FOR PATIENTS PARTICIPATING IN THERAPEUTIC VACCINE RESEARCH IN THE "EARLY ART INITIATION" ERA

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BACKGROUND: In spite of clinical improvements with ART, limitations such as drug toxicities, cost and compliance issues still persist. As such, therapeutic vaccines, to limit the need for lifelong ART, are urgently warranted. A risk assessment between ART discontinuation and potential benefits of the therapeutic vaccine should be addressed to better inform future clinical trial participants. To assess the potential risks of ART interruption during treatment with an autologous dendritic cell immune based therapy (study AGS-004-001 CTN 239), we used data from a subgroup of subjects in the SMART study with matched eligibility criteria to optimally inform study participants.
METHODS: Retrospective subgroup analysis of the SMART study population was performed using the eligibility criteria and treatment stopping rules of CTN 239. Key inclusion criteria for the study were applied to the data collected from participants of the SMART study.
RESULTS: 440 of 2720 participants on the drug conservation (DC) arm and 436 of 2752 participants on the viral suppression (VS) arm matched the CTN 239 inclusion criteria. In the first 16 weeks following randomization into the SMART there were no deaths, 2 AIDS-related events in the DC subgroup and one in the VS subgroup, thus making no difference for overall risk of AIDS related events (2 per 100 person years (0.005%) vs. 1 per 100 person years (0.002%), respectively).
CONCLUSIONS: This analysis, which applies the rigorous eligibility criteria of the CTN 239 trial, supports using historical control information based on matched patient characteristics selected from the SMART study. The results demonstrated that ART discontinuation, within the context of highly selective, closely monitored studies, assessing the antiviral activity of immune based agents, should be safe. Selection of participants and information on risks / benefits are important for successfully developing therapeutic vaccines in trials.

P081
USE OF ONCE DAILY RALTEGRAVIR TO ENHANCE ADHERENCE AND EFFICACY OF CART IN VULNERABLE HIV-INFECTED PATIENTS

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INTRODUCTION: Injection drug users (IDUs) and other vulnerable populations are often denied access to effective combination antiretroviral therapy (CART), due to issues of increased medication toxicity and concerns about adherence. The use of once daily CART including agents with a favorable toxicity profile (such as raltegravir) may address these concerns. With this in mind, we have conducted a prospective evaluation of patients in our clinic who received CART including once daily raltegravir and for whom a period of follow up of 6 months or more was available to evaluate efficacy and toxicity of the regimen.

METHODS: CART was initiated according to the clinical judgment of the prescribing physician. Follow-up was according to clinical standards at months 1 & 3 and then quarterly, with the key endpoints being the achievement or maintenance of virologic suppression, the CD4 count and raltegravir toxicity leading to treatment change.
RESULTS: In all, 116 patients were started on raltegravir once daily, 71 as a switch strategy in the setting of a suppressed viral load. This included 14 women, with an overall mean CD4 cell count and median HIV plasma viral load of 350 cells/mm3 and 28,500 copies/mL respectively. The most common co-prescribed agents were Truvada and Kivexa. Over a median follow-up of 12 months, 94 (80%) of patients had an undetectable viral load, with a mean CD4 cell count of 502 cells/mm3. There were no cases of raltegravir-related toxicity leading to a change in CART.
CONCLUSION: Once daily raltegravir is an important component of CART in the treatment of HIV-infected IDUs. Despite its potential lesser efficacy than twice daily raltegravir in clinical trials, there was no evidence of virologic failure or emergence of drug resistance in our setting.

Issues in the Developing World and Vulnerable Populations

P082
THE IMPACT OF SELF-EFFICACY AND TREATMENT LITERACY ON HIV TREATMENT ADHERENCE IN A MARGINALIZED INNER-CITY POPULATION USING A COMMUNITY-DRIVEN PATIENT SELF-MANAGEMENT SUPPORT INTERVENTION

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RATIONALE: In classic chronic disease models of patient self-management such as diabetes, treatment literacy (TL) and self-efficacy (SE) have a strong influence on adherence to treatment. However, little research has been done to demonstrate the impact of self-management support interventions on HIV TL, SE and how these may affect antiretroviral treatment (ART) adherence. To understand the mechanisms of improved HIV outcomes and build social capital for the heavily marginalized patients of Vancouver Native Health Society, we created a participatory HIV patient self-management support (PSMS) program.
METHODS: Participants were randomized to the PSMS intervention (10 individual coaching sessions led by either a trained peer or a medical professional) or control. A novel survey examining social determinants of health, TL and SE was used to detect changes before and after the intervention. These data were also compared with ART adherence and relevant clinical outcomes using an intention-to-treat analysis.
RESULTS: Of 180 participants, 56% were Aboriginal, 27% were female and only 37% completed high school. There was a high burden of unstable housing, ongoing illicit drug use and symptoms of mental illness. TL ($p=0.06$), SE ($p= 0.035$) and overall health ($p=0.003$) improved significantly in the medical professional coaching arm only and may explain that adherence was highest in this group. However, only 30.4% of the medical professional coaching group completed the full 10-session intervention.
CONCLUSIONS: Enhanced TL and SE may account for significant improvements in adherence seen in a group of patients undergoing a PSMS intervention led by medical professionals. SE and TL did not change significantly in the other study groups. However, in-depth qualitative analysis demonstrated benefits for all participants, related in large part to greater engagement with peers and medical staff through an enhanced sense of community.

P083
ORGANISING A CLINICAL TRIAL IN A LOW RESOURCE SETTING: THE CASE OF THE CAMEROON MOBILE PHONE SMS (CAMPS) TRIAL, AN INVESTIGATOR INITIATED TRIAL

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Clinical trials in developing countries have always been a huge challenge to researchers, pharmaceutical industries and regulatory bodies because of the ethical, organisational, cultural and infrastructural challenges involved. They also have a high appeal because in developing countries there is a larger treatment naive population with higher incidence rates of disease and more advanced stages. Cheaper cost and less time required to recruit patients have also added to this. Additionally, local health care workers with proficiency in the English language attract research organisations. The difficulties with such trials arise from difficulties in obtaining valid informed consent, compensation mechanisms for extremely poor populations, poor health infrastructure and considerable socio-economic and cultural divides. Ethical concerns with trials in developing countries have been extensively addressed, even though many other non-ethical issues may arise. Some authors argue that that the way forward would involve reinforcing research capacity, local review board competence and involving local researchers from the conceptualisation stages. Local investigator initiated trials also face difficulties which are not adequately reported in literature. This paper uses the example of the Cameroon Mobile Phone SMS trial to describe in detail, the specific difficulties encountered in an investigator-initiated trial in a developing country. It highlights administrative, ethical, financial and staff related issues, proposes solutions and gives a list of additional documentation to ease the organisational process.
Difficulties that may be encountered
Regulatory bodies with different standards
Administrative bottle necks
Financial bottle necks
Multiple languages
Patient compensation options
Interviewer compensation modalities
Inadequate interviewer competence
Different ages for legal consent
No dedicated administrative officer

Document	Contents	Use
Interviewer contracts	Names of interviewer, duration of recruitment period, roles and responsibilities of the investigators and interviewers including number of participants to be enrolled	Clearly defines roles and responsibilities of the concerned parties. Sets individual targets for interviewers
Recruitment log	Dates, number of forms filled, interviewer names, problems encountered, refusals and non-eligible subjects	Easily exploitable enrolment data, quality control of data, a good feedback mechanism
Trial contact list	Names, functions and phone numbers of everybody involved in the trial	Handy contact list, permits real time communication with interviewers, coaching and encouragement
Interviewer follow-up form	Names of participants, dates of enrolment, date of next visit	Essential for interviewers to track patients and prepare for follow-up visits
Participant feedback log	Dates, times, contact addresses and content of feedback from participants	Provides ongoing monitoring of intervention Useful data for providing a context for later findings

P084
NO EVIDENCE OF DIFFERENTIAL RESPONSE TO HIGHLY ACTIVE ANTI-RETROVIRAL THERAPY IN HIV-1 NON-B SUBTYPES: A REVIEW OF GLOBAL EVIDENCE

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BACKGROUND: Approximately 29 million adults live with non-B sub-

types of HIV-1 in Africa and Asia. With the availability of HAART, evidence of its response in non-B subtypes has increased over the years.
OBJECTIVE: We conducted a systematic review to synthesize and critically appraise the global evidence on response to HAART in Non B subtypes.
METHODS: We searched 11 electronic databases of worldwide literature for the period January 1996 and July 2010, including full text articles, abstracts and letters that met eligibility. We evaluated outcomes such as change in CD4 counts and viral load, time to or risk of development of AIDS or death. Two reviewers abstracted data and a third was contacted to resolve disagreement. We assessed quality using STROBE and used PRISMA in the reporting of the review.
RESULTS: A total of 16 studies were included, 7 studied inter non B subtype differences. Of all non-B subtypes, subtype D was associated with higher rates of CD4 apoptosis and CD4 decline compared with A and C subtypes, but showed no differences in viral load suppression or levels of activation of CD4 or CD8 cells. Subtype C reported higher virologic rebound compared to B. Studies that pooled non-B subtypes together and compared them with the B subtype reported no significant differences in response to HAART. The quality of studies ranged from poor to excellent.
CONCLUSION: No significant differences were observed between non-B subtypes and the B subtype with respect to response to HAART. Limited number of studies within each non-B subtype comparison group limited our ability to compare them. This summary has implications for further research on response to HAART and expanded global access initiatives on HAART.

P085
INCREASING NUMBERS OF NON-AIDS-DEFINING MALIGNANCIES AMONG VULNERABLE PATIENTS AT CASEY HOUSE

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This study documents the increasing number of cancer deaths among patients at Casey House, a specialty hospital for HIV care in Toronto. The majority of these cancers are not AIDS Defining Malignancies (ADMs).These patients have relatively high CD4 counts, and most of them have undetectable viral loads. This is clinically significant and may necessitate a re-evaluation of cancer screening and management of HIV patients. The goal of our study is to provide a description of this changing trend in cancer deaths in the complex and vulnerable patient population at Casey House.
A retrospective review of patient charts and death certificates was undertaken. Two groups of study subjects were identified based on their dates of death. All patients who died at Casey House, either between March 1, 1988 and December 31, 1988 (pre-HAART group), or between January 1, 2006 to December 31, 2008 (HAART group), were included in our study. The primary cause of death was identified and classified using the International Classification of Diseases, 10th edition. Clinical and socio-demographic characteristics, including co-morbidities as well as risk factors for certain cancers were obtained.
When comparing pre-HAART and HAART groups, there has been an increase in non-AIDS defining malignancy (NADM) cases by more than 8 fold. 47% of all the non-AIDS deaths in the HAART group are secondary to NADMs; the most common are: liver (23%), brain (17%), lung (12%), and Hodgkin lymphoma (12%). Patients in the HAART group who died of NADMs have relatively high CD4 counts (average of 322 cell/μL ± 98 cell/μL, 95% interval), and 76% of these individuals have undetectable viral loads.
An expansion of this study to include data from other centres treating complex patients with HIV and multiple co-morbidities in Ontario could yield a better understanding of the risk factors that are linked to the development of NADMs, hence improving preventive care programs for these patients.

P086
MEDICAL AND PSYCHIATRIC COMORBIDITIES: THE COMPLEXITY OF CARE IN A SAMPLE OF VULNERABLE PATIENTS WITH LATE-STAGE HIV DISEASE

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The introduction and availability of combination antiretroviral therapy has had positive consequences for the majority of HIV patients in high-income countries. Despite this initial success, a sub-sample of vulnerable patients remain who do not thrive and require significant levels of complex care. This paper reports on a snapshot of such a population cared for at Casey House, a community-based facility dedicated to supportive and palliative care for persons with HIV in Toronto, Canada, and consequently serves as a reminder of the most disadvantaged HIV patients whose stories are largely no longer being told.
A retrospective chart review of all 87 patients cared for at Casey House in 2008 provides information on patient demographics, medical and psychiatric history, intake and discharge. 13 patients (14.9%) had multiple admissions and 80.5% were male with a mean age of 48.9 years (SD=10.5).
We find that, at admission, patients took on average 11.8 medications (SD=5.3) and had a mean CD4 count of 225.0 (SD=231.7). 75.9% of patients were on psychotropic medications with an average of 1.9 Axis I diagnoses (SD=1.1) and experienced a mean of 5.6 medical comorbidities (SD=2.27).
62.1% of patients reported misusing at least one substance, 9.2% had a history of suicide attempts and 10.3% reported suicidal ideation within the year prior to admission. Almost half (47.1%) of the patients experienced HIV-Associated Neurocognitive Development. Patients were admitted to Casey House on average for 37.8 days (SD=44.6). 19.5% of these patients died while at Casey House.
This research highlights that a sub-sample of HIV patients in a high-income context remain very sick despite recent improvements in HIV treatment and require creative, flexible, and comprehensive care. In addition to medical morbidity, these patients face significant psychosocial challenges, such as substance misuse and psychiatric disorders. Further evaluative research is needed to ensure that services and guidelines are developed that effectively address these complexities.

Issues in Women and Children

P087
SEVERITY AND IMPACT OF ANTIRETROVIRAL-ASSOCIATED LIPODYSTROPHY IN HIV-POSITIVE WOMEN

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BACKGROUND: Lipodystrophy, a side effect of antiretroviral therapy (ART), refers to pathological changes in body shape including peripheral fat loss and/or central fat accumulation. This study assessed the prevalence, nature and severity of lipodystrophy and the impact on quality of life QOL among HIV-positive women in Toronto.
METHODS: Participants were recruited from four Toronto sites. Lipodystrophy was assessed with a modified HOPS questionnaire and defined as the presence of ≥1 severe body change or two moderate/minor body changes. QOL was assessed with the Body Image QOL Inventory, which ranks 19 items on a scale from -3 to 3; mean QOL was calculated for each woman. Linear regression models were used to estimate the effects of lipodystrophy, lipoatrophy and lipohypertrophy on QOL after adjusting for covariates. Lipoatrophy severity scores assessed fat loss in extremities, hips/buttocks and cheeks and ranged from 0 to 12. Lipohypertrophy severity scores assessed fat gain in neck & back, breasts and abdomen and ranged from 0 to 12.
RESULTS: Data was available for 114 women; median age was 41 years and median duration of HIV infection was 9 years. Seventy (61%) women

had lipodystrophy; 37 (32%) had peripheral lipoatrophy, 61 (54%) central lipohypertrophy, and 28 (24%) had both lipoatrophy and lipohypertrophy. Median (inter-quartile range) severity scores for lipodystrophy, lipoatrophy and lipohypertrophy were 8(3,4), 1(0,6) and 5(2,8) respectively. In a multiple linear regression model, a higher lipohypertrophy severity score was strongly associated with a lower QOL (coeff = -0.22, p<.0001), after adjusting for clinic site. Lipoatrophy severity was not associated with QOL.

CONCLUSIONS: HIV positive women with more severe lipohypertrophy reported poorer QOL. In contrast, lipoatrophy scores were not associated with QOL, suggesting that fat gain was more bothersome to women than fat loss. Significant differences in QOL were noted among clinics, suggesting differences among these patient populations.

P088

VITAMIN D DEFICIENCY AMONG CHILDREN LIVING WITH HIV: UNDERSTANDING CLINICAL SIGNIFICANCE AND RESPONSE TO TREATMENT

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BACKGROUND: The significance of vitamin D deficiency in people living with HIV remains poorly understood. Most children living with HIV screened in our clinic had low serum levels of 25-hydroxyvitamin D (25OHD). Given the importance of vitamin D in bone health and immune response, this study sought to describe the clinical significance of vitamin D deficiency on musculoskeletal and immunologic health in children living with HIV.

METHODS: This prospective pilot study includes children living with HIV with a serum 25OHD level ≤ 75 nmol/L. HIV-related (CD4 and viral load) and biochemical (bone and mineral ion metabolism) parameters were measured. Fracture history, anthropometry, radiographs for vertebral fractures, bone age, and rickets, and bone mineral density (BMD), content (BMC) and lean body mass (LBM) measurements were evaluated. Muscle function (using LeonardoTM jumping mechanography) and bone and muscle structural indices (using peripheral quantitative computer tomography) were assessed.

RESULTS: Twenty children are enrolled to date (mean age 14.2 years; 12 girls). The mean screening 25OHD level was 50 nmol/L(range 19-74). Median CD4 cell count was 579 cells/uL (range 93-2060) and 15 (75%) children were virologically suppressed. No biochemical parameter abnormalities were noted. Eight previous fractures were reported in 4 children, but no radiologic evidence of vertebral fracture or rickets was found. Initial analysis of the first 12 patients showed reduced height but normal weight, lumbar spine areal, volumetric BMD, and total body BMC/LBM Z-scores compared to population norms. Peak jump power, volumetric BMD at tibial metaphysis, and tibial mid-shaft muscle cross-sectional area were normal. Tibial cortical density was increased compared to controls.

CONCLUSIONS: In this pilot study, vitamin D deficiency did not appear to have a clinically significant impact on musculoskeletal health. Intermittent bolus vitamin D supplementation is underway to evaluate the potential impact of correcting vitamin D levels on immunologic and musculoskeletal health.

P089

HIGH PREVALENCE OF UNINTENDED PREGNANCIES IN HIV-POSITIVE WOMEN OF REPRODUCTIVE AGE IN ONTARIO, CANADA

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BACKGROUND: This study aimed to investigate the rate and predictors of unintended pregnancies in HIV-positive females in Ontario, Canada in order to support pre-conception discussions into HIV care.

METHODS AND MATERIALS: We used a self-administered survey to complete a main study on pregnancy desires and intentions of HIV-positive women in Ontario of reproductive age (18-52). Recruitment occurred between October 2007 and April 2009 from 38 sites and was stratified to match the geographic distribution of HIV-positive women in Ontario. This secondary analysis focused on pregnancy including whether the last pregnancy was intended. Logistic regression models were fit to calculate unadjusted and adjusted odds ratios for significant predictors of last pregnancies being unintended. Happiness with the last pregnancy was assessed and compared by ethnicity using the Breslow Day test of homogeneity.

RESULTS: 416 (85%) participants had at least one pregnancy prior to the survey. Median age was 38 (IQR, 33-44). 59% were born outside of Canada, 51% were living in Toronto, 47% were of African ethnicity and 74% were currently on antiretroviral therapy. Among respondents, 56% (95% CI, 51%-61%) identified that their last pregnancy was unintended. In the multivariable model, significant predictors of unintended pregnancy were: never being married ($p < 0.0001$), being born in Canada ($p < 0.01$), or living a longer time in Canada for those born in other countries ($p = 0.02$) and having given birth to no more than one child ($p < 0.001$). Women reported feeling less happy about the pregnancy if it was unintended versus intended ($p < 0.01$) and ethnicity did not impact the level of happiness.

CONCLUSIONS: Prevalence of unintended pregnancy was high in this population. Appropriate programs to to ensure appropriate considerations for management of planned pregnancies for HIV-positive women are urgently needed.

P090

ANTIOXIDANT AND MULTIDRUG-RESISTANCE (MDR-1) GENE EXPRESSION IS HIGHLY CORRELATED WITH MITOCHONDRIAL (MT) GENE EXPRESSION IN HAART-EXPOSED PLACENTAE

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OBJECTIVE: In-utero ARV exposure has been associated with higher mtDNA and lower mtRNA levels in blood, lower birth weight and premature birth. Animal studies have shown mitochondrial and oxidative damage in placenta and the offspring. Multidrug-resistance and antioxidant enzymes confer protection from HIV/HAART toxicity. We investigated whether such enzymes are induced in placentae and have a protective effect on mitochondrial gene expression.

METHODS: Placental tissue was collected from the fetal(F) and maternal(M) sides from HIV-infected women receiving HAART in pregnancy (study group), and uninfected unexposed controls. Gene expression was quantified from 80 study (44M, 36F) and 79 control (41M, 38F) samples for a multidrug-resistance protein; MDR-1, 3 antioxidant enzymes; Catalase, Mn-Superoxide-Dismutase (MnSOD), Peroxiredoxine-3 (PRDX-3) and a mitochondrial protein; COX-1. Student's t-test and Pearson's correlation were used, with correction (*p<0.005) for multiple comparisons.

RESULTS: Expression levels of the investigated genes were not different between the groups. However, the expression of MDR-1 and the antioxidant enzymes was noticeably more strongly correlated with COX-1 expression in the study group than controls. Catalase and PRDX-3 expression also correlated with MDR-1 expression only in study samples. Placentae exposed to AZT/3TC+PI had significantly higher MDR-1 (2.77±2.19 (N=30) vs. 0.81±0.58 (N=6), p=0.0002) and catalase (1.31±0.57 vs. 0.92±0.23, p=0.013) expression on the fetal side than those on alternative regimens.

R2 (p value)	Study		Control	
COX-1 vs.	Fetal (N=36)	Maternal (N=44)	Fetal (N=39)	Maternal (N=41)
CAT	0.398 (<0.0001)	0.477 (<0.0001)	0.043 (0.231) N=35	0.008 (0.592) N=39
MNSOD	0.537(<0.0001)	0.098 (0.038)	0.402 (<0.0001)	0.101 (0.043)
PRDX-3	0.239 (0.002)	0.202 (0.002)	0.080 (0.081)	0.376 (<0.0001)
MDR-1	0.137 (0.026)	0.179 (0.004)	0.011 (0.577) N=35	0.000 (0.956) N=39

MDR-1 vs.	Fetal (N=36)	Maternal (N=44)	Fetal (N=39)	Maternal (N=41)
CAT	0.253 (0.002)	0.182 (0.004)	0.089 (0.069)	0.081(0.072)
MNSOD	0.001 (0.824)	0.005 (0.623)	0.001 (0.841) N=35	0.022 (0.323) N=38
PRDX-3	0.522 (0.001)	0.768 (<0.0001)	0.015 (0.483) N=35	0.002 (0.812) N=39

DISCUSSION: Placental mitochondrial COX-1 expression was more correlated with antioxidant and MDR-1 gene-expression levels suggesting that these enzymes may contribute to countering mitochondrial toxicity and/or oxidative stress in HIV/HAART exposed placentae. Some ARVs may modulate this effect differently than others.

P091

DETERMINANTS OF HEALTH-RELATED QUALITY OF LIFE FOR WOMEN IN THE POSITIVE SPACES, HEALTHY PLACES (PSHP) STUDY

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BACKGROUND: An estimated 17.4% of all HIV-infected individuals were adult women, health-related quality of life (HRQOL) outcomes for this population are not well known in Canada.
METHODS: HRQOL for women (25%) was compared to men (75%) in a cross-sectional PSHP study (n=605). Physical Health and Mental Health Summary (PHS, MHS) scores were used for HRQOL and calculated from the MOS-HIV 34-item scales. Demographics, socio-economic status, clinical conditions and MOS social support 19-item scales were included in linear regressions for PHS and MHS for women, as for men.
RESULTS: Compared to males, females were four years younger (p<.0001), reported shorter duration (year) since the first HIV+ test (p<.0001) and had significantly low scores in five health MOS dimensions and MHS. In the multivariate MHS model for females (n=121, R2=41.7%), no or minimal depression (scores ≤23) in the past week (B=13.3, p<.0001), low social support (B=-7.6, p=.0004) and obtaining a high school degree or higher (B=4.6, p<.01); for males (n=371, R2=53.4%), no or minimal depression (B=15.7, p<.0001), low social support (B=-2.8, p=.004), high school degree or higher (B=2.2, p=.05), being employed this month (B=3.4, p=.002) and no or little problems with alcohol use (scores ≤8) in the past year (B=3.1, p=.005) were independent and significant factors. In multivariate PHS model for females (n=105, R2=37.8%), no or minimal depression (B=8.3, p<.0001), never had an AIDS-defining illness (B=5.4, p=.006), employed this month (B=5.3, p=.02) and living alone (B=-4.9, p=.02); for males (n=377, R2=29.7%), no or minimal depression (B=8.2, p<.0001), never had an AIDS-defining illness (B=2.1, p=.03), employed this month (B=5.1, p<.0001), low social support (B=-2.8, p=.009) and being Caucasians (B=-2.6, p=.03) were independent and significant factors.
CONCLUSIONS: Women in the PSHP study may have benefits to their HRQOL if such mental and HIV conditions are being prevented, as with other programs like social support and skills for employment are being given.

P092

MUSCLE FUNCTION IN PERINATALLY INFECTED HIV-POSITIVE CHILDREN AND ADOLESCENTS IN BRITISH COLUMBIA, CANADA

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BACKGROUND: Studies have shown that the bone health of perinatally HIV-infected children/adolescents (HIV+) may be compromised. Because muscle forces are determinant in bone formation, we evaluated whether muscle function of HIV+ children/adolescents is compromised in comparison to non-infected peers.
METHODS: 35 HIV+ children/adolescents 8-21 years of age (50% girls, median 16.0 yrs) were recruited from the Oak Tree Clinic. Muscle function, as measured by muscle force (Newtons) and muscle power (Joules), during a two-legged jump were assessed using the Leonardo Force Platform (Orthometrix, Naples FL). Physical activity (min/week) was assessed by questionnaire. The HIV-uninfected comparison group included healthy children/ adolescents 9-21 years of age (50% girls, median 16.4 yrs) from the University of British Columbia Healthy Bones Study cohort. Bivariate analysis stratified by sex was conducted to describe the cohort. ANCOVA compared muscle force and power between groups adjusting for age, BMI, ethnicity and physical activity. A sex*HIV-status interaction term was included to investigate possible sex-specific differences.
RESULTS: Bivariate analysis showed muscle force was not significantly different between groups, but HIV+ boys had lower muscle power than controls (40.6 vs. 44.8, p=0.048). The ANCOVA showed that in general girls had lower muscle power than boys (p<0.001). Furthermore a significant interaction effect was observed (p=0.040) meaning that the relationship between HIV-status and muscle power is different for boys than girls. Further analysis showed the HIV+ boys to have lower muscle power than the uninfected boys (p=0.006) after adjusting for potential confounders.
CONCLUSION: Muscle power was lower than the controls in HIV+ boys but not in girls. The potential effect of lower muscle power on long term bone health in boys is unknown and should be investigated in future studies. Muscle function in perinatally infected HIV+ children/adolescents needs to be better understood in the event that early fracture prevention measures are required.

P093

EXAMINING THE TRAIT, DESIRE, INTENTION AND BEHAVIOUR (TDIB) MODEL FOR FERTILITY PLANNING IN WOMEN LIVING WITH HIV IN ONTARIO

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BACKGROUND: The pregnancy intentions of women living with HIV (WLWH) in Canada have been demonstrated to be on par or higher than epidemiological reports of HIV-negative women of the same age (Ogilvie et al., 2007; Loutfy et al., 2009). Examining what may be influencing these pregnancy-related decisions is extremely important to better serve WLWH. The current study examines whether the TDIB model (Miller, Severy, & Pasta, 2004) used to explain fertility desires, intention and behavior in HIV-negative women effectively models pregnancy-related behavior in WLWH.
METHODS: 320 WLWH were recruited from AIDS service organizations, HIV clinics and community health centres across Ontario, and were administered a self-report questionnaire examining demographics, psychological, medical and social variables associated with reproductive decision-making. Women were of childbearing age (M = 37.23, SD = 7.53). Women were recruited into a larger study examining their fertility intentions and desires – the current study is a secondary analysis of the larger data set.
RESULTS: The key demographic (trait) variables, determined from primary analyses of the sample and correlations with fertility desires, of age, African ethnicity, residing in Toronto, having been born in Canada, feelings about motherhood, support from family to have a child, and currently being on Sustiva were entered into the first step of a multiple logistic regression predicting fertility behavior, defined as actively trying to become pregnant. Fertility desires were entered into step two, and fertility intentions were entered into step three. Each step was significant, as was the final model (R2 = .347, X2 (9, N=320) = 59.97, p =.017).
CONCLUSION: The TDIB model is supported among a representative sample of WLWH in Ontario. Health professionals should be prepared to address the growing fertility needs of their HIV-positive clients in order to provide timely, supportive, sensitive and comprehensive care.

P094

CANADIAN PHYSICIAN ATTITUDES REGARDING PREGNANCY, FERTILITY CARE, AND ASSISTED REPRODUCTIVE TECHNOLOGIES FOR HIV-POSITIVE INDIVIDUALS OR COUPLES

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OBJECTIVE: To assess the attitudes of Canadian Obstetrician/Gynecologists and Infectious Disease Specialists with respect to pregnancy, fertility care, and access to fertility services and advanced reproductive technologies for HIV-positive individuals and couples.

METHODS: A survey was sent to Obstetrician/Gynecologists and Infectious Disease Specialists in Canada electronically. The survey contained questions evaluating physician attitudes toward pregnancy, adoption, fertility care, and access to assisted reproductive technologies among HIV-positive individuals and couples.

RESULTS: Completed surveys were received from 165 physicians (60% Obstetrician/Gynecologists, 32% Infectious Disease Specialists, 8% other) from all ten Canadian provinces. Fifty-nine percent had seen five or less HIV-positive patients in the previous two years, and 26% had seen more than 25 patients. Thirty-one percent saw at least one patient who was planning pregnancy, and 67% had seen at least one HIV-positive pregnant woman. The majority of physicians had a positive attitude toward pregnancy and adoption, with >80% of respondents agreeing that it is acceptable for HIV-positive individuals to get pregnant or adopt a child. Most physicians (75%) also agreed that HIV-positive people should have assistance with safely achieving pregnancy and/or access to care at fertility clinics. However, a smaller number of physicians endorsed access to specific technologies, with 69% stating sperm washing should be available to couples with an HIV-positive man, 67% stating HIV-positive couples should have access to in vitro fertilization, and 62% agreeing that single HIV-positive women should have access to donor sperm. Finally, most physicians who answered the survey identified a need for standardized guidelines for pregnancy planning (80% of respondents) and pregnancy care (89% of respondents) for HIV-positive individuals in Canada.

CONCLUSIONS: In this national survey of Canadian physicians, most had positive attitudes regarding HIV-positive individuals becoming parents. National guidelines to assist with pregnancy planning and care were identified as a need by survey respondents.

Mental Health Topics

P095

CSF VIRAL LOAD IN HIV PATIENTS ATTENDING A NEUROCOGNITIVE DISORDER CLINIC (NDC)

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BACKGROUND: HIV associated neurocognitive disorders (HAND) have a high prevalence. An HIV NDC was established at St Paul's Hospital in the Immunodeficiency Clinic (IDC) to assess HIV patients with HAND. Data are being collected to further describe HAND in this population and elucidate its associated risk factors.

METHODS: HIV+ adult patients (>18 years) with cognitive impairment not readily explained by another diagnosis are referred to the IDC NDC clinic. HIV-related treatment and laboratory results were obtained through the BC Centre for Excellence in HIV/AIDS Drug Treatment Program (DTP) database. Cognitive screening tests were performed including MOCA (Montreal Cognitive Assessment) and HIV dementia scale. Patients had standard neurologic investigations and lumbar puncture as clinically indicated. Viral load in CSF was measured by a RT-PCR Taqman assay.

RESULTS: 7 patients were assessed for CSF viral load. All were male, 6/7 Caucasian, with a median age 48 years (IQR 46.5-56). Median number of years since HIV diagnosis was 11 (IQR 5.5-21.5), and 4 had a history of opportunistic infections. Median nadir CD4 was 100 cells/mm3 (IQR 40-185) and median most recent CD4 600 (IQR 435-675). All were on ART, median duration 8 years (IQR 3-12 years). Plasma viral load was <50 copies/ml in all patients. Patients were receiving the following ART's regimens: 3 on Truvada/ATV/r, 1 on Kivexa/ATV/r; 1 on Kivexa/ETV/LPV/r; 1 on Kivexa/ETV/RLT and 1 on 3TC/ETV/DRV/r/RGV.

Only 4/7 patients had low score on neurocognitive testing (median of 26 on MOCA and 10 on HIV dementia scale). Viral load in CSF was undetectable (<50 copies/mL) in 6/7 patients; in 1 the CSF viral load was 328 copies/ml with no resistance to ARVs.

CONCLUSION: In this small group of stable patients on effective ART referred for symptoms related to HAND, there was no significant finding in the CSF viral load.

P096

DEPRESSION, ANXIETY, AND CARDIOVASCULAR DISEASE RISK AMONG PEOPLE LIVING WITH HIV/AIDS (PHAS) IN THE CANADIAN HIV VASCULAR STUDY

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OBJECTIVES: Depression and anxiety are common among PHAs, and may be associated with cardiovascular disease. We examined: 1) the prevalence and correlates of depression and anxiety; and 2) the association between depression and anxiety status and atherosclerosis among PHAs.

METHODS: PHAs enrolled in the multi-centre Canadian HIV Vascular Study completed a self-administered questionnaire and the Hospital Anxiety and Depression (HAD) Scale at study baseline. Responses were classified as normal (scores of 0 to 7), indeterminate (8 to 10), and depressed or anxious (greater than 10). The carotid artery intimal medical thickness (IMT) was measured by high-resolution ultrasound. Polytomous logistic regressions were used to identify factors associated with depression and anxiety, and linear regression was used to assess the association between depression and anxiety status and carotid IMT, using SAS statistical software.

RESULTS: In total, 232 of 314 (73.9%) PHAs had both carotid IMT measured and completed the HAD Scale at study baseline. The prevalence of depression and anxiety was 6.9% and 15.8%, respectively. People who were younger, with assistance/welfare/worker's compensation/pension, or had a previous heart attack, were more likely to have either depression or anxiety. A higher glucose level was associated with depression, but not with anxiety. Both depression and anxiety status were not associated with carotid IMT in univariate analysis and in multivariable analysis adjusted for age, gender, cholesterol to HDL ratio, smoking status, blood pressure, diabetes, and previous heart problem.

CONCLUSION: The prevalence of both depression and anxiety was high in this study. The analysis suggests there are socio-demographic, and physical health characteristics associated with depression and anxiety among PHAs. However, while depression and anxiety were associated with previous heart disease, no association was found between baseline carotid IMT. Prospective analyses are required to confirm these findings.

Other Complications of HAART

P097

PERIPHERAL BLOOD AVERAGE TELOMERE LENGTH IN HIV-INFECTED AND HIV-EXPOSED UNINFECTED CHILDREN; RELATIONSHIP WITH ANTIRETROVIRAL DRUG EXPOSURE

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BACKGROUND: Human telomerase reverse transcriptase is inhibited by NRTIs. Exposing developing fetuses or growing children to NRTI could accelerate telomere attrition.

METHODS: Blood was collected from HIV+ or HIV-exposed uninfected (HEU) children (0-19 years) prospectively enrolled in the CARMA cohort.

Anonymous leftover blood samples from the ER were used as controls. Whole blood relative average telomere length (rATL) was measured by qPCR. Differences in rATL were analyzed using ANCOVA, adjusting for age and gender.

RESULTS: rATL data was obtained for 95 HIV+ children (median [IQR], range age, 13 [10-16] (1-19) years), 179 HEU (2 [0.6-4] (0.1-18) years), and 104 HIV- controls (11 [5-14] (0.2-19) years). Among HEU children, 99% were exposed to ART in utero and/or through post-partum prophylaxis. After adjusting for age and gender, there was no significant difference in rATL between the 3 groups (p=0.36). Shorter rATL was associated with older age (p<0.001) but not gender (p=0.22). Population rates of rATL decline over time were similar for the 3 groups (–0.087 (HIV+), –0.097 (HEU) and –0.080 (HIV–) rATL/year) corresponding to ~32% telomere loss before age 19. Among HIV+ children, the population rate of attrition was linearly inversely related to the percentage of the children's life spent on ART. Children with <10% lifetime ART showed the fastest population rate of attrition (N=12, –0.173 rATL/year) and those >90% the slowest (N=14, –0.021 rATL/year).

CONCLUSIONS: Telomere shortening is rapid over the first two decades of life. Preliminary analyses revealed no evidence of shorter rATL in the blood cells of children exposed to ART either perinatally or in childhood. However, longer uncontrolled viremia may accelerate the rate of attrition. These results suggest that, at the NRTI dosages used, hematopoietic stem cells maintain their telomeres. Future studies will determine whether telomeres are equally preserved in specific myeloid and lymphoid cell lineages as well as other tissues.

P099

CLINICAL PRESENTATIONS OF TENOFOVIR-ASSOCIATED NEPHROTOXICITY

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OBJECTIVE: To report a case series describing various clinical presentations of tenofovir-associated nephrotoxicity.

METHODS: A series of four cases was reported. The Naranjo Scale of adverse drug reaction probability was applied to assess the association with tenofovir. The probability (score) was classified as definite (≥ 9), probable (5-8), possible (1-4) or doubtful (0).

RESULTS:

Patient Demographics/ ARVs	Presentation (onset- months)	Outcome	Naranjo Scale Rating (0 to ≥ 9)	Confounders
47 y.o. Aboriginal female/ TDF 3TC EFV	• Tubulo-interstitial disease • 1.3-fold ↑SCr • Profound Acidosis • ↓ K+ 1.4, ↓ PO4 • Urine protein, Hb (6)	Partial resolution (6 years)	Probable (5)	Past Hx pancreatitis/ ARF/ HCV
58 y.o. Oriental male/ TDF FTC LPV/r	• PTD • 1.7-fold ↑SCr • Mild acidosis • Urine protein, glucose, Hb (11 - 26)	Biopsy: Patchy acute tubular injury. Partial resolution (5-7 months)	Probable (7)	
64 y.o. Caucasian male/ TDF FTC RAL DRV/r	Gradual onset 1.7-fold ↑SCr (6-12)	↓ TDF dose with minimal improvement over 9 months. Partial resolution since D/C TDF (9 months)	Probable (5)	Diabetes, hypertension, DRV/r use
59 y.o. Caucasian male/ TDF FTC RAL ATV/r	• PTD • 1.4-fold ↑SCr Mixed acidosis • ↓ K+ 2.4, ↓ PO4 • Urine protein, glucose (24)	Gradual resolution (6 months)	Probable (7)	ATV/r use

ARVs-antiretrovirals; Hb- hemoglobin; HCV- hepatitis C virus; PO4- phosphate; PTD-proximal tubular dysfunction; SCr-serum creatinine

CONCLUSIONS: Based on the Naranjo Scale rating, it is probable that tenofovir was the cause of nephrotoxicity in these cases. The clinical presentation was variable and ranged from elevations in serum creatinine only to proximal tubular dysfunction with acidosis, hypophosphatemia, hypokalemia, proteinuria and glycosuria. Resolution was at least partial in all patients. Underlying diseases and ritonavir-boosted regimens may have contributed to the toxicity.

P100

NEUROLOGIC AND PSYCHIATRIC SAFETY PROFILE OF TMC278 COMPARED WITH EFAVIRENZ (EFV) IN TREATMENT-NAIVE HIV-1-INFECTED PATIENTS: POOLED ANALYSIS FROM THE RANDOMIZED DOUBLE-BLIND PHASE III ECHO AND THRIVE TRIALS AT 48 WEEKS

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BACKGROUND: Two double-blind, double-dummy Phase III trials, ECHO and THRIVE, in treatment-naïve HIV-infected adults met the primary objective of non-inferiority of TMC278 to EFV in confirmed virologic response at Week 48. Results of a pre-planned pooled analysis of neurologic and psychiatric adverse events (AEs) at Week 48 are presented.

METHODS: Patients received (1:1) TMC278 25mg qd or EFV 600mg qd, plus TDF/FTC (ECHO) or TDF/FTC, AZT/3TC or ABC/3TC (THRIVE). AEs were recorded at each study visit.

RESULTS: Baseline characteristics (N=1368; 76% male; 61% Caucasian), including history of neurologic or psychiatric illness (TMC278 33% vs EFV 31%), were comparable between groups. Incidence of neuropsychiatric AEs (any cause) was significantly lower with TMC278 (40%) than EFV (57%) (Table). Differences were most pronounced in the first 4 weeks. AE prevalence decreased after 4–8 weeks, was stable to Week 48, and remained numerically lower with TMC278 throughout. Most AEs were grade 1 or 2. Neurologic (TMC278 0.3% vs EFV 0.1%) and psychiatric (0.7% vs 1.0%) serious AEs and neurologic (0.1% vs 0.7%) and psychiatric (1.5% vs 2.2%) AEs leading to discontinuation were infrequent. Patients with a history of neurologic or psychiatric illness vs those without reported more neurologic (TMC278, 35% vs 23%; EFV, 49% vs 43%) and psychiatric AEs (TMC278, 35% vs 21%; EFV, 41% vs 26%).

CONCLUSION: In ECHO and THRIVE, TMC278-treated patients reported significantly fewer neurologic and psychiatric AEs, primarily because of lower rates of dizziness and abnormal dreams/nightmares, vs. EFV-treated patients, particularly during the first 4 weeks of treatment.

These data will be first presented at the 18th Conference on Retroviruses and Opportunistic Infections (CROI) on February 27-March 2, 2011 in Boston, Massachusetts, USA.

Incidence,[a] %	TMC278 25mg qd (n=686)	EFV 600mg qd (n=682)	Difference between groups[f]
Any neuropsychiatric AE of interest[b]	40	57	p<0.0001
Any neurologic AE of interest[b,c]	27	45	p<0.0001
Headache	14	13	NS
Dizziness	10	28	p<0.0001
Somnolence	4	7	ND
Disturbance in attention	1	2	ND
Any treatment-related[d] neurologic AE of interest[b,e]	17	38	p<0.0001
Dizziness	8	26	p<0.0001
Headache	6	6	ND
Somnolence	4	7	ND
Disturbance in attention	1	2	ND
Any psychiatric AE of interestb,c	24	29	p=0.0321
Abnormal dreams/nightmares	9	13	p=0.0093
Insomnia	8	8	ND
Depression	6	5	ND
Anxiety	2	5	ND

Sleep disorder	2	4	ND
Any treatment-related[d] psychiatric AE of interest[b,e]	15	23	p=0.0002
Abnormal dreams/nightmares	8	13	p=0.0061
Insomnia	5	6	ND
Depression	2	2	ND
Sleep disorder	1	3	ND
Anxiety	1	2	ND

[a] *Safety analyses performed using all available data, including beyond Week 48;* [b] *Well-described neurologic or psychiatric AEs associated with current NNRTIs (all grades); Reported in ≥5%[c] or ≥2%[e] of patients in either group except for disturbance in attention and sleep disorder regardless of causality;* [d] *at least possibly related to trial medication by investigator;* [f] *p value for Fisher's Exact test, predefined analysis for any neuropsychiatric, neurologic or psychiatric AE of interest, and any single preferred terms (or abnormal dreams/nightmares grouped) with an incidence >10% in either group; NS = non significant; ND = not determined because not predefined*

Pharmacology and Pharmacokinetics

P101
HANDBOOK AND WEBSITE ON HIV DRUG THERAPY

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OBJECTIVES: As principles of HIV therapy evolve, and as new agents continue to emerge, antiretroviral combination regimens become increasingly complex. Practitioners need to consider factors such as efficacy, toxicity, drug interactions, medication adherence, and cost when initiating or modifying antiretroviral (ARV) regimens. A handbook and website were created to address this need. The objectives of this project were: 1) To create a centralized repository for continually updated HIV drug information for health care professionals with a main focus on drug interactions; and 2) To promote safe and rational prescribing of ARVs.

METHODS: Information was retrieved via a MEDLINE search for English language human studies and case reports for the years 1987 to present. MeSH headings included: "human immunodeficiency virus", "acquired immunodeficiency syndrome", as well as opportunistic infections and individual antiretroviral drug names. Additional information was obtained from abstracts of international and national conferences, review articles, textbooks, and drug manufacturers.

RESULTS: This award-winning project, which has been evolving for almost 20 years, has been highly successful. The ninth edition of the manual was recently published and has expanded from just 14 pages in 1992 to 550 pages in 2010. In addition, in 2000, an accompanying website with quarterly updates was developed and has been rated among the top three HIV drug interaction sites internationally by a peer-reviewed publication. Information contained in the manual focuses on HIV drug therapies, including suggested doses and duration of treatment, drug costs, provincial formulary status, pharmacologic properties, and drug interactions. The website also includes bilingual patient fact sheets and hosts websites for Canadian pharmacists practicing in HIV, provincial HIV pharmacists, as well as an HIV specialty pharmacy residency program.

CONCLUSIONS: A manual and website on HIV drug therapy were successfully developed and updated in order to disseminate vital information on ARVs, and to promote rational drug use and responsible prescribing of these agents.

P102
INCREASED DARUNAVIR DOSES FOR HEAVILY TREATMENT-EXPERIENCED PATIENTS WITH LOW LEVEL VIREMIA

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BACKGROUND: Frequently used salvage regimens contain boosted darunavir with etravirine and raltegravir plus a backbone. Sparse real-life data is available on the options if such treatments fail. We present 4 cases of heavily treatment-experienced HIV-infected Caucasian males on such salvage regimens to determine if an increase of darunavir or ritonavir doses can improve the weighted score genotypic inhibitor quotient (gIQ WS) and viral suppression.

METHODS: Summary of four case reports below.

Patient Demographics/ Baseline pVL	ARVs	Baseline DRV trough level; gIQ WS	DRV trough level (DRV 600 mg BID + RTV 200 mg BID); gIQ WS	DRV trough level (DRV 900 mg BID + RTV 100 mg BID); gIQ WS	Outcomes
52 y.o. male; pVL 470 copies/mL (8 months on ARVs)	AZT, 3TC, TDF, RAL, ETV, DRV 600 mg BID, RTV 100 mg BID	2.2 mg/L; gIQ WS 314	2.2 mg/L; gIQ WS 314	2.6 mg/L; gIQ WS 371	no adverse effects; pVL 46 copies/ mL
46 y.o. male; pVL 240 copies/mL (>4 months on ARVs)	TDF, FTC, RAL, ETV, DRV 600 mg BID, RTV 100 mg BID	2.2 mg/L; gIQ WS 550	1.8 mg/L; gIQ WS 450	3.5 mg/L; gIQ WS 875	no adverse effects; pVL < 40 copies/ mL
48 y.o. male; pVL 9700 copies/mL (4 months on ARVs)	RAL, ETV, DRV 600 mg BID, RTV 100 mg BID	Peak level: 6.9 mg/L	4.2 mg/L; gIQ WS 600	6 mg/L; gIQ WS 857	no adverse effects; pVL < 40 copies/ mL
53 y.o. male; pVL 420 copies/mL (9 months on ARVs)	3TC, RAL, ETV, DRV 600 mg BID, RTV 100 mg BID	0.84 mg/L; gIQ WS 70	N/A	2.9 mg/L; gIQ WS 241	no adverse effects; pVL 1500 copies/ mL (developed integrase mutations); possible non-adherence

CONCLUSION: Heavily treatment-experienced patients on boosted darunavir and an unsuppressed VL may benefit from an increase in darunavir dose to 900 mg BID with ritonavir 100 mg BID to improve gIQ WS. Increasing ritonavir to 200 mg BID did not improve darunavir levels or VL response. Higher doses of darunavir appear to be well tolerated. Our last case suggests adherence remains of high importance.

P103
BIOEQUIVALENCE OF THE CO-FORMULATION OF EMTRICITABINE/RILPIVIRINE/TENOFOVIR DF

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BACKGROUND: Rilpivirine (RPV, TMC278) 25mg QD has demonstrated efficacy similar to efavirenz with an improved safety profile with respect to CNS AEs, lipid abnormalities, incidence of rash in Phase 2 studies and is not teratogenic. A New Drug Application (NDA) for RPV has been submitted based on two pivotal Phase 3 double-blind, randomized 48-week studies, which evaluated the efficacy, safety and tolerability of RPV in treatment-naïve HIV-1-infected adults in combination with the NRTI backbone agents emtricitabine (FTC 200 mg) and tenofovir disoproxil fumarate (TDF 300 mg). This study evaluated the bioequivalence of a FTC/RPV/TDF fixed dose regimen tablet (FDR) to coadministration of the individual components (FTC+RPV+TDF).

METHODS: A randomized, single-dose, open-label, Phase 1 study in healthy adults under fed conditions. Serial blood samples were obtained over 192 hours following oral administration of each treatment and PK parameters calculated. Formulation bioequivalence was assessed by 90% confidence intervals (CI) for the ratio of geometric least square means (GMR) for C_{max}, AUC_{last} and AUC_{inf} for each drug of the FDR versus the individual components.

RESULTS: 36 subjects enrolled and 34 completed the study. All treatments were generally well tolerated; most adverse events were mild in severity. Arithmetic mean (CV %) of the PK parameters are presented

below; all PK parameters met the definition for bioequivalence:

Mean (CV%) PK Parameter	FTC/RPV/TDF	FDR Tablet FTC + RPV + TDF
RPV		
C_{max}	116 (29.6)	99.8 (30.5)
AUC_{last}	3010 (34.4)	2600 (32.5)
AUC_{inf}	3410 (39.8)	2900 (38.3)
FTC		
C_{max}	1750 (23.6)	1650 (21.9)
AUC_{last}	9420 (14.3)	9420 (13.9)
AUC_{inf}	9660 (14.1)	9660 (13.5)
TFV		
C_{max}	325 (26)	291 (26.4)
AUC_{last}	3110 (21.1)	3040 (21.3)
AUC_{inf}	3310 (19.7)	3240 (19.7)

*Cmax: ng/mL, AUC: ng*hr/mL*

CONCLUSIONS: The FTC/RPV/TDF fixed dose regimen tablet is bioequivalent to its individual components. This tablet is a next-generation, once-daily single-tablet antiretroviral regimen for the treatment of HIV-1 infection and may offer an attractive treatment option to efavirenz-containing regimens.

P104

THE THREE-DRUG COMBINATIONS OF THE NRTIS EMTRICITABINE AND TENOFOVIR WITH THE NNRTIS EFAVIRENZ OR RILPIVIRINE OR PROTEASE INHIBITORS DARUNAVIR OR ATAZANAVIR SHOW HIV-1 ANTIVIRAL SYNERGY IN VITRO

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BACKGROUND: A novel single tablet regimen (STR) consisting of the NNRTI rilpivirine (TMC278, RPV) and the NRTIs emtricitabine (FTC) and tenofovir disoproxil fumarate (TDF) is in development. The STR of efavirenz (EFV)/FTC/TDF is widely used as a complete antiretroviral regimen and shows synergy in three-drug combination experiments. Boosted protease inhibitors (PIs) such as darunavir (DRV), atazanavir (ATV), or lopinavir (LPV) are also used in combination with FTC/TDF. The combined antiviral activities of the three-drug combinations of FTC and tenofovir (TFV) with these NNRTIs or PIs were evaluated to understand the in vitro potencies of and possible synergies of these regimens.
METHOD: The antiviral effects of three-drug combinations of FTC+TFV plus an NNRTI or PI were tested in 5-day cytopathic assays in acutely HIV-1-infected MT-2 cells and analyzed by the combination index (CI) method (CalcuSyn software). A series of in vitro assay conditions, data quality rules, and positive controls were developed to yield reproducible and interpretable results using the CI method.
RESULTS: Using these conditions and rules, the controls showed synergy scores of additivity for FTC+FTC+FTC (CI = 0.92 ± 0.08), antagonism for stavudine+ribavirin+zidovudine (CI = >5.91±2.62), and synergy for EFV+FTC+TFV (CI = 0.57±0.08). The combination of FTC and TFV with the NNRTI RPV showed moderate synergy with a CI score of 0.73±0.13, which was not statistically different from EFV+FTC+TFV. The combinations of FTC and TFV with the PIs DRV or ATV showed moderate synergy (CI = 0.77±0.11 and 0.83±0.19, respectively). In contrast, the combination of FTC and TFV with the PI LPV showed only additive antiviral activity (CI = 0.97±0.10).
CONCLUSIONS: The observation of synergistic anti-HIV-1 activity for the combinations of FTC+TFV with RPV, EFV, DRV, and ATV suggests enhancement of the individual anti-HIV activities of these compounds within cells.

Prevention, Natural History, and Monitoring

P105

CLINICAL FEATURES, TREATMENT, AND OUTCOME OF PRIMARY HIV-ASSOCIATED THROMBOCYTOPENIA IN THE HAART ERA

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The clinical features of primary HIV-associated thrombocytopenia (PHAT) were documented prior to the widespread use of HAART, and the optimal treatment for PHAT beyond HAART is unknown. Here we describe the clinical features, treatment, and outcomes of patients with severe PHAT in the HAART era. We searched the BC Centre for Excellence in HIV/AIDS (CFE) database to identify patients with ≥ 1 platelet count $<20\times10^9$/L since January 1996. Patient charts were reviewed and descriptive statistics were used to summarize the data. Of 5290 patients in the CFE database, 31 (0.3%) with a diagnosis of PHAT and platelet count $<20\times10^9$/L were identified. At PHAT diagnosis, 8 patients had a CD4 count <200 cells/mL and ten patients were receiving HAART. Sixteen patients had a history of injection drug use (IDU), four patients were coinfected with hepatitis B, and 12 with hepatitis C. Initial treatment included IVIG, steroids, anti-RhD and HAART. Median platelet response was 58×10^9/L. At a median follow-up of 48 months, 27 patients (87%) required treatment for a recurrent platelet count $<20\times10^9$/L, including 8/13 patients receiving HAART with initial therapy. Response to treatment was not associated with treatment received but was lower in patients with comorbidities, IDU, and hepatitis B or C coinfection. Complications of PHAT treatment occurred in 2 patients and there were 4 deaths. Comorbidities in patients who died included hepatitis C, hepatic cirrhosis, portal hypertension, hepatocellular failure, and IDU. Although most patients with severe PHAT diagnosed in the HAART era achieved a safe platelet count with primary treatment, nearly all required retreatment, including 8/13 patients receiving HAART with initial therapy. Inferior response was associated with IDU, comorbidities, and hepatitis B or C coinfection. This is to our knowledge the largest series of PHAT reported in the HAART era.

P106

EVALUATION DE LA FAISABILITE DE LA LIVRAISON DES SERVICES DE SANTE EN FRANCAIS AUX PATIENTS SEROPOSITIFS A VANCOUVER

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INTRODUCTION : Une étude sur les langues officielles publiée en 2001 a noté l'absence de la livraison des services de santé aux populations francophones en situation minoritaire, et a aussi rapporté que près de 50% des francophones dans cette situation avaient retardé ou évité de consulter de peur de ne pas être compris. Au cours des 2 dernières années, nous avons mis sur pied un projet pilote pour évaluer la possibilité de livrer des services de santé en français aux populations les plus démunies de Vancouver atteintes de l'infection au VIH.
MÉTHODES : La clinique communautaire Pender et la clinique « Downtown Infectious Diseases » sont maintenant désignées pour livrer des services de santé en français aux personnes les consultant directement, ou qui leur sont référées par l'entremise du centre communautaire La Boussole, desservant les francophones en besoin. Nous avons complété un recensement des patients ayant consulté et de leur satisfaction avec les services reçus par les 3 médecins livrant les services.
RÉSULTATS : Un total de 43 patients séropositifs (VIH et/ou VHC) consultent maintenant sur une base régulière, y compris 8 femmes. Tous les patients se disent satisfaits des services, et plus de 90% se disent mieux intégrés au système de santé suite à la disponibilité des services en français, bien qu'ils disent pouvoir s'exprimer adéquatement en anglais. Les évaluations de l'intégration à long terme et de la réponse au traitement antirétroviral sont en cours.

CONCLUSION : Nous avons clairement démontré la faisabilité de livrer des services de santé en français intégrés à l'intérieur des structures existantes, et des bénéfices apportés par de tels services. Notre programme pourrait servir de modèle au développement de services aux autres communautés minoritaires linguistiques et culturelles à travers le Canada.

P107

DISCONTINUATION OF PROPHYLAXIS FOR *PNEUMOCYSTIS JIROVECI* PNEUMONIA WITH CD4+ T CELL COUNT <200 CELLS/μL WHEN HIV VIRAL LOAD IS SUPPRESSED ON ANTIRETROVIRAL THERAPY: A SYSTEMATIC REVIEW AND META-ANALYSIS

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BACKGROUND: Guidelines on *Pneumocystis jiroveci* pneumonia (PJP) prophylaxis in HIV-infected individuals indicate that prophylaxis may be safely discontinued when the CD4+ T count is >200 cells/μL for at least 3 months on antiretroviral therapy. The viral load (VL) is currently not part of the criteria for prophylaxis discontinuation, but fully-suppressed viremia may enable discontinuation of PJP prophylaxis even with CD4+ T cell counts <200 cells/μL.

METHODS: A systematic review and meta-analysis was performed to determine the incidence of PJP in HIV-infected individuals with CD4+ T cell counts <200 cells/μL and fully suppressed VL on antiretroviral therapy but without PJP prophylaxis.

RESULTS: Four articles examined individuals who discontinued PJP prophylaxis with CD4+ T counts <200 cells/μL in the context of fully suppressed VL on antiretroviral therapy. The overall incidence of PJP was 1.10 cases per 100 person-years (PY) (95% confidence interval (CI) 0.04-2.16). This was lower than the natural history rate for PJP (11.3 cases/100 PY, 95% CI 7.35-16.5) and lower than the incidence in persons with CD4+ T cells <200 cells/μL, before the availability of highly active antiretroviral therapy, who continued prophylaxis (2.66 cases/100 PY, 95% CI 0.73-4.59). This incidence was, however, higher than for individuals on antiretroviral therapy who discontinued prophylaxis with CD4+ counts >200 cells/μL (0.14 cases/100 PY (95% CI 0-0.36).

CONCLUSION: PJP prophylaxis may be safely discontinued in HIV-infected individuals with CD4+ T counts <200 cells/μL providing the VL is fully suppressed on antiretroviral therapy. A revision of guidelines on PJP prophylaxis to include consideration of the VL is merited.

P108

DEVELOPING A SIMULATED CLINICAL ENCOUNTER (SCE) TO TEACH ABOUT HIV/AIDS: IMPLICATIONS FOR UNDERGRADUATE MEDICAL STUDENTS AND HIV-POSITIVE PATIENT INSTRUCTORS

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INTRODUCTION: Medical students require more comprehensive HIV education. One model takes into account the lived experience of patients, actively involving them as 'patient instructors.' This model aligns with the Greater Involvement of People with HIV/AIDS (GIPA) Principles, which aims to facilitate meaningful participation of people living with HIV/AIDS (PHAs) at regional, national and global levels. A literature review was conducted to understand healthcare education programs involving patient instructors to inform the development of a SCE for medical students at the University of Toronto.

METHODS: EMBASE, MEDLINE, PubMed, and PsychINFO were searched from 1990 until October 2010. Medical subject headings and keyword searchers were combined. Relevant literature published in English was synthesized highlighting unique characteristics of documented programs.

RESULTS: An SCE may be a safe modality facilitating student and PHA patient instructor sharing and development of skills. For medical trainees, interactive instructional activities like participatory skill-building interactions and clinical observations are more effective than didactic approaches. Educators should critically consider what behaviour the SCE is seeking to augment, e.g. knowledge, attitudes, communication and/or engagement strategies. An SCE involving patient instructors may profoundly shape a physician's communication and practice by giving a 'face' to HIV. 'Patient instructor' opportunities may strengthen PHAs' sense of empowerment by improving their communication and relationship building with their own physicians. Employment and training opportunities may also be provided to strengthen transferable skills as teachers and facilitators. The sustainability of employment opportunities must be considered when developing an SCE in a medical education program. Emotional and professional supports such as peer debriefing and reflection are important for both trainees and PHAs throughout the SCE experience.

CONCLUSIONS: An SCE involving PHA patient instructors will be developed and evaluated for efficacy as an innovative and acceptable learning method, and as a meaningful way to involve PHAs in medical education.

P109

DELIVERING HIV TESTING AND COUNSELLING: WHAT DOES THIS MEAN FOR UNDERGRADUATE MEDICAL STUDENTS?

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INTRODUCTION: Medical students require more comprehensive HIV education through innovative and interactive modalities. Physicians may not receive adequate training in sexual health and HIV testing and counselling. A literature review was conducted to understand the HIV testing experiences of HIV-positive and HIV-negative adults to inform the development of HIV counselling and testing training programs for medical students at the University of Toronto.

METHODS: EMBASE, MEDLINE, PubMed, and PsychINFO were searched from 1990 until October 2010. Medical subject headings and keyword searchers were combined. Relevant literature published in English was synthesized highlighting HIV testing experiences.

RESULTS: HIV test seekers preferred test providers who were calm, comforting, encouraging, sympathetic, compassionate, down-to-earth and relaxed. Test seekers appreciated receiving emotional support that was geared towards their level of worry and anxiety related to the testing experience. Maintaining control over one's testing experience was related to the level of trust with the provider and broader healthcare system (i.e. confidence that one's HIV status would not be disclosed), seeking anonymous testing services and not fearing labelling or stigmatization by the HIV test provider. HIV testing and counselling was not considered a 'one size fits all' approach, rather it became an individualized assessment addressing individual, community and societal contexts. Prevailing public health practices, social values and regional political priorities were also considered relevant to the encounter.

CONCLUSIONS: Incorporating emotional support and interpersonal processes into HIV testing may make the experience more positive and affirmative. Reciprocal exchange between test providers and recipients will be incorporated into a training program where medical students conduct HIV pre- and post-test counselling for trained patient instructors who are living with HIV. The goal is to improve medical students' delivery of HIV testing and counselling via improving comfort discussing the psychosocial aspects of HIV and communicating with diverse populations.

P110

DOES CD4:CD8 NORMALIZATION IN THE ERA OF EFFECTIVE COMBINED ANTIRETROVIRAL THERAPY IMPROVE HEALTH OUTCOMES?

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BACKGROUND: CD4:CD8 ratios become inverted as immune dysregulation progresses in HIV+ individuals. Modern cART can result in ratio normalization in a small proportion of patients. We examine whether CD4:CD8 normalization after cART is associated with reduced disease progression to AIDS defining illnesses (ADI) and death.

METHODS: Data from participants of CANOC, a Canadian multicentre cohort of HIV+ adults, with CD4:CD8 < 1.2 and no ADI prior to starting cART were analyzed between 2000-2010. Predictors of ADI and death were assessed using adjusted Cox proportional hazards models that included time-updated normalized CD4:CD8 ratio.

RESULTS: 4481 individuals were included in the analysis. There were 260 ADIs and 329 deaths; 321 normalized their ratios. In univariate analyses, CD4:CD8 normalization was associated with a lower risk of ADI and of ADI and death combined. In a multivariable model adjusting for age, gender, MSM, IDU, endemic country risk and province, factors associated with the combined outcome of ADI and death are shown below:

Variable	HR	95% CI	P value
Univariate analysis (outcome)			
Normalized CD4:CD8 ratio [Time-dependent] (ADI)	0.53	0.29-0.96	0.04
Normalized CD4:CD8 ratio [Time-dependent] (ADI/death)	0.14	0.2-1.0	0.05
Multivariate analysis (ADI/death)			
Normalized CD4:CD8 ratio [Time-dependent]	0.65	0.31-1.39	0.27
Continuous age (per 10 years)	1.30	1.20-1.41	<0.0001
Injection drug use (IDU) risk factor	1.49	1.15-1.94	0.003
First year of ARV treatment			
2000-2001	REF	---	---
2002-2003	1.09	0.83-1.44	0.53
2004-2005	1.02	0.76-1.37	0.90
2006-2007	0.99	0.72-1.37	0.97
2008-2010	0.62	0.38-1.00	0.05
Baseline regimen			
NRTI	REF	---	---
Boosted-PI	2.48	1.24-4.95	0.01
Single-PI	2.27	1.09-4.71	0.03
NNRTI	2.26	1.14-4.48	0.02
Baseline CD4 (cells/mm^3)			
>350	REF	---	---
200-350	1.08	0.75-1.55	0.69
<200	1.86	1.33-2.60	0.0003
Time dependent Viral Load (/log copies/ml)	1.68	1.57	<0.0001

The effect of CD4:CD8 ratio was mitigated by adjustment for viral load and CD4 cell count.

CONCLUSIONS: In addition to expected factors such as age, IDU, CD4 and viral load, CD4:CD8 normalization may be modestly protective against ADI and death, though this was not statistically significant in a multivariable model. The increased risk of events associated with NRTI and PI-based cART was unexpected and might represent selection bias in those receiving triple nucleoside regimens. Further studies with greater power will be needed to determine if CD4:CD8 normalization is associated with improved outcomes.

P111

EPIDEMIOLOGICAL AND GENOTYPIC CLUSTERING OF HIV INFECTION WITHIN NORTH AMERICA IN A COHORT OF HIV-INFECTED PATIENTS SEEKING ANTIVIRAL TREATMENT (ART) IN THE OPEN-LABEL ARIES STUDY DURING 2007

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BACKGROUND: Demographic differences between patients identified in HIV transmission clusters and the overall screened population (OSP) in the open-label ARIES study were examined. Patients received ritonavir-boosted atazanavir plus abacavir/lamivudine and at 36 weeks were randomized 1:1 to continue on their original regimen or discontinue ritonavir.

METHODS: HIV reverse transcriptase (RT) and protease sequences were obtained from ART-naïve patients from 69 centers in mainland U.S., Canada, and Puerto Rico. Phylogenetic relationships of the HIV sequences were evaluated using neighbor-joining with maximum likelihood distances and 1000 replicates of bootstrap analysis.

RESULTS: 43 clusters containing 2-11 patients were identified (109/709 patients). Patients within transmission clusters, compared to the OSP were more likely to be male (90% vs. 84%, respectively), white (65% vs. 60%) and had fewer major RT/protease resistance mutations (IAS-USA-defined) than the OSP (9% vs. 13%), or be HBV-co-infected (0% vs. 2%) or HCV-co-infected (4% vs. 8%). While 15% of the OSP was Canadian, transmission clusters from Canadian sites were significantly more frequent (30%; p<0.0001; Fisher's exact test). 10/43 clusters contained >2 patients. 6/43 clusters contained women. 36/43 clusters had ≥1 subject with MSM risk factors; 6/43 clusters had only heterosexual risk factors noted. 8/43 clusters had patients with non-synonymous self-identified risk factors (e.g. MSM vs. heterosexual). 30/43 (70%) clusters had ≥2 cluster members seeking treatment in same city, and 33/43 (77%) ≥2 cluster members in same state/territory. 515/709 patients initiated ART; 33/515 experienced virologic failure through 144 weeks; only 2/33 were in transmission clusters.

CONCLUSIONS: Transmission clusters were significantly more frequent in Canadian patients from this cohort. Resistance mutations were less prevalent in transmission clusters than the OSP (9% vs. 13%). Overall, few patients (6%) who initiated therapy in the ARIES study experienced virologic failure through 144 weeks; patients not part of transmission clusters were more likely to experience virologic failure.

P112

LINKAGE OF INNER CITY AND ACADEMIC CLINICS: A MODEL FOR THE CARE OF HIV-INFECTED INJECTION DRUG USERS

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INTRODUCTION: HIV-infected injection drug users (IDUs) have been underserved with respect to the diagnosis and treatment of their HIV due to the lack of established structures for their care as well as the absence of an established system of care beyond their initial point of contact for those wishing to seek care outside of their traditional neighbourhoods. There is a need to evaluate the success rates of this program to determine its viability in the long term.

METHODS: We conducted a "snapshot" analysis of the patients engaged in care in our clinics (the Pender Community Health Center [PCHC] linked with the university-based Downtown Infectious Diseases Clinic [DIDC]). Patients are initially linked to PCHC to initiate CART and transferred to DIDC as their addiction behaviour and other aspects of their social infrastructure become more stable. We report here on their baseline demographic characteristics, the long-term success rates of CART and the correlates of success.

RESULTS: A total of 465 patients (12% female) were seen at the DIDC. Of these, 375 had been on treatment within the past 6 months, with 67% of patients being on Truvada-based regimens, 43% on PI-based, 33% on NNRTI-based and 31% on integrase inhibitor-based CART. At the latest follow-up visit, 75% of patients had maximal virologic suppression (HIV RNA < 50 copies/mL). Correlates of success included male sex, ongoing attendance at DIDC and lack of daily cocaine use.
CONCLUSION: A comprehensive program to engage IDUs in care must include provision for long-term care within or beyond their initial area of residence. This comprehensive model (with initial engagement in the community clinic with a clear plan for transition as appropriate) is highly successful, independent of the regimen used and all relevant demographic variables.

Resistance

P113
A BLUNTED IL-17 RESPONSE AND HIV-SPECIFIC IL-10 PRODUCTION ARE ASSOCIATED WITH PROLONGED COMMERCIAL SEX WORK WITHOUT HIV ACQUISITION IN KENYAN FEMALE SEX WORKERS

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INTRODUCTION: HIV exposure does not always result in infection. It is likely that a 'critical mass' of activated CD4 T cells, perhaps within highly susceptible CD4 T cell subsets, is needed at the mucosal site of exposure to result in acquisition. To inform future vaccine/microbicide design, here we characterized cellular immune responses in the blood and genital mucosa of HIV-exposed seronegative (HESN) female sex workers and lower risk non-sex worker controls to better define the correlates of HIV protection/susceptibility.
METHODS: Blood and cervical cytobrush samples were obtained from 116 HESN female sex workers (FSWs) and 17 non-sex worker low-risk controls. Mononuclear cells were incubated with a pool of optimized HIV CD8 epitopes, SEB or culture medium alone. Gene expression and cytokine production were measured and evaluated in conjunction with behavioural variables. All assays were run by lab personnel blinded to participant status.
RESULTS: We observed reduced production of pro-inflammatory and IL17a/IL22 cytokines in 'resting' PBMC from HESN participants; SEB-induced production of IL17a/IL22 cytokines was also reduced in both the cervix and blood. HIV-specific IL10 and MCP-1 responses were present in the blood of HESN participants. Interestingly, only virus-specific immunoregulatory (IL10) responses were associated with an increased duration of HIV exposure without infection.
CONCLUSION: Blood and cervical lymphocytes from HESN female sex workers produced less pro-inflammatory cytokines and IL17a/IL22 at rest or after mitogen stimulation, and an immunoregulatory HIV-specific response was associated with prolonged exposure without infection. These findings broaden the 'immune quiescence' model of HIV immune protection to include genital-derived lymphocytes, and describe a novel HIV-specific immunoregulatory immune phenotype.

P114
DECODING DRIED BLOOD SPOTS-BASED HIV GENOTYPING RESULTS USING TAGGED, POOLED PYROSEQUENCING

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INTRODUCTION: Dried blood spots (DBS) are an alternative specimen format to plasma for HIV genotyping. Whereas a plasma genotype represents circulating virus; a DBS genotype contains information from both plasma and archived, integrated virus. Tagged, pooled pyrosequencing (TPP) is a novel technique that allows for massive clonal analysis of HIV specimens. To characterize the contributions of plasma and integrated virus to the measured DBS genotype, we used TPP to analyze each viral compartment and compared the results to the plasma genotype.
METHODS: DBS, plasma and peripheral blood mononuclear cells (PBMCs) were prepared using whole blood from 19 HIV infected volunteers. HIV genotyping was performed on all specimens using TPP. Mixed bases in the TPP consensus were identified where minor variants existed in >20% of the reads. TPP was used to evaluate the concordance among the DBS, cells and plasma for each specimen. The percent similarity between the plasma and DBS was then calculated for each specimen at discordant sites. Results were further stratified according to viral load (VL), CD4 count and antiviral therapy (ART) status.
RESULTS: TPP genotyping demonstrated that VL and ART status, but not CD4 count, had a significant impact on the DBS and plasma genotype concordance. Subjects with VL<5000 copies/ml had a significantly higher proportion of discrepancies in the sequences between DBS and plasma when compared with those with lower VL (88.32±5.38% vs 67.55±16.92%, p=0.001). Plasma and DBS TPP genotypes from subjects who were not receiving ART (naïve or off therapy) were significantly more concordant than among those who were receiving ART (86.02±7.33% vs 60.57±19.53%, p=0.005).
CONCLUSIONS: The observation that HIV genotype concordance between DBS and plasma is greatest when VL is ≥ 5000 copies/ml and/or the patient is not receiving ART may limit the application of DBS for monitoring of patients under treatment.

EPIDEMIOLOGY AND PUBLIC HEALTH

Behavioural and Biomedical Interventions to Prevent HIV and their Evaluation

P116
AN INNOVATIVE PREVENTION INTERVENTION FOR ASIAN MSM (AMSM) IN TORONTO

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ISSUES: Survey results conducted by ACAS in 2001, indicated that Asian MSM (AMSM) who frequent bathhouses in Toronto demonstrated a need for accessible testing, culturally and linguistically appropriate information on HIV/STI prevention, and more skills building in safer sex negotiation. AMSM felt ostracized by the mainstream gay community simply because they do not fit into the ideal gay male image and consequently, issues involving stigma, racism, body image, marginalization, language barriers and discrimination surfaced during the survey. As a result it has made it difficult for AMSM to negotiate and practice safer sex, and thus made it challenging for prevention and education work.
DESCRIPTION: To address the issues, an Asian Bathhouse Night (ABN) event was developed in 2006 to: provide effective HIV prevention outreach and education, reduce racism and isolation and increase self-esteem of AMSM. This was achieved by providing culturally and linguistically appropriate information on HIV/STIs, interactive sexual health workshops, and inviting community health service partners to provide on-site testing at the bathhouse. AMSM bathhouse users recruited from the bathhouse as volunteers every year, are trained as peer leaders to plan, organize, facilitate workshops, evaluate and act as interpreters for AMSM who did not speak English.
LESSONS LEARNED: After 4 years, the ABN event has successfully run 40 events and 100 sexual health workshops organized by peer leaders. Returned participant evaluations indicated: more got tested for HIV/STIs, felt a greater sense of belonging and have increased self-esteem. The event created a unique opportunity to outreach and provide needed services to an often hard-to-reach segment of the AMSM population. In 2009, ACAS developed a manual for staff and peer leaders to serve as guide for practice. As a result of the success, the ABN event model has been adapted in part by various Toronto AIDS services organizations.

P117
REVIEWING THE LITERATURE ON EVALUATION OF HIV PREVENTION PROGRAMS DELIVERED BY ASOS: WHAT QUESTIONS REMAIN?

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BACKGROUND: A key component of the response to HIV has been the delivery of prevention programs by diverse AIDS service organizations (ASOs). Due to the ongoing instability in the HIV epidemic, there is renewed urgency to determine ways in which HIV programs might be made more effective. While some research has emerged on assessing the effectiveness of HIV prevention programs using social science paradigms, there are challenges in the uptake of this research by ASOs.
METHODS: A review of the literature on ASOs, technology transfer and program evaluation was conducted. Key readings were identified and reference lists were hand searched. Conceptual frameworks were identified. Gaps in the knowledge base were determined in order to inform future research and practice.
RESULTS: Published literature about the uptake of evidence-based prevention programs was predominantly from the US. Few conceptual frameworks positioned ASOs as important agents as deliverers of HIV prevention programs. In general, there was a lack of clarity on how ASOs evaluate their HIV prevention programs. Calls for research that situates knowledge derived from community-based practice alongside evidence derived from research were made in the literature.
CONCLUSIONS: In response to the identified knowledge gaps in the literature, a research project is proposed to address the following questions: How do ASOs in Ontario evaluate their HIV prevention programs? What qualities or attributes of HIV prevention programs are used for evaluation by ASOs and why? The purpose of the proposed case study research project is to expand our understanding of evaluation of HIV prevention programs at ASOs in Ontario. This study will seek to explain evaluation practices at ASOs by looking at the social and political context in which ASOs operate.
How ASOs evaluate their own programs is already known, to some degree, by practitioners in the HIV system. However, a systematic understanding of these insights is lacking and could inform action that could lead to a more effective and compassionate response to HIV.

P118
BIOMEDICAL HIV TECHNOLOGIES: SOCIO-BEHAVIOURAL ISSUES IN IMPLEMENTATION

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BACKGROUND: New HIV prevention technologies (NPTs), such as vaccines, microbicides, and treatment as prevention, are beginning to show promise in clinical trials and their implementation will be challenging. The use of these technologies raises several socio-behavioural issues that will need to be addressed before, during and after their eventual implementation, including awareness, access, acceptability, adherence, and risk compensation.
METHODS: As a first step to investigating these issues, a literature review was undertaken to gain a better understanding of the socio-behavioural issues involved in how individuals may use new biomedical prevention technologies to provide insight into the eventual implementation of these technologies. Major health and social science databases were searched through the Scopus search engine. The search encompassed socio-behavioural issues (e.g., awareness, acceptability, risk compensation, etc.) related to five biomedical approaches to HIV prevention: post-exposure prophylaxis, pre-exposure prophylaxis, treatment as prevention, microbicides, and vaccines. The search included both published and grey literature.
KEY FINDINGS: Overall, awareness of these technologies varies, and the acceptability of the technologies is associated with efficacy, side effects, and cost. Evidence on risk compensation with the introduction of new prevention technologies is mixed. Although some of the new technologies portend empowerment for certain groups in sexual negotiation, there are nonetheless numerous barriers at both the individual and structural levels which will impact the uptake and use of new prevention technologies, including perceptions of HIV risk; gender relations; stigma; race; and socio-economic status. Combination prevention packages that include behavioural and biomedical approaches will be required.
IMPLICATIONS: In order to provide a public health benefit, the implementation of NPTs will need to promote their awareness, ensure access, support adherence, and prevent risk compensation. While planning for implementation of these technologies, structural barriers and supports will need to be taken into account.

P119
PARTIALLY PROTECTIVE HIV PREVENTION TECHNOLOGIES: IMPLICATIONS FOR MESSAGING AND UPTAKE

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BACKGROUND: New biomedical prevention technologies (NPTs) for HIV prevention are on the horizon and their potential implementation will raise a number of issues. A key issue is that the technologies will likely only offer partial protection against HIV infection, raising two important questions about uptake: first, how to promote the uptake of a partially protective technology and, second, how to communicate the idea that the technologies are not a replacement for proven strategies of HIV prevention.
METHODS: A literature review was conducted to survey these two issues. A search for relevant research literature was conducted in the fields of medical, health and social sciences. Searches included the role of efficacy in the uptake and communication of a wide spectrum of technologies, within and outside of HIV prevention.
KEY FINDINGS: The perceived efficacy of a particular technology is central to its uptake for individuals, health care practitioners, and policy-makers. Other contextual factors impact the uptake of technologies, including social networks and shared discourses about how technologies work. Health care practitioners also emerge as a key gatekeeper to the uptake of technologies. It has been observed that communicating the notion of "partial efficacy" is important, but there are no clear directions on how to do so effectively. Information-based "education" campaigns may be too simplistic and not reflect the ways in which individuals make health decisions. Social marketing and health behaviour change theories provide insight into the design of messages and choosing correct communication channels and messengers.
IMPLICATIONS: The partial protection offered by new prevention technologies will be a key implementation challenge. Future work in this area needs to consider understandings of "partial protection" among target groups as a step towards the formative research necessary to develop messaging to accompany the implementation of NPTs.

P120
KNOWLEDGE ON THE ORIGIN OF HIV/AIDS AMONG SOUTH AFRICAN ADOLESCENTS

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BACKGROUND: It is widely accepted that HIV-1 and HIV-2 originated as zoonotic reservoirs in the primates chimpanzee and sooty mangabey, respectively. In highly endemic regions such as South Africa, adolescents are an important demographic for HIV knowledge dissemination, particularly in light of the strong association between HIV knowledge and preventative behaviour. Little is known about the impact of broader and evidence-based HIV knowledge, including the origins of HIV/AIDS, to adolescent populations living in endemic regions. This study was conducted to determine knowledge of the origins of HIV and its correlates among adolescents living in Soweto, South Africa.
METHODS: We analyzed data from a population-based survey of adolescents aged 14-19 years living in Soweto, South Africa who provided parental consent and adolescent assent. The study interviewed young women and men about their HIV knowledge, educational attainment, and HIV, sexual and reproductive health behaviors. We calculated the proportion of adolescents who correctly believed that HIV originated from primates and

used contingency table analysis and logistic regression to describe correlates associated with knowledge regarding the origins of HIV.
RESULTS: 294 adolescents were interviewed, of whom 93 (31.6%) were Zulu, 147 (50%) had ever had an HIV test, 242 (82.3%) had completed 12 or more years of education, 124 (42.2%) were women and 87 (29.6%) were gay, bisexual, lesbian or unaware of their sexuality. Only 66 (21.8%) of the individuals correctly believed that HIV originated in primates; 130 (44.2%) were unsure; and 100 (34.0%) believed in a number of other theories including, HIV came from God, space, pharmaceutical companies or the US government. After adjusting for ethnicity, currently in school and sex in the model, respondents who were gay, bisexual, lesbian or unaware of their sexuality were (AOR = 0.38; 95% CI: 0.18-0.78) less likely to correctly identify the origins of HIV.
CONCLUSIONS: There is a significant gap in knowledge about the origins of HIV among South African adolescents. More adolescents believe in conspiracy theories rather than those held by the scientific community.

P123
OPPORTUNITIES AND CHALLENGES IN A NEW HIV PREVENTION PARADIGM IMPLEMENTATION: PROJECT SPOT FOR RAPID HIV TESTING AMONG MSM IN THE MONTREAL GAY COMMUNITY

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BACKGROUND: Project SPOT has implemented a new HIV prevention paradigm combining biomedical, psychosocial and community research-intervention approaches.

OBJECTIVE: To describe the process of implementing SPOT in a community setting.

METHODS: Semi-structured interviews were conducted with 10 actors committed to the implementation of SPOT. Direct observation and documentary analysis were also done. A grounded theory approach guided the analysis of the data.

RESULTS: Five stages were identified in the SPOT implementation process. Common and specific challenges to each stage were ascertained. Throughout the implementation process, the importance of commitment by community organizations to the project was highlighted. However, coordinating a multidisciplinary team made of actors with different working methods and objectives was challenging. Common difficulties were: lack of an initial guiding plan, lack of time to develop promotional tools and perceived restrictions due to the research objectives (randomization, follow-ups, funding). At the initiation stage, mobilizing actors with a common goal but different expectations, interests and expertise was the main issue. The pending stage was characterized by communication and leadership issues, as well as role definition. The tactical and operational planning stages were influenced by the difficulties of elaborating an intervention in a research context. At the implementation stage, learning and implementing new testing and counselling methods in a community setting influenced by a research context became an issue.

CONCLUSIONS: It may not be easy but implementing new, broader paradigms in HIV prevention remains the best way to conjugate efforts and expertise. Despite the many challenges, factors like trust and mutual respect between team members, the strong willingness to work together on such an innovative project, the dedication to create a different and friendly space for HIV testing and a supportive and facilitating coordination, allowed the team to move from one stage to another and successfully implement SPOT.

Epidemiology of Co-infection (HCV/HIV, TB and syphilis)

P124
TUBERCULOSIS SCREENING IN INDIVIDUALS WITH HIV: AN OHTN COHORT STUDY (OCS) ANALYSIS FROM 2001 TO 2009

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BACKGROUND: Tuberculosis (TB) is preventable and treatable yet it is one of the most common infections seen in HIV. Ontario accounts for the highest number of TB cases in Canada. However the proportion of HIV/TB co-infections in Ontario is not well described. Our current study estimated the prevalence of latent TB infections in a cohort of individuals living with HIV in Ontario.
METHODS: Individuals diagnosed with HIV from 2001 to 2009 were reviewed from the OCS. Demographic data was extracted and analyzed using standard descriptive statistics. Mantoux test results were extracted for the reviewed cases. Latent TB infection was identified by the most recent positive Mantoux skin test result. Chi-square test was used to compare the proportion with a positive Mantoux test result between foreign and Canadian born individuals.
RESULTS: 1293 cases fulfilled the inclusion criteria. The mean age was 36.5 (SD 10.0) and 1009 (78.0%) were biological males. 445 (34.4%) were foreign born and 202 (15.6%) were born in a, HIV-endemic country. Of 479 cases with TB skin test results, 53 (11.1%; 95% CI 8.2% to 13.7%) were Mantoux test positive. Proportion of positive tests was significantly higher in foreign born individuals (24% versus 2%, $p < 0.0001$).
CONCLUSION: Foreign-born patients with HIV are more likely to be TB infected. This population should be targeted for screening and treatment. We continue to evaluate the relationship between HIV and TB in Ontario-based patients.

P125
TOBACCO AND MARIJUANA SMOKING AND PROGRESSION OF LIVER FIBROSIS IN HIV-HCV CO-INFECTED PATIENTS

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RATIONALE: There are limited data on the association between tobacco or cannabis smoking and liver fibrosis, but cross-sectional studies suggest fibrosis might be associated with smoking in hepatitis C (HCV) mono-infected populations. The aim of this study is to determine the association between tobacco or marijuana smoking and progression of liver fibrosis in a prospective cohort study of HIV-HCV co-infected patients.
METHODS: Co-infected patients from a multisite Canadian cohort with at least two visits were followed every 6 months. Fibrosis was measured using the AST-to-platelet ratio index (APRI) at each visit and ln(APRI) was modelled as a continuous variable. Information on current tobacco use (smoking status and number of cigarettes smoked per day) and marijuana use was collected at each visit. A separate linear mixed model with random intercept was run for each exposure variable, adjusting for gender, socio-economic status (education and income), duration of HCV infection, injection drug use (IDU), alcohol use at each visit, marijuana or cigarette use at each visit and time.
RESULTS: 764 subjects were included and followed for a median of 18 months; 74% were male with a mean age of 45 years. At baseline, 568 (76%) were current tobacco smokers and smoked an average of 16 cigarettes/day; 400 (53%) smoked marijuana, 365 (48%) drank alcohol and 250 (33%) were active IDU. Smokers had a 0.4% (95% CI: –8.5% to 8.6%) increase in APRI as compared to non-smokers. A

decrease of 1.6% (95% CI: –0.1% to 3.3%) in APRI per additional 5 cigarettes smoked was measured. Smoking marijuana was associated with a reduction in APRI of 1.9% (95% CI: –5.5 to 8.7%) compared to non-marijuana users. None of the small changes in APRI were statistically significant.

CONCLUSION: We found no evidence that smoking cigarettes or marijuana impacted liver fibrosis progression in the setting of HIV-HCV co-infection.

P126

PRETREATMENT CD4 COUNT DOES NOT ADVERSELY AFFECT THE OUTCOMES OF HCV THERAPY IN HCV/HIV CO-INFECTED INDIVIDUALS IN A COMMUNITY BASED CLINIC SETTING

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BACKGROUND: Hepatitis C Virus (HCV) infection causes considerable morbidity and mortality in individuals living with HIV. HCV is curable; however, many guidelines don't recommend HCV therapy in HCV/HIV co-infected individuals with a "low" CD4 count, because of concerns of decreased possibility of attaining Sustainable Virological Responses (SVR) and increased adverse reactions. We assess the efficacy of HCV therapy in co-infected individuals classified as high (>350) and low (≤350) CD4 groups by pretreatment CD4 counts.

METHODS: We retrospectively reviewed medical records at our community-based clinics in British Columbia. Those who were co-infected and had completed HCV therapy (Pegylated Interferon/Ribavirin per standard of care) between 2004 and 2009 were included. Efficacy was defined as attaining an SVR. We ran t-tests and logistic regressions in SPSS-18 for statistical analyses. The significance level was 0.05.

RESULTS: We identified 31 co-infected individuals (9 females, 22 males); the average age was 36.45 years; the mean HCV viral load was 21734.4; 17 individuals were in the high CD4 group and 14 the low group. Covariate measurements showed similar characteristics between the two groups: age, HCV viral load and genotype, gender, liver fibrosis stage, treatment discontinuation, failure, relapse, loss to follow up and re-infection; p-values were in the range: 0.12-0.93. 58.82% (10/17) of individuals in the high CD4 group attained an SVR versus 57.14% (8/14) in the low group, p=0.925.

DISCUSSION: We showed in a small real-life clinic population that HCV treatment outcomes were equally effective in HCV/HIV co-infected individual groups regardless of the pretreatment CD4 classification as low or high with threshold cut-off counts of 350. We tested 15 other thresholds to (CD4 of) 200, sequentially re-assessed the treatment outcomes between groups, and found no significant differences; p values were in the range: 0.25-0.98. We feel that absolute pretreatment CD4 count should not be the only determinant of initiating the HCV therapy.

P127

OUTCOMES OF HCV THERAPY IN HCV/HIV CO-INFECTED INDIVIDUALS NOT MUCH AFFECTED BY BEING ON HAART

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BACKGROUND: HIV-infected individuals especially those with a history of intravenous drug use (IDU) are frequently co-infected with Hepatitis C Virus (HCV). HCV therapy (Pegylated Interferon/Ribavirin) for hepatitis mono-infection is a cost-effective strategy. For HCV/HIV co-infections there are concerns about synergistic adverse reactions and decreased treatment effectiveness with concurrent HAART and HCV therapy. Consequently, many with co-infections who can benefit from therapy are not treated for HCV. In our real-life community-based clinics, we evaluate the impact of HAART on HCV therapy, and believe that providing treatment for both HIV and HCV in co-infected individuals is feasible and effective.

METHODS: Retrospective review of medical charts of HCV/HIV co-infected individuals who completed HCV treatment based on current standards of care regimens between 2004 and 2009 at our community-based clinics. HCV treatment outcomes were compared between two groups (on or not on HARRT). We ran t-tests and logistic regressions in SPSS-18 for statistical analyses. A significant p-value is defined if $p<0.05$.

RESULTS: There were 54 co-infected individuals (10 females, 44 males); 81.5% (44/54) had an IDU history; 46.3% (25/54) were on HARRT; mean age was 37.65 years. Mean pretreatment HCV viral load was 36901 and CD4 count 418. Overall, 51.9% (28/54) achieved a sustained virological response (SVR). There was no significant difference in SVR between the two groups (52% on HAART, 51.7% not on HAART; p=0.984). Covariate measurements showed similar characteristics in the two groups considering: age, HCV viral load and genotype, gender, ethnicity, treatment discontinuation, lost to follow up, relapse and re-infection. P-values were in the range: 0.205-0.984.

DISCUSSION: We observed similar HCV treatment outcomes regardless of concurrently being on HAART or not. It is noteworthy that the outcomes are relatively similar to those who are HCV mono-infected. We encourage increasing efforts for treating HCV in HCV/HIV co-infected populations.

P129

A HEPATOLOGIST IN THE HIV CLINIC: AN IMPORTANT MEMBER OF THE MULTIDISCIPLINARY TEAM

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BACKGROUND: HIV-related mortality has declined substantially since HAART introduction, but deaths attributable to non-HIV-related conditions have increased. Liver diseases have emerged as the leading cause of mortality.

OBJECTIVE: To describe the patient population managed by Hepatology at a tertiary care centre for HIV care.

METHODS: All patient encounters with DW at the Toronto General Hospital Immunodeficiency Clinic from Dec 2006 to Jan 2010 were captured using an electronic medical record. Liver fibrosis/cirrhosis was routinely assessed on all patients using non-invasive tests (Fibrotest/Fibroscan®) ± liver biopsy. Among the HCV-HIV co-infected, genotype and treatment response were also analyzed.

RESULTS: Of the 998 HIV-infected patients attending the TGH Immunodeficiency Clinic, 248 were followed by Hepatology: (88.3% male; median age 48) for the following reasons: HCV 52.4%, HBV 27.8%, fatty liver 10.9%, drug induced liver injury 2.0%, alcohol 1.6% and others 5.2%. Almost a third (31.5%) had cirrhosis and two have been listed for transplantation. Cirrhosis was most common in HBV-HIV (39.1%; 27/69), followed by HCV-HIV (31.5%; 41/130) and non-viral related causes (21.7%; 10/46). Alcohol abuse was noted in 19.4% and 35% had a formal psychiatric diagnosis (depression most common 86.2%; 75/87).

Of those with hepatitis C, 66.9% (87/130) were Genotype 1. A large proportion (48.8%; 62/130) have had HCV treatment and treatment is ongoing in 18/62. Of those who completed treatment with adequate follow-up, SVR was achieved in 51% (20/39). A pre-existing formal diagnosis of depression was more common in HCV-treated patients compared to untreated patients (25/62; 40.3% vs. 16/65; 24.6%) while the history of alcohol abuse was similar (13/62; 21.0% vs. 14/65; 21.5%).

CONCLUSION: Hepatology is an important member of the multidisciplinary team for those infected with HIV. Liver diseases and cirrhosis are common and is not limited to viral hepatitis. A high proportion HCV patients were treated (compared to the average published rates of 8.6%) despite the co-morbidities of psychiatric illness and alcohol abuse.

P131

HCV INFECTION AMONG HIV CASES REPORTED IN ONTARIO, 1999-2009

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OBJECTIVE: To describe the occurrence of hepatitis C virus (HCV)

infection among HIV cases diagnosed between 1999 and 2009 in Ontario by age, sex, risk category, and aboriginal or immigration status.
METHODS: We used the Ontario integrated Public Health Information System (iPHIS) to identify cases of hepatitis C among clients reporting HIV infection between 1999 and 2009. We calculated the percent of HIV cases ever reporting HCV infection by year of HIV infection, age and sex. Risk factors for HIV were examined for the years 2006 to 2009. We examined the order of reported infections and time between reports of infection.
RESULTS: Of 10,076 HIV cases reported between 1999 and 2009 in iPHIS, 934 (9%) had a hepatitis C diagnosis prior to or following HIV diagnosis. There was no significant difference in the proportion coinfected by gender. Of the 934 coinfected persons, approximately 38% reported hepatitis C infection first (more than one year prior to HIV infection), 48% reported both infections simultaneously (within one year of each other), and 15% reported HIV infection first (more than 1 year before hepatitis C infection). Median time to HIV infection in the HCV first group was 5.2 years. Median time to HCV infection following HIV infection was 3.2 years. Among HIV-infected cases, seventy percent (63/90) of intravenous drug users were coinfected with HCV as were 28% (7/25) of MSM-IDU. However, coinfection was also frequently observed among those in the heterosexual (85/644, 13%) and the MSM (61/1809, 3%) risk categories.
CONCLUSIONS: Coinfection with HCV is common among HIV-infected cases in Ontario. Although many coinfected cases are diagnosed almost simultaneously, opportunities for the prevention of both HCV and HIV exist among the 53% of HIV and HCV initially monoinfected cases. This could include identification of risk factors and counselling, and education that meets client's needs.

Epidemiology of HIV/AIDS among IDU

P132
EXTENT AND CORRELATES OF INJECTION OF PRESCRIPTION OPIOIDS FOR NON-MEDICAL PURPOSES IN THE SurvUDI NETWORK

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OBJECTIVES: Ethnographic observation conducted in downtown Montreal has highlighted worrying practices related to the injection of prescription opioids (PO) for non-medical purposes and the risk of HIV and HCV transmission. This analysis aimed at describing the extent of PO injection and identifying its correlates among injection drug users (IDUs) in the SurvUDI network.
METHODS: Since 1995, IDUs having recently (past 6 months) injected are recruited in harm reduction and health programs across the province of Québec and the city of Ottawa; they complete an interviewer-administered questionnaire and give saliva samples for anti-HCV and anti-HIV antibody testing. For this analysis, participants recruited between 2003/01 and 2009/06 were selected and their last visit retained. PO included opioids such as Dilaudid®, morphine, and oxycodone that were not prescribed to the participants. Correlates of PO injection (recent behaviours) were identified using multivariate logistic regression.
RESULTS: Among the 4461 participants, 76.2% were males with a median age of 38 years (females: 31 years); 40.7% reported at least one recent homelessness episode. Drugs reported as most often injected were mainly cocaine (62.2% of participants), PO (19.4%), and heroin (10.3%). Overall, 46.1% had injected PO. The final multivariate model showed a significant association between PO injection and year (adjusted odds ratio (AOR)=1.78 to 4.52 for 2005-2009 vs 2003), region (AOR=2.95 and 2.11 for the Ottawa/Outaouais region and Québec City vs Montréal), homelessness (AOR=1.53), daily injection (AOR=3.45), injection with a needle previously used by someone else (AOR=1.33), heroin injection (AOR=2.38), non-injection use of PO, amphetamines, PCP and benzodiazepines (AOR=5.46, 1.23, 1.37 and 1.31, respectively), and cocaine injection (AOR=0.53).
CONCLUSIONS: These results confirm an increase in PO injection among IDUs and highlight its use by a subgroup of vulnerable IDUs. The health consequences of illicit PO injection should be investigated in order to appropriately adapt harm reduction interventions.

P133
A NEED FOR GENDER-SPECIFIC HARM REDUCTION SERVICES IN OTTAWA: WOMEN IDUS REPORT MORE BINGING ON INJECTION DRUGS AND USING PREVIOUSLY USED INJECTION EQUIPMENT COMPARED TO MEN

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BACKGROUND: Ottawa has the highest rate among Ontario health regions of modeled HIV prevalence among people who inject drugs at 14% and modeled HIV incidence at 0.9%. Following a decline in 2000 in HIV diagnoses among women in Ontario who inject drugs, the number of new diagnoses among this population is increasing on an annual basis.
This paper reports on the HIV- and HCV-risk related practices among women and men in Ottawa who inject drugs highlighting gender differences in practices and behaviours.
METHODS: Using Respondent Driven Sampling (RDS), a unique methodology to recruit members of a hidden population, 406 interviews were completed between September and December 2007 with street-recruited men and women in Ottawa who were active injection drug users. Univariate analyses determined differences in demographics and drug-using practices among men and women who inject drugs.
RESULTS: Of the 406 IDUs who completed an interview, the majority of participants were men (79%), self-identified as Caucasian (57%), were 40 years old, and had not completed high school (52%). Compared to men, women were significantly younger (37 vs. 41 years, $p \leq 0.001$), more often reported Aboriginal ethnicity (21 vs. 9%, $p \leq 0.001$) and more often reported the sex trade as their main source of income (7 vs. 0%, $p \leq 0.001$). In terms of injection practices, a higher proportion of women reported binging on injection drugs in the past six months (68 vs. 54%, $p \leq 0.03$) and injecting with previously used needles (58 vs. 38%, $p \leq 0.03$) and other injecting equipment (77 vs. 66%, $p \leq 0.03$).
CONCLUSION: Compared to men, women reported more frequent drug use and riskier injection behaviour. This evidence necessitates a redirection of harm reduction efforts to provide gender-specific services which must address the context in which women live as they face unique barriers to protecting themselves from HIV and HCV infection.

P134
WOMEN IN OTTAWA WHO SMOKE CRACK ENGAGE IN RISKIER SMOKING PRACTICES COMPARED TO OTTAWA MEN WHO SMOKE CRACK

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BACKGROUND: Studies among injection drug users (IDU) suggest that the number of people in a drug-using network is associated with exposure to infectious diseases. Among people who smoke crack, the risk of HIV and hepatitis C (HCV) transmission exists through the sharing of smoking devices when oral sores, such as burns and blisters, are present and allow for blood exchange between users. This paper reports on the HIV- and HCV-risk related practice of sharing devices to smoke crack among women and men in Ottawa.
METHODS: Using Respondent Driven Sampling, 407 street-recruited active injection drug users completed personal interviews between September and December 2007. Chi-square tests and t-tests determined differences in demographics and smoking practices among men and women who smoked crack.
RESULTS: Of the 407 IDU participants, 87% reported smoking crack in the six months prior to interview. Among this population of smokers, nearly all had accessed the Ottawa needle exchange program (92%) in the six months prior to interview and just over three-quarters of participants reported collecting safer smoking supplies there (76%). In terms

of HIV- and HCV-risk related smoking practices, approximately three-quarters of smokers reported lending their used pipes to others (75%) and taking previously used pipes to use themselves (71%). Of concern, women reported lending a used pipe to significantly more people (27 vs. 9 people, $p<0.01$) and taking a used pipe from significantly more people (22 vs. 8 people, $p<0.0.05$) in the month prior to their interview compared to men.
CONCLUSION: Sharing crack-smoking devices is a common practice among people in Ottawa who smoke crack. Women, however, may have more exposure to potential blood borne infections compared to men due to their larger sharing networks. This suggests a need for gender-specific messaging and overall enhanced education on the risks associated with sharing crack-smoking devices in Ottawa.

P135
DESCRIBING THE HIV EPIDEMIC IN SASKATOON'S CORE NEIGHBOURHOODS: EPIDEMIOLOGY, DISEASE PROGRESSION AND TREATMENT

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INTRODUCTION: Saskatchewan has had a significant increase in the incidence of HIV/AIDS. The highest rates of infection are concentrated in Saskatoon's low-income "core neighborhoods", an area serviced primarily by the West Side Community Clinic (WSCC). Very little is currently known about these cases and we sought to characterize this population.
METHODS: HIV positive patients were identified through the WSCC database. Charts were retrospectively reviewed from WSCC and the Positive Living Program at Royal University Hospital Data was collected on demographics, CD4+ count and viral load at presentation, co-morbid conditions, disease progression, treatment and the social determinants of health.
RESULTS: The most recent 170 diagnosed cases were reviewed. 91 were female (53.5%) and 121 (71%) were self-reported Aboriginal. The mean age at diagnosis was 31 for females and 38 for males. 143 (84%) patients had a history of injection drug use. There were 140 (82%) patients co-infected with Hepatitis C, 18% with MRSA, and 5% with a history of tuberculosis and 19% had a history of sexual abuse. The mean CD4+ cell count at presentation was 391×10^6/L with 36% having counts <200. Of those with prior negative serology, 16% (8/51) met the criteria for rapid progression and 47% had CD4+ <350 within 3 years of seroconversion. Only 25% were currently on antiretrovirals.
CONCLUSION: HIV at WSCC is significantly affecting young, Aboriginal, injection drug users. There are high rates of co-morbid conditions including Hepatitis C and tuberculosis. Patients are progressing rapidly to AIDS with low rates of antiretroviral therapy. Significant resources are required to combat this epidemic.

Epidemiology of HIV/AIDS among MSM

P136
TRENDS IN BEHAVIOURS ASSOCIATED WITH SEXUALLY TRANSMITTED AND BLOOD-BORNE INFECTIONS (STBBI) AMONG HIV-POSITIVE MEN WHO HAVE SEX WITH MEN (MSM) IN MONTREAL

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OBJECTIVE: To explore the evolution of risk behaviours among Montreal HIV-positive MSM from 2005 to 2008.
METHODS: ARGUS is part of M-Track, an enhanced surveillance system that monitors HIV/STBBIs and risk behaviours among MSM in Canada. Men were recruited through approximately 40 gay venues during both cycles of ARGUS. Subjects completed a self-administered questionnaire. This analysis is restricted to MSM living in Montreal who self-identified as HIV-positive. Bivariate analyses assessed associations between selected behavioural indicators and the survey year. For each variable, a multivariable logistic regression model was used to adjust for sample variation (venue type and socio-demographics) from 2005 to 2008. Terms of interaction where included when indicated.
RESULTS: Data were available for 180 and 205 subjects in 2005 and 2008, respectively. Respondents in 2008 were more likely to have had (past 6 months): six male partners or more [OR=3.81; CI(95%): 1.58-9.15], group sex [2.72; (1.15-6.36)], looked for sex in a circuit party at least once [2.74; (1.16-6.39)] and unprotected anal intercourse (UAI) with a male partner [1.89; (1.15-3.10)]. UAI with a partner other than a regular HIV-positive partner and specifically, UAI with a "one-night stand" partner, as well as sex under the influence of recreational drugs, have remained the same since 2005. Respondents in 2008 were also more likely to have been tested [1.83; (1.02-3.24)] and diagnosed [3.71; 1.27-10.80] with syphilis in the last 12 months and to agree (moderately or very much) with the statements: "An HIV-positive man taking medications is less likely to transmit HIV" [4.24; (2.38-7.54)], and "HIV/AIDS has become a controllable disease (like diabetes)" [2.40; (1.33-4.31)].
CONCLUSION: Compared to respondents in 2005, Montreal HIV-positive MSM recruited in 2008 demonstrated a significant increase in the number of sex partners and a stable but high level of UAI with partners other than a regular HIV-positive.

P137
USER SATISFACTION OF A RAPID POINT-OF-CARE HIV TESTING SERVICE AT A DROP-IN PROGRAM FOR MALE AND TRANSGENDER SEX WORKERS IN VANCOUVER

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BACKGROUND: Rapid point-of-care HIV testing has been offered at a drop-in program for male and transgender sex workers in Vancouver since early 2009. The objective of this evaluation was to assess user satisfaction with the rapid point-of-care HIV testing service for the period of January 2009 to May 2010.
METHODS: In order to answer our objective, we conducted a focus group. Participants were selected for a diversity of perspectives, lived experiences, and levels of familiarity with the drop-in program. Before the focus group, participants were asked to fill out a brief demographic survey. Questions related to sexual orientation and gender identity were specific to identification when not working. Focus group discussion was transcribed verbatim with focus group participant names removed from the transcription. The data was then coded and analyzed. Participants were invited to review focus group findings to ensure accuracy of the interpretation of the data.
RESULTS AND CONCLUSION: All participants (n=8) identified as male. The median age was 36 years (range 31-43 years). Half of the participants identified as white and half identified as Aboriginal or Métis. The majority (62.5%) identified as gay. Most (75.0%) used the drop-in space 2-3 times a week. According to participants, comfort and convenience in relation to HIV testing play key roles in the decision to have an HIV test or not. A sense of trust, safety and quality of relationships with both the healthcare provider and others in the HIV testing environment were important. Personal character and professional integrity were considered important qualities in the healthcare provider who performs the HIV testing. Staffing decisions that affect the relationship between drop-in users and the current healthcare provider should carefully consider the impact these changes may have on the use of the HIV testing service.

P138
WHERE MEN LOOK FOR SEX: AN EXPLORATION OF MODES OF LOOKING FOR SEX AND SEXUAL RISK

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OBJECTIVES: To investigate the association between 1) riskier sexual behaviour and different modes of looking for sex, and; 2) factors associated with selected modes (i.e. internet) of looking for sex among men who have sex with men (MSM).
METHODS: The Lambda study (a component of M-Track 2007) was a cross-sectional, venue-based survey of MSM in Toronto and Ottawa.

Socio-demographic characteristics, behaviours and HIV/STI knowledge were collected using a self-administered questionnaire. Riskier sex was defined as UAI with a casual partner or with a regular partner known to be HIV-positive or of unknown HIV-status. Multivariable logistic regressions were used to identify modes of looking for sex associated with riskier sex and factors associated with selected modes.

RESULTS: 2,438 men participated. The adjusted odds of riskier sex were higher among men looking for sex in straight bars (2.2:95%CI=1.2–3.8), parks (1.8:95%CI=1.0–3.0) and the internet (1.4:95%CI=1.0-2.0). 42.2% (n=976/2,312) of participants looked for sex using the internet. The odds of looking for sex on the internet were lower with: increasing age, injection drug use (0.5:95%CI=0.3–1.0) and among self-identified gay men (0.6:95%CI=0.4–1.0), and; higher among men earning $20,000–$49,999 compared to those earning less than $20,000 (1.6:95%CI=1.0–2.4), with increasing numbers of casual partners and among men who also looked for sex in gay bars (1.5:95%CI=1.1–2.2), on bike paths (2.3:95%CI=1/1–4.9), on telephone chat lines (2.4:95%CI=1.3–4.4) and personal advertisements (3.0:95%CI=1.6–5.7).

CONCLUSION: Looking for sex on the internet is not just a fantasy. Increasingly, men use the internet to meet other men. It is a concern that this mode of looking for sex is associated with increased odds of riskier sexual behaviour. The internet may provide an important medium for prevention and education.

P140

FACTORS ASSOCIATED WITH UNPROTECTED INTERCOURSE AMONG HIV-POSITIVE MSM IN BRITISH COLUMBIA

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BACKGROUND: Men who have sex with men (MSM) in Canada continue to be disproportionately infected with HIV, accounting for 51% of prevalent infections. Despite much evidence demonstrating the secondary preventive value of HAART, we have failed to fully capitalize on the synergy between treatment and prevention, especially among MSM. This study looks at associations with risky sexual behaviour among MSM receiving therapy in British Columbia, Canada.

METHODS: We analyzed data from the Longitudinal Investigations into Supportive and Ancillary Health Services project on MSM who reported any sex with men or women in the six months prior to interview. Sexual risk behaviour was dichotomized by having unprotected sexual intercourse (yes or no) in the same time period. Multivariate logistic regression was used to describe factors associated with sexual risk behaviour.

RESULTS: 346 HIV-positive MSM met the above inclusion criteria (median age=46 years [IQR=41-53]). Of these, 78% (268) were currently on HAART with over half (185, 54%) of participants having >350 CD4 cells/μL; 28% (98) of participants reported tending to seek out HIV-positive partners for sex and 43% (147) reported being less likely to use a condom with an HIV-positive sex partner.

In the final regression model, HIV-positive MSM having a CD4 count >350 cells/μL were significantly more likely to report unprotected sexual intercourse (Adjusted Odds Ratio [AOR] =2.7; 95% CI:1.5-5.2), were more likely to not use condoms with their HIV-positive partners (AOR=12.0; 95% CI: 6.4-22.3), and less likely to report sex with anonymous partners in the past 6 months (AOR=0.28; 95% CI: 0.1-0.8). There was no significant association between unprotected sex (anal or vaginal) and current HAART use, attaining viral suppression, or attaining ≥95% adherence.

CONCLUSION: HIV-positive MSM who report engaging in riskier sexual activities (anal or vaginal sex without a condom) are more likely to be healthier (have higher CD4 counts) and to have the riskier sex with HIV-positive partners (i.e., sero-sorting) and with known rather than anonymous sex partners.

P141

COMPARING CELL PHONE-BASED SEXUAL NETWORKS AMONG MEN-WHO-HAVE-SEX-WITH-MEN IN TWO SOUTH INDIAN CITIES

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INTRODUCTION: A high HIV prevalence (19-32%) has been reported among men-who-have-sex-with-men (MSM) in South India. Indeed, sexual networks play a central role in the spread of HIV in these communities but have rarely been studied because of intense social stigma and methodological and ethical challenges. Although cell phones are commonly used among MSM to contact sexual partners in India, few studies have explored the formation of such sexual networks. This study sought to understand the non-linear structures, context, and evolution of cell phone-based sexual networks of MSM in South Indian cities.

METHODS: Sampling frames in Belgaum and Bellary were established using MSM contacts stored in the cell phones of community-based researchers (CBRs). On four separate occasions, study participant 'seeds' were randomly selected from these social networks. Seeds were asked to recruit their sexual partners, who completed surveys about their sexual practices with regular and seven-day partners. Sexual network diagrams were constructed using non-nominal codes linking study participants and were contextualized with ethnographic work.

RESULTS: Cell phone contacts represent a useful resource for constructing social and sexual networks. Compared to Bellary, social networks in Belgaum overlapped more closely with sexual networks, resulting in relatively dense network structures. Moreover, the demographic composition of networks differed between the sites. In Bellary, where sex work is more frequently practiced among members of the networks sampled, sexual networks were less dense and more divergent, including more new casual partners and one-time clients.

CONCLUSIONS: Analysing cell-phone based social and sexual networks yielded important new insights into the complexities of HIV transmission pathways among MSM in South India. Such nonlinear understandings go beyond explanations based on aggregates of individual-level behavioural statistics. This information can be used to more specifically tailor services for these communities. These methodologies can be applied to reach marginalized populations in a Canadian context.

Epidemiology of HIV/AIDS among Other Populations At Risk

P142

PERINATALLY HIV-INFECTED CHILDREN IN CANADA: THOSE BORN IN CANADA AND THOSE BORN ELSEWHERE

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OBJECTIVES: To describe demographic/clinical characteristics of HIV-infected children born in Canada (CC) and abroad (AC) using Canadian Perinatal HIV Surveillance Program (CPHSP) data.

METHODS: All perinatally HIV-infected children receiving care at 22 Canadian sites since 1990 are included. Web-submitted data are analyzed at the Canadian HIV Trials Network.

RESULTS: Among 550 HIV-infected children, the country of birth was known for 524 (95%): Canada 68% [of whom 14% Aboriginal], Africa 23%, others 9%. The proportion of AC increased from 16% (<1990-1999) to 56% (2000-2009). After 1996, the mothers of 99% of AC and 82% of CC had no ART during pregnancy. Maternal HIV risk was predominantly heterosexual (69% CC, 70% AC); IDU accounted for 22% CC and 1% AC. CC were diagnosed at a median age of 1y, compared to 5y for AC. The status of 420 (76%) children is known; 290 (69%) are alive, 130 (31%) died [78% AIDS-related]. More CC died of AIDS (22%) and at a younger age (median

1y) than AC (7%, median 5y). The majority of deaths occurred before 1998 (87% for CC, 59% for AC). The living children have a median age 14y (CC) and 15y (AC); 86 (30%) have transitioned to adult care.
Among children receiving pediatric care in 2009, history of an AIDS-defining condition was reported for 27% of CC and 9% of AC, and severe immunosuppression for 36% of CC and 25% of AC. Currently, 81% of CC and 99% of AC are noted to have no/mild/moderate symptoms; mild/moderate imunosuppression is reported in 98% of CC and 95% of AC.
CONCLUSION: Due to successful PMCT in Canada, there has been an epidemiological shift of HIV+ children from Canadian-born to children born abroad. AC were older at entry in care, had less severe disease and fewer deaths overall but more of these occurred in the HAART era. These may represent a survivor effect. Prompt diagnosis and care are essential for new immigrants.

P143

THE CEDAR PROJECT: PAP SMEAR TESTING AMONG YOUNG ABORIGINAL WOMEN WHO USE INJECTION AND NON-INJECTION DRUGS IN TWO CANADIAN CITIES

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OBJECTIVES: Few studies explore vulnerability for sexually transmitted infections (STI) among young Aboriginal women. This analysis explores pap smear testing among young Aboriginal women participating in the Cedar Project.
METHODS: The Cedar Project is an ongoing prospective study of Aboriginal young people in Vancouver and Prince George who use drugs. This analysis draws from cross-sectional data collected by Aboriginal interviewers between May-August 2005. Participants were asked whether they had ever received a pap smear, when their last pap smear was, and reasons for not being tested. Associative risk factors for not receiving a pap smear were identified using bivariable categorical data with Pearson's chi-squared test.
RESULTS: Among 253 young women, 88% reported ever having a pap smear test; only 35% of which had been done in the year previous to the interview. Women who had not received a pap were more likely to have overdosed in the past six months (24%) compared to women who had not (9%). Women who had not received a pap were less likely to self-report having an STI (36% vs. 55%). Women who had not received a pap were less likely to have been involved in any drug/alcohol treatment program (62% vs. 76%). Other important but not statistically significant findings: women who had not received a pap were more likely to have a history of sexual abuse (76% vs. 69%), less likely to have ever been pregnant (74% vs. 82%), and more likely to use condoms. Reasons cited for not being tested included: fear, pain, not wanting to expose genitals, not seeing any reason to, and not having access to female physicians.
CONCLUSIONS: Women who are accessing services are more likely to be receiving pap smears, and are more aware of their STI status. Sexual health programs that incorporate the reality of cultural differences in the context of multigenerational trauma for young Aboriginal women who use drugs must be made a priority to curb the high risks of HIV infection in this vulnerable group.

P145

HIGH RATES OF ABSOLUTE HOMELESSNESS AMONG A COHORT OF STREET-BASED FEMALE SEX WORKERS: THE NEED FOR SAFER ENVIRONMENT HIV INTERVENTIONS

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BACKGROUND: Absolute homelessness is on the rise in many North American urban centres, and has been increasingly linked to vulnerability for HIV infection. However there remains limited research on the magnitude of homelessness among street-based FSWs or potential interpersonal and structural risks associated with sleeping on the street. We therefore sought to examine longitudinally the individual, interpersonal and work environment correlates of absolute homelessness among a cohort of FSWs in Vancouver, Canada.
METHODS: Data were drawn from a community-based prospective cohort of 252 street-based FSWs, in partnership with local sex work agencies. Women were recruited through time-location sampling and peer outreach to sex work strolls between 2006 and 2008, completed baseline, semi-annual follow-up questionnaires and HIV screening. Longitudinal analyses included bivariate and multivariate logistic regression using generalized estimating equations (GEE) to examine correlates of homelessness among FSWs.
RESULTS: Among the 252 women enrolled, 222 (88%) reported lifetime homelessness and 109 (43.3%) reported 'absolute homelessness' (defined as sleeping on the street at least one night) over the 18-month period. In multivariate GEE logistic regression analysis, younger age (Adjusted odds ratios [aOR]= 0.93; 95%confidence intervals [95%CIs] 0.93-0.98), sexual violence by non-commercial partners (aOR=2.14; 95%CI 1.06-4.34), servicing a higher volume of clients (10+ per week vs <10) (aOR=1.68; 95%CI 1.05-2.69), intensive, daily crack use (aOR= 1.65; 95%CI 1.11-2.45), and servicing clients in isolated public spaces (aOR=1.52; CI1.00-2.31) were independently correlated with absolute homelessness.
DISCUSSION/CONCLUSIONS: Close to half of street-based FSWs reported 'absolute homelessness' over just an 18-month follow-up period, with significant increased odds of individual, interpersonal and structural HIV risks. Our study highlights the immediate need for structural HIV prevention interventions that ensure access to safe, supportive housing and work environments to reduce sexual exploitation and promote control over HIV risk reduction practices among women in street-based sex work.

P147

ASSESSMENT OF SEXUAL BEHAVIOUR AND OTHER HIV RISK PRACTICES AMONG IN-SCHOOL YOUTH IN THE BAHAMAS

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BACKGROUND: Bahamian youth are at increased risk of contracting HIV. Risk behaviours among Bahamian youth 15 - 17 years were evaluated for modification of health programs to suit their needs.
METHODS: A cross-sectional, facilitator-administered survey was conducted in December 2008 in schools in the Bahamas. Cluster sampling determined a sample size of 910 students. Facilitators read the questions while students responded in their questionnaire booklet which were then placed in envelopes. Descriptive statistics, χ^2 and Fisher's Exact Test were done with SPSS v11.
RESULTS: 894 questionnaires were analyzed: 48% males. The mean and median ages were 15.9 and 16 years, respectively. Sexual initiation with males was 12-14 years (46.7%), and females 15-17 years (58.6%) ($p<0.05$)]. 76% of youth had used condoms at last sex; [M (82%; F 68%) ($p=0.001$)]. As time prior to the survey decreased, condom use decreased ($p< 0.05$). Early sexual initiators and females were less likely to use condoms at last sex. Health facilities were the least likely place of obtaining condoms (3%) yet 32% wanted to use this service. For those ≤11yrs, 53% had had oral sex and 8% anal sex. 17% of youth reported forced sex of which 44% did not consider this as sex.
CONCLUSIONS: There is a recent decline in condom use, regardless of age-group. We need to know what may be triggering this trend. Females, regardless of age of sexual initiation were less likely to use condoms than males at last sex. This supports the recent trend of increased HIV prevalence among young females in the Bahamas. The limited use of Health facilities for condom procurement may suggest a need for friendlier youth services. Also, HIV reduction outreach to all youth irrespective of reported activity is important since many youth do not consider forced sex as sex.

P148

THE FORGOTTEN FORTIES: GROWING NUMBERS OF HIV DIAGNOSES AMONG CANADIANS AGED 40-49

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OBJECTIVE: To assess time-trend patterns in national HIV diagnoses by age group, sex, and exposure category.
METHODS: All provinces and territories collect data on newly diagnosed

cases of HIV, which is voluntarily submitted to the Public Health Agency of Canada for national surveillance purposes. Case reports were analyzed by age group, sex, and exposure category.
RESULTS: The proportion of HIV case reports attributed to those aged 40-49 years old has more than doubled, from 14.3% in 1985 to 30.6% in 2008. Although youth are generally viewed as the key age group population, since 1998 a greater proportion of reported HIV diagnoses has been attributed to the 40-49 year age group compared to the 20-29 year age group. The 30-39 year age group has accounted for the highest number of annual HIV case reports since the beginning of the epidemic, but in 2008 for the first time, the 40-49 year age group surpassed all other age groups.
The majority of cases in this age group over the last decade are men; comprising 75.2% to 83.9% of annual HIV test reports. Compared to the 1990s, the time period 2000-2009 witnessed a higher cumulative number of HIV case reports in the 40-49 year age group for almost all exposure categories. However, the men who have sex with men (MSM) exposure category is increasingly represented in this age group, and has been the predominant exposure category since 1998. Relative to other adult age groups, heterosexual contact is proportionately less significant in HIV case reports in the 40-49 year age group over the last ten years.
CONCLUSION: These surveillance findings point to a marked increase in the representation of the 40-49 year age group in Canada's HIV epidemic. This often-overlooked age group may require more targeted prevention and treatment interventions, especially in regards to risky MSM behaviours.

P149
THE CEDAR PROJECT: GENDER DIFFERENCES IN HIV VULNERABILITIES ASSOCIATED WITH UNSTABLE HOUSING OVER TIME AMONG YOUNG ABORIGINAL PEOPLE WHO USE DRUGS IN VANCOUVER AND PRINCE GEORGE, BC

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OBJECTIVE: This study examined gender differences in HIV vulnerabilities associated with unstable housing among young Aboriginal people who use drugs in two urban centres in British Columbia.
METHODS: The Cedar Project is an ongoing prospective study of young Aboriginal people in Vancouver and Prince George who use illicit drugs. Unstable housing was defined as sleeping on the streets or living in transitional housing including single room occupancy hotels or 'couch surfing'. This analysis included data collected between October 2003 and January 2009. Venous blood samples were drawn and tested for HIV and HCV antibodies. Generalized estimating equation (GEE) models for men and women identified factors associated with unstable housing over the study period. Variables included in multivariable analysis were chosen because of statistical significance at the $p<0.05$ level in univariable analysis.
RESULTS: The proportion of participants who reported unstable housing at follow-up eight was 46.7% (baseline: 45.7%). In multivariable analysis, factors associated with unstable housing for young women included living in Vancouver (AOR: 2.12; 95% CI:1.63, 3.01), ever having been in foster care (AOR: 1.62; 95% CI: 1.16, 2.28), injecting drugs in the past six months (AOR: 1.47; 95% CI: 1.09, 1.97), and daily crack smoking (AOR: 1.66; 95% CI: 1.17, 2.34). For young men, factors included living in Vancouver (AOR: 3.70; 95% CI: 2.63, 5.21), gay/bisexual sexual identity (AOR: 1.68; 95% CI: 1.04, 2.72), injecting drugs in the past six months (AOR: 2.30; 95% CI: 1.66, 3.18), and daily crystal meth smoking (AOR: 1.85; 95% CI: 1.20, 2.85).
CONCLUSIONS: The parallel epidemics of HIV and unstable housing among young Aboriginal men and women who use drugs is distressing. Young Aboriginal men and women must be involved in developing responses to BC's housing crisis that meet their unique needs, especially within the context of historical and lifetime trauma and increasing risk of blood-borne infection.

P150
URBAN-RURAL DIFFERENCES IN PATIENTS' CHARACTERISTICS AT PRESENTATION FOR HIV CARE IN CENTRAL SASKATCHEWAN

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BACKGROUND & RATIONALE: While little is known about the changing epidemiology of HIV infection in Canada, there is reasonable conjecture that HIV may be spreading from urban centers to more remote areas. Due to the ongoing migration of high-risk groups, the Public Health Agency of Canada and Aboriginal leaders have identified rural settings to be of special concern for HIV infection. Issues with invisibility, stigmatization, and concerns with confidentiality are common in rural regions and consequently impact access to healthcare services. These issues could lead to a late diagnosis at presentation for rural dwellers. The aim of this study was to determine the demographic and clinical differences between rural and urban dwellers at presentation for care.
METHODS: A retrospective cohort study, composed of HIV infected patients who received care at an HIV clinic, in Saskatoon, Saskatchewan from Jan 2005 to July 2010. We compared age, gender, ethnicity, risk factors, viral load (VL), CD4 counts and CD4% at presentation for care between patients living in urban (pop. ≥ 5000 according to 2006 Census) and rural (pop. <5000) settings.
RESULTS: Of the 185 patients, 21.6% were from rural settings. No differences were seen between rural and urban dwellers with regards to VL (log10VL), CD4 count, and CD4% at presentation in both univariate and multivariate models. A higher proportion of Aboriginals (p=0.002) were present in rural areas compared to urban areas. While not statistically significant, more females were also present in rural areas compared to urban areas (p=0.058). The risk factor, heterosexual contact, was significantly more like to be reported by rural dwellers (p=0.003). All other risk factors, including IDU, did not significantly differ between the two groups.
IMPLICATIONS: Our study showed that HIV positive individuals living in rural areas have unique characteristics and risk factors. Preventative services, including harm reduction programs and testing facilities, and supportive health care services in rural areas need to be created or enhanced and geared towards these vulnerable populations.

P151
INVESTIGATING ONTARIO'S ABORIGINAL HIV EPIDEMIC; ANALYSES AND EVALUATION OF PUBLIC HEALTH SURVEILLANCE DATA

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Approximately 65,000 people are estimated currently to be living with HIV/AIDS in Canada. Three populations are disproportionately at risk according to the Public Health Agency of Canada (PHAC): men who have sex with men (MSM), injection drug users (IDU) and Aboriginal people. While self-identifying Aboriginal people comprise only 3.8% of Canadians, they represent approximately 12.5% of all new infections. The objectives of the current study were to determine the association between HIV/AIDS, ethnicity and putative causative factors and to describe the potential for bias within HIV surveillance data for Ontario's Aboriginal population. Incidence risk was calculated using new HIV cases reported between 1985-2004 by the Toronto and Ottawa Public Health Units. To approximate the number of individuals at risk, population demography data from the 1986-2006 censuses was used. Within HIV positive MSM, Aboriginals are 4.83 times more likely to be IDU than Non-Aboriginals ($p<0.001$, OR=4.83, 95% CI=2.34, 9.98). Factors associated with current HIV status were evaluated using logistic regression for multivariate analysis of data from Ontario's PHAC sponsored second-generation M-Track Lambda Study. Aboriginal MSM were 9.81 times more likely to be HIV positive than non-Aboriginal MSM (p=0.02, OR=9.81, 95% CI=1.30, 72.48). However, in this study, when controlling for Aboriginal status, IDU was not associated with HIV positive status (p=0.57). Aboriginal participants tended to be more likely to provide a blood sample than non-Aboriginal participants (p=0.051), but having a previous HIV test did not

differ between Aboriginal (91.5%) and non-Aboriginal participants (88.1%) (p=0.31). Ontario's Aboriginals have distinct differences in risk factors and are at a greater risk for HIV than non-Aboriginals. The discrepancy in the results obtained from analyzing two sources of surveillance data highlights the importance for epidemiologists and public health professionals to understand the potential bias inherent to the current sources and reporting structure of HIV/AIDS data. Improving HIV surveillance and conducting further mixed method research is needed to improve the understanding of and the ability to address the HIV/AIDS epidemic in the diverse communities of Canada's Aboriginal people.

P153

FACTORS ASSOCIATED WITH LATE INITIATION OF HIV TREATMENT IN A COHORT OF HIV-POSITIVE INDIVIDUALS IN BRITISH COLUMBIA, CANADA

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BACKGROUND: In British Columbia (BC), persistent gaps exist in the care and treatment of HIV-positive individuals. Recent findings indicate that delayed treatment initiation limits the therapeutic success of HAART, and is associated with higher morbidity and mortality. We hypothesize that individuals dealing with concurrent health issues and competing life demands (mental health, substandard housing, addictions, stigma) will be more likely to delay treatment initiation.
METHODS: The LISA cohort is a prospective study of persons on HAART in BC. Interviewer-administered surveys collect information regarding housing, drug use, sexual behaviour and other clinically relevant socio-demographic factors. Clinical variables, such as CD4 cell count and viral load, are obtained through linkages with the Drug Treatment Program at the BC Centre for Excellence in HIV/AIDS. The LISA cohort over-sampled women, Aboriginal persons, and injection drug users. We defined our outcome, late initiation, as a baseline AIDS diagnosis, and/or CD4 cell count <200cells/μL. Bivariate analyses were used to quantify associations of selected sociodemographic and clinical variables (income, HIV-related stigma, injection drug use) and late initiation. Multivariate logistic regression was used to identify independent factors associated with late initiation.
RESULTS: In the 18-month period before study interview date, 192 individuals initiated HIV treatment, of which 47.4% were classified as late initiators according to our criteria. The median time to treatment initiation after HIV diagnosis was three years (Interquartile range: 1-7 years). After adjusting for potential confounders, late initiation was significantly associated with unstable housing (adjusted odds ratio: 2.22, 95% confidence interval: 1.18-4.17).
CONCLUSION: Unstably-housed HIV-positive individuals may be at increased risk of deferring initiation of antiretroviral treatment. A key social determinant of health, stable housing creates an enabling environment that may support timely health-seeking behaviour. Efforts to improve access to stable housing may reduce delays in treatment initiation, thereby improving HIV outcomes.

P154

ASSESSING THE NEEDS FOR HEALTH SERVICES AND HARM REDUCTION PROGRAMMING AMONG WOMEN AND MEN IN OTTAWA, ONTARIO WHO SMOKE CRACK

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BACKGROUND: Emerging research among women and men who smoke crack has demonstrated an increased risk of HIV transmission due to high-risk sexual practices. Recently, virologic evidence has emerged suggesting that these individuals are further at risk of HIV and the hepatitis C virus (HCV) when sharing inhalation equipment, such as crack pipes. The objective of this study was to examine the existing scientific literature whether the health service needs are being met among people who smoke crack and if access to harm reduction materials is sufficient.
METHODS: A systematic review of the literature was conducted and databases were searched for academic articles published up to December 2010. Hand searches of relevant articles were conducted and a search of grey literature was undertaken. Articles were included if they addressed crack-specific health outcomes or crack-specific harm reduction interventions. Qualitative analyses were used to extract data from publications. Findings from the systematic review will drive the development of a research instrument which will be used during one-on-one qualitative interviews conducted in Ottawa, Ontario among women and men who smoke crack.
RESULTS: Relevance assessment resulted in the inclusion of 146 published articles and many grey literature sources. The majority of academic sources were primary studies but some reviews were also included. Across studies, it was shown that people who smoke crack have unique HIV-related prevention needs, in comparison to individuals who inject drugs. Crack smokers have many unmet health service needs, particularly with access to harm reduction materials and primary healthcare services. Women are dually marginalized as they not only receive sub-standard healthcare but also lack control in their personal relationships with men, both of which lead to negative health outcomes.
CONCLUSIONS: Increasing access to crack-specific harm reduction resources is critical for preventing the transmission of HIV and HCV among this population.

P155

THIS STUDY EXPLORED GENDERED HIV VULNERABILITIES ASSOCIATED WITH NEEDING HELP INJECTING AMONG YOUNG ABORIGINAL PEOPLE WHO USE INJECTION DRUGS

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OBJECTIVE: This study explored gendered HIV vulnerabilities associated with needing help injecting among young Aboriginal people who use injection drugs.
METHODS: The Cedar Project is a cohort study of Aboriginal young people in Vancouver and Prince George who use injection and noninjection drugs. Venous blood samples tested for HIV and HCV antibodies. Generalized estimating equation (GEE) modeling identified factors associated with needing help injecting among participants who reported injection drug use over the study period (October 2003-July 2009), followed by stratified analysis to identify gender differences. Unadjusted and adjusted odds ratios (AOR) and 95% confidence intervals (CI) were calculated.
RESULTS: Among 605 participants at baseline, 319 reported injecting drugs. In multivariable analysis including all injectors, women had greater odds for needing help injecting (AOR: 2.12, 95%CI: 1.68-2.44). In multivariable analysis for women only, daily (AOR: 2.34, 95%CI: 1.57-3.49) and less than daily (AOR: 3.54, 95%CI: 2.12-5.90) cocaine injection, daily (AOR: 2.73, 95%CI: 1.65-4.52) and less than daily heroin (AOR: 2.84, 95%CI: 1.68-4.81) injection, difficulty finding new rigs (AOR: 1.69, 95%CI: 1.09-2.63), sex work involvement (AOR: 1.4, 95%CI: 1.00-1.97) and sexual partner being an IDU (AOR: 1.9, 95%CI: 1.21-2.96) were associated with needing help injecting. Among men only, less than daily cocaine injection (AOR: 2.29, 95%CI: 1.15-4.57) and sharing rigs (AOR: 2.2, 95%CI: 1.0-4.83) were associated with needing help injecting.
CONCLUSIONS: The HIV related vulnerabilities associated with needing help injecting among Cedar Project participants are staggering. Young Aboriginal men and women who use injection drugs do not have the opportunity to learn how to inject safely and by themselves, which is an important part of injection prevention.

P156

THE PREVALENCE AND DETERMINANTS OF TRANSMITTED DRUG RESISTANCE AMONG NEWLY DIAGNOSED HIV CASES IN CANADA

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OBJECTIVE: To identify time-trends and factors associated with transmitted HIV drug resistance among a subset of newly diagnosed HIV infections reported to the Public Health Agency of Canada.

METHOD: 4554 leftover sera of ART-naive HIV cases between 1998-2009 from BC, Alberta, Saskatchewan, and Manitoba had sufficient specimen volume to allow for genotypic drug resistance analysis. Logistic regression was used to identify factors independently associated with NNRTI resistance. Recent HIV infection was defined as within the last six months by one of three recent infection testing algorithms (Abbot 3A11, Vironostika HIV-1-LS or BED assay).
RESULTS: Among samples in this analysis, 9.8% had genotypic evidence of transmitted drug resistance: 3.6% against nucleoside reverse transcriptase inhibitors (NRTI), 3.5% against non-nucleoside reverse transcriptase inhibitors (NNRTI), 2.0% against protease inhibitors (PI), and 0.8% against > 2 classes of drugs. We found an increasing trend in NNRTI resistance ($p<0.0001$) over the study period, while no change was found in NRTI or PI resistance. Prevalence of NNRTI resistance was 0.7%, 3.2%, 3.8%, and 7.9% during years 1998-2000, 2001-2003, 2004-2006, and 2007-2009, respectively. Analysis revealed variability in drug resistance trends among jurisdictions. In the final multivariate model, NNRTI resistance was significantly higher among women compared to men (6.5% vs 3.3%, $p=0.014$), people who inject drugs compared to MSM (6.4% vs 2.5%, $p=0.036$), those with recent infection compared to established infection (6.1% vs 3.4%, $p=0.032$), those infected with subtype B compared to non-B subtype (4.5% vs 1.7%, $p=0.003$), and those infected in a more recent time period (as indicated above).
CONCLUSION: There was an increase over time in NNRTI resistance which was associated with sex, injection drug use, subtype B, and recent infection. These findings reinforce the importance of preventing the transmission of drug resistant HIV and of genotypic resistance analysis for patients prior to initiation of antiretroviral therapy.

Methodologic Issues and Capacity-Building in Epidemiologic and Prevention Research

P157
USE OF PROVINCIAL LABORATORY AND SURVEILLANCE DATA TO INFORM STRATEGIES FOR EXPANDING PROVIDER-INITIATED HIV TESTING AND TO ASSESS THEIR IMPACT

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OBJECTIVE: Expanding provider-initiated offer of HIV testing is currently recommended in BC in regions participating in the STOP HIV pilot project. Recommendations include to routinely offer HIV testing within specific settings such as sexually transmitted infection (STI) clinics or addictions services, or to persons getting tested for or diagnosed with an STI, tuberculosis or Hepatitis C (HCV). We used data linkages between provincial testing and surveillance databases to develop indicators to inform and evaluate strategies for expanding provider-initiated HIV testing in BC.
METHODS: Provincial surveillance and laboratory datasets housed at the BC Centre for Disease Control were linked through established protocols to describe (for 2007-2009, among individuals not known to be HIV positive) the: i) percentage of individuals tested for syphilis who were simultaneously tested for HIV (± 14 days), and ii) the percentage of individuals diagnosed with HCV that were tested for HIV within 3 months of diagnosis. Results were stratified by sex and participating regions.
FINDINGS: Of 441,363 HIV negative individuals tested for syphilis in BC, 363,743 (82.4%) were simultaneously tested for HIV (Males 74.5%, Females 86.8%; Vancouver 79.7%, Northern Interior 82.8%). Of 15,981 HIV negative individuals diagnosed with HCV in BC, 8,183 (51.2%) had been tested for HIV within 3 months of diagnosis (Males 51.8%, Females 50.3%; Vancouver 58.9%, Northern Interior 59.6%). Annual trends for these indicators were relatively stable over this time period.
DISCUSSION: This unique analysis of provincial surveillance and laboratory data has identified opportunities for increasing provider-initiated HIV testing, particularly among individuals having a new diagnosis of HCV. These indicators are being monitored to assess the expansion of HIV testing currently underway. Additional provincial indicators looking at HIV testing among individuals diagnosed with an STI are under development and will be reported at the time of presentation.

P158
A SYSTEMATIC REVIEW OF THE DESIGN AND OPERATION OF SUPERVISED CONSUMPTION SITES

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BACKGROUND: Supervised consumption sites (SCSs) share common goals but differ with respect to specific characteristics. We systematically reviewed features of SCSs.
METHODS: We searched electronic databases (Medline, PsycINFO, Embase, Scopus, CINAHL) for research articles about SCSs published between 1980 and May 2010. We also searched the internet for grey literature and scanned references of reviews. We extracted data about design features, rules, services, and referrals offered at each SCS.
RESULTS: We identified 2019 abstracts and 33 grey literature sources; we excluded 1905. Design features were inconsistently reported. We identified 47 sites in 6 countries (Germany [21], Switzerland [12], the Netherlands [8], Canada [3], Spain [2], and Australia [1]). Sites were open a median of 42 hours per week with a range of 24 to 168. Of 33 sites reporting data, 30 were integrated into existing facilities and only 3 were entirely separate. The median number of injecting spots was 6 (range 1 to 20). Among sites which allowed smoking of drugs, the median number of spots was 3 (range 1 to 28). The most common services included drug-related education, sterile injecting supplies, on-site basic health care, on-site nursing care, social work, laundry facilities, and snacks. Only 3 sites restricted the type of drug that could be smoked; we found no data about injection-related restrictions. A few sites allowed assisted injection (7) or the sharing of drugs (5). Of 22 sites with available data, 20 had a time limit, most commonly 30 minutes. Nine sites restricted the body areas into which individuals could inject. The most commonly available referrals were for drug treatment.
CONCLUSIONS: Although our review is limited to published data, we found a range of SCSs models in Europe, Canada, and Australia. This diversity suggests that design and operating characteristics need to be appropriate to each site's context.

P159
USE OF PROPENSITY SCORE MATCHING TO ADJUST FOR BASELINE IMBALANCE IN LONGITUDINAL HIV DATABASES: ASSOCIATION BETWEEN MALE GENDER AND PROGRESSION OF RENAL INSUFFICIENCY AMONG HIV PATIENTS

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BACKGROUND: When randomized controlled trials are neither practical nor feasible, subjects exposed to a risk factor can be compared with a control group matched on multiple baseline confounders. We explored the use of a propensity-score (PS) matching algorithm to investigate renal dysfunction among males and females in an HIV cohort.
METHODS: The database consisted of 1,286 HIV infected patients followed in a clinical and a prospective Canadian multicentre cohort study. Male and female patients were matched on the following potential baseline confounders of renal insufficiency – age, race, weight, duration of HIV seropositivity, CD4 cell count, HIVRNA, cART exposure, HCV-coinfection, diabetes and hypertension – using a "nearest neighbour PS-matching algorithm". The longitudinal change in estimated glomerular filtration rate (eGFR) between groups was estimated using a 3-level hierarchical linear model (HLM).

RESULTS: 1,286 patients were followed for a median of 24 months (IQR 12-35). 72% male; median age, 43 yrs; 30% black and 297 (23%) were HCV+. At baseline, 80% were on cART; 50% had undetectable HIV RNA with a median CD4, 326 cells/μL, 76 μmol/L and eGFR, 97. Both genders differed significantly on baseline eGFR, HIV duration, age, weight, HCV co-infection, black race, tenofovir exposure, smoking and liver disease ($p<0.03$). A traditional regression model, adjusting for confounders, provided an estimated annual eGFR decline (95% CI) of –3.8(–4.6,–3.0 ml/min/1.73m^2 and –0.02(–1.38,1.34) ml/min/1.73m^2 among men and women respectively.
PS matching resulted in 136 matched gender pairs with no significant differences in any of the baseline variables.From three-level HLM, annual eGFR decline (95% CI) was significantly greater among males [–5.4(–7.8,–3.0) ml/min/1.73m^2] compared to females [–0.8(–3.2,1.6)ml/min/1.73m^2].
CONCLUSIONS: HIV infected males had a 7-fold higher yearly decline in renal function than their female counterparts after PS-matching, whereas traditional covariate adjustment showed a possible under-estimation of decline within- and between both groups. PS-matching appears very useful and efficient in observational databases where baseline confounders are known and observed.

P160
ENHANCING THE ONTARIO LABORATORY ENHANCEMENT PROGRAM (LEP): METHODS AND RESULTS

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BACKGROUND: HIV diagnostic test results provide important insights into trends in HIV infection. However, missing data on risk factors and HIV test history as well as lack of information on race/ethnicity hamper interpretation. Also, most new HIV diagnoses reflect infections acquired months to years previously.
METHODS: For all HIV-positive and a 1:200 sample of HIV-negative test results, we send a questionnaire on HIV-related risks and previous HIV testing. We test first-time HIV-positive specimens using a research assay which distinguishes recent from long-standing HIV infection. In January 2009, we added information on race/ethnicity, location of residence and country of birth to the LEP questionnaire.
RESULTS: From October 1999 to December 2008, 9,999 first-time HIV-positive results were included; risk data was provided on only 46% of laboratory requisitions. Sixty-seven percent of questionnaires were returned within 8 months.. The proportion of MSM was higher and the HIV-endemic category lower among laboratory requisitions compared to the LEP questionnaire. Adjusted HIV incidence (per 100 person-years) in 2008 was: MSM 0.92, IDU 0.20 and persons infected heterosexually 0.014. From January 2009 to October 2010, race/ethnicity data was completed for 90.5% of returned questionnaires. Overall, the proportions of new HIV diagnoses were: White 54.9%, Black 24.1%, Latin-American 6.7%, East/Southeast Asian 4.6%, South Asian 4.0%, Aboriginal 2.5%, and other 3.2%. Among MSM, 65.6% were White and 10.5% each were Black and Latin-American whereas among IDUs, 85.5% were White and 7.9% Aboriginal. For new HIV diagnoses in women, 54.0% were Black and 25.1% were White.
CONCLUSIONS: The LEP continues to provide critical insights into the Ontario HIV epidemic. Data on risk, HIV test history and laboratory testing yielded estimates of exposure category-specific HIV incidence. Information on race/ethnicity was provided on almost all returned questionnaires and revealed important evolving trends in HIV infection among immigrant and indigenous populations.

P161
VALIDATING A SHORTENED DEPRESSION SCALE (10 ITEM CES-D) AMONGST HIV POSITIVE PATIENTS IN BRITISH COLUMBIA

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OBJECTIVE: To establish the reliability and validity of a shortened (10-item) depression scale used among HIV positive individuals enrolled in the Drug Treatment Program in British Columbia.
METHODS: A shortened 10-item CES-D was examined among 563 patients who initiated HAART between August 1, 1996 and June 30, 2002. These 563 patients answered the 20-item CES-D questionnaire at enrolment. Their responses to the 10 items of our shortened CES-D version were extracted for comparison. Internal Consistency of the shortened scale was measured by Cronbach's alpha. Using the original CES-D-20 as primary criteria, comparisons were made using Kappa statistic. Predictive accuracy of CES-D-10 was assessed by calculating sensitivity, specificity, positive and negative predictive values. Factor analysis was also performed to determine if the CES-D-10 contained the same factors of positive and negative affect found in the original development of the CES-D.
RESULTS: For the 563 patients, median age was 38 years (IQR: 34-46 years) and 513 (91%) were males. Their median score in the 20-item CES-D was 16 (IQR: 8-27) and the median score in the 10-item CES-D was 10 (IQR: 5-16). The correlation between the original and the shortened scale was high (Spearman correlation coefficient = 0.97 ($P<0.001$)). Internal consistency reliability coefficients of the CES-D-10 was satisfactory (Cronbach α = 0.878). The CES-D-10 showed comparable accuracy to the original CES-D-20 in classifying patients with depressive symptoms (Kappa=0.82, $P<0.001$). Sensitivity of CES-D-10 was 91%; specificity was 92%; and positive predictive value was 92%. Factor analysis demonstrates that CES-D-10 contains the same underlying factors of positive and negative affect found in the original 20-item scale.
CONCLUSION: Given the simplicity and the comparable accuracy of our 10-item CES-D scale, this shortened scale is a reliable tool to measure depressive symptoms among HIV-positive individuals.

SOCIAL SCIENCES

Addressing Social-Structural and Systemic Issues Affecting Peoples Living with or at Risk of HIV Infection

P162
EFFICACY OF SCATTERED SITE HOUSING: AN EVALUATION OF THE FIFE HOUSE SCATTERED HOUSING PROGRAM FOR PEOPLE LIVING WITH HIV/AIDS

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BACKGROUND: Access to secure and affordable housing is a key determinant of health and well-being of people living with HIV/AIDS (PHAs). Diversity of experiences and situations in the lives of PHAs require that a variety of housing options uniquely suited to individuals' needs are available. Although scattered housing has been an option often discussed and promoted its impact on health and well-being of PHAs is not well understood. Fife House's approach to scattered housing provides a more independent housing option while still providing some support services. This qualitative evaluation explores the experiences of current and former residents of the Fife House scattered sites and its impact on their overall health and well-being.
METHODS: Qualitative data were collected through in-depth interviews with five current (63%) and three former (37%) residents of scattered sites, and analyzed using thematic analysis.

RESULTS: The findings show that independent living is preferred by PHAs and empowers PHAs to take care of their nutrition and daily needs. However, participants identified several challenges related to living in scattered housing, including accepting derisory housing as a result of limited housing options, living in proximity to other substance users reinforcing substance use behaviour, difficulty protecting confidentiality and avoiding disclosure of HIV status. These challenges were often the reasons for increased isolation of the participants from the community and the neighbourhood.
CONCLUSIONS: The challenges faced by PHAs living in scattered site housing require immediate response to ensure that their health and well-being is effectively supported. This study identified several recommendations related to building management, client confidentiality, staff sensitivity, and effective cooperation between different partner agencies. Despite these challenges, scattered site housing is a viable alternative to 24 hour-supported facilities, for people living with HIV/AIDS who are able to live somewhat independently.

P163
IMPACT OF PERMANENT SUPPORTIVE HOUSING ON THE HEALTH AND WELL-BEING OF PEOPLE LIVING WITH HIV/AIDS: EVALUATION FINDINGS FOR FIFE HOUSE-DENISON HOUSING PROGRAM

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BACKGROUND: Access to secure and affordable housing is a key determinant for the health and well-being of people living with HIV/AIDS (PHAs). Fife House endeavors to provide services in a flexible manner in order to meet the diverse needs of clients, and those who support them. Denison housing program specializes in providing permanent housing for hard-to-house people who are living with HIV/AIDS, including those who experience cognitive and chronic substance use issues. This qualitative evaluation explores the experiences of current and former residents of the Denison Housing Program and the impact of support services on their overall health and well-being.
METHODS: Qualitative data were collected through in depth interviews in order to access information from current and former residents of the program about their experiences while living at the program and since they moved. One peer research assistant was trained in qualitative data collection methods and interviewing skills. Five current (56%) and four former (44%) residents of the Denison housing program were recruited for the qualitative study. Qualitative data were analyzed using thematic analysis.
RESULTS: Study findings highlight that stable housing and support services enhance health; program staff play a critical role in creating stability for residents; shared experiences of HIV reduce isolation and insecurity; concept of dependence and independence varies based on previous housing experiences; men and women have divergent perceptions of home; and safety and stability are a concern for former residents.
CONCLUSIONS/RECOMMENDATIONS: Based on the findings we propose a number of service/practice recommendations: strengthening and effectively communicating the conflict resolution process; use of community and volunteer resources to address isolation due to linguistic barriers; enhancing programs/activities with focus on women; building in-house capacity and strengthening follow up support system for former residents; and an orientation program for residents focusing on cultural sensitivities.

P164
POSITIVE WOMEN'S NETWORK: 20 YEARS OF DIFFERENCE, 20 YEARS OF CHANGE

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Positive Women's Network (PWN) celebrates their 20 year anniversary in 2011. PWN is one of few women-specific HIV organizations in Canada. PWN serves HIV+ women in British Columbia, but its resources are used nationwide. For example, thousands of copies of the Pocket Guide for Women Living with HIV are distributed in Canada yearly.
PWN was initiated by a group of women living with HIV and women affected by HIV who identified pressing issues not being met by male focussed ASOs: HIV and pregnancy, gender inequity and violence, stigma, and the burdens of caregiving. The PWN partnership between infected and uninfected women was a unique one at the time, and one that continues.
Women with HIV are often reluctant to go public with their status because of the stigma it can bring on themselves and their families. Consequently, HIV+ women's issues are often invisible. PWN is a resource for consultation on best practices, resource development, policy and advocacy nationally and internationally. Nevertheless, in the broader community those involved with PWN still encounter the question: Why are women-exclusive HIV services needed? PWN is twenty years into the answer.
PWN is currently engaged in a community based research initiative to examine the following questions: How is HIV different for women? Why do women's voices need a unique place in the HIV epidemic? What role has PWN played in creating a community in BC and in Canada? Using a gendered lens, this research project is investigating the intersection of the HIV activist movement and therapeutic developments in treating HIV in Canada over the last 20 years. The anticipated date of completion of this project is spring 2011.

P165
STOP-HIV/AIDS: THE DEVELOPMENT OF AN INTEGRATED OUTREACH TEAM (VANCOUVER, BRITISH COLUMBIA)

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BACKGROUND: Highly active antiretroviral therapy (HAART) has transformed HIV infection into a chronic, manageable condition for those individuals engaged in care and treatment. However, research from the British Columbia Centre for Excellence in HIV/AIDS indicates that ~40% of those who died of HIV-related causes in British Columbia (B.C.) between 1997-2005 never accessed HAART. Additionally, HAART is widely recognized as a powerful prevention tool by suppressing the virus to undetectable levels in treated individuals, thereby decreasing the probability of HIV transmission and incident HIV infections.
SETTING: STOP HIV/AIDS is a pilot project to expand HIV testing, treatment, and support services to clinically eligible individuals facing multiple barriers to care in Vancouver's inner city and Prince George, B.C., Canada. Vancouver Coastal Health's (VCH) innovative development of a clinical HIV Outreach Team supports the work of the pilot project by providing access to a range of low-threshold HIV specific health care interventions (including access to HIV testing, treatment, public health follow-up, HIV primary care and case management) in order to engage the most hard-to-reach clients living with or at risk for HIV infection in Vancouver's inner city.
METHODS: A qualitative and quantitative description (using case study examples) will highlight the recent work of the VCH STOP-HIV Outreach Team.
RESULTS: Preliminary quantitative results are not available at present as the team was established in October 2010. Quantitative results will include the implementation of outreach activities including testing updates (total number of HIV point-of-care tests, STI screens and positivity rate). In addition a qualitative description will highlight examples of intensive client case management as well as partnering initiatives to build community support for the integration of the outreach team with existing community based HIV provision and harm reduction services.

P166
BARRIERS AND FACILITATORS TO HIV PREVENTION IN RURAL AND REMOTE COMMUNITIES IN CANADA

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INTRODUCTION: This paper examines barriers and facilitators to two forms of HIV prevention, HIV testing and future HIV vaccine deployments, as they affect rural and remote communities.
METHODS: The paper combines findings from two community-based research projects, a study of HIV testing among women and a synthesis of lessons learned for future HIV vaccine deployments. Each study conducted

literature reviews, key informant interviews and community consultations.

RESULTS: Barriers and facilitators are subdivided into three categories: physical access; anonymity and confidentiality; and misconceptions about HIV.

Physical barriers to HIV testing and future vaccine deployment include a lack of basic and sexual health services in most rural and remote communities. The development of mobile clinics and the expansion of the Aboriginal community-health-representative model to the wider Canadian population could enhance access to HIV prevention.

Anonymous and confidential services encourage uptake of HIV prevention, but the lack of such services in many rural and remote communities means that those seeking services are likely to rub shoulders with their neighbours or to know the health-care provider personally. Although gossip can compromise a person's confidentiality, it can also act as a facilitator to HIV prevention. Programs that harness traditional rural gathering spaces including churches, socials and morning coffee hangouts offer an interesting approach to knowledge exchange in these communities.

Finally, access to HIV prevention is impeded by a misconception that HIV doesn't exist in rural communities or that it remains exclusively an issue for gay men. Specialized programs to educate rural health-care providers and community members about HIV and its impact on specific populations including women, Aboriginals, ethnocultural groups and youth are greatly needed.

CONCLUSION: While rural and remote communities in Canada face significant barriers to HIV prevention, these same barriers also offer ideas for innovative programs and services.

P167

POSITIVE CONNECTIONS – A CASE STUDY OF NINE CIRCLES OUTREACH AND SOCIAL SUPPORT PROGRAMMING AND THE EFFECTIVENESS OF RETAINING PHAS WITH CLINICAL CARE

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Outreach and social supports play an integral role in engaging and retaining People Living with HIV in clinical care. In 2007, Nine Circles Community Health Centre piloted an outreach project to support medication adherence and retention to care. Since then, this program has evolved to include four full-time outreach workers and three social workers collaborating to help People Living with HIV access services, address the social determinants of health, and maintain a connection to HIV clinical care. This poster presentation will examine the effectiveness of a prairie-based community health centre in engaging and retaining PHAs in medical care through the provision of integrated services. Specifically, a sample of 151 new client intakes over a two-year period (2008-10) was examined to explore effectiveness in maintaining a connection with care. This presentation will elaborate on the contribution of outreach and social support programming at fostering and sustaining regular HIV clinical care.

This abstract will make a valuable contribution to the developing knowledge base of outreach interventions by providing a Manitoba case study, further developing the understanding of the realities of HIV care and support in Manitoba. Moreover, this presentation will spark valuable discussions regarding the development and evaluation of outreach and social support programming for PHAs in a prairie setting.

P168

HIV DISCLOSURE: WOMEN'S EXPERIENCES FROM RURAL KWAZULU-NATAL, SOUTH AFRICA

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BACKGROUND: South Africa, home to the largest population of people living with HIV/AIDS, has begun to roll out nationwide access to HIV treatment. As these programs – with their emphasis on HIV serostatus disclosure – expand into the rural areas, it is critical that we better understand the motivations for and barriers to disclosure in rural settings, as well as its outcomes.

METHODS: This qualitative study investigates women's fears of and experiences with HIV serostatus disclosure in the rural context. In July and August 2010 we conducted individual, in-depth interviews with 18 HIV-positive women from the Sisonke District of KwaZulu-Natal (KZN) aimed at understanding the complexities of HIV serostatus disclosure from the participants' points of view. The interview transcripts were analyzed using coding techniques consistent with discursive theory. Further, narrative analysis of the interviews, including attention to gesture and body language, was used to identify and analyze that which is "unspeakable" in Judith Butler's terms. This approach accounts for the fact that, in research on highly stigmatized issues, that which is unspoken can be as important and illuminating as that which is verbalized.

RESULTS: Our findings suggest that HIV stigma is unrelenting in rural KZN and leads to fear of isolation and fear of abandonment. Fear continues to play a pivotal role in women's decisions about disclosure. Categories of fear range from fear of abandonment in intimate partnerships to fear of isolation from family and community networks.

CONCLUSIONS: These findings address a gap in the research on HIV serostatus disclosure specifically among rural South African women and highlight the need for a more nuanced discussion of the complex process of HIV disclosure, particularly in contexts where intense stigma and tremendous gender disparities persist.

P169

SEX WORK SAFETY, HUMAN TRAFFICKING AND THE 2010 WINTER OLYMPICS IN CANADA

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BACKGROUND: Large-scale international sporting events can increase the vulnerability of sex workers (SWs) to HIV infection. Leading up to the 2010 Winter Olympics in Vancouver, Canada, substantial media attention was focused on the potential for increased human trafficking for sexual exploitation and an influx of SWs to the city. Such events are rarely evaluated. This study examined the impact of the 2010 Olympic time period on the working conditions and HIV-related vulnerability of SWs in Vancouver.

METHODS: We used data from a screening questionnaire for a longitudinal cohort study in Vancouver of 230 SWs from January-July/10. We used logistic regression to examine the impact of time period (pre/during-Olympics vs. post-Olympics) on sex work patterns, safety and disruption in the last 30 days.

RESULTS: The median age of respondents was 33 years (interquartile range: 28-40), and 106 (51.2%) SWs were non-Caucasian. In multivariable analysis, in the pre/during-Olympics period compared to post-Olympics, we found significantly higher odds of respondents reporting more police stopping SWs without arrest (adjusted odds ratios [AOR]: 3.95, 95%CIs: 1.92-8.14), reporting a decrease in the numbers of clients available (AOR: 1.97, 95%CIs: 1.11-3.48), reporting difficulty hooking up with clients due to road closures/construction (AOR: 7.68, 95%CIs: 2.46-23.98) and a decrease in the number of clients available (AOR: 3.59, 95%CIs: 1.79-7.19). We found no significantly increased odds in new or trafficked SWs in the Olympic time period.

DISCUSSION: There were significant changes in the working conditions of SWs immediately before and during the 2010 Winter Olympics compared to post-Olympics. Fears over an influx of new SWs or human trafficking appear to be unfounded. Safer sex work spaces such as indoor brothels and policy reforms should be considered both in Canada and by other host countries of large-scale events to reduce the vulnerability of SWs to HIV from displacement and disruption.

P170

EXPERIENCING OCCUPATIONAL VIOLENCE IS ASSOCIATED WITH INCONSISTENT CONDOM USE AMONG FEMALE SEX WORKERS IN SOUTHERN INDIA: EMPHASIZING THE NEED FOR STRUCTURAL HIV INTERVENTIONS

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BACKGROUND: Increasing reports globally suggest that violence and exploitation by clients, pimps/managers and police may be important structural drivers of HIV vulnerability among female sex workers (FSWs). This study characterized the relationship between type and frequency of occupational violence experienced by FSWs in southern India and inconsistent condom use by clients.

METHODS: Data were analyzed from cross-sectional surveys of FSWs in three districts in Karnataka state (2007). Inconsistent condom use was defined as condom use frequency reported as 'never/sometimes/often' versus 'always', by occasional and repeat commercial clients. Client-perpetrated violence measures included having experienced physical violence in the past six months (i.e. hurt, hit, pushed, kicked, punched, choked, burned) or sexual violence in the past year (i.e. beaten or otherwise physically forced to have sexual intercourse).

RESULTS: Of our sample of 1,245 FSWs, inconsistent condom use was 13.0% (986) with occasional and 20.2% (799) with repeat clients. In multivariable logistic regression analysis, adjusting for socio-demographic characteristics, sex work environment and intervention exposure variables, the odds of inconsistent condom use with occasional clients were significantly higher for women who had experienced physical violence (adjusted odds ratio (AOR): 2.4, 95%CI: 1.2-4.8) or sexual violence (AOR: 2.7, 95%CI: 1.3-5.5). Similar results were found with repeat clients: AOR: 2.5, 95%CI: 1.4-4.6 and AOR 2.3, 95%CI: 1.3-4.2, for physical and sexual violence respectively. A dose-response relationship between the number of times experiencing physical violence and increased inconsistent condom use with both types of clients was also observed ($p<0.001$).

DISCUSSION: We found a strong independent relationship between experiencing client violence and inconsistent condom use among FSWs in southern India, increasing their vulnerability to HIV infection. Occupational violence against FSWs should be addressed within HIV prevention programming. Structural-legal reforms to current sex work laws and safer-environment interventions should be developed to stem violence and HIV vulnerability among FSWs.

P171

HEALTH-RELATED USE OF THE INTERNET BY MEN WHO HAVE SEX WITH MEN (MSM) LIVING WITH HIV (HIV+) IN CANADA

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BACKGROUND: Research has demonstrated that a large percentage of Canadians regularly look for health-related information on the Internet and these uses can have an impact on the way they manage their health. Very little is known about such use among the MSM population, especially people living with HIV.

METHODS: Between July and December 2010, 928 MSM were recruited, using a pan-Canadian online survey. Statistical analysis (χ^2) comparing HIV negative MSM (N=837) with those living with HIV (N=91) reveals significant differences between the two groups ($p<0.05$).

RESULTS: HIV+ MSM were significantly more numerous to look for health-related information on various topics (alternative treatments, medications and particular diseases) and on a more frequent basis. They were also more often concerned about specific health issues (cancer screening, hormone therapy, drug consumption, HIV prevention, sexual risk taking, compulsive sexuality, STI screening and treatment, homophobia and serophobia). Their primary source of information was more often a health professional from the public sector. They were more prone to use the Internet to communicate with a doctor or another health professional, to consult various types of websites (LGBT, MSM, HIV/AIDS community organizations and medical clinics) and to discuss with these professionals the information found on the Internet. They were more numerous to report being overwhelmed by information found online but they were reassured by its content which helped them to make appropriate decisions about their health. They considered the websites as relevant but fewer felt that they helped them maintain a less risky sexuality. They agreed more with statements suggesting that health-related topics discussed by online workers, during interactive activities, were relevant, useful and easy to understand.

CONCLUSION: HIV+ MSM have specific health issues and Internet has an impact on the way they manage their health. This research is consistent with results from studies on health-related use of the Internet by people with chronic diseases. This data can be useful for organizations offering health-related information for LGBT on their sites and online activities, especially for HIV+ individuals.

P172

PROTECTIVE AND RISK FACTORS ASSOCIATED WITH HIV STIGMA IN A POPULATION OF OLDER ADULTS LIVING WITH HIV

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BACKGROUND: Despite advances in treatment of HIV symptoms, evidence suggests that HIV stigma negatively impacts the mental health, quality of life and social experiences of older adults living with HIV. The primary objective of this study was to determine sociodemographic, psychosocial and health related variables that contribute to HIV related stigma among a large sample of older adults living with HIV in Ontario.

METHODS: This cross-sectional study presents baseline enrollment data from people with HIV who participated in the OHTN Cohort Study. The present study analyzed data from 377 participants, age 50 years and older who completed an assessment battery between September, 2007 and March, 2010. Data on sociodemographic (age, partner status, income and race), psychosocial (depression, coping, mastery and social support) and health-related variables (self-rated health, alcohol use and time since diagnosis) were placed in a multiple linear regression analysis with total score on the HIV stigma scale as the dependent variable.

RESULTS: Emotional and informational social support ($p<0.001$), and mastery ($p<0.001$) served as protective factors against stigma while use of maladaptive coping ($p<0.01$) and less time since diagnosis ($p<0.01$) were associated with greater stigma. Both older women ($p<0.05$) and heterosexual men ($p<0.05$) had higher scores of HIV stigma as compared to their MSM counterparts, even when controlling for all three clusters of sociodemographic, psychosocial and health-related variables. The final model adjusting for all factors simultaneously accounted for >30% of the variation (R2 = 0.31).

CONCLUSIONS: Findings suggest the importance of healthy internal mechanisms such as mastery, and external factors such as emotional and informational social support which protect older adults living with HIV/AIDS against the deleterious effects of HIV stigma. Interventions designed to reduce the impact of stigma and strengthen these protective components among all older HIV positive adults, particularly older women and heterosexual men living with HIV, need to be examined.

P175

HEALTH AND SOCIAL SUPPORT NEEDS OF DESCENDANTS OF RESIDENTIAL SCHOOL SURVIVORS

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BACKGROUND: Residential School Survivors were subjected to physical, mental, spiritual, and sexual abuses at Shubenacadie Residential

School. Upon returning home, they were unable to speak their language, having lost their cultural practices and spiritual beliefs. Unable to share their memories with their family,' they modelled their parenting after their experiences at 'Shubie' perpetuating the harms done to them.

RESEARCH QUESTIONS:

1. What do the descendants of Residential School Survivors understand about the experiences of their family members while at 'Shubie'?
2. What were the experiences of descendants of residential schools growing up?
3. What suggestions for services did the descendants offer?

METHODS: A community-based participatory action research approach was used. The research team was composed of Residential School Survivor Advocates, Community Research Assistants, an elder, and the Project Coordinator of the Mi'kmaq/Maliseet Healing Networking Center, and an academic researcher. Twenty-five descendants from the communities were interviewed. The data was analyzed by the research team for each community. The codes were entered into the Ethnograph program and the report written by the academic researcher with feedback and corrections provided by the First Nations members of the research team.

RESULTS: The resilience of both Residential School Survivors and their descendants was evident throughout this study. The descendants located the losses experienced through the residential school experience within the historical, social, spiritual, and physical losses endured throughout colonization. Descendants' life experiences of alienation, addiction, violence and risk behaviors were described along with their efforts to heal. Suggestions for programs fell into the categories of Therapeutic Healing, Reclaiming History, and Cultural Activities.

CONCLUSIONS: Twenty-four recommendations emerged from the experiences of the descendants and their suggestions for health and social programs that would facilitate their families' healing.

P176

HIV/AIDS IN SASKATCHEWAN: LOOKING BACK TO LOOK FORWARD

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In March 2009 it was announced that the HIV/AIDS infection rate in Saskatchewan had increased 40%. While new infection rates have leveled off in the rest of Canada, by 2010 Saskatchewan had the highest rates of HIV in the country – twice the national average and among specific risk groups. Yet, almost no attention has been paid to the history of the disease in Saskatchewan or the important lessons that this history can offer. This paper on the history of HIV/AIDS in Saskatchewan will begin to fill this gap. It will explore the ways that social, economic and political structures have historically nourished specific disease patterns. Importantly, the study aims to show that without understanding longer-term social processes of oppression, migration, alienation from health care services, and stigma, we are unable to understand the rise of HIV/AIDS in the province. Nor can we hope to create effective prevention strategies or to improve service delivery to those infected and affected by the disease. For this project I will draw on my research and teaching on the development of the pandemic, predominantly in the South African context, where historical study of HIV/AIDS is more developed. Using this experience I will develop a framework for the study of the history of the disease within the Saskatchewan context. The research for this paper draws on institutional archival material, supplemented with popular writings on HIV/AIDS, medical literature and significantly on oral history. This paper contributes to understanding the pandemic and how it has developed in the specific social circumstances of Saskatchewan. No disease develops in isolation, and a historic understanding of how such a disease has spread and been constructed is vital in understanding social forces affecting disease and thus in developing effective health and social policy.

P177

BRIDGING THE COMMUNICATION GAP – IMPROVING THE QUALITY OF CARE IN PREVENTION, TREATMENT, CARE AND SUPPORT THROUGH ACCESS TO SAFE PREGNANCY PLANNING OPTIONS, INFORMATION AND SUPPORT SERVICES FOR PEOPLE LIVING WITH HIV AND THEIR HEALTH CARE AND SOCIAL SERVICE PROVIDERS IN ONTARIO CANADA

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BACKGROUND: As pregnancy planning becomes increasingly important for the diverse population of people living with HIV/AIDS (PLWHIV) in Ontario, access to appropriate resources for all PLWHIV and their health care providers (HCPs) is crucial to ensure optimal quality of care. Yet, scarce data exists regarding HCPs' understanding of pregnancy planning support, services and resources for PLWHIV. As part of the Ontario HIV Pregnancy Planning Initiative, this cross-sectional study aims to identify gaps in information and services amongst PLWHIV and their HCPs.

METHODS: PLWHIV (n=63) and their HCPs (n=49) from 3 large and 2 small urban sites in Ontario were surveyed. Demographic information and factors affecting pregnancy planning such as knowledge about and access to resources for PLWHIV were collected. Univariate and correlation analyses were used to assess associations between access to pregnancy planning resources with various demographic factors.

RESULTS: Median age of PLWHIV was 40 years (IQR= 33-45) with 52% female and 48% male. Median age of the HCPs was 45 years (IQR = 38-50) with 67% female and 31% male. 69% of HCPs reported that they spoke to their patients about pregnancy planning. Although 95% of PLWHIV reported they saw a HCP and 63% expect a future pregnancy, only 30% reported some knowledge about available pregnancy planning services and 30% spoke to a HCP about this issue. Whereas PLWHIV identified pamphlets and information sheets as the least preferred mode of access to information, HCPs believed they are the most preferred mode. Whereas workshops and AIDS service organizations were identified as the most trusted source of information by PLWHIV, HCP respondents believed nurses and infectious disease specialists were the most trusted source.

CONCLUSION/SIGNIFICANCE: Significant disparities in beliefs regarding pregnancy planning imply gaps in communication between HCP and PLWHIV and indicate the need for targeted knowledge translation activities with all stakeholders.

P178

"I'M STILL THE SAME PERSON": RESHAPING IDENTITY IN THE CONTEXT OF A NEW HIV-POSITIVE DIAGNOSIS

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The CIHR Team in the Study of Acute HIV Infection in Gay Men is a 5-year interdisciplinary longitudinal cohort study of recently acquired HIV infections among gay men in Vancouver, BC. While HIV is considered a manageable chronic illness, receiving an HIV-positive diagnosis can result in post traumatic stress for many gay men. This presentation explores the impact of recent HIV infection and diagnosis on identity formation among gay men to inform prevention, care and support programs.

Study recruitment through six clinical sites began in April 2009 and will continue until December 2012. Study participants (n=12 at the time of submission) complete a series of self-administered questionnaires and semi-structured face-to-face interviews. Baseline qualitative interviews were recorded and transcribed verbatim. Analysis of the self-administered questionnaires described past and/or current depression, anxiety, as well as anti-gay and partner violence. Initial analysis of the interviews identified the importance of HIV diagnosis on self perception. Transcripts were then re-analysed thematically to describe the critical areas of our respondents' lives that were impacted by their HIV diagnosis, and how these contributed towards reshaping identities as a gay HIV-positive person.

Our analysis confirms that identity formation among gay men, following an HIV-positive diagnosis, is a complex process and suggests that the following are key thematic areas: coping with social stigma; the impact on family and work/career; impact on intimate relationships; attitudes towards HIV and HIV-positive persons; having sex as an HIV-positive person; and the future as an HIV-positive person.
Our findings support the need for improved understanding of the impact of HIV infection and diagnosis on identity formation, and the opportunities for and need to support post traumatic growth and resiliency following diagnosis. This will require programs and services for newly diagnosed gay men to incorporate an understanding of identity formation into counselling and support initiatives.

P179
"YOU DON'T EXIST": UNDERSTANDING THE EXPERIENCES OF LESBIAN, BISEXUAL, QUEER AND TRANSGENDER WOMEN LIVING WITH HIV IN ONTARIO

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BACKGROUND: Lesbian, bisexual, queer and transgender (LBQT) women living with HIV have been described as invisible and understudied in HIV research. The convergence of (hetero)sexism and sexual stigma may contribute to this dearth of knowledge and the low level of engagement of LBQT women in HIV treatment and care. We used a critical feminist epistemology to explore experiences of stigma and discrimination among women living with HIV from LBQT communities.
METHODS: For this qualitative study, we conducted 3 focus groups with LBQT women living with HIV across Ontario. We used a semi-structured interview guide to explore strengths and challenges experienced by women living with HIV. Focus groups were digitally recorded, transcribed, entered into NVivo and examined with narrative thematic analysis and constant comparative methodology from grounded theory.
RESULTS: Focus group participants (n=43) included: transgender (n=21), bisexual (n=15), queer (n=4) and lesbian (n=3) women living with HIV. Participants described multi-levels (individual, social, structural), forms (felt-normative, internalized, enacted, symbolic) and effects (psychosocial) of stigma and discrimination. Participants discussed sexual violence attributed to homo/transphobia as a primary route of HIV infection. Participants expressed the invisibility of HIV-positive LBQT women in HIV and LBQT programming. A lack of awareness regarding HIV prevention for HIV-positive LBQT women was described as a barrier to practicing safer sex. Involvement in social support and social justice groups emerged as important facilitators of resilience and well-being.
CONCLUSIONS: Sexism, sexual stigma and transphobia intersect to elevate risk for HIV infection and reduce access to care for LBQT women. This has implications for social/structural interventions to challenge stigma and discrimination. Understanding the deleterious psycho-social effects associated with stigma and discrimination can inform health care and support for LBQT women. Invisibility of LBQT women in HIV programming – and HIV-positive women in LBQT programs – highlights the need to develop tailored interventions to meet LBQT women's needs.

P180
PROVIDING EMERGENCY SHELTER FOR AT-RISK INDIVIDUALS

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OBJECTIVE: To assess the impact and effectiveness of providing emergency shelter to individuals who are HIV positive and/or at risk of infection or other harm.
METHODS: The goal of the shelter is harm reduction by providing clean, comfortable and safe accommodation to individuals at risk of harm.
RESULTS: Conventional accommodation can be prohibitively expensive for individuals at risk and creates a significant financial burden. The AIDS Committee of Newfoundland & Labrador (ACNL) identified the need for emergency accommodation for persons at risk of harm and, with provincial government funding support, included a four-room shelter in the planning process for construction of the Tommy Sexton Center, which houses the ACNL offices as well as six supportive housing apartments. The shelter can accommodate up to four persons in individual rooms and has a common area. Priority is given to individuals who are HIV positive. The Tommy Sexton Center shelter is available to any person who is homeless and at risk. Rooms unoccupied by HIV positive persons are made available to others who are in need of emergency shelter.
CONCLUSIONS: The Tommy Sexton Center shelter has been widely successful. All accommodation spaces are occupied and additional accommodation spaces are required. The shelter operates with a no-barrier harm reduction threshold approach to accommodation for homeless persons at risk of harm. It contributes to enhanced harm reduction. The Tommy Sexton Center shelter has helped alleviate the risks associated with homelessness. The shelter can play an important role in enhancing the health and well-being of at-risk persons including HIV positive persons. Further discussion of the challenges and benefits of operating the Tommy Sexton Center shelter is warranted.

P181
SAFE AND UNSAFE SPACES TO BE SEXUAL: YOUNG LGBT PEOPLE LABELLED WITH INTELLECTUAL DISABILITIES AND THEIR SEXUAL ENVIRONMENTS

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BACKGROUND: Young LGBT people labelled with intellectual disabilities have unique sexual health needs that are not being met. The denial of the right to pleasure and the experience of heightened control over their sexuality are commonplace. Current research indicates that people labelled with intellectual disabilities are at heightened risk for compromised sexual health, as are LGBT young people.
OBJECTIVE: To explore the ways in which social and environmental conditions influence vulnerability to adverse sexual health outcomes for this population of young people.
METHODS: We used a community-based-research approach to (a) ensure action-oriented outcomes and (b) support the realization of sexual and reproductive rights for those engaged as research participants in the project. Qualitative interviews and focus groups were conducted with 10 young LGBT people labelled with intellectual disabilities. A youth advisory board oversaw key aspects of this project including analysis.
RESULTS: Youth LGBT people labelled with intellectual disabilities have multiple limitations on their autonomy, including on their right to be sexual in private in their homes. As a result of these limitations, this population is having sex in places where they do not feel comfortable and are least likely to practice safer sex. When asked where they would be most comfortable and likely to have protected sex, participants identified their own home or in a sexual partner's home. Despite this, many of the participants were not allowed to have sex in their homes. As a result of this, these young people have developed strategies to have sex outside of their homes. These places included bathhouses, in the street, parks and out in public; all places that participants identified to be less safe, less comfortable, and where they would be least likely to use condoms.
DISCUSSION: The experiences of young LGBT people labelled with intellectual disabilities in our study, highlights that the ways in which attempts by authority figures to "protect" them through limits on their autonomy may be unintentionally leading to negative sexual health outcomes.

P182
YOU ARE NOT ALONE: THE POWER OF PEER SUPPORT FOR WOMEN LIVING WITH HIV

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ISSUE: Women living with HIV often face multiple stressors that exacerbate the negative consequences of HIV for physical and mental well-being. These include but are not limited to controlling male partners; sexual

stigma and stereotypes; and, for mothers, parental responsibilities and the issue of disclosure. For many women, HIV infection is one of several stressors that negatively affect their efforts to maintain and enhance their health. Extensive evidence suggests that social support contributes to alleviating these stressors (Vyavaharkar et al., 2007).
DESCRIPTION: Positive Women's Network (PWN) provides education, support and resources for HIV+ women (called "members") in British Columbia. Since PWN's inception in 1991, members consistently report that talking one-to-one with another HIV+ woman eases stress and social isolation; accordingly, staff informally connects members in need of peer support with members willing to provide support. In March 2010 PWN formalized its peer support program by offering comprehensive training to 9 members. Topics included women-centered support, confidentiality, disclosure, understanding oppression and diversity, boundaries, self-care, leadership, and HIV information.
LESSONS LEARNED: Peer support training participants report increased learning about HIV and increased competency in providing peer support. They have been "matched" with peers requiring support via telephone, email and in person. Members receiving peer support report increased emotional well-being and increased understanding of HIV and how it affects their lives. Challenges to the program include: volunteers are themselves dealing with multiple stressors that at times make providing peer support unmanageable; ensuring adequate staff resources to provide ongoing professional support to peer volunteers.
NEXT STEPS: Our results indicate that combining access to a support program and access to peer support, including peer support training, creates a social support structure that significantly improves quality of life for women living with HIV/AIDS. PWN plans to offer another round of peer support training in 2011.

P183
HEALING JOURNEYS: WELLNESS RETREATS FOR ABORIGINAL WOMEN LIVING WITH HIV

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ISSUE: The staggering rates of HIV infection among Canadian Aboriginal women are connected to the legacy of colonization and the enduring effects of the residential school system, entrenched poverty and cultural genocide. Aboriginal women who are living with HIV (AWLWH) often contend with sexual stigma and stereotypes, dispossession of their rights, multiple family roles, gendered violence, unequal economic power, fear of rejection when seeking services, an unsympathetic medical system and invisibility in HIV/AIDS research and policy. Consequently, AWLWH frequently experience social isolation, poor health, and barriers to accessing HIV support services.
DESCRIPTION: Since 1993, Positive Women's Network (PWN), a women-exclusive AIDS Service Organization in British Columbia, has organized weekend wellness retreats, allowing women living with HIV to come together safely. Given the number of Aboriginal women who are living with HIV and make up PWN membership, PWN has held an Aboriginal Women's Wellness Retreat every other year since 2004. Applicants who identify as having Aboriginal ancestry are prioritized. All costs, including transportation, are covered by PWN. Through workshops and activities facilitated by Aboriginal elders and diverse staff, there are opportunities to develop social support networks, discover personal strengths, health practices and coping skills, learn about HIV, and engage with Aboriginal history and culture.
LESSONS LEARNED: To date, PWN has organized 4 Aboriginal Women's Wellness Retreats, 1 retreat included participants' children. On average, 16 women attend each retreat, 40% have not attended a retreat before, 35% are from outside city centre, and 95% have Aboriginal ancestry. During the evaluation phase, participants continually report the retreat serves as a catalyst to begin, maintain or enhance their healing journey.
NEXT STEPS: Our results indicate a retreat program focused on culturally sensitive gender specific healthcare strategies, traditional practices and peer support significantly improves quality of life for AWLWH.

P185
TRIALS AND TRIBULATIONS: PARTICIPANT PERSPECTIVES ON AN HIV VACCINE TRIAL SHUTDOWN

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BACKGROUND: The Step Study phase IIb HIV-1 vaccine trial was terminated early due to futility; subsequent analyses revealed increased susceptibility to HIV infection among a subset of test vaccine recipients. The purpose of this investigation was to focus on the trial as a social process in addition to a medical experiment and to foreground the perspectives and experiences of trial participants.
METHODS: We conducted a mixed methods investigation, including a brief, self-administered baseline questionnaire and in-depth, semi-structured, 1-hour interviews after unblinding, to explore the experiences and perspectives among trial participants at the Toronto site. Interviews were digitally recorded, transcribed, and analyzed using NVivo software and thematic techniques.
RESULTS: Eighty-seven percent (48/55) of trial participants (46 gay/bisexual men; mean age = 37 years) completed baseline surveys; 15 (14 gay/bisexual men) engaged in post-trial interviews. Participants indicated surprise and disappointment about the early trial termination and unexpected risks. Some articulated understanding the uncertainties of clinical trials, steadfast support, and willingness to participate in the future; others reported greater risks than they deemed acceptable and unlikelihood of volunteering again. A few indicated mistrust of trial sponsors and ethics. Participants' most profound criticism was not about unexpected results, but perceived delays in unblinding, and gaps in post-trial dissemination of information and psychosocial support.
CONCLUSIONS: Approaches to the human dimensions of biomedical HIV prevention trials typically focus on individual-level factors that influence willingness to participate, informed consent, and sexual risk behaviours. We identified structural and systemic factors that strongly influenced participants' experience: lack of clarity and efficiency in communication mechanisms between participants, investigators, and trial sponsors; under-resourced post-trial dissemination of information and psychosocial support; and pre-existing experiences of social exclusion and mistrust of medical research. Future HIV vaccine trials may benefit from increased emphasis on clinical trials as social processes, and systemic challenges of trial implementation.

P186
COHORT PROFILE: LONGITUDINAL INVESTIGATIONS INTO SUPPORTIVE AND ANCILLARY HEALTH SERVICES (LISA)

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BACKGROUND: The Longitudinal Investigations into Supportive and Ancillary health services (LISA) study examines the experiences of HIV-positive persons who have ever accessed antiretroviral therapy (ART) in British Columbia (BC), Canada. The aim of the study is to capture the social determinants of health (housing, food security, income, social support), health care experiences (physician trust, medication perception, supportive services use), and other challenges (mental health, addictions, co-morbidities), among people living with HIV in BC.
METHODS: Eligible participants were 19 years of age or older and enrolled in the provincial Drug Treatment Program (DTP). Recruitment was conducted through letters to patients from ART-prescribing physicians, pharmacists, advertisements at HIV/AIDS service organizations and by word-of-mouth. One thousand interviewer-administered questionnaires were completed between 2007 and 2010 across the province. Clinical data on each participant was followed longitudinally through linkages with the DTP.
RESULTS: Of 1,000 interviews, 917 participants have been linked to clinical data and thus serve as the final cohort for sub-analyses. Of these

persons, 27% are female, the median age is 39 years (IQR=33-45) and 32% are of Aboriginal ancestry. A history of injection drug use is reported by 654 LISA participants (71%); stable housing by 623 (68%), food secure by 306 (33%); and current employment by 214 (23%). Participants were interviewed from all five provincial health authorities, including Vancouver Coastal (57%), Vancouver Island (11%), Fraser (22%), Interior (6%), and Northern (3%).

CONCLUSIONS: The LISA cohort is closely representative of people on treatment by health authority in the province of British Columbia, although particular sub-populations were deliberately oversampled in order to sufficiently power sub-analyses. While existing provincial data from the DTP provides clinical data on all persons accessing ART, the LISA cohort provides valuable insight into the overall well-being of this population.

P187

SEX, DRUGS AND STRUCTURAL INTERVENTIONS: UNSTABLE HOUSING ASSOCIATED WITH INCREASED HIV RISK BEHAVIOUR IN A COHORT OF PEOPLE ON TREATMENT IN BRITISH COLUMBIA

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BACKGROUND: Unstable living conditions may increase risk for HIV exposure and transmission. This analysis examines housing as a structural factor associated with drug and sexual risk behaviours among individuals accessing antiretroviral treatment (ART). We hypothesized that unstable housing is significantly associated with sex exchange and recent injection drug use.

METHODS: The LISA cohort is a prospective study of persons on ART in BC. Interviewer-administered surveys collect information regarding housing, drug use, sexual behaviour and other socio-demographic factors. Clinical variables, such as CD4 count and viral load, are obtained through linkages with the Drug Treatment Program at the BC Centre for Excellence in HIV/AIDS. In order to examine the effect of housing status on drug and sexual risk behaviours, multivariate logistic regression was used with three outcomes: sex exchange, unprotected sexual intercourse and recent injection drug use.

RESULTS: Between 2007 and 2010 approximately 1,000 participants were interviewed. The survey was modified part way through the study to stratify sexual behaviour based on partner type. This analysis is thus restricted to 477 interviews with full information on all outcomes. Median age was 45 (IQR=39-51) and 29.8% (142) were female. After adjusting for potential confounders, unstable housing was statistically significantly associated with a history of exchanging sex for food, money or drugs (Adjusted Odds Ratio [AOR]=1.92; 95% Confidence Interval [CI]=1.11-3.33) and recent injection drug use (AOR=2.39; 95% CI=1.41-4.03). Unprotected sexual intercourse with regular partners, casual contacts and clients was not significantly associated with housing status.

CONCLUSION: Greater levels of sexual exchange and injection drug use amongst unstably housed populations are associated with aspects of transient living conditions, as well as the increased need and opportunity for sexual exchanges for food, shelter, drugs and money. Our findings suggest that secure and affordable housing is an important structural intervention that may reduce HIV risk behaviour.

P188

INTERSECTORIAL ACTION TO REDUCE INEQUITIES ASSOCIATED WITH HIV RISK

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Increased incidence and prevalence of HIV and Hepatitis C, are exacerbated in circumstances in which poverty, housing instability, and drug use intersect and differentially impact individuals on the basis of gender, age and ethnicity. Inequities in HIV rates, access to treatment and outcomes of treatment are structurally produced. Of particular concern is the way in which current drug policy shapes the health of those who are least able to access resources necessary to mitigate poor health and health related risks such as HCV and HIV. Responding to such inequities requires action and partnerships across sectors including health care leaders, communities impacted, corrections, law enforcement, political leaders and decision makers.

The Canadian Nurses Association, as part of their commitment to reducing health inequities and promotion of social justice, led the development of a discussion paper on harm reduction and illicit drug use. The purpose of the paper was to inform nursing education, research, policy and practice in order to reduce health inequities, particularly the risk of HIV and Hepatitis C and other infections associated with illicit substance use. In this presentation, we will highlight the structural determinants of HIV risk, the role of drug policy in shaping HIV risk and key areas for intersectorial action to reduce structural inequities associated with HIV risk. In particular, we will focus on strategies for the development of partnerships across several sectors including corrections, law enforcement, municipal officials, provincial policy makers, health care organizations and providers that are necessary to address the conditions that shape HIV risk.

P189

THE CLINICAL EXPERIENCE OF PROVIDING THERAPEUTIC COUNSELLING IN TORONTO'S MALE BATHHOUSES

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Providing a pilot clinical mental health intervention in bathhouses in Toronto can be a complex experience for any professional counsellor, regardless of their training and theoretical orientation. To suddenly experience a therapeutic encounter within a bathhouse setting can present different challenges for both the person who is not expecting to access counselling in a bathhouse and the bathhouse counsellor. Bathhouses are venues where sexual, emotional and psychological experiences can get complicated by the clashing of the patron's inner emotional experience and the challenges attached to a bathhouse setting. In Toronto, male bathhouses are key venues to provide for HIV/AIDS prevention work, and any kind of outreach work due to the meaningful interactions between men that can happen there. It is with this in mind that the Bathhouse Counselling Intervetion was designed (TowelTalk). In this presentation we discuss the clinical challenges of this pilot program, and how we developed some clinical considerations that make providing mental health counselling in a bathhouse possible. We will tease out how to address challenges brought by the sexualized environment, the lack of a counselling frame or structure in the bathhouse environment, and patrons' lack of experience or knowledge with counselling. Furthermore, how these apparent challenges can be beneficial to create a space where patrons can talk about their emotional struggles. We are drawing our information from clinical discussions with the different collaborators, satisfaction surveys developed by the evaluation committee, and ongoing analysis of data collected.

BACKGROUND: TowelTalk is a collaborative effort between several organizations involved in HIV support and prevention, and is led by the AIDS Committee of Toronto (ACT). Since April 2009, a professionally trained counsellor has offered bathhouse patrons anonymous and brief counselling (10 to 45 minute sessions), as well as referrals to other health and social services. When a need is identified, the counsellor also provides short-term follow-up counselling (up to 8 sessions) at ACT.

P190

CANADIAN TREATMENT ACTION COUNCIL (CTAC): THE 1ST CANADIAN HIV/HBV/HCV CO-INFECTION RESEARCH SUMMIT 2010 – A MULTIDISCIPLINARY RESPONSE

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ISSUES: Approximately 30% of Canadians that are living with HIV are also living with Hepatitis C (HCV) and many are also co-infected with HIV and Hepatitis B (HBV). There exists a shortage of research on HIV co-infection which could assist in guiding health and social policy reform and program development regarding the treatment, care and support that people living with HIV co-infection receive.

DESCRIPTION: The Canadian Treatment Action Council (CTAC) and the Ontario HIV Treatment Network (OHTN) has responded to these

research needs along with other partners and multi-stakeholders to hold the 1st Canadian HIV/HBV/HCV Co-infection Research Summit 2010.
Approximately 100 people attended from across the country including community, frontline, clinicians and researchers gathered on the 30th and 31st of October in Toronto, to actively contribute in both small group and large group contexts to develop solid co-infection research questions based on the following 5 research tracks:
1) Clinical service delivery;
2) Clinical and epidemiology research;
3) Socio-behavioural research;
4) Support service delivery and
5) Social policy development.
LESSONS LEARNED: The participants of the Summit were highly engaged in reviewing the latest research and examining if there are gaps in research, policy and support service delivery. All participants played a very important role via highly interactive, facilitated discussions in contributing to the identification and prioritization of HIV co-infection research questions as the most "urgent", "important", "impactful' and "fundable".
It was recognized that each research question had to be viewed through a variety of lenses including specific priority populations, specific settings and specific contexts of risks.
NEXT STEPS: The final priorities will form the basis of "Roadmap of HIV Co-infection Research" to help guide next steps in research, program and policy development regarding treatment, care and support of people living with hepatitis and HIV across Canada.

P191

WORKING IN THE FORMAL ECONOMY IS ASSOCIATED WITH BETTER MENTAL HEALTH AMONG PEOPLE WITH HIV: THE ONTARIO CIHR EMPLOYMENT CHANGE AND HEALTH OUTCOMES (ECHO) STUDY

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OBJECTIVE: Employment status is associated with better mental health outcomes. Little is known about the relationship between different types of labour force participation and mental health in people with HIV.
METHODS: The ECHO study is a longitudinal mixed-methods study that examines the effects of employment transitions on health outcomes in people with HIV in Ontario (N=445). Baseline enrolment data included socio-demographic factors and depressive symptoms (CES-D). General linear models were fitted to determine the relationship between labour force participation and depressive symptoms, controlling for potential confounders. Types of labour force participation included working for taxable income (n=191), working under the table (n=39), student/volunteer (n=87), and unemployed (n=128). Higher CES-D scores indicate higher levels of depressive symptoms.
RESULTS: Most participants were men (69%), gay, lesbian or bisexual (56%), Canadian born (69%), well educated (84% ≥ high school education) and had low incomes (68% with a personal income ≤ $30,000/year). The median age was 46 years (range 19-74). Controlling for age, gender, education, and income, working for taxable income was associated with significantly lower levels of depressive symptoms (CES-D score: 10.6, 95% CI 6.1 to 15.1) than being unemployed (24.3, 95% CI 20.7 to 27.8), working under the table (17.7, 95% CI 12.8 to 22.6) and being a student/volunteer (13.3, 95% CI 8.6 to 18.0). Participants working under the table and those who were studying or volunteering had significantly lower levels of depressive symptoms than unemployed participants. Participants who were studying or volunteering were not found to be significantly different from those working under the table.
CONCLUSIONS: Although working for pay is better than being unemployed, working for taxable income seems to offer a mental health advantage to working in the informal economy. Longitudinal follow-up will help determine whether working in the formal economy is causally related to mental health outcomes for people with HIV.

P192

FACILITATING ACCESS TO AIDS SERVICE PROVIDERS FOR BLACK PEOPLE OF AFRICAN AND CARIBBEAN DESCENT LIVING IN CANADA

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OBJECTIVES: The Canadian AIDS Society has set up a national advisory committee to address at the national level issues facing Black people of African and Caribbean descent. A key objective is to identify pressing issues with member organizations' staff and community members in order to improve delivery by AIDS Service Providers (ASPs).
METHODS: A needs assessment survey was developed in collaboration with the national advisory committee. Open and closed format questions were asked on select issues to address: access; training and continuing education of staff; major prevention, treatment and care needs or issues; and concerns to ASPs when planning for program implementation.
RESULTS: A majority of respondents ranked as important or very important for ASPs to have more than one part or full-time dedicated staff from select communities to ensure their cultural competency and to prepare a comprehensive job description including all specific tasks. Respondents expressed the need to monitor job-related psychosocial stress that staff often experience and address the issue of self care and support. Prevention, treatment and care priorities identified included: community members experiencing challenges communicating medication side effects and their desire to switch drugs; religion; prevention messaging; and family dynamics. Funding of these programs remains essential but seems to be the first affected by cuts or reallocation.
CONCLUSIONS: Survey results identified pressing priorities for ASPs providing services to Black people of African and Caribbean descent living in Canada to help improve service delivery. Several issues related to human resources as well as prevention, treatment, care needs and program implementation were also raised and will help inform training and awareness strategies.

P195

FACTORS ASSOCIATED WITH SEXUAL VIOLENCE AGAINST MEN WHO HAVE SEX WITH MEN AND TRANSGENDERS IN SOUTHERN INDIA

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INTRODUCTION: Sexual violence (SV) has been associated globally with vulnerability to HIV infection in marginalized populations. However, there is little information on SV among men who have sex with men and transgendered individuals (MSM-T) in South Asia. Societal sanctions resulting in stigma and discrimination may place MSM-T at especially high risk for HIV. We investigated factors associated with SV among MSM-T, and the relationship between health care utilization patterns and with reported SV.
METHODS: Data were obtained from cross-sectional surveys in four districts in Karnataka, India. Bivariate and multivariable logistic regression models were constructed to examine factors related to SV. Multivariable negative binomial regression models examined the association between physician visits and SV. Normalized weights were used to account for a complex sampling design.
RESULTS: The total sample size was 543. The prevalence of SV in the past year was 18%, with a range by district of 12%-31%. HIV prevalence among those reporting SV was 20%, compared to 12% among those not reporting SV (p=0.10). In multivariable models, among those reporting sex work involvement, only having anal sex with five or more casual sex partners in the past week was associated with SV (AOR: 4.1; 95%CI: 1.2-14.3, p=0.03). Of those not reporting sex work, feminized sexual identities (AOR: 6.10; 95%CI: 1.3-28.8, p=0.03) and younger age (AOR: 0.9;

95%CI: 0.9-1.0, p=0.002) were associated with SV. There was no significant association between numbers of partners and SV among those not reporting sex work. Increased physician visits among those reporting SV was reported only for those involved in sex work (ARR: 1.7; 95%CI: 1.1-2.7, p=0.012).
CONCLUSIONS: The high rates of SV observed highlight the importance of incorporating violence reduction components into HIV prevention programs among MSM-T. Heterogeneity in vulnerability to SV should also be taken into account.

P196
BARRIERS TO ACCESSING HEPATITIS C TREATMENT FOR PEOPLE WHO INJECT DRUGS

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BACKGROUND: In Canada, approximately 10 000 people are living with both hepatitis C and HIV; 20 percent of individuals living with HIV are co-infected with hepatitis C. Many individuals who inject drugs are at a higher risk for contracting both hepatitis C and HIV because they engage in high risk activities that increase their chances of being in contact with infected blood. Individuals living with hepatitis are at risk of contracting HIV. Being co-infected with both diseases complicates both hepatitis C and HIV; it is therefore critical to provide treatment for hepatitis C. Although those living with hepatitis C often report high interested in treatment, uptake remains low.
OBJECTIVE: To identify the factors which influence decisions around hepatitis C treatment.
METHODS: Fifty-five individuals were recruited from a community based methadone clinic in Nova Scotia. A cross sectional questionnaire was used to gather background characteristics, interest in hepatitis C treatment, knowledge of hepatitis C, and attitudes and opinions towards hepatitis C treatment. Knowledge was assessed using a 'true-or-false' series of questions; 'good' knowledge was defined as having more (or the same) correct answers than the median number of correct answers of all participants.
RESULTS: 70% of participants were interested in starting hepatitis C treatment within the next 6 months, while 30% were undecided or uninterested. Individuals in both groups had similar 'good' knowledge levels in terms of hepatitis transmission and progression. In terms of knowledge around hepatitis C treatment, 88% of those who said they were interested in treatment scored good knowledge, compared to only 61% among those who were uninterested.
DISCUSSION: There was a correlation between knowledge of hepatitis C and willingness to start treatment, suggesting that those who are uninterested in treatment may have lower levels of knowledge around treatment.

P197
BARRIERS TO ACCESSING HEPATITIS C TREATMENT, SUPPORT AND CARE THOUGH PHOTOVOICE

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BACKGROUND: In Canada, approximately 10 000 people are living with both hepatitis C and HIV; 20 percent of individuals living with HIV are co-infected with hepatitis C. Many individuals who inject drugs are at a higher risk for contracting both hepatitis C and HIV because they engage in high risk activities (i.e. needle sharing) that increase their chances of being in contact with infected blood. Individuals living with hepatitis are at risk of contracting HIV. Being co-infected with both diseases complicated both hepatitis C and HIV; it is therefore critical to provide hepatitis C treatment for individuals both mono-infected with hepatitis C and co-infected with both. Although those living with hepatitis C often report high interest in treatment, uptake remains low.
OBJECTIVE: To identify barriers to accessing hepatitis C treatment, care and support through the Photovoice method. Photovoice is a qualitative data collection method in which participants take photographs of the issue being studied.
METHODS: Participants were recruited from a community based methadone maintenance program in Halifax, Nova Scotia. Five hepatitis C positive clients agreed to participate and were provided with disposable cameras. Participants were asked to take photographs of real or perceived barriers to accessing hepatitis C treatment, care and support. A focus group was held with the participants to discuss individual photographs and themes based on all photographs.
Several themes emerged from the photographs, including (1) feeling alone and isolated, (2) mental health, (3) finances and money, (4) drugs and addiction, and (5) education and knowledge. This project highlighted the barriers experienced by individuals who have experience with injection drug use as they access hepatitis C treatment, care and support. Future plans include involving a larger group of clients, and focusing on barriers to accessing care for HIV/HCV co-infection.

P198
THE REPRESENTATION OF RACE AND ETHNICITY IN BIOMEDICAL RESEARCH

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There are published guidelines for using the terms "race" and "ethnicity" in biomedical research. This research examines to what degree the recommendations for the use of these terms have been adopted in a sample of biomedical research articles published between 2005 and 2010.
Using the PubMed database/search engine, a set of 102 articles using "race" or "ethnicity" were identified and examined. Analysis of the publications revealed no cases where "race" or "ethnicity" categories were defined although 2/3 papers associated a medical outcome with race or ethnicity. This suggests the guidelines for use of the terms are unknown or ignored.

P199
CANADA'S AGING POPULATION: IMPLICATIONS FOR CARE-GIVING INVOLVING MEDICALLY COMPROMISED HIV+ CARE-PROVIDERS

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BACKGROUND: 25% of Canada's eldercare-givers are themselves seniors.[1] Studies document the stress of eldercare, but rarely in the context of overall well-being. To understand how care-giving; chronological aging; accelerated aging related to HIV disease-progression; and behavioural/psychosocial factors affects the health outcomes/psychological well-being of PHAs, the effects of care-giving must be contextualized by HIV-disease.
METHODS: Observations from Gerontology studies dealing with Stress, Social Support, and Psychological Distress of Family Caregivers of the Elderly[2] (emphasizing Risk factors for stress in elderly caregivers[3]) were correlated with HIV-disease characteristics, and matched with Psychosocial moderators of immune function[4], or common impacts of HIV on the psyche and daily functioning.
RESULTS: HIV disease-characteristics heightened risk factors for stress (role-reversal; mental illness; dealing with morbidity; stigma/social isolation/cultural deviation). HIV can turn every aspect of living into "off-time events"[5]. PHAs commonly view off-time events, including eldercare role-reversals, as losses. Neurocognitive degeneration in the elderly can be cruel, and often marks HIV disease progression. PHAs' functional reality frequently equals depression. In eldercare situations "vulnerability factors" are accentuated and "protective factors" are diminished by the degree to which one self-identifies as "deviant" within a given community, subgroup, or extended family. For someone abandoned by their only support system, a forced "label" of cultural deviation resigns them "outside the norm", unengaged in the real functioning of society; a situation approximating the consequences of stigma, and psychological or psychosocial handicaps.
RECOMMENDATIONS: A full environmental research scan is required to provide evidence-based policies. Public and private programs / services along with an advocacy / support system must be developed for HIV+ caregivers
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P200

'BOYS WILL BE BOYS': HETERO-NORMATIVE MASCULINITY AND RISKY SEX

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Socio-cultural influences lead to heterosexual men putting themselves, and in turn, their female sexual partners at risk for contracting HIV. Heterosexual transmission is a risk for men, and is the primary means of HIV infection for women.

Masculinity is socially constructed, and is the characteristic we believe males inherently possess merely because of their sex. It is also what we think a man ought to be, the stereotypical strong, stoic man, constantly preoccupied with sex, who is celebrated for his sexual conquests. There is a connection between these traditional masculine gender expectations and risk-taking including: alcohol use, casual sex, multiple partners, unprotected sex, lack of regard for self-care and accessing medical services (e.g. HIV/STI testing), and also perceptions of invulnerability and insusceptibility.

Due to the ideals we hold about traditional masculinity, men's sexual behaviour is often considered unchangeable and uncontrollable, and women are in turn are often tasked with the responsibility of pregnancy and HIV/STI prevention. Men who have sex with women remain a forgotten group in the epidemic in terms of engagement in prevention and education strategies.

The goal of this presentation is to begin a discussion on how relevant education in the context of societal representations, which normalize and encourage unsafe sex as a measure of "true" manhood as to facilitate heterosexual men in protecting themselves and others from HIV transmission, can be possible.

P201

WOMEN AND HIV TESTING IN CANADA: BARRIERS TO TESTING AS IDENTIFIED BY SERVICE PROVIDERS

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BACKGROUND: Because of gendered, geographical and socio-economic factors, as well as guidelines surrounding the provision of testing in prenatal care, women face important barriers when it comes to accessing HIV testing in Canada.

METHODS: A community-based research project was carried out by a Project Coordinator working in consultation with a Steering Committee. The project used a mixed-methodology approach, comprised of a literature review, an online survey with 75 service providers and 15 key informant interviews. Service providers who participated in the research worked with diverse communities across Canada, and included nurses, doctors, and representatives of ASOs, sexual health clinics and specialized HIV testing centers.

RESULTS: The barriers identified by service providers were grouped into five categories: (1) Access to a testing site, such as geographical distance and comfort in accessing the facility; (2) The testing process, including the absence of comprehensive pre- and post-test counseling in non-specialized settings; (3) Skewed perceptions of HIV risk on the part of health-care providers and women; (4) The emotional dimensions of HIV testing for women, including fear of the process, of waiting for results and of the potential repercussions of a positive diagnosis; and (5) The lack of access to confidential and anonymous testing services, particularly in rural, remote or smaller urban settings. These barriers coalesce differently in individual women's lives, affecting their ability and desire to access or receive an HIV test.

CONCLUSIONS: While women face significant barriers to accessing HIV testing, service providers have identified strategies that can help mitigate them, including the provision of free, anonymous, rapid testing in communities, the training of peer counselors to offer pre- and post-test counseling, and the delivery of non-judgmental and flexible services. A "best-practices" resource is currently being developed, which profiles the work of programs that offer innovative HIV testing services in Canada, to help organizations, clinics and other facilities adapt their services and make them more responsive to women's issues and needs.

P202

COUNSELING, CASE MANAGEMENT AND HEALTH PROMOTION FOR PEOPLE LIVING WITH HIV/AIDS: A SCOPING REVIEW

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BACKGROUND: Counseling, case management and health promotion are key services provided by many AIDS service organizations (ASOs) in Canada and internationally. However, there are few efforts to mobilize research evidence that can inform these programs and strengthen the supports for people living with HIV/AIDS (PHAs).

OBJECTIVES: To identify all existing systematic reviews related to counseling, case management and health promotion for people living with HIV/AIDS and to assess the quality and local applicability of the systematic reviews.

METHODS: We searched 12 electronic databases using a search strategy designed to optimize the retrieval of systematic reviews. Two reviewers independently assessed the titles and abstracts for inclusion, assessed the quality of included systematic reviews (using the AMSTAR instrument), categorized reviews by topic and extracted key messages, the year searches were last conducted and the countries in which included studies were conducted (categorized by high and low- and middle-income countries).

RESULTS: Our searches yielded 5398 references from which we excluded 4832 based on title and abstract review and an additional 545 after assessing the full-text articles, leaving 18 systematic reviews that met our inclusion criteria. Twelve of these reviews address topics related to counselling and case management, which have a mean quality score of 6.5/11. Eight reviews address topics related to health promotion (2 address both domains), which have a mean quality score of 6/11. Most of the systematic reviews (11 of 18) were conducted within the last 5 years, all included studies from high-income countries (only 6 include studies from Canada) and 5 include studies from low- and middle- income countries.

CONCLUSIONS: There are a number of high-quality and locally applicable systematic reviews about counseling, case management and health promotion that ASOs and other health system stakeholders can use. We plan to further mobilize these findings by developing easy-to-use fact sheets.

P203

NATIONAL ABORIGINAL YOUTH STRATEGY ON HIV AND AIDS IN CANADA (NAYSHAC): DIRECTION FOR ADDRESSING SOCIAL-STRUCTURAL AND SYSTEMIC ISSUES AFFECTING ABORIGINAL YOUTH LIVING WITH AND AFFECTED BY HIV AND AIDS

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BACKGROUND: On December 3rd, 2010, the National Aboriginal Youth Council on HIV and AIDS launched its National Aboriginal Youth Strategy on HIV and AIDS in Canada for First Nations, Inuit and Metis youth between 2010 to 2015 (NAYSHAC). One strategy in particular, involves opening space for the greater involvement of Aboriginal youth in health research.

METHODS: A national youth advisory council was initiated in December 2009. These dedicated Aboriginal youth from across Canada provided their guidance to the Canadian Aboriginal AIDS Network (CAAN) about what First Nations, Inuit and Metis youth in Canada need from other Aboriginal youth, governments, community leaders, AIDS service

organizations and partners in HIV and AIDS research in order to lower the alarmingly high rates of HIV and AIDS among Aboriginal youth. Input into NAYSHAC was collected orally by monthly teleconference, 2 annual face-to-face meetings, survey and written drafts. It is the hope of the youth that NAYSHAC will evolve to provide guiance for all those dedicated to lowering HIV and AIDS infection.
DISCUSSION: In the workshop, experienced researcher participants and Aboriginal youth can provide dialogue and understanding on how they see Aboriginal youth benefiting from health research; particularly how NAYSHAC can aid in this process. Many of the Aboriginal youth on Advisory youth council already lead Aboriginal youth research in Canada and internationally. Therefore, a focus will be on identifying gaps and research priority areas. For example, lowering stigma and discrimination about HIV among Aboriginal youth and their communities, through peer-to-peer education, harm reduction, arts-based workshops and other methods.
IMPLICATIONS: NAYSHAC and this workshop, by engaging dialogue about involving Aboriginal youth in health research, provides direction for service providers, researchers, governments, AIDS service organizations and individuals already working towards lowering HIV and AIDS infection, to look at methods of greater involvement and creating space for Aboriginal youth in their work. By building the capacity of the youth to conduct health reasearch, we are taking care of our future.

Critical Approaches in Social Research Methods and Theories in HIV

P204
SUBJECTIVE SOCIAL INCLUSION AND SOCIAL EXCLUSION AS MEASURES OF WELL-BEING: NEW APPLICATIONS FOR HIV RESEARCH

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BACKGROUND: While internationally, objective indicators of social inclusion and social exclusion have been the focus of policy and research since the early 1970s, consideration is beginning to be applied to more subjective measures of social standing and integration. These measures can benefit the analysis of the social and structural drivers of HIV infection and transmission (Auerbach, 2009) by complementing and in some cases replacing more prescriptive, objective, and arguably, misleading measures.
METHODS: This paper conducts a systematic review of literature related to the measurement of subjective social inclusion and subjective social exclusion (SSI&SSE), and applies the findings to the field of HIV research.
RESULTS: Recent work on the measurement of SSI&SSE has sought to assess subjectivities through indicators related to material, social and psychological health. Measures have included the subjective reporting of actual satisfaction with financial standing, living conditions, access to goods and services, sense of belonging, experiences of happiness, and self-perceptions of stigma and discrimination (UNDP, 2006). Field-based efforts to measure these subjectivities have focused on independent living (Corrigan et al, 2003), determinants of subjective welfare (Zigante, 2007), intersections of SSI&SSE and choice (Gingrich and Preibisch, 2008), symbolic mechanisms of SSI&SSE (Gingrich, 2010), self-reported marginality (Bernáth and Bălţătescu, 2010) and the role of SSI&SSE in empowerment (Rogers et al, 2010).
CONCLUSION: SSI&SSE (the how, who, when, where, why, and what as applied to individuals' self-reported thoughts about variables associated with their own social integration) offer an important avenue of inquiry for HIV research due to their potential to help mitigate the biases of pre-defined beliefs about what is 'good' for people's well-being (Waldron, 2010). Incorporating measures of SSI&SSE would benefit research among those whose behaviours and social status place them on the social margins (Park, 1928), vulnerable and at-risk of acquiring and transmitting HIV and its associated ills.

P205
DECOLONIZING HIV RESEARCH USING ARTS-BASED METHODS: WHAT ABORIGINAL YOUTH IN CANADA HAD TO SAY

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BACKGROUND: One explanation for the elevated prevalence of HIV/AIDS within Aboriginal communities is that the ongoing systemic colonial oppression faced by Indigenous populations propagates conditions of risk. Many conventional HIV prevention strategies that fail to take these legacies into account, have proven ineffective. Historical abuses conducted in the name of science have left many communities wary of researchers.
METHODS: "Taking Action: Using Arts-Based Approaches to Develop Aboriginal Youth Leadership in HIV Prevention" is a community-based research project examining how Aboriginal youth understand the links between individual HIV risk and structural inequalities (such as colonialism). A participatory research design using arts-based approaches (e.g. photography, theatre, painting, hip hop) was adopted in six Aboriginal communities. Data were collected through the creation of artistic cultural productions during weekend workshops, intake surveys and in-depth follow-up interviews. Over 100 youth have participated. Analyses have been conducted collaboratively.
RESULTS: Youth involved identified that both the process and product of arts-based methods were important. They identified the process: as fun, participatory, empowering, instilling pride, helpful in learning about culture, healing, enhancing recall, assisting in opening up dialogue, and was varied enough that different youth were reached. In addition, artistic products of the research were: a source of pride, communicated and transmitted complex information in digestible formats, useful in raising awareness, conveyed emotion, tangible and long lasting and helped to both bridge and challenge traditional culture.
CONCLUSION: Our findings support the notion that arts-based approaches to the development of HIV prevention knowledge and Aboriginal youth leadership are working. As an innovative tool that involves youth "where they are at," it also embeds cultural understandings of health in by-youth, for-youth prevention and policy efforts. Arts-based approaches represent one way to assist with decolonizing the research process, moving forward the agenda of ownership, control, access and possession (OCAP).

P206
USING CRITICAL SOCIAL THEORY TO EXAMINE SCIENTIFIC KNOWLEDGE PRODUCTION ABOUT HIV

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OBJECTIVES: I will argue that a critical social theory lens can be used to examine how scientific research is produced for and about Ontario's African, Caribbean, and Black (ACB) communities.
BACKGROUND: Although attention has been given to how HIV-related protest activities affected the scientific response to HIV, little work has looked at the struggles of racialized groups within the HIV movement. Of interest are the struggles involved in implementing a Black community-based response. One of the ways to affect this process is through the support of scientific research that benefits the communities and reflects particular socio-political community values, such as social justice or anti-racism.
METHODS: I will use a theoretical approach based on the works of Pierre Bourdieu to examine power and scientific knowledge production. Several concepts are useful for this purpose: arena of struggle - a relational site of practice where groups from the HIV movement engage with particular fields (e.g. sciences); symbolic power - the ability to change or define social reality through reshaping its representations in a manner that benefits existing power relations.
FINDINGS: In the arena of struggle between Ontario's ACB sector and the

field of sciences, particular knowledge paradigms are attributed with scientific authority. Symbolic power provides insight into how and why these paradigms and responses to HIV are imbued with this authority. As "hard" sciences and the medical model have traditionally been dominant in the field of sciences, HIV research has reflected a strong focus on the individual (e.g., changing behaviour). Alternatively, socio-political research that questions hegemonic norms that underlie structural inequalities and drive the epidemic, have little symbolic value in the field of sciences.
CONCLUSION: A Bourdieu theoretical lens allows for a critical examination of how the legitimation of particular scientific ideologies and knowledge paradigms affects how research is produced for and about ACB communities.

P207
ADMISSIBLE EVIDENCE: KNOWLEDGE PRODUCTION FOR HIV PROGRAMS AND POLICY IN COMMUNITY SETTINGS

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Evidence-based (or evidence-informed) decision making (EDM), facilitated through knowledge translation and exchange (KTE), is widely understood as indispensible to an effective, accountable response to HIV/AIDS. Though the conceptual and practical value of EDM and KTE seem incontrovertible, the standard rationale masks complicated and contested understandings of their value. What, for example, distinguishes information, wisdom, knowledge and evidence? Why does "evidence" refer mainly to certain kinds of knowledge? Why privilege research evidence when social and behavioural HIV research is often ambiguous and provisional? These questions suggest a struggle over what forms of knowledge constitute evidence, and whose knowledge and experiences matter for EDM. We propose to address the issue of how evidence is constructed, and its relation to EDM, by grounding evidence within the broader framework of knowledge production. This entails (1) re-interpreting the distinction between producers and users of research (i.e., between researchers and everyone else), (2) understanding that knowledge production involves interactive dialogue among multiple stakeholders with varieties of knowledge and evidence, and (3) understanding that researched communities and traditional users of social and behavioural HIV research substantively enhance knowledge production. These principles inform our work at the AIDS Committee of Toronto (ACT) to support meaningful participation in knowledge production among diverse stakeholders. For example, ACT Research Day is a KTE event for all stakeholders to enhance: access to research, capacity for community-based research (CBR), informed decision-making about programs and policy, and stakeholder collaboration in knowledge production. "What's in it for me?" is a program to strengthen capacity among people living with HIV/AIDS to critically examine, engage in, and direct knowledge production. These initiatives, together with ongoing investment in CBR and other KTE activities, will inform debate about linking research and action, support critical understanding of evidence in HIV, and enhance the knowledge base for program and policy development.

P208
HOW CAN WE MEASURE WHAT WE KNOW ABOUT AFRICAN, CARIBBEAN AND BLACK (ACB) WOMEN LIVING WITH HIV IN CANADA? CRITICAL APPROACHES AND RESEARCH METHODS FOR IDENTIFYING AND USING VALIDATED AND RELIABLE INSTRUMENTS TO MEASURE QUALITY OF LIFE (QOL) AMONG ACB WOMEN

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BACKGROUND: Instruments that have been tested, validated and deemed reliable with African, Caribbean and Black (ACB) women living in Canada have not been identified. Racism, sexism and HIV related stigma have been identified as significantly impacting on QOL, HIV transmission, diagnosis, treatment and care. Instruments were identified that provide empirical information about these key domains. We used a critical race feminist theory to inform the selection of instruments to be tested.
METHODS: A multi-method approach, triangulating qualitative and quantitative methods, was employed to investigate lived experiences of women living with HIV. Building on qualitative findings (n=104), the quantitative phase involved developing, pilot testing, and implementing a cross-sectional survey among ACB women to measure: racism, sexism and HIV related stigma. Cronbach's alpha and multiple linear regression (MLR) analyses were conducted using SPSS 17 to measure scale reliability and associations between independent (racism, sexism, HIV-related stigma) and dependent (quality of life) variables.
RESULTS: Survey participants (n=161; mean age=41 years; ethno-racial identity: 50% African, 50% Caribbean) reported experiences of racism, sexism and HIV-related stigma. Six of twelve scales explicitly measured quality of life, racism, sexism and HIV related stigma, and one new scale was developed to measure HIV-related racism. Scales had high reliability (Cronbach's alpha >0.80). In MLR analyses, racism, sexism and HIV-related stigma predicted lower quality of life scores, adjusted $R2=0.35$, $F(1,79)=18.06$, $p<0.001$.
CONCLUSIONS: Theoretically informed methods of identifying and modifying scales are critical to empirically understanding the impact of social and structural determinants of health. Results highlight that these instruments effectively measured quality of life, racism, sexism, HIV-related stigma and their role in lowering QOL among ACB women living with HIV. These instruments and critical multi-method approach can be used to inform service providers, ACB women, research(ers), HIV prevention, diagnosis, treatment and care and act as a baseline for developing new instruments.

P209
INSPIRATION, HOPE, AND SILENCE: CANADIAN REFLECTIONS ON ZAMBIAN FIELDWORKER INVOLVEMENT IN INTERNATIONAL HIV RESEARCH

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BACKGROUND: With the increasing focus of HIV in the global South, there is a need to reflect on HIV research design that incorporates local Southern research partners who may not have been involved in previous research. Our project is an in-depth qualitative study on the experiences of people with disabilities in Lusaka, Zambia who have become HIV-positive. Our objective in this presentation is to reflect on the role of Zambian field workers in the research design namely in data gathering, interpretation, and analysis.
METHODS: As critical researchers, we have employed multiple qualitative methods to address North-South power relations in research design and analysis. First, Zambian field workers conducted in-depth semi-structured interviews with 9 key informants. Second, a collaborative descriptive analysis by a subset of the Canadian research team followed by an analytic meeting with the entire Canadian research team was held. This analysis was followed by a 2-day workshop with the Zambian team (which included 6-7 fieldworkers, the transcriptionist/interpreter, and study coordinator) to validate the findings. The study intentionally engages a broad range of academics, rehabilitation specialists, disability activists, sign language interpreters, HIV/AIDS workers, and community members in various roles within the interdisciplinary research team to address a multitude of research design issues.
RESULTS: Our presentations will discuss our participatory process and the training of fieldworkers; the ethical dilemmas related to compensation; the challenges of developing an international, collaborative, and interdisciplinary research team; and the inclusion of people living with HIV/AIDS and people with disabilities as fieldworkers.
CONCLUSION: Our Canadian anticipations of where the challenges would be were sometimes accurate and other times misplaced. At other moments, where we expected dialogue, there was silence. What surprised us most were the unexpected places of inspiration that have significantly shaped the research project. It is these engagements, which give us all sepo (hope).

P210

WRESTLING WITH OUR IMPERIALIST DO-GOODER LEGACY: COMING INTO CRITICAL HIV RESEARCH IN ZAMBIA-CANADA PARTNERSHIP AS A NEW RESEARCHER

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BACKGROUND: With the increasing focus of HIV in the global South, there is a need to reflect on the power relations inherent in North-South HIV research. My objective in this presentation is to critically examine power relations in an in-depth qualitative study on the experiences of people with disabilities in Lusaka, Zambia who have become HIV-positive. As an emerging HIV researcher, person with a disability, and anti-oppressive practicing social worker, my recent involvement as part of the interdisciplinary research team has been both enlightening and challenging.

METHODS: As critical researchers, we have employed multiple qualitative methods to address power relations in research design and analysis, by employing: in-depth semi-structured interviews with key informants, multiple collaborative descriptive analyses, and a 2-day workshop with the Zambian team to validate the findings. The study intentionally engages a broad range of academics, rehabilitation specialists, disability activists, sign language interpreters, HIV/AIDS workers, and community members in various roles within the research team to address a multitude of practical, ethical, and methodological issues.

RESULTS: As a member of the research team, I will discuss my own reasons for engaging in North-South HIV research, the dilemmas I face as a new researcher, and what mentoring has taught me in working on critical interdisciplinary, international HIV research. I will also wrestle with the questions of how can critical international HIV research address imperialist power dynamics, and how is colonialism both reinforced and resisted through the practices in this study.

CONCLUSION: While exploring the topic of people with disabilities living with HIV, the research team acknowledges that the potential success of the study hinges on building and maintaining meaningful relationships. Taking time to reflect on our roles within the project has helped me to distill the ways in which we reenact "traditional" North/South dynamics and yet, resist them.

P211

MEANINGFUL AND GREATER INVOLVEMENT OF PEOPLE WITH HIV IN COMMUNITY-BASED RESEARCH

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ISSUES: Community-Based Research (CBR) strives to involve community members in all stages of research and has resulted in increased relevance of research findings and interest by the community in research. CBR is increasing in the field of HIV, however, few studies have incorporated the principle of the Greater Involvement of People with HIV (GIPA), particularly in a meaningful way. People living with HIV (PLWHIV) are most commonly active as community advisory board members or peer research assistants. Capacity building programs are needed to improve the involvement of PLWHIV in additional stages of research and more thoroughly.

DESCRIPTION: Our research program has developed a CBR Capacity Building Model that incorporates GIPA in meaningful manner from development of the research question through to knowledge translation. This model involves two main components: an education component and an execution component. Educational workshops have been designed by and delivered to PLWHIV and other community members on topics including: principles of research, steps of research, grant and protocol writing, ethics board submission, quantitative and qualitative analysis, and manuscript writing. The execution component builds on the educational phase of the program and involves the meaningful involvement of PLWHIV on the research team including: being co-principal investigator, being co-investigators, coordination, analysis, presentations, grant, abstract and manuscript preparation and development of programmatic interventions.

LESSONS LEARNED: This CBR Capacity Building Model has resulted in an increased involvement of PLWHIV in academic research. Implementing the meaningful GIPA principle has improved the relevance of our research to PLWHIV and efficient, relevant and appropriate knowledge exchange and programmatic interventions. PLWHIV have developed new research skills leading to employment, education, volunteer and research opportunities.

RECOMMENDATIONS: This model of CBR has successfully resulted in building community capacity to participate in research and can be adapted to other areas of HIV research and other disease groups.

P212

"THE WAY I SEE IT:" A PHOTOGRAPHIC EXPLORATION OF HOUSING AND HEALTH AMONG PERSONS LIVING WITH HIV IN VANCOUVER

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THE ISSUE: The Pacific AIDS Network, representing over 40 HIV/AIDS service organizations (ASOs) throughout BC, recently identified housing as the most urgent unmet need of people living with HIV/AIDS (PHA). The limited data available on the impact of housing instability on health of PHA in BC has been generated without meaningfully involving community; consequently, it does not reflect experiences of affected populations. "The way I see it:" a photographic exploration of housing and health among PHA in Vancouver is a community-based research (CBR) initiative that examines impacts of housing on quality of life of PHA.

OUR APPROACH: This collaboration is comprised of ASO representatives, healthcare providers, housing advocates, researchers and experts in arts-based methods. This project adapts Photovoice to generate evidence and disseminate findings. Photovoice is a research tool used to assist people, often marginalized by social-structural inequity, to reflect on their strengths, capacities and needs, engage with policymakers and encourage social change. Participant-generated photographs and accompanying narratives about housing conditions will be used to develop an understanding of the housing-health nexus grounded in individuals' experiences.

PROGRESS: The collaboration applied for a CIHR CBR grant in October 2010 and the project has received approval from relevant Research Ethics Boards. A steering committee has been established with peer facilitators hired to conduct the Photovoice sessions. The team is working with community partners to launch a photo exhibit to display participants' photos and narratives at project conclusion.

LESSONS LEARNED: Photovoice has enormous potential to inform a comprehensive, community-informed definition of healthy housing as viewed through the eyes of PHA. The process of meaningfully engaging in CBR—a valuable tool for addressing HIV health issues—holds important lessons regarding community-academic partnerships. The BC-based CIHR-CBR facilitator has been extremely helpful in clarifying issues around responsibility and ownership, and bridging the gap between community and academia.

P213

PEERING AHEAD: THE ONTARIO HIV TREATMENT NETWORK'S (OHTN) HARMONIZED PEER RESEARCH ASSISTANT TRAINING MODEL

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BACKGROUND: The employment of peer research assistants (PRAs) is a priority in Ontario. The OHTN sought to create a harmonized approach to training involving PRAs from multiple research studies to optimize the peer model and enhance further knowledge and engagement in the entire CBR process enterprise.

METHODS: In November, 2010, the OHTN and the CIHR Centre for REACH in HIV/AIDS hosted a harmonized training workshop series for 24 experienced and newly hired PRAs from five CBR studies in Ontario. Classroom style training was combined with two days of sessions at the OHTN Research Conference related to CBR.

RESULTS: Pre-training evaluation indicated that PRAs had a diverse knowledge of CBR: PRA roles and responsibilities, social determinants of health, ethics and confidentiality, cultural competency, and how to conduct a research interview, ranging from "poor" to "excellent". Prior to training, 82% of respondents indicated that they had at least a "good" knowledge of social determinants of health, while at least 27% of respondents indicated that they only had a "poor" or "fair" knowledge of community based research, PRA roles, ethics, cultural competency and conducting a research interview. Participants completed a post-training evaluation to measure changes in their perceived knowledge of CBR skills and to identify key areas requiring ongoing support. As a group there was an overall upward trend in knowledge in all areas. All PRAs indicated that they had at least a "good" understanding of PRA roles and responsibilities, ethics, cultural competency and conducting a research interview. PRAs noted that attending the conference helped them to increase their understanding of CBR, ethics and networking.
DISCUSSION: A harmonized approach to PRA training that utilizes the previous experiences of PRAs and teaches CBR skills beyond "how-to-do the research" has the potential to increase confidence, mentorship, peer-based learning and support, knowledge and skills of peer research assistants across a variety of skills and backgrounds. The inclusion of PRAs from multiple studies enhances KTE, research capacity and strengthens community cohesion.

HIV Treatment and Care

P214
A NEEDS ASSESSMENT FOR HIV/AIDS RESEARCH UTILIZATION AND TRAINING WITHIN THE DEPARTMENT OF NURSING AT THE UNIVERSITY OF PORT HARCOURT, NIGERIA

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BACKGROUND: In 2009 the Centre for Health and Development (CHD) opened at the University of Port Harcourt (UNIPORT), Nigeria, in collaboration with the University of Toronto, Canada. The CHD conducts operational research at UNIPORT aimed at improvement of the health of the people of Rivers State. This analysis of strategic directions for nursing at UNIPORT identifies needs and proposes future directions to improve research training and utilization.
METHODS: At a workshop to explore future directions for building HIV/AIDS nursing knowledge and research capacity, nursing faculty completed a series of self-completed questionnaires to measure barriers and facilitators of research utilization. Descriptive results were calculated using available tools.
RESULTS: Nursing faculty (n=23) assessed the role and capacity of HIV/AIDS nursing research at UNIPORT. The mean age of participants was 50, (range 30-62). All were female. The majority had graduate degrees (52.2%). Primary barriers to research utilization at the local level identified included: 1) Inadequate facilities. 2) Inability to access relevant literature. 3) Insufficient authority to apply research to change patient care procedures. 4) A lack of access to tools and funds for research. 5) Difficulty understanding research findings. Activities suggested to address these barriers included i) Improved staffing for research. ii) Greater availability of research journals in libraries. iii) More attention to research collaboration between nurses and clinicians. iv) Commitment to implementation of research findings by administration. v) Training in research skills and utilization.
CONCLUSION: Faculty within the Department of Nursing are skilled practitioners. There is a general appreciation and understanding of the ability of research to improve clinical activities and teaching. However, available resources and structures challenge the conduct of research. The CHD will continue to broker the engagement and development of research skills within the Department in order to enhance teaching at UNIPORT and improve HIV/AIDS patient care across Rivers State.

P215
A DESCRIPTION OF AN INTEGRATED MODEL OF HIV/AIDS CARE INCLUDING SUPERVISED INJECTION SERVICES

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Persons who inject drugs face multiple social and structural barriers to accessing clinical and support services, including highly active antiretroviral treatment (HAART), and consequently experience poor clinical outcomes and high mortality rates. In Canada, supervised injection services have emerged as an innovative, if controversial, service delivery model for this population. Recent studies have provided definitive evidence of the health and other benefits of a supervised injection facility in Vancouver (Insite), including reductions in HIV risk behaviours, such as syringe sharing and sex without a condom, and increased access to health, detoxification, and addictions treatment services. Questions are now being asked regarding the potential role of supervised injection services (SIS) in hospital and community-based health settings. For example, what are the health and other benefits of integrating SIS into hospital and community-based health settings? And also, how should SIS be coordinated with other clinical and support services to improve client outcomes?
A systematic description and evaluation of the integration of SIS into other settings is clearly needed to address these questions. This presentation explores the integrated model of HIV/AIDS care implemented by the Dr Peter Centre, a Vancouver-based community-based health organization providing clinical and support services to persons living with HIV/AIDS including SIS. The Dr Peter Centre operates a day health program providing a range of clinical and support services (including SIS) to as many as 325 PLWHAs every day and a residence that provides care for up to twenty-four individuals at a time who require 24-hour specialized nursing care for persons actively using illicit drugs. This presentation discusses the integration of SIS into the Dr. Peter Centre, as well as the implications of this model of care for other jurisdictions.

P216
SOCIODEMOGRAPHIC AND PSYCHOSOCIAL CORRELATES OF CIGARETTE SMOKING AMONG PERSONS LIVING WITH HIV IN ONTARIO: FINDINGS FROM THE OHTN COHORT STUDY (OCS)

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BACKGROUND: People with HIV have higher rates of cigarette smoking than the general population. The purpose of this study is to determine the prevalence and identify independent correlates of cigarette smoking among people with HIV in Ontario.
METHODS: We analyzed baseline data from 1,136 persons (222 women and 914 men) living with HIV. We used multinomial logistic regression to calculate identify factors (i.e., calculated adjusted odds ratios) independently associated with current cigarette smoking status.
RESULTS: One-third of the 1,136 participants (22% women, 37% men) are current cigarette smokers. One-fourth (12% women, 27% men) are former smokers. The remaining 42% (66% women, 36% men) never smoked. Among women, current cigarette smokers were significantly more likely to be younger (OR=1.06, 95% CI: 1.01-1.11) and Caucasian (OR=7.15, 95% CI: 2.76-18.52) and report higher level of stress (OR=1.22, 95% CI: 1.04-1.15). Women who are former smokers were more likely to be Caucasian (OR=4.38, 95% CI: 1.47-13.03) and be heavy drinkers (OR=4.91, 95% CI: 1.13-21.24) than non-smokers. Men who currently smoke are more likely to: be Caucasian (OR=1.51, 95% CI: 1.01-2.25), less educated (OR=2.94, 95% CI: 1.64-5.26), have low income (OR=1.85, 95% CI: 1.20-2.78), use substances (OR=1.64, 95% CI: 1.02-2.63), and be heavy drinkers (OR=3.16, 95% CI: 2.05-4.88). They also reported high level of depressive symptoms (OR=1.02, 95% CI: 1.00-1.04) and stress (OR=1.09, 95% CI: 1.02-1.16). Men who reported quitting smoking were more likely to be older (OR=1.03, 95% CI: 1.01-1.05) and Caucasian (OR=2.24, 95% CI: 1.44-3.50).
CONCLUSIONS: Ontarians living with HIV have a higher prevalence

of cigarette smoking. To be successful, cigarette smoking cessation interventions need to consider sociodemographic and psychosocial differences between men and women. Managing depressive symptoms and stress, in particular, may help to reduce the higher smoking prevalence in this population.

P217
EQUAL DRUG ACCESS IN CANADA: A UNIVERSAL CATASTROPHIC DRUG PLAN

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The Canadian Treatment Action Council is a national NGO run by and for people living with HIV/AIDS (PLWHA) doing systemic access to treatment policy work. In Canada the decision to have a publicly funded drug plan and its terms remain a provincial/territorial decision except for federally covered plan holders. Without uniform public/private drug coverage across the country for PLWHA, there are inconsistent conditions for coverage and inequities that exist across the country, leading to better health outcomes for some PLWHA and not for others. PLWHA are often living at or below the poverty line and cannot afford to pay for drugs not covered by public or private plans. This applies to HIV antiretrovirals, medications for opportunistic infections, side effects and toxicities, prophylactic drugs and drugs for co-morbidities.

This problem is not limited to people with PLWHA. In 2008, CTAC commissioned a paper to establish a universal catastrophic drug plan for Canada. Such a plan will be publicly mandated and multi-stakeholder funded covering prescription drug costs for individuals who do not have public or private health insurance sufficient to cover their drug costs. Catastrophe is defined not by disease and disability but by inability to pay for medications.

CTAC's paper has a detailed formula and cost analysis for implementation of the plan based on an environmental scan of Canada and other countries, cross disability group feedback from meetings and online and discussions with other healthcare stakeholders including associations of doctors, pharmacists, dentists, nurses, pharmaceutical companies, life insurance industry and federal and provincial bureaucrats and politicians.

Based on these valuable insights and advice CTAC is amending its paper for publication and presentation to healthcare stakeholders in early 2011.

P218
ACCESS TO SOLID ORGAN TRANSPLANTS FOR CANADIANS LIVING WITH HIV/AIDS AND CO-INFECTIONS

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The Canadian Treatment Action Council (CTAC) is a national, non-governmental organization run by and for PLWHAs whose mandate is to inform access to treatment policy and practice for people with HIV or AIDS (PLWHA) and/or co-infected with hepatitis. Approximately - 58,000 Canadians are living with HIV/AIDS and 3.9 people per 1000 PLWHAs need access to a liver assessment and/or a liver transplant yet access to organ transplantation and management is not available to PLWHA or co-infected individuals in Canada.

CTAC responded by establishing a multidisciplinary working group with a focus on changing policy to secure a dedicated HIV/AIDS transplant programme. PLWHA's, Hemophiliacs, individuals co-infected with hepatitis, infectious disease specialists, community HIV doctors, and a legal expert all contributed to the work of this group.

As a result, the University Health Network submitted a funding request for a dedicated transplant program. On December 17, 2009, the Ontario Health Technologies Advisory Committee recommended that the Ministry of Health move ahead to accept this proposal, which was revised in June 2010.

On December 1, 2010, the Honourable Deb Matthews, Minister of Health and Long Term Care in Ontario announced that the Ministry is working to implement a model for donation and transplant services that will improve access to safe and effective organ transplantation for patients with HIV. They are working with a broad range of stakeholders to create an outline of the criteria to enable PLWHA's to be considered for organ transplant. CTAC has requested representation on this group.

The working group is now researching the structure of tranplant facilities worldwide to analyze the best approach for an Ontario facility. These recommendations will be sent to the Minister of Health.

P219
WOMEN'S HIV EMPOWERMENT THROUGH LIFE TOOLS FOR HEALTH: PEER CASE MANAGEMENT, QUALITY OF LIFE, MENTAL HEALTH AND COPING

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INTRODUCTION: HIV-positive women face numerous social challenges including access to care, community services and social support. The risk for depression is significantly elevated in HIV infection and is associated with poor social support and quality of life. The Women's HIV Empowerment Through Life Tools for Health Intervention (wHEALTH) is a community-based research project (CBR) studying how peer-delivered, strengths-based case management impacts the quality of life of HIV-positive women. Secondary objectives are to evaluate whether wHEALTH decreases depression levels, improves coping skills and increases perceived social support among HIV-positive women.

METHODS: The wHEALTH intervention is a unique case management approach whereby HIV-positive peer case managers (PCMs) work in partnership with women to identify and utilize their strengths and resources to address challenges. wHEALTH was compared to support programs offered by AIDS service organizations across Ontario. Since June 2008, 55 HIV-positive women have completed a support intervention including 19 women in Hamilton and 36 women in Toronto.

RESULTS: The wHEALTH intervention has not only enabled women to feel supported and understood as women living with HIV, but has also built women's awareness of community-based services. Statistical analysis of the impact of the wHEALTH intervention on outcomes including physical and mental health-related quality of life, depression, coping strategies and perceived social support will be explored in greater depth. A manual for HIV-positive women acting in the capacity as a peer case manager generated out of this project will also be presented.

CONCLUSIONS: Peer-based interventions may effectively link women to community services, reduce social isolation, improve quality of life and access to care. Although there are unique considerations when peer case managers work with other HIV-positive women including self-disclosure, maintaining boundaries and self-care, peer case management integrates the strengths-based case management model with peer-based support.

P220
STIGMA AS A PRIMARY BARRIER TO ACCESSING HEALTH CARE FOR HIV-POSITIVE AND VULNERABLE STREET-BASED SEX WORKERS IN AN URBAN SETTING IN CANADA

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BACKGROUND: Women involved in street-based sex work in Canada have among the poorest health outcomes, including high rates of violence and HIV, yet continue to experience barriers to accessing conventional health services. As such, disentangling the factors shaping poor health access remains a critical HIV-prevention and care priority. This study aimed to evaluate the prevalence of occupational stigma associated with sex work and examine the relationship between experiencing stigma and barriers to accessing health services.

METHODS: Analyses were drawn from a community-based HIV prevention research project in partnership with local sex work agencies. Between 2006-2008, women (14years+) in street-based sex work were enrolled in an open prospective cohort study, including baseline and semi-annual peer-administered questionnaires, pre-test counseling and HIV screening. Bivariate and multivariate logistic regression was used to examine the relationship

between experiencing stigma (defined as hiding sex work status from family, friends and/or home community) and experiencing barriers to accessing health services due to at least one of: poor treatment by a healthcare professional, long waitlists, inaccessible hours, and inaccessible location.
RESULTS: Of a total of 252 women, approximately one quarter (23%) were HIV-positive at baseline and 125 (49.6%) reported one or more barriers to health access in the previous six months. Overall, 141 (58.5%) reported occupational stigma. In multivariate analysis, sex work stigma was strongly associated to health access (adjusted odds ratio[AOR]:=1.85, 95% confidence intervals[CIs]: 1.07-3.20). Sex workers who experienced barriers to accessing services were also significantly more likely to be older (AOR=1.03, 95% CI: 1.00-1.06) and report recent emergency department use (AOR=2.04, 95% CI: 1.06-3.90).
CONCLUSION: Policy and public messaging to reduce occupational stigma associated with sex work remains critical to bringing sex workers under the public health and HIV prevention umbrella. Results suggest the need for improved access to innovative, mobile, and non-judgmental health care delivery models for HIV-positive and at-risk women in street-based sex work in Canada.

P221
ALCOHOL USE, SAFETY AND BEST PRACTICES IN ENSURING HIV CARE FOR ABORIGINAL PEOPLE

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BACKGROUND: The Public Health Agency of Canada reports that in 2008 Aboriginal peoples accounted for approximately 8% of persons living with HIV and 12% of all new HIV infections, despite comprising only 6.9% of that population. (PHAC, 2010). Previous research undertaken by the Canadian Aboriginal AIDS Network revealed that some APHAs reported discrimination by health care providers who assume a tendency toward alcohol and drug abuse in their clients (Jackson, R., & Reimer, G., 2005, February).
PURPOSE: This mixed methods study is an in-depth exploration of the association between APHAs real and perceived alcohol use and access to services from the perspectives of APHAs and service providers.
METHODS: After undertaking a prospective power calculation to ensure a representative sample, two national surveys (APHA n=116 and service provider n=109) were undertaken in French and English. The research team prioritized less researched populations in smaller centres such as Thunder Bay (ON), Red Deer (AB), and Regina (SK). Subsequently 25 service providers, and 25 APHAs were interviewed by a team that included peer interviewers.
FINDINGS: This research reveals a complex relationship between alcohol use, perceptions of alcohol use, and access to services. 46.6% of surveyed APHAs reported that alcohol played a role in becoming HIV positive. 32% report not accessing services they require for fear of not receiving them. Disaggregating the data by gender revealed that generally transgendered, two-spirited, and intersexed respondents were more vulnerable to marginalization than heterosexual men or women. This presentation highlights the tensions between access to services and safety, interrogates the relationship between alcohol use and HIV, and describes best practices in HIV care for APHAs.

P223
GENDERED BARRIERS AND FACILITATORS FOR HIV+ WOMEN ACCESSING AND ADHERING TO HIV CARE AND ANTIRETROVIRAL THERAPY IN POST-CONFLICT NORTHERN UGANDA

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OBJECTIVES: Despite substantial concerns of introducing comprehensive HIV care and antiretroviral treatment (ART) in conflict and post-conflict settings due to political, economic and social instability, evidence suggests equally successful HIV outcomes in conflict and non-conflict settings. In post-conflict northern Uganda, HIV prevalence is the highest in the country, with efforts focused on rolling-out ART. We therefore aimed to qualitatively explore the barriers and facilitators to initiating and adhering to ART among women living with HIV in northern Uganda.
METHODS: We conducted two focus groups and 30 in-depth interviews with women living with HIV accessing services with The AIDS Support Organization (TASO) in the Gulu District of northern Uganda. Women were invited through purposive sampling at TASO-Gulu and outreaches to former IDP camps. Over a three-day workshop in July 2010, a qualitative interview guide was developed, adapted and piloted with the TASO-Gulu team, translated into the Luo language and administered by trained ethnic-Acholi female interviewers. All interviews were recorded, transcribed, translated, and coded for emergent themes.
RESULTS: Our analyses of women's narrative reveal several gendered barriers to accessing HIV care and ART services for HIV+ women in ART-discordant and HIV-discordant partnerships, including fear of violence, abandonment by spouse, and household and community stigma. The need for secrecy from male spouses resulted in women avoiding getting tested for HIV, hiding ART medications, and discontinuing ART treatment. The normalization of violence in post-conflict setting and lack of legal protections for women experiencing violence buttresses these barriers to HIV care. Encouragingly, women in ART-concordant partnerships reported positive benefits of engagement of spouse in HIV care services, including improved marital support and communication, and increased control over HIV care for women.
DISCUSSION/CONCLUSIONS: Results indicate significant gender gaps for HIV+ women in HIV-discordant and ART-discordant relationships, and critical need for HIV care interventions to address the legacy of violence and trauma within a post-conflict environment. There is urgency to protect women at the policy level against interpersonal violence to advance human rights in the HIV response.

P224
AEROBIC EXERCISE INTERVENTIONS FOR ADULTS LIVING WITH HIV/AIDS: AN UPDATE OF A COCHRANE COLLABORATION SYSTEMATIC REVIEW

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OBJECTIVE: To examine the safety and effect of aerobic exercise interventions on immunological and virological, cardiopulmonary, strength, weight, body composition, and psychological outcomes in adults living with HIV.
METHODS: We performed an update of a systematic review of literature on HIV and exercise using the Cochrane Collaboration protocol between 1980 and June 2009. We included randomized controlled trials comparing aerobic exercise interventions with no aerobic exercise interventions or another exercise or treatment intervention, performed at least three times per week for at least four weeks among adults living with HIV. Abstracts were reviewed independently by two investigators to determine study eligibility. Two investigators independently abstracted data on study design, participants, interventions, outcomes and methodological quality from studies that met inclusion criteria. We performed meta-analyses where possible using Review Manager Version 5 computer software.
RESULTS: Fourteen studies with a total of 454 participants met inclusion criteria. Thirty meta-analyses over several updates were performed. Main results indicated that performing constant or interval aerobic exercise, or a combination of constant aerobic exercise and progressive resistive exercise for at least 20 minutes, at least three times per week, for at least five weeks appears to be safe and may lead to significant improvements in selected outcomes of cardiopulmonary fitness (maximum oxygen consumption), body composition (leg muscle area, percent body fat), and psychological status (depression-dejection symptoms). With the exception of one meta-analysis, no significant differences were found for CD4 count or viral load

outcomes.

CONCLUSIONS: Aerobic exercise appears to be safe and beneficial for adults living with HIV who are medically stable. These findings are based on the absence of adverse events attributed to exercise among exercisers and the stability of CD4 count and viral load. Findings are limited to participants who completed the exercise interventions and for whom there were adequate follow-up data.

P226

HOUSING AFFORDABILITY AND SENSE OF COMMUNITY BELONGING PREDICT HEALTH-RELATED QUALITY OF LIFE AMONG PEOPLE WITH HIV IN ONTARIO: RESULTS FROM THE POSITIVE SPACES, HEALTHY PLACES STUDY

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BACKGROUND: Housing is a major determinant of health (DOH). We examined the impact of housing affordability and sense of community belonging on health-related quality of life (HRQOL) of people living with HIV in Ontario.

METHODS: As part of our CIHR-funded 'Positive Spaces, Healthy Places' study, a prospective cohort of 602 adults with HIV are being followed for 5 years, we interviewed participants at three points in time between 2006 and 2009. Using generalized estimating equations (GEE) method, we examined the impact of various DOHs on HRQOL outcomes (Physical Health Summary [PHS] and Mental Health Summary [MHS] Scores of MOS-HIV Health Survey).

RESULTS: Of the 602 participants, 141 were female, 454 were male and 7 were transgender, 62% were Gay, Lesbian, or Bisexual, and 73% were Caucasian. At baseline, 50% were diagnosed with AIDS, 74% were on ARV, and 42% and 31% had a history of homelessness and incarceration, respectively.

Our GEE results revealed that lower PHS was associated with older age, lower CD4 count, diagnosis of AIDS, unemployment, difficulty in paying housing costs, experiencing housing-related discrimination, and higher level of depression. Living in the Greater Toronto Area and higher level of social support were associated with better PHS. Higher mental health quality of life (MHS) was associated with being male, employed, and having a higher CD4 count. A better sense of belonging in a neighbourhood, a better location of residence, and higher social support were also associated with higher MHS. On the other hand, difficulty paying for housing costs, worrying about being evicted, harmful alcohol use, and harmful drug use were associated with worse MHS.

CONCLUSIONS: Housing affordability and sense of belonging in a community have independent contributions to HRQOL. Interventions that increase affordability and quality of housing may lead to improved health outcomes.

P227

PREFERENCES FOR RAPID POINT-OF-CARE HIV TESTING IN A FEMALE PRIMARY CARE POPULATION

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BACKGROUND: Although the identification of individuals infected with HIV is an important element of HIV treatment and prevention programs, many HIV-positive individuals are not aware of their status. Those unaware of their HIV-positive status are unable to benefit from effective treatment, and preventable HIV transmissions continue to occur. Rapid point-of-care testing for HIV has been shown to be preferred by patients in some contexts, with potential benefits for testing uptake and case-finding. However, few studies have examined preferences in primary care populations.

OBJECTIVES: This study investigated HIV testing preferences within a patient population of an urban primary care clinic, specifically examining preferences regarding rapid HIV testing.

METHODS: Employing a cross-sectional design, data were collected on sexual practices and STI/HIV risk factors, history of STI diagnosis, HIV testing history and preferences, and demographic characteristics of 104 female patients aged 16-39 years.

RESULTS: 56% of participants reported a history of HIV testing. 81% stated that they would prefer rapid testing to standard HIV testing procedures. Testing preference was not significantly associated with demographic variables, behavioural characteristics or risk factors examined. A majority of participants stated an increased likelihood of HIV testing if rapid testing were readily available.

CONCLUSIONS: The finding of a strong preference for rapid testing suggests that increased availability of this modality may serve to eliminate barriers to voluntary HIV counselling and testing. Potential increased utilization of HIV testing through acceptable rapid testing is likely to increase knowledge of infection status, and has positive implications both for clinical management of HIV infection and prevention of HIV transmission in populations.

Individual-level and Behavioural Risks and Interventions to Prevent HIV

P229

"PRIDE REEL": BUILDING STRATEGIES AND PRACTICES TO DEVELOP RESILIENCE AMONG LATINO COMMUNITY MEMBERS THROUGH THE PRESENTATION AND DISCUSSION OF MOVIES, RELATED TO ISSUES THAT DECONSTRUCT THE INTERSECTION OF HIV PREVENTION, RACE, GENDER, SEXUAL ORIENTATION/PRACTICES, IMMIGRATION AND SOCIAL VULNERABILITIES

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CONCEPT: The intervention consists in a monthly gathering to watch a movie that is related to topics relevant for HIV prevention such as: sexual immigration, prostitution, love and relationships, homophobia/masculinity, HIV infection, living with HIV, etc. The intervention's goals are to reduce social isolation, offer HIV/STI's information, and provide a safe space for deconstruction of individual subjectivities and power/knowledge discourses while allowing participants to develop their personal awareness, control over their lives and build resilience.

PROCESS: A theme-relevant movie is selected and promoted through different community channels. The movie is presented, in the presence of a peer educator (facilitator) who then leads a discussion in the format of a community forum. All opinions are welcome and the facilitator ensures that all questions are answered and that information for referrals is provided as needed. Each movie night is evaluated. Participants vote to select the next film.

The evaluation that follows is based on a cross-cut of two movie nights. [Total n=13 participants. Nationalities: Mexican 5, Colombian 2, Ecuadorian 1, Peruvian 3, Chilean 1, unknown 1. 11 masculine, 2 feminine. Time of residence in Canada: less than three years=8, more than three years=5.] All participants agreed that the movie and subsequent discussion helped them gain information about HIV, safe sexual practices and community services. They also all agreed that the intervention raised their awareness about condom use in their sexual lives.

LESSONS LEARNED:

- There is a need for more interventions like this one, which gather people together and help to provide information and to deconstruct subjectivities. The interventions can improve the participants' self-esteem, awareness about safe sexual practices and general well-being.
- There is a need for funding to continue with this program and to create better and more sophisticated methodologies for further evaluation of the impact of an intervention like this particular one.
- This is a friendly (easy to do) community model that can be easily instrumented with other communities and HIV community based organizations.

P230
THE ASSOCIATION BETWEEN SEXUAL RISK AND A DRIVE FOR MUSCULARITY AMONG MEN WHO HAVE SEX WITH MEN

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BACKGROUND: Men who have sex with men (MSM) report high rates of body dissatisfaction (BD), which often manifests as a drive for increased muscularity (DM). This DM has been shown to be associated with negative mental and physical health outcomes. This study sought to examine the factors associated with DM among a racially diverse sample of MSM.
METHODS: Cross-sectional data were collected from MSM attending the LGBT Pride Festival (Toronto - June, 2008; N=430). The main outcome was a score on the Drive for Muscularity Scale (DMS). Variables included age, race, education, depression, disordered eating symptomology (DES), STI diagnosis (ever), HIV status, substance use during sex, frequency of unprotected anal intercourse (UAI), internalized homonegativity (IH), and history of childhood sexual abuse (CSA). Multivariate regression analysis was used to predict the relationship between the independent variables and DMS. The mean score on the DMS scale was 2.81 (SD=0.99, range 1-6).
RESULTS: Multiple regression analysis of the predictor variables on the DMS accounted for 17% of the variance ($p<.001$). DES ($p=.001$), depression ($p<.01$), STI diagnosis ($p<.01$), increased frequency of UAI ($p<.05$) and increased IH ($p=.001$) were associated with higher DMS scores.
CONCLUSIONS: DM is associated with mental and sexual health risk among MSM. Nearly one-fifth of the sample reported DES and high levels of IH associated with an increased drive for muscularity. DMS examines strong beliefs and potentially harmful behaviours that can occur in conjunction with other risks. Though the sample of MSM at Toronto's Pride festival may decrease the generalizability of the findings, efforts were made to recruit men who were diverse in age, race and body type. These findings provide evidence of the need for interventions among MSM that address the relationships between DM, DES, IH and other mental and sexual health issues.

P233
TESTING NEVER TESTED MSM: BASELINE DATA FROM MONTREAL PROJECT SPOT

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OBJECTIVE: To describe SPOT participants' profile according to HIV testing history.
METHOD: Cross-sectional data from 918 MSM recruited between July 2009 and November 2010 in the SPOT Project was used. Data were gathered through structured interviews and self-administered questionnaires. "Never tested" and "tested before" participants were compared on socio-demographic and behavioural variables, barriers and reasons for testing, with multivariate logistic regression models.
RESULTS: Among SPOT participants, 10% had never been tested for HIV. A higher proportion of "never tested" men were recruited through "word of mouth" than "tested before" men (39.1% vs. 28.1%, p=0.03). "Never tested" men were more likely to score higher on many barriers to HIV testing: test cost (OR: 8.49, CI95%: 1.47-48.89), no risk taking (OR: 9.28, CI95%:1.78-48.30) and not wanting to be seen in a clinic (OR: 14.32, CI95%: 1.10-186.03). "Never tested" men were less likely to have an annual income higher or equal to 30k (OR: 0.36, CI95%: 0.19-0.67), to have had HIV-negative (OR: 0.43, CI95%: 0.21-0.89) sexual partners, to have had a lower number of sexual partners (OR: 0.89, CI95%: 0.80-0.99) and to have used poppers during their sexual encounters (OR: 0.35, CI95%: 0.14-0.87) in the past 3 months. However, "never tested" men were more likely to have come to SPOT because a partner asked them to (OR: 2.30, CI95%:1.17-4.52). No difference was observed between these two groups when it comes to the proportion of HIV+ partners, unprotected anal sex with partners of unknown and HIV+ status (RAS) and test results.
CONCLUSIONS: Although "never tested" men seem to have had less sexual partners in the past 3 months, they had as many HIV+ partners and RAS. Therefore, new strategies are needed to reach them even more. For example, asking SPOT participants to encourage their "never tested" partners or friends to go to SPOT.

P234
PUBLIC OPINIONS OF SUPERVISED CONSUMPTION SITES: PERSPECTIVES FROM ONTARIO RESIDENTS

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BACKGROUND: We examined the opinions of Ontario residents towards supervised injection facilities (SIFs) and supervised consumption (inhalation) facilities (SCFs).
METHODS: We analyzed data from the 2009 CAMH Monitor, a population based, random digit dialing, telephone survey of Ontario residents (n=1035). We used descriptive and bivariate statistics and composite variables that summarize opinions across all SIFs and SCFs questions.
RESULTS: Over half of residents had read/seen/heard about SIFs (58%); and 18% about SCFs. Nearly half of residents strongly agreed that SIFs should be made available if the goal is to: reduce negative health consequences (48%); increase contact with healthcare/social workers (48%); or reduce neighbourhood problems related to drug use (56%). Fewer strongly agreed that SIFs should be made available if the goal is to encourage safe injection (30%). A similar pattern was observed among residents' opinions of SCFs: 35% believe that SCFs should be made available if the goal is to reduce negative health consequences; 40% if SCFs increase contact with healthcare/social workers; and 45% if SCFs reduce neighbourhood problems. Fewer strongly agreed that SCFs should be made available if the goal is to encourage safe smoking (20%); 39% are strongly opposed to this goal. Summarizing across all questions, 27% strongly agreed that SIF should be made available, 11% were opposed and 62% were in between (somewhat agree/disagree). For SCFs, 19% strongly agreed that SCFs should be made available, 16% were opposed and 65% were in between.
CONCLUSIONS: Overall, there is more support among Ontario residents for SIFs than for SCFs. Our data show striking differences in opinions about both SIFs and SCFs, depending on the goals. For communities considering SIFs or SCFs, demonstrating that sites improve health and reduce neighbourhood problems related to drug use are likely to be key to establishing and maintaining support.

P235
ENGAGING POPULATIONS AT RISK - UNIQUE APPROACH TO DATA COLLECTION FROM AT RISK POPULATIONS

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PURPOSE OF STUDY: Locate injection drug users and substance users to learn: who are they, where are they, how do they learn/want to engage.
Substance using populations are hard to find, hard to reach, hard to engage. They are socially marginalized, distrustful and often economically challenged, driven to create underground, secretive networks to conduct their stigmatized and/or illegal business, as well as to avoid societal discrimination.
RESEARCH METHODOLOGY: The research team utilized an adaptation of respondent-driven sampling (RDS), a well-known, effective way to access difficult-to-reach or invisible populations. Adapted sampling method is similar involving direct recruitment of peers by peers and a dual incentive system with uniquely coded coupons. Survey was not interviewer-administered. Respondents filled survey out independently. Screening protocols were informal and after-the-fact. Recruitment networks tracked through an anonymous coding system vs personal attributes or known associations. Mathematical model not applied to the sample to control for bias. Signatures for informed consent not required at any stage. Participants consented by participating, but remained completely anonymous.
Sampling technique was highly effective. 364 surveys collected, above the target of 144. Baseline sample comprised 295 surveys. Key learning in the

course of the study included how to:
1. Select and train successful recruiters
2. Develop colour coding system for primary and secondary incentives
3. Track survey completion and coupon redemption
4. Select fixed site locations for survey collection
5. Control for subversive respondent practices, such as misrepresentation, duplication, coupon hawking
6. Establish effective screening protocols

While methodology was an effective way to sample a difficult-to-reach population it was not without limitations. Surveys collected yielded rich, credible data which is used to improve existing service delivery and outreach, develop new resources, explore web-based delivery, and introduce new programs to better meet the needs of the intravenous drug and substance-using population.

P236

A PORTRAIT OF QUEBEC BABY BOOMERS WHO USE THE INTERNET TO MEET MEN FOR SEXUAL PURPOSES BASED ON DATA FROM THE QUEBEC "NET GAY BAROMÈTRE" STUDY

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OBJECTIVE: The online survey, "Net Gay Baromètre", provides a portrait of men visiting websites for gay men to meet and can help describe their sexuality with casual and regular partners and guide prevention activities accordingly. Respondents of the baby boomer generation are described here.

METHOD: Men were recruited between January and April, 2008 (n = 3560), through personalized e-mailings on nine major websites for French MSM. Baby boomers (from 1945 to 1964) account for 26.1 % of the sample (n = 928). Bivariate analyses ($\chi 2$, t tests) as well as simple and multiple logistic regression analyses were conducted.

RESULTS: Compared with younger men, baby boomers are more educated and have a higher income. More of these men self-define as bisexual, report having been the victim of insults, frequent the gay community less often, and use sex venues (saunas, cruising spaces, etc.). Fewer baby boomers are part of a couple, more are HIV-positive.

They report as many casual sex partners as younger men in the past twelve months, as well as more open couples and sex involving the exchange of money. However, boomers engage in less unprotected anal intercourse for all frequency levels and have less bareback sex and anal exposure to sperm.

Multivariate analyses show that regular unprotected anal intercourse, practiced by 16.5% of this group (vs. 21.1% among younger men), is associated with self-identifying as homosexual, taking drugs at least once, frequenting a sex venue, having more than ten casual partners in the previous twelve months, engaging in marginal sexual practices, and having oral contact with sperm over the same period.

CONCLUSION: Baby boomers are often an overlooked group in behavioural surveys of men who have sex with men. Our findings suggest that they are less integrated into the gay community and more often live alone. If they are less frequently involved in sexual risk practices overall, predictors of regular risk-taking in this group overlap with those of the global sample.

P237

BUILDING ON BY-PRODUCT BENEFITS : BLACK CAP'S REVISIONS TO THE MANY MEN, MANY VOICES (3MV) INTERVENTION TO ADDRESS THE SOCIO-EMOTIONAL NEEDS OF TORONTO YBMSM

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PLAIN LANGUAGE SUMMARY: In collaboration with academic partners, Black CAP developed supplementary material building on the existing 3MV intervention. The material addressed core beliefs through the use of guided imagery, visualization techniques and positive affirmations. The decision to include these tools was informed by theories such as social cognition, self-efficacy, and reason action theory

ISSUES: Recent research on risk of HIV/STI infection for young Black MSM has noted little disparity in HIV knowledge in comparison to other groups, and has begun to recognize the range of underlying individual and community level factors such as impaired mental and emotional health in response to the impact of racism, homophobia, and HIV stigma, as well as the limited social support and strategies of coping available.

DESCRIPTION: 81 youth participated in Black CAP's modified intervention since late 2009. The program emphasized community building, included stress-inoculation exercises, life mapping activities, adult BMSM mentorship, curriculum on substance use, emphasis on, and modeling of HIV/STI testing, individual clinical counseling on-site, and an Afro-centred rite of passage ceremony.

LESSONS LEARNED:
- The need for ongoing culturally appropriate counselling services for YBMSM in response to trauma.
- Increased need for programming that increases e motional management skills, and builds upon existing functional coping strategies that may be transferable to areas of deficit.
- Issues of reconciling interpretations of spiritual tradition/religious doctrines and sexuality was identified, and appears to be an area for further exploration and potential programmatic response.
- Recreational substance use was highlighted as being a component of the social scene that many of the youth were part of, and constituted a great deal of their interactions with other YBMSM peers, and sexual partners.

NEXT STEPS: Black CAP and research partners will collect the remaining quantitative data, and follow up in-depth interviews to determine the full impact of the program, as well as the contextual narratives of the youth in order to produce a clearer picture of the social environment of these young people in relation to their HIV and STI risk.

P238

A DEMONSTRATION OF A WEB-BASED INTERVENTION FOR HIV+ MEN HAVING SEX WITH MEN

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INTRODUCTION: The use of technology has become a vital component in the way in which individuals communicate with one another. Specifically, a significant proportion of Men who have Sex with Men (MSM) who use the internet to meet sexual partners tend to engage in risky sexual behaviour, and have multiple sexual partners than those who do not seek sexual partners online. Therefore, to keep up with current trends, HIV prevention interventions need to incorporate the same medium that individuals use in order to reduce risky sexual behaviours such as inconsistent condom use. Therefore, a web-intervention to increase condom use among HIV-positive MSM with partner(s) who are either HIV-negative or of unknown status was developed.

METHODS: The web-based intervention for HIV+ MSM to increase their condom use with HIV negative or unknown status partners used the systematic procedure of Intervention Mapping during the development process.

RESULTS: A demonstration of the use and application of the web-intervention will be shown. The web-intervention consists of one session with multiple quick messages relating to condom use. The performance objectives for the web-intervention include: 1) to plan condom use when sexual intercourse; 2) to negotiate with partner the use of a condom during sexual intercourse; 3) choosing not to have sexual intercourse without a condom. Each of the messages is tailored to the individuals' responses regarding their level of self-efficacy and intention to use condoms within each of the performance objectives.

CONCLUSION: The use of a web-based intervention allows for a wider reach of the target population. As well, using a web-based intervention reduces cost in implementation, increases intervention fidelity through standardization of content, and the opportunity to tailor the intervention to individuals' needs and/or characteristics. In addition, web-based interventions have been found to produce significant effects comparable to interventions delivered by human facilitators.

P239
VOLUNTARY COUNSELING AND TESTING (VCT) FOR COUPLES: A HIGH-LEVERAGE INTERVENTION FOR HIV/AIDS PREVENTION IN UGANDA – KAMMENGO SUBCOUNTY

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Most HIV infections in Uganda and in this particular case Kammengo subcounty occur during heterosexual intercourse between persons in couple relationships. Women who are infected by HIV seropositive partners risk infecting their infants in turn. Despite their salience as social contexts for sexual activity and HIV infection, couple relationships have not been given adequate attention by social/behavioral research in Uganda.

Increasingly studies point to the value of voluntary HIV counseling and testing (VCT) as a HIV prevention tool. Studies show that VCT is associated with reduced risk behaviors and lower rates of seroconversion among HIV serodiscordant couples. Many of these studies point out that VCT has considerable potential for HIV prevention among other heterosexual couples, and recommend that VCT for couples be practiced more widely.

However, follow-up in the area of VCT for couples has been extremely limited. Thus, current understandings from social/behavioral research on how couples in Kammengo - Uganda manage HIV risks as well as HIV prevention interventions to support couples' HIV prevention efforts have remained underdeveloped. Important opportunities are being missed for preventing HIV infection, be it by heterosexual transmission or mother-to-child HIV transmission by mothers who have been infected by their partners.

Therefore, increased attention to couples-focused VCT provides a high-leverage HIV prevention intervention for Uganda and other African countries. In addition, areas where applied social/behavioral research is needed to improve knowledge about how couples in Uganda/ Africa deal with the risks of HIV infection.

P240
RISK-TAKING BEHAVIOUR, DRUG USE, AND UNPROTECTED SEXUAL PRACTICES: A QUALITATIVE EXAMINATION OF GAY MEN WHO ATTEND GAY CIRCUIT PARTIES

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Research suggests that circuit parties—large, techno-dance events for gay/bisexual men—may be involved in the continued transmission of some STIs/HIV among gay/bisexual men. Such heightened STI/HIV transmission might occur because these parties are locales of prevalent drug use and unprotected sex. Indeed, research highlights that many gay and bisexual men engage in more drug use and more unprotected sex at circuit parties than they do elsewhere.

To develop knowledge about these practices, one-hour, audio-recorded, qualitative interviews were undertaken with 17 self-identifying gay/bisexual men who (1) attend circuit parties, (2) use drugs at these parties, and (3) engage in unprotected sex as part of this partying experience. The purpose of these a priori inclusion/exclusion criteria was, first, to obtain a homogeneous sample of self-identifying gay/bisexual men who engage in the three foregoing practices, and second, to develop and in-depth understanding about the meaning, significance, and process of this three-pronged risk-taking behaviour. Recruitment was based on participant self-selection and occurred in both Ottawa and Montréal, Canada. It continued until data saturation occurred.

Thematic analysis of the interview data revealed that the participants in this study intentionally consumed drugs to engage in a process of boundary play. That is, the research participants reported how, as part of attending circuit parties, they purposively engaged in unsafe sex and then justified this behaviour using drugs as an excuse. The results thus revealed that drug use can fulfill a dual purpose for some circuit party attendees: on one hand, these substances can help individuals fulfill their desires for unprotected sexual contact (e.g., by means of disinhibition), while on the other hand, these substances also act as a socially accepted reason for acting "out-of-character". These findings are important for both HIV prevention workers and HIV researchers because they highlight the dynamic, fluctuating, and fluid nature of risk-taking.

P241
RESPONDENT DRIVEN SAMPLING WITH HARD-TO-REACH MIGRANT WORKERS IN PAKISTAN: EXPERIENCES AND LESSONS LEARNED

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This presentation focuses on the use of respondent driven sampling (RDS) to recruit and sample two groups of migrant workers in Pakistan: those who were about to depart for the Middle East and those who had just returned from having worked there for at least 12 months and their HIV risk.

Probability sampling methods are preferred over non-probability methods in survey research, for statistical reasons as well as reasons of generalisability, it is not always possible to use these methods. Probability sampling generally requires knowledge of the size and whereabouts of the target population in order to create a sampling frame. Until recently, studies that sampled hard-to-reach groups such as migrant workers traditionally used non-probability sampling methods such as snowballing or convenience sampling. That was until the development of RDS. RDS is a quasi-probability sampling method based around a structured form of snowball sampling.

The use of RDS to recruit migrant workers in Pakistan had a number of advantages: greater recruitment efficiency, unbiased sampling, minimizing costs and maximising security for the researcher and research participants. There were a number of challenges in the implementation of RDS: social stigma attached to HIV, political instability on the time of recruitment and Opposition from Local Religious Leaders, these issues were resolved.

Despite social stigma attached to HIV, political instability and opposition from local religious leaders, the researcher successfully implemented RDS to recruit migrant workers in Pakistan and attained predetermined sample sizes for both groups within the assumed time frame. This was achieved with limited human resources, showing that implementation of RDS does not necessarily require a large work force.

P242
ENSURING COMMUNITY UNIVERSITY PARTNERSHIP TO ADDRESS HIV/AIDS AND SEXUAL REPRODUCTIVE HEALTH ISSUES AMONGST NEWCOMER AFRICAN IMMIGRANT AND REFUGEE ETHNO-RACIAL YOUTH IN WESTERN CANADA

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This intervention intend to build a unique and innovative collaboration of African immigrant and refugee youth from endemic countries, community organizations and university researchers across three cities to develop a process for a community based research also involving youth as peer researchers/educators. This project has secured funding from CIHR under catalyst grant and focuses on targeting equal number of female youth. This intervention would facilitate an exchange of knowledge about HIV/AIDS, sexuality, sexual health and STD's within youth grappling with cultural norms from their African heritage and Canadian society in the negotiation of safe sex practices. This intervention was put together based on the earlier completed community university partnership project in Winnipeg. A clear message from these exchanges was that a public dialogue around sex and sexuality was missing within these communities and that knowledge about culturally sensitive strategies was very much considered necessary in order to reduce their vulnerability to HIV infection related to associated factors of gender, poverty, race, culture, sexual norms and stigma associated with sex and HIV. It was also clear that to be successful, intervention needs to engage the community at all levels of research including from design to data collection to youth-focused delivery of the messaging. Given the lack of information on youth and sexuality and HIV in ethnic minority immigrant populations in Canada, this project seeks to expand the scope of community research partnerships to three cities also engaging youth in order to develop a multi-year project using CBR principles. The strength of the project lies in the multi-

disciplinary regional team approach to CBR for HIV risk reduction, targeted at and engaging marginalized and under-represented youth especially female youth in order to identify factors that put them at risk. The team will generate a larger research proposal as the final outcome.

P243

KEEP IT ALIVE! CHANNELLING THE MESSAGE FOR MAXIMUM IMPACT

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BACKGROUND: In 2006-2009, the African and Caribbean Council on HIV/AIDS in Ontario (ACCHO) implemented a community-based HIV/AIDS education and awareness social marketing campaign called "Keep it Alive!" (KIA). The campaign targeted African, Caribbean, and Black (ACB) people living in Ontario, specifically Toronto, Ottawa, London, Windsor, Peel Region, Hamilton and Thunder Bay.

The KIA evaluation study was implemented in 2009-2010 in London, Ottawa and Toronto, involving a survey and focus groups with ACB communities. The purpose of the evaluation study was to assess how the campaign was received and understood among ACB communities. This presentation focuses the focus group results from our study.

METHODOLOGY: We conducted seven focus groups with 47 participants as follows: Toronto - ACB youth aged 16-24 (n=11), and service providers who work with ACB communities (n=8); London - men (n=6), women (n=5); Ottawa - men (n=7), and French-speaking women (n=6). Four people living with HIV/AIDS (PHAs) from southwestern Ontario participated in a focus group via teleconference. Focus group participants were recruited by local research assistants from community spaces frequented by ACB people. All focus group discussions were recorded, transcribed, and then coded using NVivo8.

LESSONS LEARNED: The focus group discussions revealed that PHAs generally interpreted the KIA campaign quite differently from other focus group participants. Compared to other focus group participants (except service providers), PHAs often had a more sophisticated and expansive understanding about HIV and its impact on ACB communities in Canada, and a more favourable view of the campaign. Our findings suggest different levels of understanding about HIV and its impact on ACB people among PHAs and the general ACB public, and dissimilar interest in HIV among the two groups. Campaigns for PHAs and the general ACB public should differ in content, direction, and channels of delivery to achieve optimum impact among PHAs and community members at large.

P244

"WE PARENTS DON'T TALK ABOUT [HIV] BUT WE BLAME OUR CHILDREN": EXPLORING EXPERIENCES OF PARENT-ADOLESCENT COMMUNICATION ON HIV, SEXUAL AND REPRODUCTIVE HEALTH IN AN HIV-ENDEMIC COMMUNITY IN SOUTH AFRICA

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BACKGROUND: Effective parent-adolescent communication about HIV, sexual and reproductive health (HSR) topics has been shown to reduce HIV and sexual risk behaviours among adolescents. While South African adolescents have good knowledge of HSR, many report poor communication with parents on such issues. The objective of this study was to explore experiences of and barriers to effective HSR communication between parents and adolescents in South Africa.

METHODS: Adolescents (aged 14-19 yrs) and parents were recruited from the Kganya Motsha Adolescent Centre (KMAC) in Soweto from June-August 2009. Qualitative data were collected through two focus group discussions (n=10 adolescents) and 38 semi-structured interviews (n=31 adolescents, n=7 parents). Focus groups and interviews were conducted in local languages, transcribed verbatim, translated into English and analyzed using a grounded theoretical approach.

RESULTS: In total, 7 parents (57% female) and 41 adolescents (56% female, mean age=17.2 [SD=1.4]) participated in the study. Four major themes emerged: Communication between adolescents and parents about sex remains a challenge; parents' communication about HSR focused on negative consequences of sexual activity rather than prevention; misinformation from parents and peers and avoidance of communication contributed to adolescents' inaccurate HIV-related knowledge and attribution of blame; and both parents and adolescents desired more HSR communication with one another. Further, young women, who are particularly vulnerable to HIV infection in this setting, expressed wishing that they could talk to a parent about how to handle relationships and intimate partner violence.

CONCLUSIONS: Missed opportunities for HSR communication between parents and adolescents appear to be contributing to inaccurate HIV-related knowledge and sexual risk behaviours. Culturally appropriate ways for parents to engage their adolescents in communicating HSR need to be investigated. Future interventions must address social and structural influences of HIV risk such as violence, gender attitudes and norms and include conversations about preventative HIV strategies.

P245

CONDITIONAL ACCEPTANCE AND REJECTION OF SUPERVISED CONSUMPTION SITES (SCSS) – OPINIONS OF COMMUNITY STAKEHOLDERS IN TORONTO AND OTTAWA

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OBJECTIVE: Community support or opposition can create opportunities or barriers to the implementation of controversial public health programs. We examine community opinions about SCSs.

METHODS: We held Focus groups and key informant interviews with residents, business owners, police, fire, paramedics, healthcare and social service providers, and city officials (n= 141) in Toronto and Ottawa during 2009 and 2010. Thematic analyses were employed.

RESULTS: Opinions about SCSs range from unconditionally supportive to vehemently opposed. Most participants had views between these extremes and linked SCS acceptance or rejection to one or more conditions: determination of an acceptable community location; improved access to drug treatment and counselling; inclusion of SCSs as part of a comprehensive health and social service response to local drug problems; demonstration of evidence that SCSs reduce transmission of HIV and Hepatitis C, decrease overdose, and do not increase crime; and evaluation of an SCS during a pilot phase and a will to close the facility if it creates problems. This middle group can be further divided into three, overlapping, categories - hesitant, sceptical, and strategically doubtful. Hesitant stakeholders believe that SCS is necessary to solve some problems (such as disease transmission) but worry that SCS create or exacerbate other problems (such as trafficking). Members of the sceptical category prefer drug treatment and prevention over SCS yet acknowledge some potentially modest SCS benefits. Without overtly stating their opposition, the strategically doubtful raise many concerns about SCS, believe drug treatment is the best solution, and question the quality of scientific evidence regarding SCSs.

CONCLUSIONS: Our findings provide guidance to communities contemplating SCSs about policy/program/design issues and considerations that are important to community members. And further, that in developing a comprehensive health and social service response that integrates harm reduction with prevention, treatment, and enforcement, it may be essential to target strategies that build community support for SCSs.

P246

ON-LINE TESTING FOR CHLAMYDIA AND GONORRHEA? OTTAWA PUBLIC HEALTH EMBRACES NEW TECHNOLOGIES TO COMBAT YOUTH SEXUALLY TRANSMITTED INFECTION RATES

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Ottawa Public Health (OPH) is the first Public Health Unit in Canada to develop a website that offers an on-line access point for lab requisitions to test for chlamydia and gonorrhea. The results of this campaign may be of particular interest to health service providers in Canada who are interested in adopting new technologies to offer an alternative option to youth to get tested for STIs.

In response to increasing rates in sexually transmitted infections (STI's) among Ottawa's young men and women aged 14 – 29 years, the OPH Sexual Health Unit developed the 'Get Tested. Why Not? Testing is the only way you will know if you have chlamydia or gonorrhea; most people do not show any signs or symptoms' campaign to increase public awareness and promote regular testing for STIs as part of a routine health check-up for sexually active people.

The project objectives included increasing access to services and information on STI / HIV/ birth control for youth aged 14 – 29 using new technologies such as: SMS Texting ("Get Texted"), on-line screening and promoting STI testing by providing access to test requisitions via the website. The project also aims to encourage testing and reduce the spread of sexually transmitted infection in particular, chlamydia and gonorrhea.

The audience will be provided with information on the multi-stakeholder strategy OPH developed to implement this campaign (includes youth engagement, partnership development etc.), and a description of why we chose to focus on SMS Texting, on-line screening, a social media presence and a new website. Detail of the communications campaign to promote the campaign will be shared as well as preliminary findings of the campaign and lessons learned so far.

Living with HIV

P247

SEXUAL INTERACTIONS AND EXPECTATIONS OF PEOPLE LIVING WITH HIV IN THE CANADIAN CONTEXT OF CRIMINALIZATION: RESULTS FROM THE PSHP SURVEY

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A set of questions about HIV and the law were added to the Positive Spaces, Healthy Places cohort study (N=438). Results: 48.6% expect casual sexual partners to tell them if they are HIV+. Conversely 18.3% do not expect a sexual partner to tell their HIV status but this varies by sexual orientation: gay 26.7%, bisexual 23.1%, heterosexual men, 10.0%, heterosexual women, 5.1% (p=0.015) and by ethnicity: white 20.3%, Africa/ Caribbean 11.1%, Aboriginal 8.9% (p=0.048). With HIV-negative partners and partners of unknown HIV status, 44.7% told all partners that they were HIV-positive; 32.4% had no partners of this type. 5.3% did not tell any partners, 8.3% told some, 4.6% dropped hints, 9.3% felt it was unnecessary to tell because they had protected sex, 4.6% felt it was unnecessary because partners should presume everyone is positive, 3.2% felt it was unnecessary to tell because partner was willing to have unprotected sex, 3.9% felt it was unnecessary because it is partner's responsibility to use a condom if s/he wants to, and 4.4% stated they were afraid to tell. Unemployed respondents were more likely not to disclose (10.3%, p=0.008), to drop hints (8.5%, p=0.016), to feel disclosure is unnecessary with protected sex (15.4%, p=0.009), and to be afraid to disclose (21.4%, p=0.003). MSM were a little more likely to disclose to only some partners (bisexual 19.2%, gay 11.3%, p=0.020), to drop hints (gay 7.2%, p=0.047), and to feel disclosure is unnecessary with protected sex (12.0%, p=0.031). Those with casual partners were more likely to tell only some partners (13.9%, p<0.0001), feel it is unnecessary to disclose with protected sex (16.4%, p<0.0001), feel it is unnecessary to disclose because partner should presume everyone is positive (8.0%, p=0.002), because partner is willing to have unprotected sex (5.5%,p=0.013), or because it is partner's responsibility to use a condom (7.5%, p<0.0001) compared to those without casual partners. With HIV-positive partners, 46.1% disclosed that they were also HIV-positive.

P248

ON RECONSTRUCTION: THE LIVED EXPERIENCE OF RECONSTRUCTIVE TREATMENTS FROM THE PERSPECTIVES OF PEOPLE WHO SUFFER FROM FACIAL LIPOATROPHY

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Facial lipoatrophy is a condition that has been described as the hallmark of body fat changes in people living with HIV/AIDS. Over the years, healthcare professionals have acknowledged that facial lipoatrophy is detrimental to the quality of life of people living with HIV/AIDS and have expressed a growing concern for the psychosocial impact of this condition. Researchers have also come to demonstrate that people who suffer from facial lipoatrophy report higher incidences of social and psychological distress. Of particular interest to this project are studies that document the positive effects of reconstructive treatments on the lives of people who would otherwise be permanently redefined by this condition. The main objective of this qualitative research was to explore the lived experience of reconstructive treatments from the perspective of people who suffer from facial lipoatrophy. Twelve participants took part in the study which was based in Montreal, Quebec. The data was collected using semi-structured in-depth interviews and was then analyzed according to Bardin's content analysis approach. The results were further analyzed using a critical theoretical framework. During the analysis, a number of themes emerged from the data and were further developed into subthemes. Overall, participants explained that facial lipoatrophy had forced them into a state of precariousness while simultaneously making their lives seem not worth living. In this sense, they were willing to go to great lengths to erase the facial features of lipoatrophy and reappropriate their own bodies. While this research corroborates what has been previously stated by other researchers about the positive effects of reconstructive treatments, it also sheds light on the consequences of not making these treatments accessible as well as the undocumented realities of those who cannot afford the recommended course of dermal fillers and must, therefore, live with the idea that reconstruction is provisional.

P249

TRAJECTORY WITH HIV AND ITS TREATMENT, AND QUALITY OF LIFE OF ETHNO-CULTURAL MINORITY MEN LIVING WITH HIV

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OBJECTIVE: Describe the trajectory with HIV and its treatment, and quality of life of ethno-cultural men living with HIV compared to other men living with HIV in the Montreal Maya project.

METHODS: Maya is a longitudinal study on quality of life of people living with HIV which took place between November 2004 and December 2007. At baseline, the sample includes 601 men (mean age= 45.6 years) recruited through clinics and community organizations in the Montreal area, 13% are from an ethno-cultural minority group (n = 78). Bivariate analysis (Pearson Chi-square and Student t-test) were performed on trajectory with HIV and its treatment, quality of life (MQOL-HIV scale: NERI 1991) and coping strategies (COPE scale: Carver et al. 1989) according to ethno-cultural background.

RESULTS: The results show that a higher proportion of ethno-cultural men have been diagnosed HIV-positive at least 3 years after the presumed time of infection (78% vs 61%, p=0.02). There is no difference between ethno-cultural men and other men on the time delay between HIV diagnosis and the beginning of treatment. Their quality of life is lower regarding to physical (5.48 vs 5.82, p = 0.03) and sexual functioning (3.86 vs 4.48, p = 0.001), medical care (5.22 vs 5.60, p = 0.001) and financial status (4.74 vs 5.44, p=0.001). There is no difference between ethno-cultural men and

other men concerning the other dimensions of quality of life. Religion (1.54 vs 1.21, p = 0.009) and self-distraction (1.57 vs 1.31, p = 0.03) are the coping strategies most often used by ethno-cultural men.

CONCLUSIONS: HIV/AIDS appears to have a significant impact on quality of life of ethno-cultural men living with HIV. Community workers and health professionals working with these men should tailor their interventions according these specifications.

P250

PEER RESEARCH ASSISTANT TRAINING IN BC: A PERSONAL PHA EXPERIENCE

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THE ISSUE: HIV Community Based Research (CBR) projects in BC increasingly create opportunities for the greater meaningful involvement of people living with HIV (GIPA). The "Impact of Food Security on Health Outcomes in People Living with HIV/AIDS Across Canada" CBR study recently provided training to eleven people living with HIV employed as peer research assistants (PRA) to conduct data collection within the HIV community on Food Security in BC.

APPROACH: Three days of training on aspects of CBR methodology and data collection included modules on ethics, confidentiality, self-care and personal safety in the field, and scientific rigour among other topics relevant to the Food Security project in BC. Embracing the value of PHA involvement as PRAs while guiding through techniques, encouraging and including feedback given on the data collection tools, all provided a rich personal training experience for PRAs.

PROCESS: Sharing the personal experience and value of PHA involvement in CBR work encourages other PHAs toward CBR engagement. Having a voice in developing research tools, conducting fieldwork and publicly speaking about the experience develops capacity within the HIV community and combats research fatigue.

LESSONS LEARNED: Giving careful consideration to the length of training modules, PHA-specific needs as PRAs, and inclusion of PRA feedback while celebrating the value of peer data collectors results in a highly "positive" experience for PRAs. Sharing the training experience with the research community from a unique PHA perspective provides practice-based evidence of the value gained through GIPA in CBR work in BC.

P251

PSYCHOSOCIAL AND CLINICAL PREDICTORS OF PSYCHOLOGICAL DISTRESS IN WOMEN LIVING WITH HIV/AIDS

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BACKGROUND: Among people living with HIV psychological distress has been associated with difficulty adhering to antiretroviral therapy and HIV disease progression. Women living with HIV (WLWH) are known to have additional distress related to care-giving demands and lower socioeconomic status. This study aimed to assess the correlates of anxiety among WLWH.

METHODS: The current study is a secondary analysis of a cross-sectional self-administered survey which examined the reproductive intentions of WLWH (ages 18 to 52; Mean age 38 years, SD = 7.86) living in Ontario, Canada. We used hierarchical linear regression (N = 396) to investigate the demographic, psychosocial and clinical variables associated with anxiety among WLWH. Anxiety was assessed using the Hospital Anxiety and Depression Scale and dichotomized using Zigmond and Snaith's (1983) original cut off values.

RESULTS: Approximately 35% of the women screened positive for anxiety. Being on government assistance, β=.19, t(389), p=.001, significantly predicted anxiety. Reporting low CD4 count, β=-.10, t(387), p=.03, was associated with anxiety, and having a romantic/sexual partner (β=-.16, t(387), p=.001) was associated with no anxiety, after controlling for demographic data. HIV-health related worries (β=.2, t(382), p=.001) and desire to become pregnant (β=.14, t(382), p=.01) were positively associated with anxiety, whereas having a partner and a positive relationship with the HIV-specialist (β =-.,14 t(382), p=.004) were associated with no anxiety. The final regression model accounted for 17% of the variance in anxiety among WLWH.

CONCLUSIONS: Our findings indicate that being on government assistance, low immunological status, HIV-health related worries, and desire for children were key factors associated with anxiety; whereas having a partner and a positive relationship with the HIV-specialist were associated with not having anxiety among WLWH. It is important to identify factors associated with anxiety to allow healthcare providers to screen for them and improve health care provision for HIV-infected female patients.

P252

CEDAR AND SAGE: A HOLISTIC APPROACH TO WOMEN'S SELF-CARE

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Saskatoon, SK

INTRODUCTION: First Nations healers consider cedar and sage to be sacred medicines. Cedar is used in purification ceremonies and for balance, while sage - a woman's medicine - confers strength, wisdom and clarity of purpose. Cedar and Sage is a presentation which guides women living with HIV on a journey through the four directions and four dimensions of the Medicine Wheel to gain insights into spiritual, emotional, physical and cognitive aspects of our lives.

PURPOSE: The guided journey through the Medicine Wheel allows us to take stock of various dimensions of our lives and to recognize those areas that are strong and robust. How can these strengths be maintained? Shared? And if there are dimensions of our lives that are less developed, less robust – how can we address these shortcomings? Self-care is an especially challenging concept for women, but with self-awareness, skills, and courage, we can learn to navigate more smoothly through the health system and through social and personal relationships.

METHODOLOGY: The four directions and four dimensions of the Medicine Wheel provide the framework for the four-part presentation/workshop. Women's roles as healers and caregivers are examined, as well as communication, sociocultural and self-care issues. Participants identify realistic steps which lead to renewed spiritual strength, emotional equilibrium, physical resilience and optimal cognitive function.

DISCUSSION: As western medicine moves slowly toward integrated, holistic healthcare, healing relationships can be forged with self and others by those who appreciate the fundamental roles of compassion, kindness and spiritual-awakening. Women who embody self-acceptance, self-forgiveness and self-respect can live in greater balance, and with greater strength, wisdom and clarity of purpose.

P253

HIV-POSITIVE MEN WHO USE THE INTERNET TO MEET OTHER MEN IN FRANCE: RESULTS FROM THE FRENCH "NET GAY BAROMÈTRE" STUDY

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OBJECTIVES: With data from this biennial study, we will present some of the HIV-positive respondents' social and sexual practices, and identify predictors of regular unprotected anal intercourse in this group.

METHOD: Men were recruited between January and April 2009 (n = 19,052) through personalized e-mailings on nine major websites for France's diverse MSM population. Approximately 12% of the sample was HIV-positive (n = 2,229). Bivariate analyses (χ^2, t-test) as well as simple and multivariate logistic regressions were performed.

RESULTS: Compared to HIV-negative men, significantly larger proportions of HIV-positive respondents were older, identified as homosexual, resided within the Paris region, and frequented the gay community. In particular, more HIV-positive men went to sex clubs, outdoor sex venues and saunas in the previous 12 months. Drug use over this time was also more prevalent among HIV-positive men and, on average, they had twice as many sexual partners. Regularly engaging in unprotected anal sex was

reported by a significantly greater number of HIV-positive men and about three times as many of this group had "barebacked" in the past 12 months. In so doing, they showed less sero-sorting. The multivariate regression analysis found regularly having unprotected anal sex was significantly associated in HIV-positive men with residing in the Paris region, having more than 11 casual partners in the previous 12 months, meeting casual partners online, going to websites for MSM to meet that feature "hard" sexual practices, using drugs in the past 12 months, having contracted an STI over this time, not having been tested for HIV over this period, engaging in bareback sex within a couple, having been in contact with a partner's sperm during oral sex, engaging in group sex, and practicing fist fucking.
CONCLUSION: This online survey reached many HIV-positive respondents. Overall, these men seem to be more exposed to certain risk factors. Over and above HIV status, this may be explained by sensation seeking, a taste for risk as well as disinterest in themes of intervention oriented towards prevention.

P254
SUPPORTIVE HOUSING FOR PEOPLE LIVING WITH HIV/AIDS

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OBJECTIVES: 1) To examine the benefits and challenges of proving affordable supportive housing for people living with HIV/AIDS; 2) To examine whether such housing results in improvement to quality of life of its residents.
METHODS: Many low-income individuals living with HIV/AIDS are unable to find appropriate and affordable housing. The AIDS Committee of Newfoundland & Labrador (ACNL) identified the need for clean, comfortable and safe housing for individuals living with HIV/AIDS. With government and community support, ACNL had a new building constructed, the Tommy Sexton Center, which would house its offices. Plans for the building included six low-income apartments designated specifically for HIV positive individuals and families. The new building also included an emergency shelter.
RESULTS: The six apartments are all occupied and additional apartments are required. ACNL is currently engaging other community partners in an effort to secure additional housing apartments. The apartments of the Tommy Sexton Center have been successful in both improving the quality of life of residents as well as helping to alleviate the financial burden faced by low-income HIV positive individuals. The apartments are new, affordable, clean, safer and wheel-chair accessible.
Despite being new, the building and its apartments require on-going maintenance. Additional costs include things like snow clearing, grounds maintenance and utilities.
CONCLUSIONS: The Tommy Sexton Center supportive housing apartments operated by ACNL have been successful in providing safe, affordable and high quality housing for HIV positive individuals and families. Long-term planning is an essential component of a sustainability strategy. Further discussion of the benefits and challenges of supportive housing is warranted.

P255
LISTENING TO THE VOICES OF PEOPLE LIVING WITH HIV – THE POSITIVE SIDE/VISION POSITIVE READERSHIP SURVEY

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ISSUES: The Positive Side / Vision positive is CATIE's health and wellness magazine for and by people living with HIV. The magazine offers a holistic look at living positively, practical tips on staying healthy and personal perspectives from people living with HIV.
DESCRIPTION: In the spring of 2010, CATIE launched a survey designed to get an understanding of The Positive Side's readership, the current impact of the magazine, and the readership's needs. The survey was disseminated through multiple channels in both a paper and on-line format. 183 people completed the survey.
LESSONS LEARNED: Sixty percent of the readership is people living with HIV. Of those, three quarters identify as gay/lesbian/trans/bisexual, 20% as heterosexual, 11% as substance users, almost 10% as Aboriginal, 5% as from an ethnocultural community, almost 5% as prisoners, and none as youth. Ninety-nine percent of readers feel the magazine is good at addressing the broader issues of treatment in the context of people's lives and communities. Ninety eight percent of readers feel that the information in the magazine is helpful for people living with HIV looking to improve their health and quality of life. Three quarters of readers share articles with others. The most important type of articles are those that cover HIV-specific medical/treatment issues (reported by 98%) followed by articles highlighting personal stories of people living with HIV (reported by 94%). The most important expansion of The Positive Side online version was more links to online resources and more frequent online reporting of HIV-related news.
RECOMMENDATIONS: The overwhelmingly positive response validates the current approach and focus of the magazine. The results will be used to develop new marketing strategies to target broader communities. Finally, the information gathered will help to inform editorial outlines for upcoming issues and to guide the expansion of the on-line presence of the magazine.

P258
THE LEGACY PROJECT: WALK WITH ME - A STRUCTURED MENTORSHIP PROGRAM TO SUPPORT LONG TERM EMPOWERMENT OF PEOPLE LIVING WITH HIV/AIDS

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Wong, Keith; Egdorf, Thomas; Peters, Eric;
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THE ISSUE: To support the greater participation of people with HIV/AIDS (GIPA), The Legacy Project was developed in 2009 to address the changing HIV/AIDS community. Community organizations have invested resources in capacity building programs for people living with HIV/AIDS (PHAs). The Legacy Project resolves to provide ongoing structured mentorship supports, by creating a community of learning and enhancing the learning needs of the PHAs in managing transformation and building a meaningful life.
DESCRIPTION: The project provides:
1) Mentorship relationships across diverse communities
2) Career and employment practicum opportunities
The Legacy Project objectives
- Community engagement
- Establishing relationships
- Building trust
- Creating ongoing structured support
- Practicum opportunities

Preparation for mentoring:
- Building trust
- Listening and Feedback Techniques
- Managing role complexity
- Boundaries, Boarders and Bridges
- Creating a Mentoring Agreement
- Knowledge transfer through shared experiences

First year statistics:
- 64 participants with ongoing outreach for additional session in 2011
- 32 Mentors
- 32 Protégés

Progress:
- By building community capacity, participants are learning and growing together.
- Participants are hopeful for their future; building confidence and resiliency to manage personal and professional transformation.
- Building bridges between PHA and communities.

LESSONS AND INSIGHTS:
- Additional training in coaching techniques and conflict resolution
- Managing expectations on roles and responsibilities in relationship
- Incorporate lessons on anti-oppression and equity

RECOMMENDATIONS:
- Build internal capacity through peer facilitation

- Establish relationships of support within community
- Identify practicum opportunities.
- Program evaluation to track impact and progress

P259
GENDER AND ETHNICITY DIFFERENCES IN HIV-RELATED STIGMA

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BACKGROUND: HIV-related stigma is a leading barrier to health promotion and treatment amongst people living with HIV (PLWH) globally. There have been few studies explicitly quantifying the effect of gender or ethnicity on the form, degree, or subtype (perceived, internalized, enacted) of HIV-related stigma.
METHODS: A cross-sectional study of PLWH in the OHTN Cohort Study (OCS) was conducted. Outcomes of interest were stigma scores as measured by the Revised HIV-related Stigma Scale in the extended OCS questionnaire. Primary correlates of interest were gender (male, female) and ethnicity (White, Black, Aboriginal, Asian/Latin-American/Unspecified).
RESULTS: 1000 participants were included in the analysis: 840 men (579 White, 85 Black, 51 Aboriginal, 130 Asian/Latin-American/Unspecified) and 160 women (56 White, 81 Black, 8 Aboriginal, 15 Asian/Latin-American/Unspecified). Males were more likely to be LGBT (82% vs. 5%, $p<0.0001$) and Canadian-born (65% vs. 37%, $p<0.0001$). Females had significantly higher total and subscale stigma scores. Asian/Latin-American/Unspecified women had the highest, Black and Aboriginal women intermediate, and White women the lowest total stigma scores (Median=59.0 vs. 57.0 vs. 55.3 vs. 52.0, $p = 0.03$). Black men had the highest, Aboriginal and Asian/Latin-American/Unspecified men intermediate, and White men the lowest total stigma scores (Median=54.0 vs. 51.0 vs. 51.0 vs. 46.0, $p<0.0001$). In multivariable regression modeling, there was a significant gender and ethnicity interaction term; Asian/Latin-American/Unspecified ethnicity males and Black females reported the highest degree of stigma. Lower stigma scores were associated with LGBT status, higher education, longer duration of HIV diagnosis, IDU in the last 6 months, and living within Toronto, Ontario.
CONCLUSION: There were significant demographic differences between males and females in the study cohort. After adjusting for other factors, males and females of non-White ethnicity reported higher levels of stigma. Female gender in combination with Black/African ethnicity had an interaction leading to a greater experience of stigma.

P260
VOICES THROUGH PHOTOGRAPHY: UNDERSTANDING THE EXPERIENCES OF PERSONS LIVING WITH HIV/AIDS IN ASSISTED CARE IN CALGARY

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BACKGROUND AND RATIONALE: The perspectives of persons living with HIV/AIDS are a crucial part of understanding the effects of the HIV/AIDS epidemic. Garnering their perspectives through participatory research has shown to be a positive experience for participants and an important form of advocacy.
OBJECTIVE: This study seeks to understand how individuals living in assisted care construct their identity, their perceptions of the virus and their experiences living in a public health facility through the Photovoice research approach.
METHODS: Photovoice is a methodology that combines photography with qualitative interviews. This study used Photovoice to explore self representation among individuals living in assisted care at a public health facility in Calgary, Canada. Seven participants took photographs that reflected aspects of their lives and discussed them through qualitative interviews.
RESULTS: The photos of participants most commonly represent the many factors that have made it difficult to cope with living with HIV, namely addictions, the death of loved ones and their brain injuries. Their representations of living in assisted care often highlighted having a supportive community of persons with HIV/AIDS, the loss of friends and tensions caused by power dynamics and addictions within the facility.
DISCUSSION: Photovoice was a suitable method to explore the experiences of individuals living with HIV. Accessing the population was difficult and a lengthy process. It was difficult to help participants complete the project because they were often self conscious about their ideas or the decisions they had made in their lives. Participants, however, cited that they appreciated being given the opportunity to express themselves and to be advocates for persons with HIV/AIDS. Future research with this population employing Photovoice should provide workshops on confidence building and class consciousness to help individuals come to terms with their life path and feel more confident about their abilities to tell their stories.

Policy and Social, Political, and Legal Aspects of HIV

P261
CONSULTATION ON THE CANADIAN HIV VACCINE INITIATIVE RESEARCH AND DEVELOPMENT ALLIANCE

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BACKGROUND: The Canadian HIV Vaccine Initiative (CHVI) Research and Development Alliance (the Alliance) was announced by the Government of Canada and the Bill & Melinda Gates Foundation, in July 2010, as the cornerstone of the Renewed CHVI. The Alliance will be a Canadian network comprised of leading public and private sector, and international researchers, who will develop innovative solutions to the challenges facing HIV vaccine development. The Alliance will enable Canada to become a leading contributor to global efforts in developing a safe, effective, affordable and globally accessible HIV vaccine. An Advisory Board will oversee the Alliance, and a Coordinating Office will support the work of the Alliance.
METHODS: A three–pronged consultation process, including a web-based consultation, a face-to-face meeting, and one-on-one interviews was hosted between September and October 2010 with Canadian and international stakeholders. The objective of the consultation was to seek input on how best to implement the CHVI Research and Development Alliance, the Alliance Coordinating Office (ACO), as well as to determine how the Alliance can best contribute to achieving the 2010 Scientific Strategic Plan of the Global HIV Vaccine Enterprise.
RESULTS: The Consultation Report highlights stakeholders' support for a broad-based, inclusive and collaborative Alliance, and the necessity for the Alliance to capitalize on Canadian strengths of collaboration and engagement to 'carve out' a niche based on well-defined goals and effective management. Stakeholders also indicated that the ACO should be an administratively lean, impartial, transparent and accountable entity led by a scientifically knowledgeable and human relations expert.
CONCLUSION: The Alliance will be established in 2011. Feedback from the consultation informed the Invitation to Submit Application (ISA) for the ACO, which was launched in December 2010, to invite prospective applicants to express their interest in setting up the Alliance Coordinating Office.

P264
HIV AND RELATED CO-INFECTIONS – CANADA'S POLICY FRAMEWORK FOR PREVENTION

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OBJECTIVE: The policy framework articulates a set of shared principles for effective HIV/AIDS and related co-infection prevention interventions and presents a high-level integrated prevention model to guide the work of policy-makers and planners. The framework is intended to support a more effective and comprehensive pan-Canadian prevention response to HIV/AIDS and related co-infections.
ACTIVITIES: In response to a need identified by HIV prevention experts

in 2007, the Public Health Agency of Canada (PHAC) consulted with stakeholders to develop the elements, principles and qualities essential to a pan-Canadian HIV and co-infections prevention policy framework. The results of the consultation, together with international and domestic developments in prevention and input from an expert working group, informed the development of the framework.

DELIVERABLES: The framework includes a series of guiding principles for effective prevention interventions, inspired by HIV prevention principles endorsed by UNAIDS (2005). The principles ask that prevention interventions be holistic, address vulnerable populations and the social determinants of health, adhere to principles of social justice and human rights, encourage the use of sound evidence, and foster collaboration across sectors and with those living with/affected by HIV/AIDS.

PHAC has also developed a conceptual model to be used by public health practitioners and other policy-makers and planners as a tool for developing prevention interventions. The model, based on best-evidence in prevention, integrates various public health models for prevention, including a categories or levels of prevention approach, a population-specific approach, and a determinants of health approach.

CONCLUSIONS: It is expected that this framework will support the re-invigoration of prevention by helping policy-makers and planners to develop comprehensive and robust interventions for populations that remain most vulnerable to HIV/AIDS, other STBBIs and TB co-infection.

P265

UNWRAPPING HIV/AIDS PREVENTION: A DISCOURSE ANALYSIS OF THE BAREBACKING PHENOMENA

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BACKGROUND: The majority of the published literature in social sciences positions barebacking as a failure of public health practices. Meanwhile, surveillance data over the past 20 years, using various measures and variables, seem to repeatedly report that 10-15% of gay men engage regularly in high-risk practices. Using an 'archeological' Foucaldian methodology (Foucault 1969) I explore the discursive practices that our society uses to build programs for HIV/AIDS prevention.

METHODS: The analysis identifies the discursive "conditions of possibility" that allow one "to make sense" of barebacking. I examine a variety of artifacts (N= 55, 1989 to 2010) ranging from TV programs, books, conference abstracts, research reports, public policies, press releases, scholarly articles and public debates that constitute this phenomenon.

RESULTS: The normalization of the controversy of barebacking (process from 1997 to 2010) demonstrates how the constitutive elements of the object are directly interlocked with the different knowledge practices that we use to produce the "reality" of HIV/AIDS prevention. With a positivist account of knowledge, "the social" gets embedded in a "psychosocial" conceptualization of an "environment." This system models a neoliberal framework whereby the individual actor must manage risk, responsibility and vulnerability and the State remains a protector of public health. In this discursive framing, barebacking functions to discipline specific subjects (gay men) towards adopting socially acceptable risk-management practices. This construction of barebacking and risk becomes inscribed within peoples' behaviors, thus allowing for the "science/social" to then intervene/act/judge on the subject based on its interiority ("intentionality"), actions and gestures. Meanwhile, these discursive practices reduce the complexities of lived sexual experience to a reductionist biomedical risk framework.

DISCUSSION: This analysis exposes a severe need for a larger applied critical account of this knowledge-producing system that currently "disciplines/regulates" subjects to fit within regulatory health frameworks. It exemplifies how social phenomena are also constituted in relation to the different key stakeholder (risk groups, experts, communities), and often reifies the knowledge creation in the field of HIV/AIDS.

P266

HARM REDUCTION IN THE COURTROOM: LITIGATING PRISONERS' HEALTH AND HUMAN RIGHTS

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In spite of the proven effectiveness of prison-based needle and syringe programs (PNSPs) in reducing prisoners' vulnerability to HIV and hepatitis C virus (HCV) infection, the Correctional Service of Canada (CSC) refuses to introduce such programs in its institutions. The absence of PNSPs in federal prisons is particularly glaring in light of the availability of needle and syringe programs in the community and recently reported rates of HIV and HCV behind bars that are 15 and 39 times higher, respectively, than they are in the community.

Canada's Charter of Rights and Freedoms protects prisoners' rights to life, liberty and security of the person; to equality before the law and the equal protection and benefit of the law without discrimination; and not to be subjected to cruel and unusual treatment or punishment. Federal correctional legislation mandates CSC to provide prisoners with essential health care that conforms to professionally accepted standards, and recognizes that prisoners retain the rights and privileges of all other members of society except those necessarily limited as a consequence of incarceration. As a number of public health and human rights organizations contend, these provisions obligate CSC to implement PNSPs in its prisons.

A legal case has been developed in collaboration with a working group of harm reduction and prisoners' rights experts, litigators and researchers, making the case for PNSPs in Canada's federal prisons. The expert testimony of physicians and staff working in prisons worldwide — including those where PNSPs operate — has been commissioned to underscore the benefits of such programs and the reality that feared negative consequences (such as injecting equipment being used as weapons or increased drug use) have not occurred. It is now up to the courts to decide whether prisoners, arguably among the most vulnerable to HIV and HCV infection, are entitled to the same access to health services other Canadians are.

P267

SAFE SEX AND DANGEROUS LAWS: THE CRIMINALIZATION OF PROSTITUTION AND ITS IMPACT ON SEX WORKERS' HEALTH AND SAFETY

Chu, Sandra K
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While the exchange of sex for money is legal in Canada, the Criminal Code prohibits virtually every activity related to prostitution, and prohibits prostitution in almost every conceivable public or private place. Recognizing the dangers posed by this legal paradox, the Ontario Superior Court of Justice in September 2010 struck down provisions of the Criminal Code concerning communicating in public for the purposes of prostitution, keeping a common bawdy house, and living off the avails of prostitution. In the judge's view, those laws violated sex workers' constitutionally protected rights to liberty, security of the person, and freedom of expression.

At trial, much of the evidence brought forth focused on the physical violence that resulted from the criminalization of sex work. For a number of reasons, there was little discussion of the other health consequences of such criminalization. Yet, there is a significant body of evidence that points to a complex causal relationship between the criminalization of sex work and the health and safety risks (and negative outcomes) for sex workers, specifically in the context of HIV.

We propose to intervene before the Ontario Court of Appeal to underline these particular ramifications of criminalization. This will include evidence demonstrating that the criminalization of prostitution contributes to sex workers' loss of control over their working conditions, resulting in increased risk of violence and, directly or indirectly, risk of HIV infection. Criminalization also contributes to the stigma, discrimination and social vulnerability faced by sex workers, impeding their access to services such as police protection and health care, and ultimately rendering them more vulnerable to HIV.

Sex workers are not immune from the HIV risks faced by all sexually

active persons, and efforts to improve their health and safety must be based on a recognition of sex workers' individual agency, dignity, worth and right to organize. Decriminalizing sex work is an important first step that we hope to support through our intervention.

P268
HIV TESTING AND COUNSELLING IN NS: IMPLICATIONS FOR POLICY AND PRACTICE

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ISSUE: As the HIV testing policy and programming landscape continues to shift in Canada, this study provided an opportunity to understand the implications of various HIV counselling and testing (HCT) strategies on the health of Nova Scotians. At its most basic public health level, HCT provides a means of facilitating timely access to care, treatment and support for those who are HIV positive and to help prevent the further spread of infection.

OBJECTIVES: To 1) understand the HIV testing rates and behaviours among a sample of adults males and females living in NS; and 2) develop an evidence-based understanding of the experiences of individuals that have been tested or those who have not been tested, with an eye to developing NS-specific policy and programming recommendations.

METHODS: The data collected for this study included a review of relevant provincial HIV policy and programming documents, a descriptive epidemiological summary of HIV tests and diagnosed HIV case data in NS, and in-depth interviews with a diverse sample of individuals from across NS (N = 50) who had either sought or had not sought HIV testing in the past year.

FINDINGS: Despite the availability of HIV testing options, barriers to accessing HIV services persist in NS, including geographic isolation for rural communities, a lack of anonymous testing sites, fear of disclosure particularly in small communities, poverty, and continuing stigma associated with HIV.

CONCLUSION: The following recommendations were put forth from the community advisory committee associated with this study:

1) More fully integrate HIV testing services into the existing provincial health care infrastructure;
2) Increase HIV education amongst practitioners, patients and general public, including HIV testing options and availability;
3) Standardize population-appropriate HIV counselling;
4) Increase HIV testing options across the province to better serve the needs of hard-to-access populations;
5) Conduct further community-based HIV research to determine appropriate outreach strategies for diverse populations in NS.

Additional KTE activities associated with this study are ongoing with provincial partners and community advisory committee members.

P269
PERCEPTIONS OF MEDIA COVERAGE OF HIV CRIMINALIZATION AMONG PHAS IN ONTARIO

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BACKGROUND: There has been an observed increase in criminal cases involving the transmission of HIV. We conducted a study to explore how this affects people living with HIV (PHAs) in Ontario.

METHODS: Data presented comes from the Positive Spaces Healthy Places (PSHP) study (N = 438) and a qualitative study – Impacts of criminal prosecutions for HIV exposure and transmission on people living with HIV (N = 122). Participants were asked about information sources and awareness of the law and their perceptions of media coverage surrounding HIV criminalization.

RESULTS: 95.9% of PSHP survey participants reported hearing that Canadian law requires them to disclose their HIV status to sexual partners in some circumstances – 55.6% heard this from the media and 53.5% from an AIDS service organization. Other sources included: another PHA (30.8%), HIV clinic (21.1%), family or friends (17.6%), physician (16.7%), nurse or health care provider (12.0%), social service agency (11.3%) and website (7.2%).

Participants of the qualitative study referred to the media coverage as sensationalized and one-sided, often portraying HIV-positive people as criminals looking to cause harm and making them fear their picture or name being publicized. Participants said the media could do a better job explaining the details and complexities of the cases more fully and educating the public about HIV to help reduce stigma. Participants perceived cases to be primarily heterosexual in nature and feel the gay press does a better job supporting PHAs in the current public climate. Additional participants reported not following the media coverage or felt the media simply state the facts. These individuals felt unaffected by the media coverage because they did not have casual partners.

CONCLUSION: PHAs are aware of the presence of criminalization for HIV transmission. There is an opportunity for collaboration between media sources and organizations serving people living with HIV to offer more accurate and comprehensive information about this issue.

P270
COPY, PASTE, LEGISLATE?: MAPPING HIV "MODEL LAW" AND CONTENTIOUS TRANSNATIONAL LEGAL REFORM PROCESSES

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Victoria, BC

In this preliminary analysis of my Doctoral research I explicate institutional processes related to HIV "Model Law" in West and Central Africa. This complex and highly contentious legal terrain involves both Canadian and global stakeholders. I map the social and textual processes related to the proliferation of HIV-related laws focusing upon HIV "Model Law" (37 articles) developed in N'Djamena, Chad in 2004. Between 2005-2010 (at least) 14 African countries have passed HIV laws that emulate the USAID-funded Model Law. Rather than reify shifts towards a global legal order, I make explicit how this transnational process involves work sequences of textually-mediated legal creation, challenge and reform.

Four institutional work processes are examined: (1) *Making Model Law* (examining key work practices and funding mechanisms); (2) Marketing and *Moving Model Law* (exporting and marketing the Model to policy actors across borders); (3) *Making State Law* (activating and transforming the *Model into State Law*); and, (4) Marching and "modeling against" legislation (how national and international NGOs and IGOs are contesting problematic provisions—e.g. laws which ignore questions of gender, violence and HIV—through protest and alternative legislation/models).

My research method is informed by the sociological research strategy of institutional ethnography. Building upon the technical analysis of legislation provided by Canadian researchers, I contribute a rich genealogical account grounded in an ontology of the social. Unexamined elements of this legislative processes were made visible through participant observation, archival research, textual analysis and informant interviews with national and international stakeholders (n=32). This has involved research in Canada, Switzerland, Austria, South Africa and Senegal (2010-2011). My analysis addresses unanswered questions of power and ideology in both legislative processes (the limits, forms and possibilities of "model" legislation to guide transnational legal reform) and *content* (how HIV-related legal provisions can support and/or violate human rights and public health goals).

P271
CRIMINAL LAW AND HIV NON-DISCLOSURE: ENCOURAGING DEVELOPMENTS

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Toronto, ON

OBJECTIVE: To track criminal charges for HIV non-disclosure; analyse and inform legal developments; and develop an effective response to the current use of the criminal law in cases of HIV non-disclosure.

METHODS: Tracking and analysing new criminal cases. Intervening before appellate courts (in BC, MB and QC). Informing and mobilizing community members and legal professionals through workshops, accessible

resources and working group.
RESULTS: The number of charges against PHAs for not disclosing their HIV-positive status to sexual partners continues to increase and the application of the legal test – namely, a "significant risk" of transmission – remains unclear and inconsistent. However, there have been some encouraging developments before the courts and at the community level in the past year. For example, the Manitoba Court of Appeal did a thorough evaluation of the scientific and medical evidence before it and acquitted a man on the grounds that the risk of transmission was sufficiently lowered by condom use and/or undetectable viral load. This decision clearly recognises that the law must evolve with science. At the community level, members of the community succeeded in developing an active campaign to call for prosecutorial guidelines in Ontario. Guidelines are needed to ensure that prosecutions are informed by science and a good understanding of the social context of living with HIV and that cases are handled in a fair and non-discriminatory manner.
CONCLUSION: Despite some encouraging developments, the criminal law in cases of HIV exposure continues to be applied inconsistently across Canada. More clarity in the law through informed courts' decision and prosecutorial guidelines is needed as well as a better understanding of the impact of prosecutions on PHAs and HIV prevention efforts. Research and advocacy efforts toward limiting and clarifying the use of the criminal law in cases of HIV non-disclosure must be maintained and further developed.

P272
MEANINGFUL INVOLVEMENT OF PEOPLE LIVING WITH OR AT-RISK FOR HIV/AIDS IN RURAL CANADA

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Kamloops, BC

The majority of research to date about "Greater Involvement of Persons Living with HIV/AIDS" (GIPA) has been conducted in large urban centres. Constraints to GIPA are magnified in rural regions where there is no critical mass of service users and where stigmatization is a significant factor. The issue is compounded by difficulties in accessing and engaging further marginalized sub-groups, such as Aboriginal people and users of drugs, in rural regions. The presentation will focus on the first year of a community-based research (CBR) study intended to (1) contribute to the understanding of how the GIPA principle is operationalized in rural regions, and (2) to provide direction to AIDS Service Organizations (ASOs), policy makers and people living with HIV/AIDS (PHAs) or at-risk for HIV about how the ideals of GIPA could be fully realized within ASOs in rural regions. The presenters will detail the pespectives of the population of interest, service providers and policy makers regarding the promotion and support of meaningful involvement of the population of interest in ASOs in rural regions. They will compare and contrast these findings with the 2005 "Nothing About Us Without Us" report that highlighted how GIPA could be actualized within large metropolitan areas. The presenters will highlight how the research findings provide direction to stakeholders about how the identified facilitators could be used to support the meaningful involvement of the client populations of ASOs in rural regions, as well as how the challenges to meaningful involvement might be mitigated in those organizations.

P273
WHAT'S GOING ON WITH THE BASIC RIGHTS OF PEOPLE LIVING WITH HIV IN QUÉBEC? THE HIV INFO RIGHTS LINE OF THE COCQ-SIDA: AN OBSERVATORY THAT HIGHLIGHTS ISSUES OF DISCRIMINATION, PRIVACY AND ACCESS TO HEALTH AND SOCIAL SERVICES, INSURANCE AND EMPLOYMENT IN QUEBEC

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CONTEXT: Basic human rights violations negatively impact social determinants of health and contribute to maintaining or exacerbating the vulnerability of people living with HIV. HIV INFO RIGHTS offers legal information and support for various administrative procedures to PHAs, community based organisation, health professionals and employers.
OBJECTIVES: Describe the various issues of discrimination and rights violations and analyse calls to the service over a 24 month period using descriptive statistics and a thematic analysis.
RESULTS: 340 cases have been recorded since the service started. One in five calls required actions such as formulating complaints or accompaniment through legal proceedings. Cases were distributed as follows: 23% insurance, 14% confidentiality/privacy, 14% discrimination and harassment, 10% travel abroad, 7% social benefits, 7% criminalisation and 7% immigration, 18% other. Almost 20% of all calls were related to employment and work environment. A detailed analysis of the issues will be presented at the conference. Trends show an increase in the number of calls as well as an increase in inquiries about travel.
LESSONS LEARNED: Although multiple mechanisms and laws exist to protect the rights of PHAs, the number of calls to the info line indicated a lack of information about various issues as well as important cases of violation. Continuous analysis of the inquiries allowed for the development of specific tools (brochures, web site) to address the needs of PHAs and community workers. Furthermore, COCQ-SIDA will engage in certain legal actions to address frequently reported issues.

P274
RACE AND THE CRIMINALIZATION OF HIV NON-DISCLOSURE IN ONTARIO

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BACKGROUND: In 2010, the African and Caribbean Council on HIV/AIDS in Ontario (ACCHO) commissioned a paper to assess the impact of the increasingly expansive use of criminal law with respect to HIV exposure on African, Caribbean and Black (ACB) communities in Ontario, and propose an effective community response. The paper was launched on December 1, 2010.
METHODS: The development of the paper involved: a) a review of legal and sociological literature and media reports; b) an analysis of criminal charges for non-disclosure of HIV-positive status amongst members of ACB communities; and c) original qualitative research through key informant interviews and focus groups.
DISCUSSION: The increasingly expansive use of the criminal law in response to instances of HIV exposure and non-disclosure is affecting ACB communities in Ontario. Amongst those charged, there is perception of an over-representation of Black heterosexual men, especially since 2004. The media coverage of prosecutions for HIV non-disclosure is perceived to be perpetuating stigma and discrimination against ACB people living with HIV/AIDS, and ACB communities more broadly. Anxiety and fear related to the possibility of charges or false allegations in relation to HIV non-disclosure run high.
CONCLUSIONS: ASOs and community organizations working with ACB persons living with or affected by HIV need to develop greater understanding of the impacts of the criminalization of HIV non-disclosure on their clients and develop effective collective responses. Policymakers, researchers, service providers and community members are coming together to produce accessible tools for action and education, respond to media coverage, conduct further research and contribute to new guidelines and protocols in an effort to build a strategic, targeted and multi-sectoral response to the racialization of the criminalization of HIV non-disclosure in Ontario.

P275
EVALUATING THE SERVICES AND RESOURCES OF CATIE – A NATIONAL HIV KNOWLEDGE BROKER

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BACKGROUND: CATIE champions and supports innovation and excellence in HIV knowledge exchange by collaborating with and building the capacity of front line organizations to use knowledge effectively to respond to the HIV epidemic; supporting and connecting people with HIV, other individuals, and organizations to develop, synthesize, share and apply HIV knowledge; and acting as a central contact point for the flow of

comprehensive, accurate, unbiased, timely and accessible HIV information and community-based knowledge.

METHODS: In 2010 an online survey was conducted to evaluate the impact of CATIE's services and resources for front line service providers. 300 front line service providers responded to the survey. Frequency descriptives have been compiled to evaluate the organization.

RESULTS: 90% of respondents work for organizations with an HIV specific mandate. 21% are living with HIV. Geographically, 27% of respondents were from the Pacific region; 18% Western region; 21% Ontario; 16% Quebec; 14% Atlantic region.

96% reported that the services and/or resources CATIE provides are very useful or useful for providing information to clients. 92% reported that the services and/or resources CATIE provides are very useful or useful for increasing their knowledge of HIV. 85% found the services and/or resources CATIE provides are very useful or useful for planning and delivering programs and services in their organization.

Respondents were asked how they use the information they receive from CATIE. 99% had used information from CATIE to educate/inform/persuade their clients, other health professionals, colleagues and/or members of the public. 86% had used the information from CATIE to change work practices and/or implement/change programming.

CONCLUSIONS: According to front line workers, CATIE's services and resources are effective vehicles for knowledge exchange. Future programming should address HIV testing, HIV epidemiology and specific populations since CATIE's impact in these areas was lower than HIV prevention, HIV treatment and HCV.

Understanding and Addressing Intersectionality/Diversity of Peoples Living with or at Risk of HIV Infection

P276
HIV PREVENTION NEEDS OF AFRICAN, CARIBBEAN AND OTHER BLACK MEN AND WOMEN: FINDINGS FROM THE BLACCH STUDY INTERVIEWS

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London, ON

BACKGROUND: Definitions of masculinity and femininity and gender roles impact how individuals access, interpret and use HIV prevention messages in African, Caribbean and other Black (ACB) communities. These differences must be considered when designing prevention interventions.

OBJECTIVE: To explore sex-based differences in ACB peoples' HIV prevention needs.

METHODS: Using a community-based approach, a purposive sample of 22 ACB community members (CM) and 8 service providers (SP) in London, Ontario was interviewed about health. Respondents represented a cross-section of ACB communities and SPs serving these communities. HIV-specific topics included: awareness, perceived risk, risk behaviours, barrier to accessing services and service needs. Interviews were divided by sex (12 female, 10 male CMs; 6 female, 2 male SPs) and analysed using qualitative content analysis to identify themes.

FINDINGS: Men had greater awareness about HIV than women. Women believed their risk of contracting HIV was very low or zero due to marriage and abstinence. Men and women recognized sexual behaviours as risk factors for infection. Women also said alcohol and drug use were risk factors. Men and women said stigma and fear were barriers to accessing HIV services. Women cited literacy and discrimination as additional barriers; men cited mental health and culture. Women called for more condoms and Canadian HIV statistics. Men called for culturally based services and family testing. Female and male SPs cited female disempowerment as a barrier to protection for women, and low condom use was a barrier for ACB men. Female SPs said ACB men need male SPs that they would access.

DISCUSSION: It appears that education, awareness, and empowerment efforts specific to ACB women are needed. Information is needed about straight ACB men, and it is important to encourage them to access HIV services. A quantitative survey complements these findings; these data will be used in a needs assessment.

P277
BRAZILIAN YOUNG ADULTS VULNERABILITY TO HIV IN RIO DE JANEIRO AND TORONTO

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The main purpose of this study is to analyse the meaning attributed to sexuality by male youngsters living in Brazil and their preventive measures used against HIV. This investigation has been conducted in Rio de Janeiro, with its methodological design founded on a qualitative research approach with semi-structured interviews. As a start-up, participants were asked to comment on the slogan of the HIV prevention campaign conducted by the Brazilian Health Ministry in 2008,"what is your attitude in the fight against AIDS?". Their responses were collected from January to June 2009 by interviewers who were graduates of sociology or anthropology. The conclusions show that sexuality in that context plays a fundamental role and is usually seen as almost a cultural obligation for men in Brazil. Furthermore, according to the interviewees, condoms can ruin this cultural representation, because they may restrain pleasure. Therefore, AIDS prevention campaigns for that population should focus not only on the importance of condoms as a means of prevention but also on the deconstruction of popular discourses so that Brazilian men may free themselves from a permanent tension/restrain situation and from the feeling of being permanently tested. Hence, they will be able to contemplate the possibility of searching for pleasure without compromising their partner's and their own health. Consequently, condom use can become part of a sexual script of eroticism. Our next step will consist in comparing those findings with the Brazilians living in the GTA. Its relevancy lies in the fact that the Portuguese speaking community in Toronto accounts for one of the largest in the world and there are not many surveys about HIV prevention in that population. Thus, understanding it, will help us to work better towards primary prevention measures against HIV.

P278
POPULATIONS-SPECIFIC HIV/AIDS STATUS REPORT: USING THE DETERMINANTS OF HEALTH AS A LENS TO EXAMINE HIV VULNERABILITY AND RESILIENCE AMONG WOMEN

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OBJECTIVE: Particular groups of women in Canada, such as women involved in sex work, women in prisons, women who inject drugs, Aboriginal women, women from countries where HIV is endemic, and transwomen, are particularly vulnerable to HIV infection. To better understand why certain groups of women are more vulnerable, this report reviewed available Canadian data and research on HIV/AIDS in women. This report took an intersectional approach to look at the ways in which gender, race, and class interact with other health determinants to produce situations in which women are vulnerable to HIV infection.

METHODS: The Public Health Agency of Canada developed this report in consultation with a working group composed of population representatives, researchers, and policy and program experts. Academic and grey literature searches were conducted to identify relevant Canadian literature published from 2002-2008 addressing the determinants of health in relation to HIV/AIDS among Canadian women. Information on currently funded research and program/policy responses was gathered from the Public Health Agency of Canada, Health Canada, Correctional Service Canada, Canadian Institutes of Health Research, and provincial/territorial governments.

RESULTS: The report found that gender, race, culture, sexual orientation, and stigmatizing attitudes about HIV/AIDS play a significant role in influencing women's vulnerability to HIV. Many of the groups of women most affected by HIV/AIDS experience multiple, compounding and intersecting forms of discrimination related to these factors.

CONCLUSIONS: Future research and responses to HIV/AIDS need to

consider how HIV prevention, diagnosis and access to care, treatment and support are experienced differently by certain groups of women who are marginalized by society. The evidence supports the development of HIV prevention strategies aimed at distinct female populations and encourages responses that focus on empowering women in order to redress gender power imbalances and discrimination.

P280
ENGAGING POPULATIONS AT RISK - STRENGTHENING CONNECTIONS

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HIV/AIDS and Hepatitis C epidemics in Northern Ontario are primarily fuelled by Injection drug use (IDU) and substance use in combination with unsafe sex.

GOAL: Decrease disease transmission. Increase education and support for individuals with addictions.

PURPOSE: Locate injection drug users and substance users to learn: who are they, where are they, how do they learn/want to engage.

DESIGN: Research conducted June 1, 2009 to March 31, 2010 involving development of a survey tool (adapted from respondent driven sampling RDS know as effective to reach invisible populations), focus groups and a literature review.

RESULTS: 51% female, 48% male. Majority >25 yrs old, unemployed, living in unstable housing and had children. Many reported poor physical health, not seeking or receive health care, use family/ friends for medical attention, or go nowhere. Primary health problems: mental health, depression, anxiety (females) and head injuries (males). HEP C is the most diagnosed condition.

Use >3x/wk. Excluding alcohol and marijuana, most substances used are non-prescribed prescription drugs as follows: oxycontin, Percocet, Tylenol #3s, cocaine and morphine. Pills easily injected. Respondents reported they are sharing drug paraphernalia.

MESSAGING TO SUBSTANCE USERS: Respondents want information delivered informally and passively preferably in pamphlets or via Internet. Not seeking information on sexually transmitted diseases or safe drug injection. Information should be two-tiered: primarily about improving life generally, with other messages (eg. harm reduction) embedded within. Information priorities: housing, mental health services, government services. Highest trust method is delivered by friends/peers, available in non-stigmatizing locations, (Internet, mall, coffee shop).

SERVICE IMPACT: Improve existing services, develop new resources, explore web-based delivery, introduce programs better meeting needs of the IDU and substance-using population. Increase outreach time on the street, coffee shops, libraries, malls to improve engaging with this population. Revise peer training program. Continue research to explore questions arising from study.

P281
SEXUAL HEALTH MATTERS: CONCERNS OF HIV+ YOUTH

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BACKGROUND: HIV+ youth face vulnerabilities such as stigma, emotional or sexual disturbance, compromised immune system, alcohol/substance use, and risk of sexually transmitted infections. A number of these vulnerabilities may be enhanced by the very act of self-disclosure of HIV. Few Canadian studies have explored HIV+ youths' experience with disclosure of HIV status, or compared the experience of youth infected at birth to youth infected during adolescence. In Canada there are no existing health promotion guidelines or "disclosure scripts" on how to assist HIV+ youth to disclose (or not) their HIV status.

OBJECTIVES: This study explores a) the experience of disclosure of HIV+ status of a diverse group of Canadian HIV+ youth infected at birth or during adolescence, b) the impact of disclosure on their sexual health, and c) their access to available support services. It compares HIV disclosure experience of HIV+ youth infected at birth or infected during adolescence to identify key distinctions. The results will provide evidence for educators and HIV+ youth to support safe and successful disclosure of HIV status.

METHODOLOGY: In June 2010, a youth advisory committee identified key themes, and helped develop interview questions. Up to forty HIV+ youth from London and Toronto, Ontario, 14-24 years of age, will be participating in in-depth interviews that commenced in August 2010 with ethics clearance from The University of Western Ontario. Using a phenomenological approach, data analysis will describe and catalogue the "lived experience" of the participants. Themes and patterns will be compared across all transcripts to describe individual and collective experiences.

RESULTS: Preliminary emerging themes from 10 interviews include learning how to manage disclosure, lack of sexual health education, barriers to accessing confidential support services, and impact of diagnosis. In collaboration with AIDS service organizations at least one workshop for HIV+ youth will be created to promote knowledge translation and exchange of key messages regarding disclosure of HIV and its impact on sexual health.

P282
MAKING GIPA PRACTICAL FOR PEOPLE WORKING ON THE FRONT-LINES

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Toronto, ON

BACKGROUND: The Greater Involvement of People living with HIV and AIDS (GIPA) principle is widely recognized and accepted internationally. HIV program implementers working within HIV-specific organizations and broader development agencies understand that an effective HIV response must be driven by the needs and experiences of affected communities. But according to current research, many people working on the front-lines in organizations lack the knowledge on how to effectively implement GIPA.

PROJECT DESCRIPTION: Canadian consultants worked with the Global Network of People Living with HIV (GNP+) and the International HIV/AIDS Alliance to lead a global consultative process with HIV program implementers from international NGOs and country networks of people living with HIV to develop a GIPA Good Practice Guide to address this knowledge gap. Drawing on a wide range of policy guidance and programmatic documents on the GIPA principle, as well as 11 in-depth interviews from key informants around the world, the Good Practice Guide highlights practical ways of involving people living with HIV in different levels of the HIV programs.

LESSONS LEARNED: Experiences of HIV program implementers from countries such as China, Namibia, the Philippines, Ukraine and Zambia facilitated the elaboration the GIPA principle in practice and helped to understand ways in which to operationalise the GIPA at a practical level by creating a supportive organizational environment. Expertise of people living with HIV in the consultative process resulted in practical ideas about how to build capacity and recognize assets to enhance the participation and visibility of people living with HIV in the local HIV response. Developing and reviewing the Good Practice Guide with experts representing a range of key populations ensured that this resource addressed their specific needs. Through case studies, strategies and tools, the Good Practice Guide helps to define best practice and makes the GIPA principle 'real' for HIV program implementers working in the field.

P283
INTERSECTIONS OF STRUCTURAL AND INTERPERSONAL VIOLENCE, ALCOHOL BINGE USE AND HIV RISK IN POST-CONFLICT NORTHERN UGANDA

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OBJECTIVES: The people of northern Uganda are emerging from decades of insecurity, displacement and mass wartime violence. Recent

evidence suggests that HIV prevalence and incidence are highest in Gulu District of Northern Uganda, with young men and women most vulnerable to new HIV infections. In an effort to understand the social contexts of risk, this qualitative analysis explores the intersections of structural and interpersonal violence, alcohol binge use, and sexual HIV risks in post-conflict northern Uganda.

METHODS: We conducted two focus group discussions and 30 in-depth interviews with women living with HIV and accessing The AIDS Support Organization (TASO) in the Gulu District. Women were invited through purposive sampling at TASO Gulu and outreach sites to former IDP camps. Over a three-day workshop in July 2010, a qualitative interview guide was developed, adapted and piloted together with the TASO Gulu team, translated into the Luo language and administered by trained ethnic-Acholi female interviewers. All interviews were recorded, transcribed verbatim and coded for key themes and emergent content patterns.

RESULTS: The narratives of women reveal how civil war and life in internally displaced camps for over 20 years has led to a loss of traditional gender roles, and facilitated a normalization of 'everyday violence' and alcohol binge use. This socially and structurally produced cycle of violence and victimization continues to result in a breakdown in interpersonal relations that intersects with high rates of unemployment and widespread alcohol binge use among men. Many women reported brewing and selling alcohol as a means of income generation. Everyday interpersonal violence and alcohol binge use by men directly inhibits women's ability to seek support for violence, engage in safer sexual practices and access health and HIV care.

DISCUSSION/CONCLUSIONS: HIV prevention, treatment and care programs urgently need to develop community and couple-focused interventions that address the systemic impacts of decades of war, displacement and violence and their ongoing impact on the breakdown of familial and marital structures, emerging HIV risks, and continued barriers to HIV care.

P284

THE ONTARIO WOMEN'S STUDY: COLLABORATING WITH AN EXPERT WORKING GROUP TO EXPLORE THE HIV PREVENTION NEEDS OF DIVERSE GROUPS OF WOMEN

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OBJECTIVES: The Ontario Women's Study (OWS) is a community-based research initiative exploring HIV prevention for diverse groups of women living in the province. The OWS was initiated by community service providers, community members and researchers who recognized the lack of research that asks women to describe their HIV prevention needs. The OWS is documenting women's understanding of HIV acquisition and social, structural, racial, gender-based and economic factors that influence their HIV-related risk. The goal is to determine best practices for reducing HIV among women and transfer this knowledge to decision-makers to drive enhanced HIV prevention policies and programming in Ontario and Canada.

METHODS: In collaboration with a representative, diverse Expert Working Group (EWG), the OWS has developed research tools for conducting a series of focus group discussions (n=16) and a quantitative survey (n=80). This group was also tasked with determining the populations of women to participate in the study including women in prison; transgender women; immigrant/refugee/non-status/newcomer/transient women; women living with HIV/AIDS; rural/remote women; homeless/unstably housed women; women in the sex trade; women who use drugs; women who have sex with women; and young women. Further, to engage community members throughout the research, focus groups and surveys are being conducted and data are being analyzed in partnership with trained peer researchers.

RESULTS: Through consultation with the EWG, the OWS has created a core set of questions that have identified themes common to the diverse participant groups. Population-specific questions have been added when the core set of questions has not explicitly addressed some issues.

CONCLUSIONS: The OWS has embraced the principles of community-based research by initiating community relevant research, building partnerships and broadly consulting stakeholders in all aspects of the study. This focus on community engagement ensures that the HIV prevention challenges experienced by women will be meaningfully explored throughout the OWS.

P285

THE INTERSECTIONALITY OF HIV AND DISABILITY IN ZAMBIA: RESULTS FROM THE SEPO STUDY

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OBJECTIVE: To present results of the Sepo Study which explored experiences of people with disabilities in Lusaka, Zambia who are HIV-positive.

METHODS: People with disabilities who have become HIV-positive were recruited to participate in in-depth semi-structured interviews exploring dimensions of their experiences of having a disability and being HIV-positive. Interviews were conducted in local languages by Zambian fieldworkers, two of whom are sign language interpreters, two of whom are HIV workers, and two of whom are women with disabilities. Interviews were digitally recorded, transcribed verbatim and then translated into English (if necessary). Descriptive analysis was conducted by a subset of the research team that included Northern and Southern, and junior and senior partners. Descriptive results were then analyzed thematically and theoretically by the full research team and the Zambian fieldwork team.

RESULTS: Participants included 12 Zambians (6 men, 6 women, aged 29-61) with mobility (4), visual (4), hearing (3) or intellectual impairments (1). Years since HIV diagnosis ranged from 6 months to 9 years. Emerging themes included "double the load" (i.e., the intersectionality of HIV and disability), "priority of needs" (i.e., location of HIV and disability vis-a-vis more basic concerns), "layering of stigma", "entrepreneurialism and advocacy", "normalization and othering", and "sexuality and intimacy".

CONCLUSION: In recent years, research has begun to explore issues of vulnerability to HIV among people with disabilities and the related implications for HIV prevention, but this is the first study exploring care, treatment and support issues for People With Disabilities who are living with HIV. Future steps include engagement with African and Caribbean communities in Canada to explore possible relevance of these findings within a Canadian context.

P286

AN EXPLORATION OF CONTEXTUAL FACTORS THAT AFFECT ACCESS TO SAFER INHALATION: DISTRIBUTION OF SAFER INHALATION RESOURCES DOES NOT EQUAL SAFER INHALATION DRUG PRACTICES AMONG PEOPLE IN OTTAWA WHO SMOKE CRACK

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Canadian research suggests that approximately 75% of injection drug users report also smoking crack. While smoking crack, heat is conducted through smoking devices leading to cuts, burns, blisters and open sores on the mouth, lips and gums. Emerging evidence suggests that these injuries promote the transmission of HIV and hepatitis C (HCV) through blood-to-blood contact when smoking devices are shared among users or when engaging in unprotected oral sex. Despite widespread use of crack and documented associated disease transmission risks, the HIV- and HCV-related prevention needs of women and men who smoke crack have been largely ignored in the development and implementation of harm reduction programs.

An exploratory study was conducted to enhance our understanding of the HIV- and HCV-related prevention needs specific to people who smoke crack. Focus groups and in-depth personal interviews were conducted with women and men in Ottawa who smoke crack to explore the contextual

factors that impact their access to safer inhalation materials and their use of safer drug smoking practices.
Despite participants' knowledge of safer smoking resources, sharing of smoking devices was commonly reported, and perceived risk of HIV and HCV transmission was minimized. Sharing of crack smoking devices occurred as a result of not having access to a clean unused stem at a time when it is needed, often due to accessibility/availability of safer smoking resources (agency location, hours of operation or age restriction policies) or to a reluctance to collect or to carry ones' own (used or new unused) safer smoking supplies for fear of being caught by police.
Safer smoking resources and information must be provided in the most readily accessible fashion for people who smoke crack, with greater attention to information and education about the HIV- and HCV- risks involved in sharing devices while smoking crack. There is an urgent need for enhanced cooperation between agencies that distribute safer inhalation materials and law enforcement efforts in order to reduce drug users' reluctance accessing and carrying safer inhalation resources.

P287
HIV/AIDS COMMUNITY HEALTH FORUM; TREATMENT TOPIC RELATED SUPPORT PROGRAM DELIVERY

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ISSUE: The demand for accurate reliable and up-to date information and knowledge about HIV has grown enormously since the start of the HIV/AIDS epidemic. This includes knowledge about alternative treatment options. With a growing diversity of persons seeking knowledge the ACT Community Health Forum has developed over the past eight years from there to seven per year with an improved attendance from 15 - 110 per event.
DESCRIPTION: ACT's strategic plan identifies innovative forms of program delivery as a cornerstone of the organization's work
The HIV/AIDS Community Health Forum is delivered in a nonjudgmental environment allowing freedom for questions and dialogue. It has attracted specialist speakers nationally and internationally within their specific field of research and care. Topics are selected with input from the Advisory Committee of community members, support workers, sponsors and physicians.
RESULT: Persons living with HIV/AIDS gain knowledge to improve their health, make informed choices about care and treatment, and improve dialogue with health care provider. The Fora are presented by specialist and co-presented with a person living with HIV/AIDS. Forums fully meet the GIPA/MIPA principal of program delivery and development. The collaborative model has contributed to educating the range of participating stake holders and people living with HIV/AIDS- through addressing gaps in understanding and improving dialogue. The forums also encourage leadership within ACT staff and community partners.
LESSONS LEARNED: Persons living with HIV/AIDS know their bodies but are often not aware of available treatment options, or are unable to have proper discussions with their health care providers. The Forums, as demonstrated, in the evaluations and growing attendance, have improved the knowledge base through delivering content in an accessible language. The forum has become a valuable tool for improving quality of life and adherence to treatment.
NEXT STEPS: To share this program widely, using new technology that will enable others throughout Canada to access the presentations and benefit from this most valuable health promotion program from the AIDS Committee of Toronto

P288
COMMUNITY BASED STORY TELLING TO IDENTIFY WISE PRACTISES AND GAPS NEEDED TO ADDRESS ABORIGINAL HIV/AIDS EPIDEMIC

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Storytelling is a traditional practice for sharing and building Aboriginal knowledge systems and also a method that allows researchers to capture a community's perspective on health and wellness. This community-based research (CBR) uses storytelling to provide a perspective of HIV/AIDS to inform education, prevention and/or support strategies in the central Alberta region. There exists a significant disparity in HIV/AIDS rates among Aboriginals when compared to non-Aboriginals; this reality, along with the growing percentage of HIV reports and AIDS cases in Aboriginal communities, necessitates examination of the gaps, barriers, and needs related to this specific population.
Stories collected indicate that there are significant barriers to culturally competent health services for Aboriginals. Lack of information and a common cross-generational language to discuss HIV/AIDS were significant barriers. Gender issues, stigmas and misinformation surrounding HIV/AIDS were also prominent. Building on a process of cultural revitalization and continued decolonialization as well as programming to develop culturally competent health services are key strengths that can be used to address this health issue.

P289
EPIDEMICS WITHIN AFRICAN AND BLACK POPULATIONS IN DEVELOPED COUNTRIES: CREATING A COMMON PLATFORM TO SUPPORT SHARING OF KNOWLEDGE AND LESSONS LEARNED

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BACKGROUND: HIV epidemics linked to high prevalence countries of Africa and the Caribbean have emerged in a number of developed countries. The African and Black Diaspora Global Network on HIV and AIDS (ABDGN), a network whose mission is to strengthen the global response to existing/emerging HIV epidemics amongst African and Black populations in the Diaspora (ABD), in partnership with Health Canada, CDC, Atlanta and European CDC, organized a high level meeting (HLM) during AIDS 2010 in Vienna to dialogue, share knowledge and develop strategies to address developing world epidemics in the developed world.
METHODS:
a) Critical theme analysis of key regional/international HIV policy documents and reports focused on ABD populations.
b) Review of available regional/national epidemiological data from Canada, United States, and Europe on ABD populations.
c) Synthesis of responses of structured discussions held at the HLM.

RESULTS: Though ABD populations in EU, Canada, United States and Australia are diverse, commonalities in epidemiological data patterns, surveillance and methodological challenges were identified. Other common challenges identified across countries/regions included: multiple forms of social isolation and exclusion (poverty/underemployment, unemployment) compounded by intersecting forms of stigma (racism, homophobia, gender inequities); unhealthy sexual practices; limited access to services; high rates of incarceration; harmful HIV policies; and limited research and community involvement.
STRATEGIC DIRECTIONS TO ACCELERATE ACTIONS PROPOSED INCLUDED: Increased surveillance, coordinated terminology and data standardization; more culturally and linguistically appropriate programming, research and evaluation of interventions; policy changes to accommodate needs of ABD communities; and use of multiple lenses to address intersections of gender, race, culture, and HIV stigma/discrimination.
CONCLUSIONS: Mechanisms/platforms for collaboration, knowledge and resource sharing are needed to facilitate coordinated efforts in regional/global responses to HIV among ABD populations. ABDGN has successfully bridged this divide by facilitating dialogues and fostering new/existing partnerships to improve knowledge generation, translation and exchange to influence action.

P290

LIVING WITH HIV AT 50 YEARS OF AGE AND OVER: WHAT IS THE IMPACT ON ONE'S LOVE LIFE AND SEXUALITY?

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BACKGROUND: Finding themselves at the intersection of HIV and aging, people living with HIV who are 50 and older (PLHIV50+) are likely to face numerous difficulties in their individual and social lives. Although contemporary research has focused on this population, the subject of their love life and sexuality remains scarcely explored. In order to address this shortcoming of the literature, our study aims to document the repercussions pertaining to the interaction of HIV and aging on PLHIV50+.

METHODS: The results of this research are based on semi-structured interviews conducted with 17 PLHIV50+ living in the area of Montreal (MSM, heterosexual men and women). Qualitative analysis of the data is based on an ethnographic approach and is carried out by using QDAMiner software.

RESULTS: Data reveals that PLHIV50+ face multiple difficulties in their private lives, due to HIV and/or aging process. The loss of a partner who has died from AIDS, fear of transmitting HIV, and fear or actual experiences of reject from partners due to stigma surrounding HIV are all potential hurdles in the lives of PLHIV50+. Intimate life can also be disrupted by specific consequences of the aging process, such as physiological changes (erectile dysfunction, menopause), reduced desire, and a subjective loss of one's own power of seduction. Lastly, ageism, in virtue of its pervasiveness within the gay community, constitutes a major obstacle to love life and sexuality. Despite the aforementioned difficulties, many single participants hope to live in a stable relationship, notably in part due to concerns relating to growing old alone.

CONCLUSION: The intersection of HIV and aging engender several difficulties in the personal lives of PLHIV50+. These are linked to the interaction of biological and social factors, amongst which stigmatisation of HIV and ageism play a major role.

P291

CONDOMS AND CONTRADICTIONS: HOW QUEER AND TRANS YOUTH LABELLED WITH INTELLECTUAL DISABILITIES NAVIGATE SAFER SEX DECISIONS

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BACKGROUND: Youth labelled with intellectual disabilities are rarely perceived as sexual. Inadequate and inappropriate prevention messaging, programming and research, have left queer and trans youth labelled with disabilities at an even greater risk. 'Picture This' aimed to understand the vulnerabilities of queer and trans youth labelled with intellectual disabilities to HIV and other sexually transmitted infections.

METHODS: Data collection occurred during a 3-day retreat attended by 10 LGBTQ youth labelled with intellectual disabilities, researchers, staff and a volunteer. Data collection activities were partly arts-based and included: a pictorial card game exploring knowledge about HIV, herpes and pregnancy; HIV prevention poster-making activities; and in-depth interviews focusing on sexuality, relationships, condom use and HIV testing.

RESULTS: When creating their own health promotion posters, youth reproduced many of the 'safer sex' slogans that they have heard elsewhere (e.g. "No glove, No love") and created works that were explicit, sex-positive and promoted condom use. However, when confronted with concrete explicit images in the pictorial card sorting activity, some youth had a much harder time in deciphering what could protect them, and what put them at risk for HIV/pregnancy/herpes. When interviewed about their individual experiences, their understandings and use of barrier methods were much more complex. The gut reaction of many youth was to say they always used a condom. When probed however, several talked about the challenges associated with the decision. This included resistance from partners, substance use making this confusing, and the difficulties associated with negotiation when sex is non-consensual.

CONCLUSION: Through triangulating the data gathered from various activities and approaches, the contradictions between what youth say, do and know come to the fore. Nevertheless, what is unique about this population is that they may not see or necessarily understand the contradictions. It is important for those working with youth labelled with intellectual disabilities to probe deeply about safer sex knowledge and behaviour, using multiple strategies to ensure that youth understand the messages and are equipped to act.

P292

MOVING BEYOND THE DISCOURSE OF 'INDIVIDUAL RISKY BEHAVIORS': ADDRESSING SOCIAL INEQUALITIES AS RISK CONDITIONS FOR HIV INFECTIONS AMONG MARGINALIZED YOUNG MEN

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Socially and economically marginalized youth experience disproportionate sexual health disparities, including sexually transmitted infections (STI). These health disparities raise questions about universal access to effective sexual health and HIV prevention programs for all youth. They also point to the need for context-based research that explores mechanisms leading to varied sexual practices among youth of diverse social positions. This study recruited twenty-four young men aged 16 to 24 of diverse racial backgrounds from two disadvantaged neighbourhoods in Toronto. It used a mixed method of individual and group interviews, neighbourhood walks, and resonant texts to explore the construction of masculine identities and sexual practices of these young men. Findings of this study challenge the prevailing essentialist assumptions about race, class, and HIV. They show that: (1) structural conditions and social inequalities produced varied sexual practices among these young men within and across class and racial divisions; (2) these young men actively participated in (re)constructing and/or resisting hegemonic masculinities through guy-talk and mutual surveillance; (3) their sexual practices were intricately intertwined with their homosocial practices; and (4) intra-group or local codes of homosocial solidarity coupled with global hegemonic masculine expectations exerted pressure on these young men to conform to sexual practices that increased their vulnerability to STI/HIV infection and other health disparities. This study concludes that accountable STI/HIV prevention programs must move away from the emphasis on 'individual risky behaviours' to consider the 'risk conditions' that contribute to sexual health disparities among marginalized young men. They must also consider the effects of racism, heteronormativity, sexism, and economic marginalization on young men's sexual practices. Furthermore guy-talk constitutes a potential space for young men to engage in critical dialogue to challenge hegemonic masculine domination. Place-based STI/HIV prevention initiatives are critical for young men excluded from the school system and/or living on the streets.