CAHR 2020 VIRTUAL

CONFERENCE CAHR 2020

29th Annual Canadian Conference on HIV/AIDS Research

CONFERENCE CAHR 2020

29e Congrès annuel canadien de recherche sur le VIH/sida

Hope, Victories and Perseverance beyond 2020

Hope, Victoires et Persévérance au-delà de 2020

ABSTRACTS
ABRÉGÉS

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CAHR 2020

Hope, Victories and Perseverance beyond 2020

ACRV 2020

Espoir, Victoires et Persévérance au-delà de 2020

Abstracts / Abrégés

May 1 - 2, 2020 / 1 au 2 mai 2020
Virtual Conference

Due to COVID-19, the 29th Annual Canadian Conference on HIV/AIDS Research -- which was scheduled to take place in Quebec City -- became CAHR 2020 Virtual. This compendium of abstracts represents those that were approved for the face to face program as developed by the 2020 Conference Scientific Committee.

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Basic Sciences: HIV Virology (Viral and Host Factors)
Sciences fondamentales : Virologie du VIH (Facteurs liés au virus et à l'hôte)

BS1.01

Production of Chemokine Fractalkine in HIV-1 Brain Inflammation: a New Approach to Understand and Treat HIV-1 Neuro-pathogenesis

Vincent Sénécal, Corinne Barat, David Gosselin, Marie-Thérèse Gagnon, Michel J. Tremblay
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HIV-1 infection of microglia and astrocytes causes release of neurotoxic viral proteins and inflammatory mediators. Clinically, this results in HIV-associated neurocognitive disorders (HAND) with an uncontrolled prevalence in treated individuals. However, the effects on neuroprotective factors in the brain remain unresolved. We focus on fractalkine, a chemokine highly produced by neurons that controls microglia neurotoxicity. We hypothesize that HIV-1 alters fractalkine signaling which affects HAND severity.

Human astrocytes were infected and stimulated with pro-inflammatory cytokines. Fractalkine was measured by qPCR (RNA), on-cell western assay (membrane-anchored form) and ELISA (soluble form). The enzymatic activity of ADAM-10, the metalloprotease for fractalkine shedding, was evaluated with a fluorometric assay. The interaction between NF-κB and fractalkine promoter was evaluated by chromatin immunoprecipitation. Supernatants from infected microglia were added to astrocytes to analyse fractalkine secretion. Neuroprotective effect of fractalkine was evaluated on neurons exposed to conditioned media from infected microglia by caspase 3/7 fluorescence and LDH assay.

We showed that HIV-1 infection of astrocytes limits their potential to express fractalkine in response to pro-inflammatory cytokines; we observed a reduction on both the soluble and membrane-anchored form. We demonstrated that ADAM-10 activity remains unperturbed. We then investigated the biological mechanism responsible for this reduced fractalkine expression and found that HIV-1 infection specifically blocks the interaction of transcription factor NF-κB on fractalkine promoter. Conditioned media from infected microglia increased fractalkine production by astrocytes; this effect was due to TNF as demonstrated using anti-TNF neutralizing antibody. Finally, we confirmed that recombinant fractalkine reduces apoptosis in human neurons exposed to infected microglia-derived media.

In conclusion, our results indicate relevant interactions between HIV-1 and fractalkine signaling in the brain. Considering its neuro-protective functions, reducing its production from astrocytes could have important outcomes in chronic inflammation and immune activation. Overall, interventions with fractalkine-based treatments could offer neuroprotection and reduce HAND.

Basic Sciences: HIV Virology (Viral and Host Factors)
Sciences fondamentales : Virologie du VIH (Facteurs liés au virus et à l'hôte)

BS1.02

Characterization of Gag Mutations in HIV-1 Subtype a Long-term Non-progressors

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Background: Factors associated with control of HIV in the absence of therapy are not completely understood. Protective HLA alleles and robust CD8 T cell responses contribute to immune-mediated mechanisms of control; however, HIV adaptation to immune pressure, which is evident in the accumulation of viral "escape mutations" in targeted epitopes, can result in loss of control. Some escape mutations reduce viral fitness, indicating that functional constraints may play an important role in determining the extent to which HIV can adapt to host immunity. A better understanding of subtype-specific viral adaptation mechanisms may inform future efforts in HIV vaccine development and cure research.

Methods: We examined plasma specimens from 20 treatment-naïve long-term non-progressors infected with HIV subtype A who maintained normal CD4 cell counts for over 25 years. The *gag* coding region was amplified using nested RT-PCR and sequenced using Sanger methods. Viral subtype was confirmed using phylogenetic methods. Mutations in the *gag* sequence consistent with escape from HLA-mediated immune pressure were identified by comparing aligned sequences to consensus reference strains in regions encoding Gag epitopes, based on the LANL HIV Immunology database.

Results: We observed the following mutations in well-characterized Gag epitopes: B*57/58-KF11 [n=7 (35%) A163G]; B*57/58-TW10 [n=3 (15%) T242N, n=2 (10%) P243T, n=1 (5%) P243V]; B*44-AW11 [n=11 (55%) S310T]; B*57/58-QW9 [n=8 (40%) E312D]; B*57/58-IW9 [n=1 (5%) L147M, n=2 (10%) L147V]. Prior studies demonstrated that many of these mutations reduce *in vitro* HIV replication capacity, suggesting that viral attenuation is common in this cohort.

Conclusions: Reduced viral fitness associated with Gag sequence variation may contribute to long-term non-progression in this cohort of HIV subtype A-infected individuals. Future work will confirm this hypothesis by measuring the replication capacity of selected Gag clones.

Basic Sciences: HIV Virology (Viral and Host Factors)
Sciences fondamentales : Virologie du VIH (Facteurs liés au virus et à l'hôte)

BS1.03

Rates and Patterns of Indels in HIV-1 gp120 Within Hosts

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Changes to the lengths and N-linked glycosylation patterns of the variable loops in HIV-1 gp120 modulate the resistance to neutralizing antibodies. These changes are often caused by sequence insertions and deletions (indels). Despite their importance, the rates and composition of indels in HIV-1 gp120 have not been well-characterized within hosts. Here we report a phylogenetic analysis of HIV-1 gp120 indel evolution within hosts.

I retrieved and processed 11,265 HIV-1 clonal gp120 sequences sampled longitudinally from 25 subjects in the Los Alamos National Laboratory HIV Sequence Database. An additional 2,541 sequences from 25 subjects were kindly provided by Dr. Vlad Novitsky. We excluded 23 alignments with poor temporal signal (measured by root-to-tip regression) and reconstructed time-scaled within-host phylogenies for the remaining data under a Skygrid model using BEAST v1.10 with tree topologies fixed to maximum likelihood (RAxML) estimates. We used posterior samples of trees to perform ancestral reconstruction using Historian and extracted insertion and deletion events within the variable loops. Insertion and deletion rates on terminal branches were estimated by Poisson regression.

The median insertion rate was 8.1E-4 (interquantile range = 4.3E-4, 1.8E-3) events/nt/year and the deletion rate was 1.9E-3 (IQR = 8.0E-4, 2.9E-3). Deletion rates were significantly higher than insertions for all variable loops ($P<2.2E-16$). Indel lengths other than multiples of 3 were rare (ins =15.5%, del = 9.9%), implying purifying selection on sequences with frame-shift mutations. We found no association between indel rates and the nucleotide/dinucleotide composition of the ancestral sequences.

Our estimates of indel rates in HIV-1 gp120 within hosts are significantly higher than our previous estimates from among-host sequences (doi://10.1093/ve/vez022), indicating that many indels are filtered by selection before onward transmission. These data will provide the raw material for evaluating different models of insertion and deletion, such as replication slippage or template switching, in a probabilistic framework.

Basic Sciences: HIV Virology (Viral and Host Factors)
Sciences fondamentales : Virologie du VIH (Facteurs liés au virus et à l'hôte)

BS1.04

Pan-retroviral Nucleocapsid-Mediated Phase Separation Regulates Genomic RNA Positioning and Trafficking

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The duality of liquid-liquid phase separation (LLPS) of cellular components into membraneless organelles defines the nucleation of both normal and disease processes including stress granule (SG) assembly. From mounting evidence of LLPS utility by viruses, we discover that HIV-1 nucleocapsid (NC) protein condenses into zinc finger (ZnF)-dependent LLPSs that are dynamically influenced by cytosolic factors. ZnF-dependent and Zinc (Zn^{2+})-chelation-sensitive NC-LLPS are formed in live cells. NC-Zn^{2+} ejection reverses the HIV-1 blockade on SG assembly, inhibits NC-SG assembly, disrupts NC/Gag-genomic RNA (vRNA) ribonucleoprotein complexes, and causes nuclear sequestration of NC and the vRNA, inhibiting Gag expression and virus release. NC ZnF mutagenesis eliminates the HIV-1 blockade of SG assembly and repositions vRNA to SGs. We find that NC-mediated, Zn^{2+}-coordinated phase separation is conserved among diverse retrovirus subfamilies, illustrating that this exquisitely evolved Zn^{2+}-dependent feature of virus replication represents a critical target for pan-antiretroviral therapies.

Basic Sciences: Comorbidities, Coinfections and Complications
Sciences fondamentales : Comorbidités, coinfections et complications

BS1.05

Art-Treated Adults with Diagnosed Atherosclerosis are Characterized by a Particular Expression of Regulatory T-cells

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B**ackground:** Chronic HIV infection results in accelerated aging and cardiovascular diseases (CVD) notably atherosclerosis due to persistent inflammation. It is well documented that regulatory T-cells (Tregs) and ectonocleotidases CD39/CD73 (regulators of purinergic signaling) play protective role against atherosclerosis via their anti-inflammatory functions. We therefore assessed Treg sub-populations in ART-treated people leaving with HIV (PLWH) *versus* HIV-uninfected individuals with or without atherosclerosis.

Methods: PBMC were obtained from 142 sex and age matched participants in four study groups from the Canadian HIV and Aging Study, as follow: ART-treated PLWH with and without atherosclerosis (n=43 and n=41, respectively) and HIV-uninfected individuals with or without atherosclerosis (n=30 and n=28, respectively). The presence of atherosclerotic plaques was evaluated by computed tomography angiography of the coronary arteries performed on all participants. The frequency of Treg subsets and T-helper (Th) cells, as well as T-cell immune activation were assessed by flow cytometry.

Results: PLWH with atherosclerosis distinguished from the other 3 groups by increased frequencies of total Tres and depletion of CD39+ and CD73+ Tregs. Moreover, Tregs from PLWH with atherosclerosis exhibited increased expression of CCR4 (migration) and decreased expression of CCR6 (migration into inflammatory sites) and CD31 (indicative of recent thymic emigration). Furthermore, PLWH with atherosclerosis compared to the other study groups exhibited significantly lower levels of activated HLADR-expressing CD4+ and CD8+ T-cells. Finally, alterations in Th1, Th2 and Th17 cell frequencies were observed during HIV infection, with the highest frequencies of Th2 cells being observed in PLWH with atherosclerosis.

Conclusion: These results reveal profound alterations in the frequency of regulatory and effector CD4+ T-cell subsets associated with atherosclerosis in ART-treated PLWH. The paucity and poor tissue-infiltration potential of anti-inflammatory CD39/CD73 Treg subsets may represent one mechanism contributing to atherosclerotic plaque formation during ART-treated HIV infection.

Basic Sciences: Antivirals, Microbicides and Mechanisms of HIV Resistance
Sciences fondamentales : Antiviraux, microbicides et mécanismes de résistance au VIH

BS1.06

The Influence of TIGIT on Natural Killer Cell Activity Against HIV

Kayla A. Holder, Michael D. Grant
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I**ntroduction:** During chronic human immunodeficiency virus (HIV) infection, inhibitory molecules are upregulated and contribute to effector cell dysfunction and exhaustion. People living with (PLWH) HIV are at a greater risk for age-related morbidities, an issue magnified by human cytomegalovirus (HCMV) co-infection. As HCMV modifies NK cell phenotype and function, we considered the role of upregulated inhibitory molecules in this context and their potential to affect NK cell-based strategies to eliminate HIV-infection.

Methods/Results: To investigate the significance of HCMV-driven NK cell adaptation in HIV infection, PLWH were distinguished by HCMV status or by high (>20%) versus low (<6%) percentages of adapted NK cells. Adapted NK cells did not display a classical exhausted phenotype as there was low LAG-3, PD-1 (<1%), and TIM-3 (<10%) expression. In contrast, TIGIT was present on a large fraction of NK and $CD8^{pos}$ T cells and levels were associated with HCMV status. Since $CD4^{pos}$ T cells latently infected with HIV upregulate CD155, a ligand for TIGIT, we investigated TIGIT modulation of NK cell functions. Blocking TIGIT/CD155 interactions increased NK cell cytotoxicity and correlated with the extent of NK cell adaptation to HCMV. Engaging TIGIT reduced levels of antibody-dependent cell-mediated cytotoxicity (ADCC) against pseudo HIV-infected (vPE16) P815 cells with the extent of reduction again reflecting NK cell adaptation to HCMV. We measured HIV-specific ADCC against HIV-infected $CEM.NK^{R}.CCR5$ and using cells transduced with CD155 will allow assessment of the role of TIGIT inhibition in a genuine HIV infection model.

Implications: Blocking TIGIT may be an appropriate strategy to invigorate antibody-dependent NK cell activity against HIV reservoirs in cure or treatment strategies.

Clinical Sciences: HIV in Children and Adolescents
Sciences cliniques : Le VIH chez les enfants et les adolescents

CS1.01

Neurodevelopmental and Mental Health Co-morbidities in Canadian Children and Adolescents Living with HIV in the EPIC4 Cohort

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B**ackground:** Perinatal HIV infection (pHIV) differs from infection later in life in that it can affect the developing brain. This study describes neurodevelopmental (NDD) and mental health diagnoses (MHD) in the Early Pediatric Initiation Canada Child Cure Cohort (EPIC[4]).

Methods: EPIC[4] prospectively enrolled and followed children with pHIV from 7 Canadian centres from 2014-2018. We determined the prevalence of NDDs and MHDs, and investigated predictors of diagnoses on univariate Poisson regression analysis.

Results: 226 children were enrolled; median age at diagnosis and at last study visit were 1.4 years (range birth-16.1 years) and 15.6 years (range 1.0-27.9 years), respectively. . 23/200 (11.5%) were born prematurely. 57/226 (25.2%) had a NDD: expressive (28/226, 12.4%) or receptive (24/226, 10.6%) language delays; gross motor (23/226, 10.2%), fine motor (22/226, 9.7%%), or global (23/226, 10.2%) delays; HIV encephalopathy (20/226, 8.8%). Head imaging, performed in 84/226 (35%), showed abnormality in 58/84 (69.6%). 35/226 (16.2%) had a learning disability: dyslexia (8/226, 3.7%); auditory processing (3/226, 1.4%) or visual processing (3/226, 1.4%) disorder; unspecified (23/226, 10.6%). 26/195 (13.4%) had failed at least one grade in school. 65/226 (28.8%) had a MHD: attention deficit hyperactivity disorder (30/224, 13.4%); depression (24/225, 10.7%); anxiety (24/225, 10.7%); post-traumatic stress disorder (11/225, 4.9%). Predictors of NDD included prematurity (RR 2.55, 95%CI=1.48, 4.37), diagnosis at <1year (RR 2.23, 95%CI=1.43, 3.48) and earlier cART initiation (<1year, RR=3.80, 95%CI=2.17, 6.67; 1-5years, RR 2.00, 95%CI=1.10, 3.66), higher peak viral load (>100000 copies/mL, RR 1.71, 95%CI=1.08, 2.71). Predictors of MHD included prematurity (RR 2.03, 95%CI=1.16, 3.55), diagnosis at <1year (RR 2.02, 95%CI=1.33, 3.06) and cART initiation <1year (RR=3.10, 95%CI=1.86, 5.15).

Conclusion: NDDs and MHDs were prevalent and earlier HIV diagnosis and treatment were predictive for these problems. This suggests a possible association of NDDS and MHDs with more symptomatic HIV disease as reflected by earlier HIV diagnosis.

Clinical Sciences: HIV in Children and Adolescents
Sciences cliniques : Le VIH chez les enfants et les adolescents

CS1.02

Double Trouble: Increased Risk of Congenital Cytomegalovirus Infection Among HIV-exposed Newborns

Hannah Hyde-de Sousa[1], Isabelle Boucoiran[2, 3], Silvie Valois[2], Suzanne Taillefer[2], Marc Boucher[2, 3], Hugo Soudeyns[2, 4, 5], Christian Renaud[2, 4], Valérie Lamarre[2, 5], Fatima Kakkar[2, 5]

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B**ackground:** Congenital cytomegalovirus infection (cCMV) is the leading cause of a treatable congenital infection worldwide. While maternal immunosuppression is a risk factor for transmission, there are currently no recommendations for screening infants of women with HIV in pregnancy. The objective of this study was to examine the association between in utero HIV exposure and the risk of cCMV infection.

Methods: Between April 1st 2014 and March 31st 2018, all HIV exposed infants born at CHU Sainte-Justine (Montreal, Quebec) were screened for cCMV by salivary PCR or co-culture, and positive screens were confirmed with a second urine test. In parallel, a targeted screening program for cCMV was implemented for all infants who failed their newborn hearing test. The incidence of cCMV between the two groups was compared.

Results: During the study period, 156 children were born to women living with HIV. There was only one case of perinatal HIV transmission. 127 (81.4%) newborns were successfully screened for cCMV, and 3 of 127 (2.36%) were confirmed positive; only one had symptomatic cCMV infection and required antiviral treatment for cCMV in addition to antiretroviral prophylaxis for HIV. All 3 cases of cCMV were born to mothers who were CMV IgG positive and IgM negative at the onset of pregnancy; only one was born to a mother with severe immunosuppression (CD4 count <200 cells/mm3). During the same period, 484 newborns were screened for cCMV due to a failed hearing test, and only 3 (0.62%) were confirmed positive.

Conclusion: The incidence of cCMV among HEU infants was >3-fold higher than among healthy newborn infants targeted for screening due to failed hearing test, and 4-fold higher than general North American population estimates (0.5%). In the absence of universal screening, these results suggest that all HIV-exposed infants should be screened for cCMV.

Clinical Sciences: HIV in Children and Adolescents
Sciences cliniques : Le VIH chez les enfants et les adolescents

CS1.03

Risk Factors for Aberrant Newborn Growth among HIV-Exposed Infants in the Centre Maternel et Infantile sur le Sida (CMIS) Cohort

Laura-Kim Tremblay[1], Suzanne Taillefer[2], Silvie Valois[2], Christian Renaud[2, 3], Marc Boucher[2, 5], Valérie Lamarre[2, 4], Hugo Soudeyns[2, 3, 4], Isabelle Boucoiran[2, 5, 6], Fatima Kakkar[2, 4]

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B**ackground:** Children who were HIV-exposed but uninfected (HEU) are at increased risk of morbidity as compared to unexposed controls. Potential risk factors include aberrant *in utero* growth due to maternal HIV infection, and exposure to antiretroviral agents (ARV). The objective of this study was to determine the incidence of small for gestational age (SGA), microcephaly and macrocephaly among a cohort of HEU newborns in Montreal, Quebec.

Methods: Newborn birth weight (BW), length, and head circumference (HC) were assessed for children born to women living with HIV from the CMIS cohort (1988-2016), for whom linkage to the provincial health administrative databases could be done. Data were analyzed using published Intergrowth21 standards, with reported Z scores and percentiles adjusted for gestational age and sex.

Results: 724 newborns were included in the analysis. Median BW Z score was 0.21 (IQR=0.50-0.90), HC=0.84 (IQR=0.01-1.56), and length=0.22 (IQR=0.50-0.90). Overall, 13% of newborns were preterm (gestational age <37 weeks), 11% were SGA (BW<10th percentile), 2.3% had microcephaly (HC<3rd percentile), and 15.9% had macrocephaly (HC>97th percentile). On univariate analysis, the only significant risk factors for SGA from among maternal age, race, treatment type, delivery CD4 (dCD4) count and viral load (dVL) were dCD4 count (B=-0.01, p=0.01) and race (B=-4.5, p=0.02), both of which remained significant after adjusting for maternal age, treatment type and dVL. Infants born to mothers of African origin had significantly higher birth Z scores than those of Haitian origin (0.274 vs. -0.04, p=0.002). Maternal dCD4 was the only significant predictor of HC at birth (B:-0.01, p=0.016), though it had no impact on infant birth length (B=0.003, p=0.14).

Conclusions: In this cohort, maternal immunosuppression was identified as a potential risk factor for SGA and microcephaly among HEU newborns. Further work needs to be done to assess the long-term health impacts of these extremes of growth.

Clinical Sciences: HIV in Women and in Pregnancy
Sciences cliniques : Le VIH chez les femmes et pendant la grossesse

CS1.04

Assessing the Cellular and Mitochondrial Effects of Integrase Inhibitors in a Human Embryonic Stem Cell Model

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B**ackground:** Women living with HIV give birth to ~1.5M infants each year, 80% of them exposed to ARVs *in utero*. Most ARVs can cross the placenta, but their safety has not been fully elucidated in the context of pregnancy. Many ARVs affect mitochondria, which could impact embryonic development. Our objective was to characterize and compare the effects of 14 ARV regimens on cultured human embryonic stem cells (hESCs), with respect to pluripotency, and cellular and mitochondrial health.

Methods: CA1S hESCs were cultured (n=5 independent experiments) in the presence of 0.1% DMSO or 1X Cmax of one of 14 ARV regimens, with a particular focus on regimens containing an InSTI base drug. After 3 days, cells were assessed via flow cytometry using markers for mitochondrial and cellular health. Two markers of pluripotency, specifically SSEA-3 (lost early in differentiation) and TRA-1-60 (a later marker) were also assessed. Regimens were grouped according to base ARV and compared to DMSO control using Kruskal-Wallis with Dunn's correction.

Results: HESCs exposed to DTG or BIC had a 3-fold reduced cell count ($p \leq 0.005$) compared to controls. BIC exposure resulted in a 5-fold decrease in viability ($p=0.026$) and a 6-fold increase in apoptosis ($p=0.01$). Exposure to regimens containing DTG or CAB resulted in a >80% loss of the pluripotency marker SSEA-3 compared to controls ($p \leq 0.02$). There were no significant differences between regimens with respect to mitochondrial markers or TRA-1-60 expression. No effects were detected for the backbones, RAL, EVG/COBI, EFV, RPV, or DRVr.

Conclusions: Exposure to some ARV regimens at pharmacological concentrations, especially DTG or BIC, appear toxic to cultured hESCs. Additionally, exposure to the InSTIs DTG and CAB can induce hESC differentiation. Given the increasing use of DTG and other InSTIs, it is imperative to investigate their long-term safety in the context of pregnancy and embryonic development.

Clinical Sciences: HIV in Women and in Pregnancy
Sciences cliniques : Le VIH chez les femmes et pendant la grossesse

CS1.05

Reproductive Toxicity Studies to Evaluate Potential Neural Tube and Other Abnormalities Associated with Dolutegravir Exposure in Pregnancy

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The benefits of antiretroviral therapy in improving maternal health and preventing vertical HIV transmission are indisputable. However, exposure to any potent drug during pregnancy carries the risk of embryo-fetal toxicities. Dolutegravir (DTG), an integrase strand transfer inhibitor (INSTI), is a WHO-alternative first-line regimen, because of its efficacy, tolerability, and a higher genetic barrier to resistance. However, initial findings from an observational study in Botswana showed an increased incidence of neural tube defects (NTDs) with peri-conceptional exposure to DTG. Here we explore potential DTG reproductive toxicities in a mouse model. Wild-type female C57BL/6 mice, were mated and randomly allocated to control (water) and 1x-DTG (2.5mg/kg DTG+50mg/kg TDF+33.3mg/kg FTC-yielding DTG peak plasma concentration of ~3,000ng/ml) administered once daily by oral gavage from the day of plug detection to sacrifice at embryonic day (E)15.5. Mice were on a folate-sufficient diet. Fetuses were assessed blinded to treatment allocation by two independent reviewers. 241 litters and 1921 fetuses were assessed (control n=91 litters, 747 fetuses; 1x-DTG n=150 litters, 1174 fetuses). Resorption rates, viability, and fetal/placental weight ratio did not differ between groups. Lower placenta weight, lower fetal weight and lower maternal weight gain were observed in the 1x-DTG vs. control groups. Five NTDs (Exencephaly, n=2; Anencephaly, n =1; Spinal Bifida, n=2) were observed in the 1x-DTG group (5/1174=0.43%), with no NTDs in controls (odds ratio (OR) 1x-DTG vs. control=6.92, 95%CI 0.38-127, p=0.16). Fetuses exposed to 1x-DTG also had higher rates of anophthalmia/microphthalmia (OR(95%CI): 2.0 (1.18-3.45), p=0.011), severe edema (OR(95%CI): 2.76 (1.33-5.73), p=0.007), vascular/cranial/spinal bleeding issues (OR(95%CI): 3.32 (1.63-6.74), p=0.001), and enlarged liver (OR(95%CI): 1.61 (0.99-2.62), p=0.057) compared to control. Contrary to expectations, several fetal abnormalities are evident when dams are exposed to a clinical dose of DTG supporting the link between DTG in pregnancy and the risk of NTD and other adverse fetal outcomes.

Clinical Sciences: HIV in Children and Adolescents
Sciences cliniques : Le VIH chez les enfants et les adolescents

CS1.06

Breastfeeding by Women Living with HIV in a Resource-Rich Setting: A Multicenter Retrospective Review of Maternal and Infant Management and Outcomes

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B**ackground:** Exclusive formula feeding remains the preferred infant feeding recommendation for women living with HIV (WLWH) in resource-rich settings because vertical transmission (VT) can occur despite an undetectable viral load (VL). However, in recent years, some Canadian WLWH have elected to breastfeed their infants while on combination antiretroviral therapy (cART). The objective of this study was to describe demographic characteristics, management and outcomes of breast-fed infants born to WLWH in Canada.

Methods: A multicenter retrospective chart review of all known breastfed infants born to WLWH in Canada, 2015-2019. Demographic characteristics, management and outcomes were reviewed.

Results: Ten breastfed infants (9 mothers) were reviewed. All mothers were on cART during pregnancy (7 pre-conception) and had virologic suppression at delivery. Stated reasons for breastfeeding included mother-infant bonding (n=8), infant health (n=2), and fear of inadvertent HIV disclosure (n=1). Four had previously breastfed infants while living in other countries. Median breastfeeding duration was 18 weeks (range 2-28 weeks); mixed feeding was documented in 4 cases. All mothers remained on cART while breastfeeding and most (n=8) maintained an undetectable VL. Initial infant antiretroviral prophylaxis consisted of zidovudine/lamivudine/nevirapine (n=8), zidovudine (n=1) or nevirapine (n=1). Nine infants continued prophylaxis until one month after discontinuing breastfeeding. No cases of VT were documented. Median hemoglobin and neutrophil count at 1 month of age was 122.5 g/L (range 97-140 g/L) and 1.4x1x10^9/L (range 0.8-2.97x10^9/L), respectively. One infant was switched from zidovudine/lamivudine/nevirapine to nevirapine monotherapy prophylaxis after 4 weeks due to neutropenia (0.8x10^9/L). Five other infants experienced neutropenia (0.5-1x10^9/L) that resolved after discontinuing cART. None experienced significant anemia.

Conclusions: There is an increasing trend among WLWH on effective cART in Canada to breastfeed their infants. Multidisciplinary preconception and throughout pregnancy counseling of WLWH on infant feeding, and close clinical follow-up of breastfed infants is needed to optimize infant outcome.

Epidemiology and Public Health: Data and methodological science: use of administrative data, new tools and other novel data sources in HIV surveillance, prevention and control programs

Épidémiologie et santé publique : Science des données : Utilisation des données administratives, nouveaux outils de mesure et autres sources originales de données dans les programmes de surveillance, de prévention et de contrôle du VIH

EPH1.01

Using Administrative Pharmaceutical Prescription Data to Estimate the Number of Persons on HIV Antiretroviral Treatment, Canada, 2014–2018

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I**ntroduction:** The number of people on HIV antiretroviral treatment (ART) is a critical component to measuring the 2nd 90-90-90 target for eliminating HIV. Current national estimates combine data from various sources e.g. provincial clinical and prescription databases, since a comprehensive data source for all HIV positive persons on ART in Canada does not exist. The Public Health Agency of Canada (PHAC) purchased data from IQVIA to corroborate current estimates of the number of people on HIV ART.

Method: Annual estimates of persons on ART in Canada were generated for 2014-2018 from IQVIA's prescription database (data not available for Alberta, British Columbia and the Territories). An algorithm was used to distinguish users of ART for HIV treatment from those using it for pre or post-exposure prophylaxis or Hepatitis B treatment. We provide the estimated number of people on ART for HIV by sex, age group and prescriber specialty.

Results: The estimated number of people on HIV ART in 2016 (eight provinces) was 32,260 using IQVIA data and was 31,976 using provincially provided data. IQVIA data showed an increase in the number of persons on ART from 26,833 in 2014 to 35,092 in 2018. Over the five year period, the relative increase was greatest among males aged 18-24 years (310%) and females aged 15-17 years (278%). In 2018, approximately half of people (53.4%) on treatment were aged 36–55 years and males accounted for 79.3% of persons on treatment. In 2018, 50.2% of prescriptions were prescribed by primary care providers, followed by infectious disease specialists (23.0%).

Conclusion: IQVIA data corroborated the treatment data from provincial clinical or pharmacy databases. Administrative data is a useful validation tool that could also be used to develop 2nd 90 estimates where treatment data are not available and to estimate treatment targets for other diseases (e.g. HCV).

Epidemiology and Public Health: Data and methodological science: use of administrative data, new tools and other novel data sources in HIV surveillance, prevention and control programs

Épidémiologie et santé publique : Science des données : Utilisation des données administratives, nouveaux outils de mesure et autres sources originales de données dans les programmes de surveillance, de prévention et de contrôle du VIH

EPH1.02

A Novel Phylogenetic Approach to Prioritizing HIV-1 Transmission Clusters

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B**ackground:** Despite a marked reduction in HIV transmission due to antiretroviral therapy, groups with elevated transmission persist. HIV sequence data can be used to phylogenetically identify groups of individuals at risk of elevated transmission rates, and thus direct optimal allocation of public health resources. However, public health agencies with limited resources require an approach that allows higher resolution prioritization when several clusters of rapid transmission occur simultaneously. We combine phylogenetic clustering with lineage-level phylogenetic diversification rates to form a novel method capable of successfully identifying clusters of urgent concern.

Methods: 35760 HIV protease and partial reverse transcriptase sequences collected from 9824 participants between 1996 and 2019 were used to infer 100 approximate maximum-likelihood bootstrap trees rooted by root-to-tip regression. Transmission clusters were inferred using a patristic distance threshold of 0.02 substitutions/site. Lineage-level diversification rates were calculated for all tips in all bootstraps and pooled to generate cluster-level diversification rate summary statistics.

Results: Preliminary results reveal that diversification rates differ significantly between the group of clusters marked as concerning by the current public health prioritization protocol and the remaining clusters, marked as less concerning, when using mean (Mann-Whitney, p=0.036) and maximum (p=0.0496) diversification rates, but not median rates (p=0.173). Mean and maximum diversification rates allowed transmission clusters to be ranked such that the top-ranking clusters matched those marked by public health prioritization as concerning in 2018. Further analyses will compare diversification rates to other commonly used measures for prioritization of transmission clusters and will additionally confirm the effectiveness of this approach on annual sequence subsets for the ten years preceding 2019.

Conclusions: By combining phylogenetic clustering with lineage-level diversification rates, we establish a method capable of distinguishing transmission clusters of urgent concern with increased resolution relative to phylogenetic clustering alone, further optimizing the allocation of limited resources by public health agencies.

Epidemiology and Public Health: Epidemiology and Surveillance of HIV Co-infections
Épidémiologie et santé publique : Épidémiologie et surveillance des coinfections au VIH

EPH1.03

Using Population-level Latent Class Analysis to Classify People Living with HCV in British Columbia (BC) for Targeted Program Planning

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I**ntroduction:** Direct-acting antivirals (DAAs) have expanded hepatitis C virus (HCV) treatment access to individuals with comorbidities such as HIV. As of 2018, 5.0% (n=2,689) of people currently living with HCV (plHCV) also live with HIV (plHCV-HIV). HCV affects diverse populations including people who inject drugs (PWID), gay/bisexual men who have sex with men (gbMSM), and immigrants from endemic regions. Assessing patterns of shared characteristics among subpopulations using Latent Class Analysis (LCA) may facilitate targeted program planning.

Methods: The BC Hepatitis Testers Cohort includes all plHCV identified in BC between 1990 to 2015, followed until 2018, with linked data on medical visits, hospitalizations, cancers, prescription drugs, and deaths. LCA grouped all people who had been HCV antibody-diagnosed in the Cohort (n=73,665) by characteristics with demonstrated relationships to HCV treatment uptake (age, gender, ethnicity, sexual identity, coinfections, urbanicity, socioeconomic status, use of injection drugs, liver disease and mental illness among others). Models were fit adding 1-10 classes stepwise. The final model was chosen based on fit statistics, epidemiological meaningfulness, and posterior probability for class assignment. Classes were named by defining characteristics. Among people treated, multinomial logistic regression and LS-means assessed prescribers' specialties.

Results: The best-fitting model had six classes named: 'Younger PWID', 'Older PWID', 'gbMSM', 'Urban socially-deprived baby boomers', 'Rural baby boomers', and 'People of Asian backgrounds', with proportions of plHCV-HIV at 10%, 17%, 7%, 4%, 0%, and 0% respectively. Among people treated with DAA's, the probability (mean, [standard deviation]) of receiving treatment from infectious disease physicians was higher for the three classes with higher proportions of plHCV-HIV (30.9%, [0.013]) and lower for remaining three (20.3%,[0.012]).

Conclusion: LCA identified six classes with distinct characteristics. Observed differences in HCV treatment suggests multiple factors influence treatment prescription. Further analysis of health service utilization patterns related to multivariable patient profiles may inform optimal service layout.

Epidemiology and Public Health: Epidemiology and Surveillance of HIV Co-infections
Épidémiologie et santé publique : Épidémiologie et surveillance des coinfections au VIH

EPH1.04

Incidence of HCV Infection Among gbMSM in British Columbia, Canada: a Population-based Cohort Study

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Aims: Monitoring incidence of HCV among Gay, bisexual, and other men who have sex with men (gbMSM) is critical to achieve hepatitis elimination goals. However, population-based systems to monitor incidence of HCV among gbMSM are lacking. We estimated the incidence of HCV infection among gbMSM through a population based surveillance system in British Columbia.

Methods: This analysis included all gbMSM in the BC Hepatitis Testers Cohort(BC-HTC) who have been tested for HCV at least twice between 1/1/2000 and 31/12/2018, with a first test being negative. Incident HCV infection was defined as a positive anti-HCV, RNA, or genotype test following a negative anti-HCV test. Annual incidence rates for HCV infection from 2000 to 2018 were estimated and Cox proportional hazards models were constructed to identify risk factors for HCV seroconversion.

Results: Among 44,172 eligible gbMSM, 641 HCV seroconversions occurred over 286,253 person-years(PY) of follow-up with an overall incidence rate of 0.22/100PY (95%CI:0.21-0.24). The incidence rate was highest among gbMSM with drug dependence (1.44, 95%CI:1.28-1.61), especially those with history of opioid misuse (2.45, 95%CI:2.07-2.9) and stimulant misuse (1.79, 95%CI:1.53-2.1). Incidence declined from 1.3/100PY in 2000 to 0.078/100PY in 2018. In the multivariable model, younger birth cohorts(1965-1974: adjusted hazard ratio (HR) 7.54, 95%CI:3.1-18.37; ≥1975: HR 13.7, 95%CI:5.64-33.23 vs. <1945), drug dependence (HR: 5.56, 95%CI:4.44-6.98), opioid misuse (HR: 2.08, 95%CI:1.61-2.68), HIV coinfection (HR: 4.38, 95%CI:3.61-5.31), and material deprivation (most privileged vs most deprived: HR: 0.55, 95%CI:0.45-0.68) were associated with HCV seroconversion. In models by HIV status, drug dependence and opioid misuse were not significantly associated with HCV seroconversion risk in people with HIV infection.

Conclusion: Overall incidence rate among gbMSM is low. gbMSM with HIV infection, drug dependence, opioid misuse, and material deprivation are at higher risk of HCV infection, requiring multi-faceted approaches to reduce the risk of HCV infection among gbMSM subgroups.

Epidemiology and Public Health: Epidemiology and Surveillance of HIV Co-infections
Épidémiologie et santé publique : Épidémiologie et surveillance des coinfections au VIH

EPH1.05

Hepatitis C Virus (HCV) Treatment, Injection Practices, and Access to Harm Reduction among HIV-HCV co-infected People who Inject Drugs in Montréal from 2003-2018

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B**ackground:** In Montréal, 86% of people who inject drugs (PWID) living with HIV have been exposed to HCV. Assessing unmet needs in HCV prevention and treatment among key populations is critical to inform local elimination efforts. We aimed to 1) estimate temporal trends in HCV treatment uptake among Montréal HIV-HCV co-infected PWID between 2003-2018; and 2) describe injection practices and coverage of harm reduction programs in this population.

Methods: We used data from the Canadian Co-infection Cohort, a prospective study of HIV-HCV co-infected individuals. We defined three periods of interest based on HCV treatment guidelines: 2003-2010: interferon/ribavirin-based; 2011-2013: first-generation direct acting antivirals (DAAs); 2014-2018: second-generation DAAs. For each period, analyses were restricted to Montréal participants reporting injection drug use (IDU) in the past six months (P6M) at their first visit. We estimated the proportion who initiated HCV treatment and examined reported injection practices (P6M), and access to needle and syringe programs (NSP), opioid agonist therapy (OAT), and supervised injection sites (SIS).

Results: We included 256 participants (82% male, median age of 44 years at baseline). The yearly proportion of HCV treatment uptake increased from 2% (95% confidence interval (CI): 1-2%) in 2003-2010, to 4% (95%CI: 2-6%) in 2011-2013, and 12% (95%CI: 11-13%) in 2014-2018. The proportion reporting IDU in the P6M decreased from 66% to 52% over time. Among these, the proportion reporting sharing needles/syringes reduced two-fold and use of NSP decreased from 90% to 71%, whereas engagement in OAT increased from 2% to 5%. Recent opioid injection, however, increased over time (24%, 39%, and 45% in the three time periods, respectively). SIS became available in 2014-2018 (6% of active PWID).

Conclusions: Recent increases in HCV treatment uptake could support elimination among HIV-HCV co-infected PWID, if sustained. However, harm reduction scale-up is needed to meet HCV elimination targets in Montreal.

Epidemiology and Public Health: Evaluations of Public Health Policies, Programs or Interventions
Épidémiologie et santé publique : Évaluation des programmes, des politiques et des interventions en santé publique

EPH1.06

Is Hepatitis C Elimination Sustainable in Populations with Ongoing Transmission Risk? Modelling Post-elimination Epidemics Among People Who Inject Drugs

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B**ackground:** Multiple countries have established goals for hepatitis C virus (HCV) elimination including reductions in incidence (80%) and mortality (65%) by 2030. Previous studies suggest widely scaling-up direct-acting antivirals, opioid agonist therapy (OAT), and needle and syringe programs (NSP) to attain these targets among people who inject drugs (PWID). However, little is known regarding the public health efforts needed post-elimination in populations with ongoing transmission risks. We aimed to investigate post-elimination HCV transmission dynamics among PWID for various scenarios.

Methods: Using a dynamic model of HCV transmission (including incarceration dynamics) among PWID in Montréal (Canada), calibrated to epidemiological data (2003-2015), we modelled increases in testing and treatment to reach elimination by 2030. Then, during the post-elimination phase, we assessed how long it would take for incidence to rebound to 90% of its 2015 level when a) scaling-down rates of testing (once per three year) and treatment (10/1,000 person-years) and b) concurrently increasing OAT (60%) and NSP (95%) coverage, and reducing post-incarceration HCV acquisition risk. Finally, we compared the number of treatments required to maintain elimination over 2030-2040 to the efforts needed to achieve it over 2020-2030.

Results: With testing and treatment scaled down after 2030, incidence would rebound to 90% of its 2015 level within 31 years (95%CrI:25-37). When combining this scale-down with increasing harm reduction coverage, incidence never rebounds to the 2015 level and would take 25 years (95%CrI:16-36) to reach 50% of pre-elimination levels. Maintaining elimination over 2030-2040 would require 18% of the total number of treatments needed to achieve elimination by 2030.

Conclusions: Despite ongoing transmission risks, HCV incidence rebounds slowly in the post-elimination phase. This is especially true if high-coverage harm reductions interventions are implemented. Overall, our findings suggest that sustaining elimination would require a considerably lower effort than achieving it.

Social Sciences: Criminalization, Law and Policy
Sciences sociales : Criminalisation, droit et politique

SS1.01

The Perils of "Protection": Sex workers' experiences of law enforcement in Ontario

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The passage of the *Protection of Communities and Exploited Persons Act* (PCEPA) in 2014 enshrined sex workers as victims and widened the net of criminal prohibitions against sex work. Because the law frames sex workers as victims, the common misconception is that sex workers are no longer criminalized. However, this law — along with the conflation of sex work with human trafficking — has been used to justify harmful law enforcement intrusions in sex workers' lives.

In 2018, the Canadian HIV/AIDS Legal Network interviewed sex workers and key informants in Ontario about their experiences of law enforcement in the context of their sex work since the PCEPA became law. Sex workers described increasingly pervasive, unsought and disproportionate surveillance from law enforcement, who employ criminal, immigration, human trafficking, municipal and other laws to monitor, interrogate, investigate, harass, detain, ticket, arrest, charge and deport sex workers. This resulted in abuses by law enforcement, including assault, intimidation, threats, harassment, unwarranted searches of their workplaces and belongings, destruction or theft of property, arbitrary or disproportionate application of the law, and retaliation and extortion. Racialized, migrant and trans women bore the heaviest burden of this profiling, yet were routinely positioned outside the reach of assistance in times of actual need. One sweeping commonality was sex workers' experience of law enforcement as a source of repression rather than protection.

To evade and mitigate these harms, sex workers reported changing their ways of working, including by working in unfamiliar and secluded areas, in social isolation, and with unknown risks. This has had wide-ranging, negative impacts on sex workers, including on their health and ability to earn income, highlighting the harmful impact of laws and policies that purport to protect — but instead empower law enforcement to over-police sex workers at considerable cost to their human rights.

Social Sciences: Criminalization, Law and Policy
Sciences sociales : Criminalisation, droit et politique

SS1.02

Recent Developments in Canada's Approach to HIV Criminalization : the Role of the Canadian Coalition to Reform HIV Criminalization in Fostering Change

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In 2016, several people living with HIV (PLWHIV) (including people with lived experience of HIV criminalization), community organizations, lawyers and researchers decided to consolidate their advocacy efforts to end the unjust criminalization of PLWHIV in Canada. The creation of the Canadian Coalition to Reform HIV Criminalization (the "Coalition") has since led to several positive developments in Canada's approach to HIV criminalization.

In November 2017, the Coalition issued its Community Consensus Statement, which calls for specific actions that the governments must take to limit the unjust criminalization of PLWHIV. Due to the diversity of its members and their expertise, the Coalition's input is frequently sought after by elected officials wishing to adress or study the issue of HIV criminalization.

In December 2017, Justice Canada released a report on the criminalization of HIV non-disclosure in Canada, which makes recommendations to limit the criminalization of PLWHIV. In November 2018, the Coalition called upon the federal government to follow through with its commitment. In December 2018, the Attorney General of Canada issued a directive to federal prosecutors, based on the report's findings, limiting the use of the criminal law in cases of HIV non-disclosure.

In April 2019, the Standing Committee on Justice and Human Rights invited members of the Coalition to testify about HIV criminalization. The Committee concluded that Canada's approach is too broad, too punitive, and inconsistent with science. It makes further ecommendations to limit the use of the criminal law against PLWHIV, including its withdrawal from the realm of sexual assault, as well as legislative reform, two things that have long been requested by the community.

The Coalition's actions led to tangible results. While there is still a long way to go, the Coalition's gains reflect the relevance of a unified advocacy strategy which highlights the lived experience of PLWHIV.

Social Sciences: The Health of African, Caribbean and Black Communities
Sciences sociales : La santé des collectivités africaines, caraïbéennes et noires

SS1.03

Criminalization of HIV Non-disclosure: another Mechanism of Social and Judicial Surveillance and Control of Black Women Living with HIV in Canada

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Background: Inherent in the application of sexual assault law that criminalizes HIV non-disclosure are assumptions that non-disclosure is an objectifying assault, and criminalization will protect women and advance gender equality. Women, ART, and the Criminalization of HIV (WATCH) is a community arts-based research study that explored how the criminalization of HIV non-disclosure impacts the lives of women living with HIV within and outside of the criminal justice system.

Methods: As part of 7 Body Mapping workshops that occurred June 2016 to May 2017, a Toronto workshop was held with 8 black women who had immigrated to Canada from African and Caribbean countries. Women were taken through a peer-led, co-facilitated process of creating images on their Body Maps and sharing personal narratives. The Body maps and accompanying narratives underwent visual and narrative analysis grounded in a critical race and feminist theoretical framework.

Results: Visual images and accompanying narratives reinforced how the criminalization of HIV-non-disclosure infiltrates the lives of black women. Women recounted and artfully described how the criminalization of HIV non-disclosure intersects with immigration, healthcare surveillance, and gender based violence in and through their intimate relationships and within the judicial system. Importantly, the role of the self, family, community and religion were sources of strength and resistance, which propelled women to redefine the criminalization of black women living with HIV narrative and to lean into community based cultural support.

Conclusions: Black women living with HIV experience the law that criminalizes HIV non-disclosure as a mechanism of social and judicial surveillance and control. Acts of resistance by black women are often in response to the fear of judicial and intimate partner violence. Advocacy efforts must be grounded in critical race and feminist frameworks that recognize historical and current day racism and gender based violence within Canadian judicial and health care institutions.

Social Sciences: Responding to the Opioid Crisis
Sciences sociales : Réaction à la crise des opioïdes

SS1.04

Not in THIS backyard: HaliFIX OPS strategies for overcoming NIMBYism

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The HaliFIX Overdose Prevention Society is a peer-run coalition of people who use drugs, harm reduction service providers, health professionals, lawyers, students, mothers, police officers, community members, researchers, community advocates and family members who have witnessed and experienced the harms of drug addiction. In September 2019, HaliFIX opened Atlantic Canada's first Overdose Prevention Site in Halifax, Nova Scotia.

As commonly experienced in other cities, HaliFIX was met with some community opposition (commonly coined as "NIMBY" or not in my backyard) by the local business association. But northend Halifax is also the home of African Nova Scotians, many of whom have historical roots in the demolished Africville community and have traumatic memories of environmental racism and marginalization. HaliFIX organizers were confronted with opposition from both stakeholder groups and struggled in particular with the lateral oppression (displaced aggression directed against other marginalized groups rather than adversaries) vocalized by community leaders from the African Nova Scotian community. At the same time, there has been significant support from many within the business community, the African Nova Scotian Community, and the Indigenous community (i.e., the M'ikmaw Native Friendship Centre).

This presentation will highlight the key lessons learned and strategies employed by the executive group of HaliFIX around meaningful community consultation, conflict negotiation, communication and transparency, allyship, intersectionality and confronting the systems of dominance that oppress both people who use drugs and African Nova Scotians (e.g., criminalization of drug use, drug-related violence, police brutality). We will also discuss the comprehensive evaluation framework that has helped to alleviate (unfounded) fears of the undesirable impacts of the OPS on the broader neighbourhood. FInally, we will present evidence of HaliFIX's outcomes, both in terms of responding to the local opioid crisis, but also in terms of community impacts.

Social Sciences: Responding to the Opioid Crisis
Sciences sociales : Réaction à la crise des opioïdes

SS1.05

Lessons Learned from Implementing Injectable Opioid Agonist Treatment in an Innovative Community Based Model

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Dr. Peter AIDS Foundation, Vancouver, BC

Issue: Injectable opioid agonist treatment (iOAT) is a tool in the continuum of care for individuals with opioid use disorder. More specifically, iOAT is an important means to help individuals with severe opioid use disorder who have not benefited from conventional oral opioid agonist treatment for reasons such as persistent cravings or inability to reach a therapeutic dose. While uptake of this intervention is growing in Canada, delivering it using a community model is unique.

Description: In 2019, the Dr. Peter Centre (DPC) launched an iOAT pilot project and integrated this intervention into the wide variety of health care services available to people living with HIV and other health and social challenges (including mental illness, disability, trauma, poverty, food insecurity, and lack of stable housing). Since then, numerous obstacles have arisen which have challenged service delivery. Despite these, the DPC iOAT program has grown and is showing promising results.

The DPC has been tracking the lessons learned from planning and implementing iOAT service in our integrated setting. The lessons learned are separated into categories that each impact delivery of this service. These categories include organizational capacity, iOAT prescribers, staffing resources, financial implications, and drug supply.

Recommendations: This presentation aims to give harm reduction service providers foundational knowledge on the considerations for starting iOAT and will offer insight to providers who have begun exploring delivery of this service. Sharing lessons learned from starting this pilot program at the DPC will encourage scale-up of this promising safe supply service in integrated care settings across various jurisdictions.

In the context of the ongoing overdose epidemic, a critical public health strategy is the provision of a safe drug supply through a service such as iOAT which aims to reduce the risk of overdose and HIV transmission among people who use drugs.

Social Sciences: Criminalization, Law and Policy
Sciences sociales : Criminalisation, droit et politique

SS1.06

Condom Use and HIV Criminalisation in Canada

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According to a Supreme Court of Canada (SCC) decision in 2012, people living with HIV can be criminally prosecuted for not disclosing their status before sex that poses "a realistic possibility of HIV transmission." The decision appeared to leave people open to prosecutions in a range of circumstances and has, in some cases, been interpreted as requiring both condom use and a low viral load in order to avoid prosecution.

Since that decision, it is now (more or less) established that having a suppressed viral load *alone* should preclude criminal liability. However, it remains unsettled in the law whether just using a condom (regardless of viral load) will be enough to preclude liability. A young man's conviction for HIV non-disclosure before sex with a condom is scheduled to be heard by the Court of Appeal for Ontario in February 2020.

In December 2018, the Attorney General of Canada directed federal lawyers to generally not prosecute people who use condoms (regardless of viral load) "because there is likely no realistic possibility of transmission." In June 2019, the House of Commons Standing Committee on Justice and Human Rights also made strong recommendations against prosecution when a condom is used. But provinces are lagging behind in developing sound guidelines for prosecutors that would protect people from prosecution when they use condoms.

According to the 2018 international *Expert consensus statement on the science of HIV in the context of criminal law*, correct use of a condom during sex means HIV transmission is not possible. Criminalizing people who take precautions to protect their partners and pose no to negligible risk of transmission is unfair and discriminatory. It is bad for public health. Ending unjust prosecutions in Canada requires more evidence-based judicial decisions, sound prosecutorial guidelines and *Criminal Code* amendments.

Basic Sciences: HIV Latency and Viral Reservoirs
Sciences fondamentales : Latence du VIH et réservoirs viraux

BS2.01

Characterization of HIV Reservoirs in Multiple Tissues Collected Post-mortem from Two Individuals on Suppressive ART

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B**ackground:** The identification of tissues in which HIV persists during ART is a prerequisite to the development of efficient eradication strategies. Using tissues collected *post-mortem* from two participants on ART who generously gave their body to HIV cure research, we quantified and performed genotypic analysis of infected cells in multiple anatomical sites.

Methods: Participant #1 was enrolled in Ottawa, on ART for 11 years and requested medical assisted death at the age of 67. Participant #2, a 68 years old man from Edmonton, died from B cell lymphoma. A total of 15 tissues including multiple lymph nodes (LNs), gut, liver, spleen, brain and testes were snap frozen in liquid nitrogen. HIV DNA and cell-associated gag RNA were quantified by qPCR. Near-full length HIV sequencing was performed using a modified FLIPS assay.

Results: Participant #1 displayed highest levels of HIV DNA in LNs. HIV transcripts were detected at high levels in LNs and lungs and rarely in other tissues. Proviruses amplified from lungs, colon, rectum, spleen and LNs were all defective. In participants #2, liver and spleen displayed the highest amounts of HIV DNA and HIV transcripts. While most proviruses retrieved from lungs, duodenum, jejunum and LNs were defective, all 5 HIV sequences derived from the spleen were intact. A few identical defective proviruses were found in multiple tissues in both participants.

Conclusion: Although detected in nearly all tissues analyzed, HIV DNA and RNA were more abundant in LNs, spleen, lungs and liver. The majority of the proviruses were defective and some clonally expanded genomes were detected in multiple organs. In one participant, intact proviruses were primarily detected in the spleen. Our study reveals a large diversity in the frequency of infected cells in different tissues, and highlights interindividual differences in reservoir locations during long-term ART.

Basic Sciences: HIV Latency and Viral Reservoirs
Sciences fondamentales : Latence du VIH et réservoirs viraux

BS2.02

HIV is Seeded within Pulmonary DN T-Cells During Acute Infection and Persists During Long-term Effective ART

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I**ntroduction:** The lungs are relatively unexplored reservoirs in the ART era. Double negative (DN) T-cells originate either from the thymus by escaping negative selection, or in the periphery following CD4 downregulation by HIV Nef/Vpu/env. As circulating DN T-cells have been described as cellular HIV reservoirs, we undertook a thorough analysis of pulmonary DN T-cells *versus* blood of ART-treated HIV-infected individuals.

Methods: Bronchoalveolar lavage (BAL) fluid and matched blood were collected from 38 long-term ART-suppressed and 14 uninfected adults, without active respiratory symptoms. T-cell subsets and HIV p24 were characterized by flow cytometry. HIV-DNA levels were measured by ultrasensitive PCR. To examine DN T-cell dynamics in acute *versus* chronic infection, lung, spleen and blood specimens from pNL4.3-ADA-GFPinfected BLT humanized mice (hu-mice) were assessed.

Results: FACS-sorted DN T-cells from BAL harbored HIV-DNA in ART+ adults although HIV-DNA levels were lower in DN *versus* lung CD4 T-cells. Both HIV+ and HIV- adults had greater CD3+CD4-CD8α-CD8β- cell frequencies in BAL *versus* blood, while CD3+CD4-CD8-TCRαβ-TCRγδ- cells were only enriched in HIV+ BAL. Compared to blood, pulmonary DN T-cells in both HIV+ and HIV- groups displayed mostly an CD45RA-CD28+ memory phenotype. However, HIV+ individuals had more activated (HLA-DR+) and exhausted (PD-1+) and, fewer senescent (CD28-CD57+) and recent thymic migrant (CD31+) pulmonary DN T-cells. Similar to humans, DN T-cells were enriched in BAL *versus* blood of HIV+ and HIV- hu-mice. Importantly, p24+ DN T-cell frequencies in lungs were consistently higher than in blood and spleen in both acute and chronic HIV infection and ART suppressed p24+ DN T-cell within the lungs of hu-mice. Like in humans, fewer lung DN T-cells in hu-mice had a recent CD31+ thymic migrant phenotype, suggesting their local expansion within the lungs following HIV infection.

Conclusion: HIV is seeded within pulmonary DN T-cell reservoirs during acute infection and persists even following long-term ART.

Basic Sciences: HIV Latency and Viral Reservoirs
Sciences fondamentales : Latence du VIH et réservoirs viraux

BS2.03

Plasma CXCL13 Correlates with Reservoir Size in Long-term ART-treated People Living With HIV

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B**ackground:** Follicular helper CD4 T-cells represent a major HIV reservoir compartment and contribute to HIV persistence despite antiretroviral therapy (ART). These cells activate germinal centre B-cells, while also secreting the B-cell chemoattractant CXCL13. Plasma levels of CXCL13 are associated with disease progression in people living with HIV (PLWH). Herein, we elucidate the relationship between CXCL13 and reservoir size in PLWH receiving antiretroviral therapy (ART).

Methods: Blood was collected from PLWH with early (EHI) (n=23) or chronic phase (CHI) (n=39) of infection. CHI was further subdivided into ART-naïve (CHI ART-) (n=8) and those receiving ART for a median of 15 years (CHI ART+) (n=31). CD4 T-cell count, CD4/CD8 ratio, HIV plasma viral load (VL) and total IgG were clinically assessed. CXCL13 and the pro-inflammatory markers IL-1β, IL-6, IL-8 and TNF-α were measured in plasma by ELISA. Integrated HIV DNA was determined through nested qPCR in sorted CD4 T-cells.

Results: Plasma CXCL13 levels negatively correlated with CD4 T-cell count ($r=-0.42$, $p=0.003$) and CD4/CD8 ratio ($r=-0.47$, $p=0.006$), and positively correlated with total IgG ($r=0.47$, $p=0.03$) and TNF-α ($r=0.29$, $p=0.04$) in all participants. In ART-naïve participants, CXCL13 positively correlated with VL ($r=0.56$, $p<0.001$). Furthermore, CXCL13 was associated with integrated HIV DNA levels in CD4 T-cells in CHI ART+ ($r=0.44$, $p=0.01$) but not in EHI ($r=0.27$, $p=0.2$) nor CHI ART- ($r=0.52$, $p=0.2$). Neither total IgG, IL-1β, IL-6, IL-8 nor TNF-α were associated with integrated HIV DNA in any group.

Conclusion: We showed for the first time that conversely to B-cell activation or pro-inflammatory markers, plasma levels of CXCL13 were associated with integrated HIV DNA in PLWH on long-term ART. This suggests that CXCL13 may play a role in the maintenance of HIV reservoirs. Future studies on the role of CXCL13 in HIV persistence may pave the way towards interventions combatting this obstacle to a cure.

Basic Sciences: HIV Latency and Viral Reservoirs
Sciences fondamentales : Latence du VIH et réservoirs viraux

BS2.04

Genetic Diversity of HIV Proviruses Persisting During cART in Former Viremic Controllers

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B**ackground:** The HIV reservoir is the main barrier to cure. Analysis of within-host proviral diversity during suppressive antiretroviral therapy (cART) in context of pre-cART plasma HIV RNA evolution provides insight into reservoir dynamics, but individuals who spontaneously suppress viremia without therapy remain underrepresented in such studies. We characterized blood proviral diversity during suppressive cART among former viremic controllers, and interpret these data in the context of longitudinal pre-cART plasma HIV diversity.

Methods: Four viremic controllers who initiated cART during chronic infection, three of whom broadly maintained pVL < ~2000 pre-cART and one who lost viremic control prior to cART, were studied. A mean of 13 (range 10-17) pre-therapy plasma samples per participant, spanning 46 (range 28-71) months were studied, in addition to PBMCs sampled a mean of 1.5 years after cART. Single-template HIV RNA (plasma) or proviral (PBMCs) sequencing was performed for a subgenomic region (*nef*), where RNA extracts were DNAse-treated prior to amplification. Maximum-Likelihood phylogenies were inferred under a general time-reversible substitution model (PhyMLv3.0).

Results: A total of 453 plasma HIV RNA sequences (mean 113; range 57-190 per participant) and 98 intact, non-hypermutated, PBMC-derived proviral sequences (mean 25, range 20-28 per participant) were collected. Of these, 53.6% (range 36.9-80.7% per participant) plasma and 68.4% (37.5-92.3%) proviral sequences were unique. For three participants, proviral sequences sampled on-cART co-mingled phylogenetically with those sampled from pre-cART plasma, but proviral sequences from the participant who lost viremic control almost exclusively clustered with the diverse “breakthrough” plasma sequences sampled pre-cART. Overall, average tip-to-tip distances separating unique on-cART proviral sequences were higher than those separating all unique longitudinally-sampled pre-cART plasma sequences (overall mean 0.033 versus 0.023 nucleotide substitutions/site; paired t-test p=0.052).

Conclusion: Within-host proviral diversity on cART is substantial even in individuals who naturally control viremia without therapy. HIV eradication strategies must overcome this diversity.

BS2.05

Hiv-1 Nef Enhances Viral Reactivation from Latency by Stimulating TNF-α Expression

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B**ackground:** A better understanding of host and viral factors that influence mechanisms of HIV latency and re-activation will be critical to improve efforts to eradicate infection. HIV Nef is an abundant early viral protein that modulates T cell signaling events, but its role during viral reactivation from latency remains unclear.

Methods: We established a latent HIV-infected human CEM T cell clone harbouring a single integrated provirus encoding functional Nef (C-Lat-Nef) and a corresponding clone in which *nef* was knocked out using CRISPR/Cas9 (C-Lat-Nef-KO). Viral reactivation (Gag-p24) and tumour necrosis factor alpha (TNF-α) expression was measured by flow cytometry following stimulation of cell with a latency reversing agent (LRA) (prostratin or panobinistat).

Results: Following treatment with prostratin, we observed higher levels of Gag-p24 expression (% of cells $p24^+$) in C-Lat-Nef compared to C-Lat-Nef-KO cells ($P<0.001$). Similar results were found using panobinostat and other C-Lat clones. Interestingly, we also observed higher levels of intracellular TNF-α following LRA stimulation in C-Lat-Nef compared to C-Lat-Nef-KO ($P<0.0001$). Addition of a TNF-α-blocking antibody to LRA-stimulated cultures of C-Lat-Nef cells markedly decreased Gag-p24 expression. Treatment of C-Lat-Nef cells with TAPI-2, an inhibitor of pro-TNF-α converting enzyme ADAM17, similarly diminished Gag-p24 expression ($P<0.001$). Finally, we observed that addition of exosomes containing Nef was sufficient to trigger TNF-α expression and viral reactivation in C-Lat-Nef-KO cells.

Conclusion: Our results demonstrate that Nef enhances viral reactivation from latency through a mechanism mediated by TNF-α. These observations are consistent with Nef's ability to promote the formation of ADAM17-containing exosomes that may stimulate TNF-α-mediated signaling pathways upon binding to or ingestion by target cells. This work highlights a novel role for Nef in modulating latent HIV infection.

Multivariate analysis of predictors of NAFLD in lean HIV mono-infected patients.

Variable	**OR** (95% CI)	**aOR** (95% CI)	**P-value**
Age (per 10 years)	1.34 (1.15-1.57)	1.29 (1.04-1.59)	0.020
Male sex (yes vs. no)	1.34 (0.92-1.95)	0.99 (0.64-1.54)	0.970
Black ethnicity (yes vs. no)	0.58 (0.30-1.13)	1.18 (0.55-2.55)	0.670
Hypertension (yes vs. no)	1.63 (1.14-2.35)	1.10 (0.72-1.68)	0.654
Triglycerides (mmol/L)	1.56 (1.32-1.85)	1.34 (1.11-1.63)	0.002
HDL cholesterol (mmol/L)	0.32 (0.20-0.51)	0.45 (0.26-0.77)	0.004
Time since HIV diagnosis (per 10 years)	1.20 (1.03-1.40)	0.99 (0.80-1.22)	0.913
CD4 cell count (per 100 cell/mL)	1.05 (1.00-1.10)	1.05 (1.00-1.11)	0.056
Nadir CD4 <200 cell/uL (yes vs. no)	1.44 (1.04-2.00)	1.40 (0.98-2.00)	0.068
ALT (per 10 IU/L)	1.13 (1.04-1.22)	1.15 (1.05-1.26)	0.002

Odds ratios (OR) and 95% confidence interval are presented for each variable in the unadjusted and adjusted analysis. Abbreviations: ALT, alanine aminotrasnferase; aOR, adjusted odds ratio; CIs, confidence intervals; HDL, high-density lipoprotein; HIV, human immunodeficiency virus.

Basic Sciences: HIV Latency and Viral Reservoirs
Sciences fondamentales : Latence du VIH et réservoirs viraux

BS2.06

Staphylococcus aureus and Candida albicans Facilitate HIV Reservoir Establishment in CD4+ T-Cells by Promoting RALDH Activity in Dendritic Cells

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Viral reservoirs (VR) persist in HIV-infected individuals despite viral-suppressive antiretroviral therapy (ART). Recent advances established a link between microbial dysbiosis and HIV pathogenesis, thus prompting the hypothesis that HIV reservoirs persist in T-cells recognizing predominant components of the microbiota. *Staphylococcus aureus (SA)* and *Candida albicans (CA)* establish opportunistic infections in people living with HIV (PLWH). Also, SA and CA promote differentiation of Th17 cells, a $CD4^+$T-cells subset highly permissive to integrative HIV infection. Thus, we investigated HIV permissiveness and VR persistence during ART in *SA/CA*-reactive/specific CD4+T-cells upon immunological synapse formation with antigen-loaded monocyte-derived DC (MDDC, obtained by culture with GM-CSF/IL-4), SEB and CMV-pp65 were used as controls for polyclonal and Th1 activation, respectively. Antigen-loaded MDDC were co-cultured with autologous CD4+T-cells of HIV-uninfected participants and ART-treated PLWH. T-cell proliferation was measured by CFSE dilution assay. A MDDC-based viral outgrowth assay (MDDC-VOA) was performed with MDDC and CD4+T-cells of ART-treated PLWH. HIV replication was measured by ELISA/FACS. RALDH (a retinoic acid synthesizing enzyme) activity was measured by FACS.

MDDC loaded with *SA/CA versus* SEB/CMV exhibited a superior ability to transmit HIV to CD4+T-cells. Efficient HIV *trans*-infection coincided with high RALDH activity and CCR5 expression on *SA/CA*-reactive/specific CD4+T-cells. Blockade of the retinoic acid pathway decreased CCR5/integrin β7 expression and diminished MDDC-mediated HIV *trans*-infection. A TLR ligand screening confirmed the role of TLR2 in RALDH activation. Finally, exposure to zymosan, a TLR2-ligand, promoted VR reactivation in MDDC-VOA performed with cells of ART-treated PLWH. Inhibition of the retinoic acid pathway reduced zymozan-induced reservoir reactivation.

In conclusion, our results identified CD4+T-cells specific to *SA and CA* as being highly permissive to HIV infection *in vitro* and carrying VR in ART-treated PLWH. . Also, we identified the TLR2-mediated RALDH activity as an important metabolic pathway hijacked by HIV for VR establishment/reactivation in microbiota-driven Th17 cells.

Basic Sciences: HIV Latency and Viral Reservoirs
Sciences fondamentales : Latence du VIH et réservoirs viraux

BS2.07

Persistent HIV Reservoir Suppression by (-)-Hopeaphenol, a Plant-Derived Stilbenoid

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B**ackground:** While ART durably suppresses HIV replication, virus persists within cellular reservoirs. One experimental approach toward inactivating HIV reservoirs ("Block-and-Lock") involves reinforcing long-term and durable proviral latency, even in the presence of subsequent activation and/or latency-reversing stimuli. Here we identify and characterize (-)-hopeaphenol, a resveratrol tetramer, as a candidate Block-and-Lock agent.

Methods: 527 pure compounds from Compounds Australia were screened for ability to inhibit PMA-induced latency reversal in J-Lat cells containing an HIV-GFP provirus. Hopeaphenol (> 99% purity), the most active hit, was further assessed for antiviral activities in both CEM-GXR cells, which contain an LTR-driven GFP reporter, and PBMC. Ability of hopeaphenol to suppress latency reversal (inclusive of periods after wash-out) was assessed in J-Lat cells. Mechanisms of action were investigated via *in vitro* reporter constructs and enzyme inhibition.

Results: Hopeaphenol inhibited HIV replication with dose-dependence in infected CEM-GXR cells and PBMC (EC_{50}s = 3.3 and 1.6 µM, respectively) without concomitant cytotoxicity. It also inhibited latency reversal induced by PMA, panobinostat, or TNFα in J-Lat cells (EC_{50}s = 0.1 – 1 µM). Hopeaphenol blocked both NF-κB-dependent reporter expression and CDK9 enzymatic activity (respective IC_{50}s = 9.4 and 0.2 µM). Following 24 h pre-treatment with hopeaphenol and 24 h compound wash-out and resting, J-Lat cells remained refractory to latency-reversal induced by PMA, panobinostat, or TNFα (EC_{50}s = 2.1 – 3.5 µM). Finally, cells pre-treated with 10 µM hopeaphenol remained completely refractory to latency-reversal for up to 3 days post-washout.

Conclusion: We identify (-)-hopeaphenol as a potent HIV inhibitor with potential "Block-and-Lock" activity that may support long-term, ART-free HIV remission strategies.

Basic Sciences: HIV Latency and Viral Reservoirs
Sciences fondamentales : Latence du VIH et réservoirs viraux

BS2.08

Multiplexed RNA Flow Cytometric Fish Allows Single-cell Viral Transcriptional Profiling of Reactivated Translation-Incompetent HIV Reservoirs

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Reactivation is necessary to make viral reservoirs (VR) recognizable by the immune system. However, VR are heterogeneous in their potential to progress from latent infection to viral transcription, translation, and productive infection.A better insight into this diversity is key to achieve a cure, but VR studies at the single-cell level in primary samples are challenging.

We developed a multiplexed RNA flow cytometric fluorescent *in situ* hybridization (RNAflow-FISH) assay for concurrent detection of three viral RNAs (vRNA), p24 protein and phenotyping. We examined VR transcription and p24 translation induced by PMA/Ionomycin (P/I), HDAC inhibitors (Panobinostat; HDACi), and PKC agonists (PEP005; PKCa) on CD4-T cells from ART-suppressed people (ART). Untreated viremic (UNT) and uninfected (UD) donors represented positive and negative controls.

This versatile assay allows sensitive (down to a single vRNA+ cell / 10^6 CD4 T cell) and specific (false-positive rate: <4/vRNA+ / 10^6 in UD) single-cell analysis of VR upon LRA stimulation. In ART, median vRNA+ VR frequencies induced per million CD4 were 51 (P/I), 22 (PEP005) and 15 (Panobinostat). The proportions of p24-producing cells upon stimulation (6% P/I, 11% PEP005 and 4% Panobinostat) were low compared to UNT (74%). In contrast to vRNA+p24+ cells, LRA-treated vRNA+p24- ART cells expressed heterogeneous levels of HIV *gag* and *nef* transcripts. LRA classes elicited distinct reactivation patterns, with PKCa inducing equivalent proportions of VR expressing *gag* or *nef* alone, or both genes, and HDACi inducing mostly *gag* vRNA (84% of VR).

We revealed inducible VRs larger than previous estimates in primary clinical samples. Dissociated expression of structural and regulatory genes was frequent, and differences observed between LRA classes. Irrespective of the LRA, a minority of the VR produced p24, a target for CD8-T cells. These findings have implications for both 'shock' and 'kill' interventions. Multiplexed RNAflow-FISH as a relevant option for monitoring clinical trials.

Clinical Sciences: HIV and Aging and Comorbidities (including CVD, Osteoporosis, Neurocognitive Effects)
Sciences cliniques : Le VIH, le vieillissement et les comorbidités

CS2.01

Successful Aging with HIV: Who and How?

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B**ackground:** Much attention is paid to the negative aspects of aging with HIV. Less attention is paid to those doing well, yet much could be learned from those aging successfully.

Objective: The purpose of this study is to estimate the extent to which people aging with HIV met criteria for successful aging and maintained this status over time. A second objective was to identify factors that placed people at promise for successful aging.

Methods: Participants were members of the Positive Brain Health Now (BHN) cohort which recruited from five Canadian sites (2014-2016) with prospective follow-up over 27 months. People ≥50 were classified as aging successfully if they were at or above norms on 7 or 8 of 8 health-related quality of life domains from the RAND-36. Promise factors covered domains of socio-demographic, HIV, co-morbidity, life-style, resilience, and the environment. Group-based Trajectory Analysis, logistic regression and regression tree analysis, a form of machine learning, were applied.

Results: Of the 536 people over the age of 50 at study entry, 77 (14.4%) met criteria for successful aging at entry and over time. In a multivariate analysis using data at study entry, self-reported cognitive ability, resilience, and quality of the environment were associated with greater odds of successful aging (odds ratios per standard deviation difference: 2.6 [95%CI: 2.48 - 2.81]; 3.9 [95%CI: 3.22 – 4.75]; 3.5 [95%CI: 1.95 – 6.28], respectively) and predicted this status with a high degree of certainty (c= 0.897). Of these, the resilience factors of confidence in managing symptoms, meaning in life, and plans/goals for future, and the environmental factors, feeling safe and having adequate money and housing, were the most important for distinguishing the successful agers.

Conclusion: The results indicate the important role that cognition, resilience, and social determinants have in contributing to successful aging.

Clinical Sciences: HIV and Aging and Comorbidities (including CVD, Osteoporosis, Neurocognitive Effects)
Sciences cliniques : Le VIH, le vieillissement et les comorbidités

CS2.02

Metformin Decreases Weight and Inflammation in Non-Diabetic People Living with HIV: Link with Microbiota Composition

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B**ackground:** People living with HIV (PLWH) on antiretroviral therapy (ART) have increased risks of inflammatory comorbidities associated with changes in gut microbiota. Metformin, an anti-diabetic drug, has been shown to decrease inflammation by interacting with the gut microbiota in diabetic and non-diabetic people. Herein, we evaluated the effect of metformin on inflammation and gut microbiota composition in PLWH on ART (LILAC CIHR/CTN pilot study).

Methods: We recruited 22 non-diabetic (HbA1c <6%) PLWH on ART with a viral load <50 copies/ml for more than 3 years and a CD4/CD8 ratio ≤0.7 to select participants with higher risk of inflammation. Each participant received 12 weeks of metformin. Blood and stool were collected at baseline (V1), after 12 weeks of metformin (V2), and 12 weeks after metformin discontinuation (V3). The inflammation marker soluble CD14 (sCD14) was measured in plasma by ELISA. The 16S rRNA gene from stool-extracted DNA was sequenced to analyze bacterial composition. Butyrate was measured in serum by liquid-chromatography and mass spectrometry.

Results: Metformin use was safe, with no reported serious adverse events. Interestingly, participants lost a median of 2.5 kg after metformin treatment and returned to their baseline weight at V3. Plasma sCD14 levels decreased at V3 compared to V1. We observed a significant increase of *Escherichia/Shigella* and *Lachnoclostridium* and a decrease of *Collinsella* abundance in stool at V2 compared to V1. The abundance of *Lachnospiraceae* was also increased at V3. Butyrate, an anti-inflammatory short-chain fatty acid produced by the Lachnospira bacteria family, was also increased at V3.

Conclusion: A 12-week metformin therapy in non-diabetic PLWH on ART was safe and decreased weight as well as some markers of inflammation along with an enrichment of butyrate-producing bacteria seen in stool. Results from this pilot study suggest that a longer metformin therapy in PLWH may decrease risk of inflammatory co-morbidities.

Clinical Sciences: HIV and Aging and Comorbidities (including CVD, Osteoporosis, Neurocognitive Effects)
Sciences cliniques : Le VIH, le vieillissement et les comorbidités

CS2.03

Pilot Randomized Controlled Trial to Determine the Feasibility and Acceptability of Group Therapy for People Aging with HIV Facing Cognitive Challenges

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B**ackground:** Cognitive impairment is an important comorbidity for people aging with HIV, yet we lack non-medical techniques to address the associated anxiety and stress. Combination psychosocial interventions may have better outcomes than single technique approaches. Mindfulness-Based Stress Reduction (MBSR) and tablet-based Brain Training Activities (BTA) are promising techniques. Using community-based participatory research we sought to determine the feasibility and acceptability of group therapy for HIV, aging, and cognition.

Methods: A pilot, parallel design, two-arm RCT recruited from a Toronto neurobehavioural research unit. Eligibility criteria included: diagnoses with the mild form of HIV-associated neurocognitive disorder (HAND), age ≥ 40 years, HIV-positive for 5+ years, and English fluency. Randomization was 1:1 concealed allocation to Cognitive Remediation Group Therapy (*Experimental;* combination of BTA and MBSR) or Mutual Aid Group Therapy (*Control*). Primary outcomes were feasibility, measured by recruitment and completion, and acceptability, determined by satisfaction questionnaire. The secondary outcomes were intervention fidelity, anxiety, stress, coping, and use of intervention activities.

Results: From April-September 2018, we attempted contact with 40 eligible participants of whom 15 replied, 12 recruited and 10 completed the study. At post-intervention, acceptability was 90% in the novel and 85% in the control arm. Assessors confirmed intervention delivery with satisfactory fidelity, with no missing components or significant deviations. Anxiety decreased for all in the novel arm and half of the control. Stress decreased and coping increased for half in both arms. All participants increased and sustained BTA use and half with mindfulness activities.

Conclusion: Although the combination of BTA and MBSR proved equal or slightly better to mutual aid therapy on all outcomes, recruitment of people with a formal HAND diagnosis from a single site was challenging. We recommend that future exploration of these techniques be broadened to those aging with HIV with cognitive challenges regardless of a formal HAND diagnosis.

Clinical Sciences: HIV and Aging and Comorbidities (including CVD, Osteoporosis, Neurocognitive Effects)
Sciences cliniques : Le VIH, le vieillissement et les comorbidités

CS2.04

Classifying Frailty in People Living with HIV: Co-Morbidity vs. HIV Factors

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Mcgill University, Montreal, QC

B**ackground:** Frailty is considered a consequence of an accumulation of health deficits. For people with HIV, frailty can arise from HIV itself and/or co-morbidities but these contributions have yet to be untangled.

Objective: The purpose of this study is to estimate the extent to which co-morbidity and HIV-related factors explain the presence of frailty criteria.

Methods: Data came from the Positive Brain Health Now (BHN) cohort involving 856 persons living with HIV recruited (2014-2016) from five clinics in Canada. 845 people had complete data to complete Fried's Phenotype criteria (≥3/5), operationalized using self-reported items capturing gait speed, grip strength, exhaustion, physical activity, and BMI (<21 kg/m^2). Co-morbidities were collected directly from the HIV clinic charts and confirmed with each participant. They were hypertension, cancer, arthritis, osteoporosis, stomach ulcer, thyroid, myocardial infarction, angina, diabetes, and kidney, lung, liver, peripheral vascular diseases.

Results: 88 of the 845 people (10.4%) were classified as frail: (68/88;77%) with co-morbidity and 20 (23%) without and these two groups differed. Frail without co-morbidity, even though younger by six years, were more likely to have HIV onset in the pre-HAART era (55.0% vs. 36.8%) and to have experienced a greater immune deficiency (nadir CD4 count ≤200: 73.7% vs. 50%). In the group without co-morbidity, frailty was manifested most often by limitations in walking even short distances, a proxy for slowness in gait speed, and a marker of sarcopenia.

Discussion: Two groups of people emerged from this analysis: (i) those who met the criteria for frailty because of co-morbidity affecting hand strength, mobility and fatigue; and (ii) those who met criteria without disabling co-morbidities but with indicators of greater immune deficiency. This study supports that for some people with HIV, frailty results from the condition itself and is not a secondary effect of co-morbidity.

Clinical Sciences: HIV and Aging and Comorbidities (including CVD, Osteoporosis, Neurocognitive Effects)
Sciences cliniques : Le VIH, le vieillissement et les comorbidités

CS2.05

Prevalence, Predictors and Evolution of Lean Non-alcoholic Fatty Liver Disease in HIV Mono-infected Patients

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Objective: The burden of NAFLD is growing in people living with HIV. NAFLD is usually associated with obesity, however it can occur in normoweight (lean) patients. We aimed to investigate prevalence, predictors and evolution of lean NAFLD in HIV-infected patients.

Design/Methods*:* We included HIV mono-infected patients from three prospective cohorts. NAFLD was diagnosed by transient elastography(TE) and defined as controlled attenuation parameter ≥248 dB/m, in absence of alcohol abuse. Lean NAFLD was defined when BMI<25 kg/m^2. Fibrosis progression was defined as development of significant liver fibrosis (TE≥7.1 kPa), or transition to cirrhosis (TE≥13 kPa) for those with significant liver fibrosis at baseline.

Results: 1511 patients were included, of whom 45% were lean. Prevalence of lean NAFLD was 13.9%. NAFLD affected 24% lean vs. 59% overweight patients(p<0.001). After adjusting for sex, ethnicity, hypertension, CD4 cell count, nadir CD4 cell count and time since HIV infection, predictors of NAFLD in lean patients were age (adjusted OR[aOR] 1.29, 95% confidence interval[CI] 1.04-1.59), high triglycerides (aOR 1.34, 95% CI 1.11-1.63) and elevated ALT (aOR 1.15, 95% CI 1.05-1.26), while high HDL was protective (aOR 0.45, 95% CI 0.26-0.77). 142 patients with NAFLD were followed for a median of 26 months(interquartile range 6-54). Incidence rate of fibrosis progression was 24.5 per 100 persons-year (PY)(95% CI, 11.0-54.5) vs. 17.6 per 100 PY(95% CI, 12.5-24.9) in lean vs. overweight/obese patients(p=0.438).

Conclusion: NAFLD affects one in four lean HIV mono-infected patients. Investigations for NAFLD should be proposed in older patients with dyslipidemia and elevated ALT even if normoweight.

Clinical Sciences: HIV and Aging and Comorbidities (including CVD, Osteoporosis, Neurocognitive Effects)
Sciences cliniques : Le VIH, le vieillissement et les comorbidités

CS2.06

Incidence of Diabetes Mellitus Among People Living with HIV Compared with HIV Negative Individuals in British Columbia Between 2001-2013

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B**ackground:** Due to improvements in ART and increased life expectancy, people living with HIV (PLHIV) are increasingly at risk of developing comorbidities such as Diabetes Mellitus (DM). While DM is associated with elevated mortality and morbidity worldwide, there is limited understanding of DM-related risks among PLHIV. This study examines the incidence rate of DM among PLHIV compared to their HIV-negative counterparts in British Columbia (BC) between 2001-2013.

Methods: We used data from the Comparative Outcomes and Service Utilization Trends (COAST) Study, a population-based cohort including longitudinal clinical data linked with administrative health and demographic data in BC. We included all PLHIV who were ARV naïve at COAST baseline, and a comparison sample including 1:5 age-sex-matched HIV-negative individuals who were assigned the same baseline as their matched PLHIV. All participants had ≥5 years of follow-up to baseline, and ≥1 year post baseline. Cases of DM were identified using BC Ministry of Health's published case definitions applied to hospitalization, physician billing and drug dispensation datasets. Incident cases of DM were identified using a 5-year run-in period. We estimated the incidence rate ratio (IRR) per 1000 person-years (PYs) using a Poisson regression model adjusted for key confounders, and we assessed trends in incidence rates of DM, stratified by sex, using Kendall Trend Tests.

Results: Among the 2,792 PLHIV and 13,869 people without HIV included in our study, 129 PLHIV and 636 matched HIV-negative individuals had incident cases of DM between 2001-2013. The overall IRR per 1000 PYs was 1.09 (95% confidence interval: 0.88, 1.35). There was no significant trend of DM throughout the study period. Similarly, sex-stratified trend tests suggested that DM incidence rates remained mostly stable in the two comparison samples between 2001-2013.

Conclusion: DM incidence was similar among PLHIV when compared to their age-sex matched HIV-negative counterparts in BC between 2001-2013.

Clinical Sciences: HIV and Aging and Comorbidities (including CVD, Osteoporosis, Neurocognitive Effects)
Sciences cliniques : Le VIH, le vieillissement et les comorbidités

CS2.07

Examining the Utility of the HIV Disability Questionnaire (HDQ) in Clinical Practice: Perspectives of Adults Aging with HIV and Health Care Providers

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Objectives: The HIV Disability Questionnaire (HDQ) is a 69-item patient-reported outcome measure developed to describe the presence, severity, and episodic multi-dimensional nature of disability. Our aim was to examine the utility of the HDQ in clinical practice from the perspectives of people living with HIV (PLWH) and health care providers (HCPs).

Methods: We conducted a descriptive qualitative study. We recruited PLWH accessing a day health program and HCPs working in HIV care to participate in an interview asking about experiences completing (PLWH) or administering (HCPs) the HDQ, and perspectives on its utility in clinical practice. We asked PLWH to return for a focus group where we asked further questions about experiences completing the HDQ, its perceived value for use in clinical practice, timing of administration, interpretability, and recommendations for a short-form version. Interviews and focus groups were audio-recorded and transcribed verbatim. Data were analyzed using conventional content analysis.

Results: Fifteen PLWH and five HCPs participated in an interview, of which 10 PLWH returned for one of two focus group discussions (six men; four women; median age: 61 years; median number of comorbidities: seven). Participants felt the HDQ possesses value for assessing disability (and changes of disability) in clinical practice, facilitates communication between patients and providers, guides referrals to services, and identifies areas to target treatment interventions. Strengths included HDQ comprehensiveness, domain relevance, and item importance, whereas challenges included length, occasional assistance required to complete, and concerns of 'disability' as a potential label when living with a chronic condition. HCPs commented on the importance of score interpretability to guide treatment. Participants recommended shortening the questionnaire, however item importance varied among participants.

Conclusions: The HDQ possesses clinical utility from the perspective of PLWH and HCPs. Next steps include developing a short-form version to enhance feasibility for use in clinical practice.

Epidemiology and Public Health: Interdisciplinary Epidemiology (Biological, Behavioural and Social) of HIV infection, including structural, social and individual determinants

Épidémiologie et santé publique : Épidémiologie interdisciplinaire (biologique, comportementale et sociale) de l'infection au VIH et déterminants structurels, sociaux et individuels

EPH2.01

Association Between Lifestyle Factors and Osteoporosis/Lipodystrophy Among the PLHIV : a Cross-sectional Study of the Canadian HIV and Aging Cohort Study

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Background. People living with HIV (PLWH) are at higher risk for osteoporosis and lipodystrophy. Few studies have explored the association between modifiable lifestyle factors and osteoporosis/lipodystrophy risk in the PLWH population.

Objectives: . Our primary objective was to evaluate the association between osteoporosis, lipodystrophy, and different lifestyle risk factors among PLWH.

Methods: . All participants in the Canadian HIV and Aging Cohort Study (CHACS) with available data on bone mineral density (measured by dual-energy X-ray absorptiometry scans (DXA)) were included in this study. Lifestyle factors of interest were: annual income, education level, alcohol intake, tobacco use, illicit drug use and physical exercise. Covariates included full antiretroviral medication history, medical comorbidities, co-infections, viral load, nadir CD4+ and baseline CD4+ count. Osteoporosis was defined by a T-score of -2.5 or lower. Lipodystrophy was assessed on whole body DXA and defined as a fat mass ratio (the ratio between trunk and lower limbs fat mass) greater than 1.33 for women and 1.96 for men. Analyses were done using logistic regressions.

Results. We included 547 PLWH (median age 55 years, 88% males) and 97 HIV-uninfected controls (median age 57 years, 64% males). Osteoporosis was present in 13% of PLWH and 6% of controls (OR 2.21, 95%CI [0.96 – 6.06]). Lipodystrophy was present in 138 (25%) of the 481 PLWH with available measurements of fat mass ratio. None of the lifestyle factors studied were associated with osteoporosis or lipodystrophy. However, covariates associated with an increased risk of osteoporosis were increasing age, lower body mass index and hepatitis C coinfection. Covariates associated with an increased risk of lipodystrophy were older age, hypertension, longer antiretroviral duration, and longer exposure to nucleosidic reverse transcriptase inhibitors (NRTIs) and integrase strand inhibitors (INSTIs).

Conclusion: . No association was found between any of the lifestyle factors of interest and osteoporosis or lipodystrophy.

Epidemiology and Public Health: Interdisciplinary Epidemiology (Biological, Behavioural and Social) of HIV infection, including structural, social and individual determinants

Épidémiologie et santé publique : Épidémiologie interdisciplinaire (biologique, comportementale et sociale) de l'infection au VIH et déterminants structurels, sociaux et individuels

EPH2.02

Depression is Associated with Bacterial Sexually Transmitted Infections (STIs) Among Gay, Bisexual, and Other Men Who Have Sex with Men (gbMSM)

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B**ackground:** Depression is consistently associated with both stimulant use and HIV risk behaviour among gbMSM. However, there is a lack of data on how depression may be associated with outcomes related to bacterial STIs among gbMSM.

Methods: We examined the associations of depression and stimulants with recent syphilis, gonorrhea, or chlamydia diagnosis. We recruited 2449 sexually-active gbMSM via respondent-driven sampling in Toronto, Vancouver, and Montreal. Participants completed questionnaires in French or English and nurse-assisted HIV and STI testing. We fit a series of structural mediation models of the associations between depression, any stimulant use (SU: e.g., crystal methamphetamine, cocaine) in the last 6 months, condomless anal sex (CAS) in the last 6 months, and bacterial STIs diagnosed at the study visit. We estimated the indirect path from depression to bacterial STIs, testing a path from depression to SU to CAS to STI diagnosis. For HIV-negative gbMSM, we also examined CAS while using PrEP. The structural mediation models were adjusted for age, ethnicity, income, city and recruitment related clustering, and further stratified by participant HIV-status.

Results: In the full sample (mean age:36.8; 71%White), the models fit the data well [root mean-square-error approximation for each model<.05, 90%CI(.00-.07)]. The model for HIV-negative participants demonstrated positive effects from depression to SU (β=.09; p<.01), from SU to CAS (β=.37; p<.001), and from CAS to STI (β=.41; p<.001). An identical pattern was found when examining CAS for HIV-negative men using PrEP. Among HIV-positive participants, the path from depression to SU was non- significant (β=.08; p=0.26), but the path from depression to CAS was significant (β=.20; p=.03).

Discussion: Depression was correlated with confirmed diagnoses of bacterial STIs, partially because depression was associated with stimulant use, which, in turn, was associated with CAS. Addressing determinants of and treating depression could be associated with reduced STI incidence among gbMSM.

Epidemiology and Public Health: Interdisciplinary Epidemiology (Biological, Behavioural and Social) of HIV infection, including structural, social and individual determinants

Épidémiologie et santé publique : Épidémiologie interdisciplinaire (biologique, comportementale et sociale) de l'infection au VIH et déterminants structurels, sociaux et individuels

EPH2.03

Exploring Associations between Sex Work and Social and Health Outcomes among Women Living with HIV in the Canadian HIV Women's Sexual and Reproductive Health Cohort Study

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B**ackground:** Globally, sex workers experience social and health inequities due to contexts of stigma and criminalization. This may be amplified for sex working women living with HIV (WLWH), but little is known about the wellbeing of sex working WLWH across Canada. We aimed to explore social and health outcomes associated with sex work involvement ever, and in the past 6-months, among WLWH.

Methods: We conducted a community-based study with WLWH in Ontario, British Columbia and Quebec. We conducted bivariate analyses to examine associations between any/recent sex work and: socio-demographic, health (CD4 count, viral load, ART adherence, physical health [SF-12], depression, PTSD, alcohol/drug use), and social (incarceration, violence, stigma [HIV-related, racial, gender]) factors. Socio-demographic factors associated with sex work (e.g., age, sexual minority identity, food insecurity) were covariates in multivariable linear/logistic regression models to examine associations between any or recent sex work with health and social outcomes.

Findings: Of 664 respondents, one-third (37.1%; n=247) reported a sex work history and 12.3% (n=82) reported past 6-month sex work. Sex work history was associated with lower CD4 count (AOR=0.60, 95%CI: 0.42-0.87), poorer physical health (β= -0.12, *p*=0.002), clinical depression (AOR=1.85, 95%CI: 1.31-2.61), binge drinking (AOR=1.69, 95%CI: 1.16-2.48), injection drug use history (AOR=15.64, 95%CI: 10.15-24.08), and incarceration history (AOR=14.46, 95%CI: 9.50-22.00). Past 6-month sex work was associated with clinical depression (AOR=1.83, 95%CI: 95% CI: 1.10-3.04), injection drug use history (AOR=6.81, 95%CI: 3.71-12.49), gender discrimination (β= -0.09, *p*= 0.02), and incarceration history (AOR=7.01, 95%CI: 3.67-13.41).

Conclusion: Findings signal the importance of understanding and addressing priorities among sex working WLWH. Sex working WLWH experience a syndemic of increased health (clinical depression, injection drug use) and social (gender discrimination, incarceration) disparities compared with their non-sex working counterparts. Intersectional, sex work affirming, and harm reduction approaches are urgently required to advance equity and wellbeing among WLWH sex workers.

Epidemiology and Public Health: Interdisciplinary Epidemiology (Biological, Behavioural and Social) of HIV infection, including structural, social and individual determinants

Épidémiologie et santé publique : Épidémiologie interdisciplinaire (biologique, comportementale et sociale) de l'infection au VIH et déterminants structurels, sociaux et individuels

EPH2.04

Neighbourhood Level Material Deprivation and Complete Immune Response (VL+/CD4+) in the Canadian HIV+ Observational Cohort Collaboration (CANOC)

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I**ntroduction:** Previous research demonstrates that social determinants of health, including income and education, have been shown to affect response to antiretroviral therapy. Neighbourhood-level material deprivation approximates an individuals' material deprivation by geographic area utilizing Canadian census data (i.e. average household income, proportion unemployed, and proportion with a high school education or greater). This study assessed the impact of neighbourhood level material deprivation status (deprived: yes/no) on complete immune response (VL+/CD4+).

Methods: CANOC cohort participants with complete postal code information were selected for inclusion in the study. Complete immune response (VL+/CD4+) was defined as achieving viral suppression (<50 copies/mL; VL+) and CD4+ cell count increase of 100 cells/mm^3(CD4+) within the first 6 months of initiating antiretroviral therapy. Univariable and multivariable logistic regression models were conducted to examine the relationship between neighbourhood level material deprivation and complete immune response. Sex at birth, province of enrollment, year of entry into cohort, antiretroviral therapy regimen, and baseline age, CD4+ cell count, and viral load were pre-specified as confounders

Results: From 10 133 individuals with postal code information, 33.3% (3379/10 133) were categorized as living in a materially deprived neighbourhood. Forty-six percent (1564/3379) of participants from materially deprived neighbourhoods attained complete immune response within six months of initiating antiretroviral therapy. After accounting for the pre-specified confounders in the multivariable model, those classified as living in a materially deprived neighbourhood were 17% less likely to achieve complete immune response (OR 0.83, 95%CI 0.76-0.91).

Conclusion: Neighbourhood level material deprivation status was associated with achieving complete immune response among HIV+ individuals in a large pan-Canadian observational cohort. This research supports the theory that social determinants of health play an important role in antiretroviral treatment response.

Epidemiology and Public Health: Interdisciplinary Epidemiology (Biological, Behavioural and Social) of HIV infection, including structural, social and individual determinants

Épidémiologie et santé publique : Épidémiologie interdisciplinaire (biologique, comportementale et sociale) de l'infection au VIH et déterminants structurels, sociaux et individuels

EPH2.05

Characterization of HIV Care in the Newfoundland and Labrador Clinic

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B**ackground:** The Provincial HIV Clinic in St. John's, Newfoundland and Labrador (NL) provides care for all persons living with HIV (PLWH) in NL. To assess progress towards the UNAIDS 90-90-90 targets, we summarized the status of the PLWH cohort receiving care through the NL Provincial HIV Program.

Methods/**Results:** All PLWH with ≥ one clinic visit or viral load (VL) measurement in 2019 were considered under care and included in analysis. Median age of the 188 participants was 53 years (interquartile range (IQR) 12 years); 143 (76.1%) were male, 44 (23.4%) female and 1 (0.5%) transgender, with median duration of infection 15 years (IQR 19 years). The dominant reported risk factor was men having sex with men (MSM; 53.7%), followed by heterosexual (37.8%), blood/endemic/vertical transmission (12.2%) and intravenous (IV) drug use (8%). Access to effective antiretroviral therapy (ART) is key to achieving the second two '90' targets. Participants were considered on ART if they had undetectable VL or if prescriptions for ART were filled since last clinic visit. Virologic suppression was defined as latest VL measurement <200 copies/mL. All clinic attendees (n=188, 100%) received ART in 2019, with 152 (80.8%) participants prescribed integrase inhibitor-based ART regimens. 181 participants (96.3%) were virologically suppressed, including 173 (92%) whose VL was <50 copies/mL. For the six new HIV diagnoses in 2019 (all male; median age 30.4 (IQR 14.25)), median time to first clinic appointment was 41 days (IQR 28 days) and all started treatment within 11 days (IQR 10.25 days) of their first visit.

Conclusion: The NL cohort of PLWH linked to care through the provincial HIV program exceed national goals of 90% receiving ART and 90% achieving undetectable VL. However, new infections continue to occur, indicating a need for enhanced surveillance methods to prevent new infections and enhance timely linkage to care.

Epidemiology and Public Health: Interdisciplinary Epidemiology (Biological, Behavioural and Social) of HIV infection, including structural, social and individual determinants

Épidémiologie et santé publique : Épidémiologie interdisciplinaire (biologique, comportementale et sociale) de l'infection au VIH et déterminants structurels, sociaux et individuels

EPH2.06

Prevalence of and Factors Associated with Syphilis among Gay, Bisexual and Other Men Who Have Sex with Men (GBM) in Montreal, Toronto and Vancouver: Results from the Engage Study

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B**ackground:** Syphilis contributes to HIV transmissibility. Among GBM attending sexual health clinics, syphilis cases have increased during the past decade in Canada and GBM living with HIV are disproportionately affected. Population-based prevalence data are limited. We calculated estimates of current or recent active syphilis among GBM and explore associated factors.

Method: Baseline data (02-2017 to 08-2019) from the Engage study were used. Sexually-active GBM ≥16 years were recruited via respondent-driven sampling (RDS) in Montreal, Toronto and Vancouver and completed serologic testing for syphilis as well as a comprehensive questionnaire. Recent or current active syphilis was defined as a treponemal reactive test and a RPR titer ≥1:16 (regardless of treatment history). Bivariate and multivariable analyses were used to identify potential demographic, health status and sexual and drug-use behaviour correlates. Analyses were RDS-adjusted.

Results: Among 2414 participants (Montreal=1167, Toronto=504, Vancouver=743), RDS-adjusted prevalence estimates (95% CI) of active syphilis were 1.3% (0.8-1.8%) in Montreal, 0.9% (0.0-1.9%) in Toronto, and 3.6% (1.7-5.4%) in Vancouver (p=0.002). Correlates of active syphilis are summarized in table 1. HIV status was associated with syphilis infection only in univariable analyses.

Conclusions: At an RPR titre threshold of 1:16, the prevalence of recent or current active syphilis appears lower among GBM in Montreal and Toronto compared to Vancouver. In all 3 cities, the odds of syphilis were higher among those who engaged in 'chemsex' and those with lower incomes; these GBM may benefit from more frequent syphilis screening.

Table 1: Correlates of active syphilis[1] among sexually active GBM in the Greater Montreal, Toronto and Vancouver areas: results from the Engage Study baseline data (n= 2414[2])

	Univariable OR (95% CI)	Multivariable[3] OR (95% CI)
Age (continuous)	1.02 (1.00- 1.04)	1.01 (0.99 - 1.03)
Annual income: Less than 30K	2.83 (1.41- 6.41)	2.66 (1.38 - 5.66)
Self-reported HIV status: Positive	3.35 (1.83- 6.00)	1.54 (0.80 - 2.92)
Number of anal sex partners (continuous)	1.01 (0.99- 1.02)	1.00 (0.98 - 1.01)
Has used a psychoactive drug traditionally associated with "chemsex" (crystal or GHB or ecstasy or ketamine) or poppers with at least one of his last 5 sexual partners	11.26 (5.73 - 24.44)	9.25 (4.87 - 18.98)

OR, odds ratio. 95% CI, 95% confidence interval. Statistically significant results from the multivariable model are in bold. Factors exhibiting similar relationships in each city and associated with active syphilis in bivariate analyses (at p<.0.20) are presented.

[1] Recent or current active syphilis was defined as having a treponemal reactive tests (ELISA or CMIA) and a RPR titer >1: 16 (regardless of treatment history).

[2] Participants with incomplete lab results (n=20) or an RPR titer = 1:8 (n=15) (a more sensitive but less specific marker of active syphilis) were excluded from this analysis.

[3] The final model was adjusted for city

Other variables that were considered: sociodemographic characteristics (born or moved in Canada, education), sexual partnership and recruitment in the past six months (P6M)(having a main partner, number of oral or anal sex partners, transactional sex. attending a bathhouse, engaged in group sex, dating app use), sexual behaviors P6M (using sex toys, engaged in receptive fisting, gave oral sex to a casual partner), use of erectile dysfunction drugs, use of injection drugs, emotional health (symptoms of depression or anxiety, sexual compulsivity), diagnosis of chlamydia or gonococcal infection past 12 months, PrEP use among HIV negative participants P6M.

Epidemiology and Public Health: HIV Prevention: Public Health Aspects
Épidémiologie et santé publique : Prévention du VIH : aspects de santé publique

EPH2.07

Scale-up and Sustainability of Digital Public Health Services for STBBI Testing: an Investigation of Healthcare Service and HIV Policy Context in British Columbia

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B**ackground:** Digital public health services in sexual health can help strengthen STBBI prevention efforts and benefit population health outcomes. Yet less is known about the way policy and socio-economics influence the life cycles of their implementation. We investigated how contextual factors shape the scale-up and sustainability of GetCheckedOnline, an internet-based public health service for STBBI testing available in select British Columbia communities.

Methods: We conducted an Institutional Ethnography of the ongoing implementation of GetCheckedOnline. Between April and December 2019, we conducted 23 interviews with stakeholders from the BC Centre for Disease Control, Interior and Island Health, and community organizations. We observed 20 operations and planning meetings, and conducted textual analysis of key documents. Inductive and iterative analyses uncovered mid-range and macro-level implementation contextual factors affecting scale-up and sustainability.

Results: The positioning of GetCheckedOnline within the broader healthcare and testing landscape varied by geographical setting. In sites with existing specialized and community STI testing services, internet-based testing operated alongside other options and diversified testing access points; in sites shaped by a shortage of primary care providers and closed-down public health STI clinics, it fulfilled a more standard testing provision role. GetCheckedOnline is situated within a provincial STI clinic; while this enabled initial implementation and scale-up, financial and infrastructure constraints within public health agencies and across public and private laboratory services have since limited further scale-up. Similarly, disease-specific funding and policy priorities attached to HIV helped service scale-up; however, HIV-specific policies have more recently hindered the sustainability of integrated digital STBBI programming.

Conclusion: Our findings suggest that both the organization of healthcare services and HIV-specific policy have shaped, and ultimately determined, the scale-up and sustainability of GetCheckedOnline. These findings affirm the need to consider how policy and the healthcare landscape operate as contextual factors determining the implementation of digital public health services.

Epidemiology and Public Health: Data and methodological science: use of administrative data, new tools and other novel data sources in HIV surveillance, prevention and control programs

Épidémiologie et santé publique : Science des données : Utilisation des données administratives, nouveaux outils de mesure et autres sources originales de données dans les programmes de surveillance, de prévention et de contrôle du VIH

EPH2.08

Incidence Rates for Oral Cavity and Oropharyngeal Cancers Among HIV-positive and HIV-negative Individuals in British Columbia: a Retrospective Cohort Study

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I**ntroduction:** The incidence of HPV-associated oropharyngeal cancer is increasing in Canada. Despite this, little is known about the epidemiology of these cancers as it relates to HIV status, sex, and sexual behaviour.

Methods: In this retrospective cohort analysis (1990-2015), we created a subset of ~1.2 million individuals from the Integrated Data and Evaluative Analytics (IDEAs) cohort who had tested for or been diagnosed with HIV in British Columbia (BC). Squamous cell carcinomas of the oropharynx (tongue–base, soft palate, tonsils, mid-pharynx) and oral cavity (tongue–front 2/3, hard palate, gums, floor of mouth) were assigned using ICD-O-3 codes. Follow-up began at 01/01/1990, date of 16th birthday, or HIV detection (HIV-positive stratum), whichever occurred last, and ended at first cancer diagnosis, HIV diagnosis (HIV-negative stratum), death, or 31/12/2015, whichever occurred first. Individuals aged ≥16 years with ≥6 months of follow-up time were included. Crude incidence rates per 100,000 person-years were calculated over the entire period, stratified by HIV status, sex, and, among males, whether they were men who have sex with men (MSM).

Results: From 1990-2015, there were 663 incident oropharyngeal cancers (n=60 MSM; n=474 male non-MSM; n=129 female) and 511 incident oral cavity cancers, (n=42 MSM; n=295 male non-MSM; n=174 female). Overall, crude incidence rates among HIV-positive individuals, compared with HIV-negative individuals, were higher for both oropharyngeal cancer (13.51 vs. 2.41 per 100,000 person-years, respectively) and oral cavity cancer (8.26 vs. 1.87 per 100,000 person-years, respectively). Oropharyngeal cancer incidence rates were highest among HIV-positive non-MSM males (21.23, 95% confidence interval [95%CI]: 11.05-40.80) and lowest among HIV-negative females (0.82, 95%CI: 0.69-0.98). For oral cavity cancer, incidence rates were highest among HIV-positive MSM (12.46, 95%CI: 6.23-24.92).

Conclusions: Considering the paucity of oral cancer screening programs in Canada, these results highlight the importance of HPV prevention initiatives, particularly among men living with HIV.

Social Sciences: Engaging (with) Communities in HIV Research
Sciences sociales : Participation des collectivités à la recherche sur le VIH

SS2.01

"People Give and Take a Lot in Order to Participate in Things:" Making a Case for Non-participation in HIV CBPR and Participatory Programming with Young People

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B**ackground:** Common typologies used in community-based participatory health research and programming[1-3] frame participation as existing at different hierarchical levels. Scholars have critiqued these typologies for ignoring contextual specificities and the complexities, nuances, and power dynamics inherent in participatory processes[4,5]. Non-participation is positioned as something negative, or not addressed at all.

Methods: In this study, we used photovoice (a method where participants are given cameras to identify, document and analyze issues in their communities) to understand how stakeholders (n=11) at a youth-led, HIV prevention and harm reduction peer education project understood 'youth engagement'. In response, participants told us about the challenges of participating in youth-led programming and research. Drawing on Tuck's[6] desire-based framework, I provide a visual and thematic analysis of how youth understood and navigated this 'call to participation' in complex, and self-determined ways.

Results: Participants shared: what it meant to "act engaged", the hidden costs of participating (including burnout), and the importance of trust when navigating the 'choice' to participate. Participants' voices bolster the work of critical scholars who have questioned the discursive role of participation in enacting neoliberal strategies of surveillance and control – in other words, what is at stake when young people are invited to *willingly* participate in processes that may appear voluntary. Drawing on Indigenous theorists who advocate for a politics of refusal[7,8], I argue that young people's refusal to participate (or to participate on their own terms) may be an act of resistance – especially for youth whose bodies are regulated on a daily basis.

Implications: Young people are savvy and well-aware of how participation functions in participatory HIV research and programming. In these contexts, non-participation may be considered a form of refusal. Practitioners are wise to consider the possibilities that non-participation engenders.

Social Sciences: Programming and Policy
Sciences sociales : Programmation et politiques

SS2.02

Perspectives on Principles in Practice: Black PHA's experiences with Greater and Meaningful Involvement of People Living with HIV/AIDS (GIPA/MIPA) Principles

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Introduction: Black people in Canada are disproportionately affected by HIV and face multiple and complex vulnerabilities such as health and social inequalities, social determinants of health, and systemic violence. Due to the lack political power and social capital their contributions, feedback, and needs are neglected and unrecognized in planning and policy development. This study examined the extent to which Black PHAs are engaged in Research, Policy, and Practice in the Greater Toronto Area.

Methods: This qualitative study utilized a decolonizing lens guided by critical race and feminist theories to centralize the voices of Black people living in the study. The study interviewed Eight Black people living with HIV with diverse and multiple engagement experiences in the HIV sector in the Greater Toronto Area (GTA). Through narratives/storytelling, participants shared their diverse and complex experiences of involvement, practiced critical self-reflection, and took ownership of the knowledge produced.

Results: Black communities in Canada exist in a backdrop of systemic stigma, racism, and other dynamics resulting from being a racialized population within a White nation. This leads to social and symbolic exclusion from the country's social, political, economic, and legal institutions. Black PHAs involvement is complex and intersecting and yet unrecognized and undervalued. The study found that individual, community, and systemic factors play a crucial role to either motivate or deter people from being involved in the HIV sector.

Conclusion: GIPA practices must be; Inclusive of social justice, anti-oppression, anti-Black racism, feminist, and intersectionality frameworks and include interventions that support PHAs in service provision roles, including debriefing supports and structural supervision. The sector must Implement a sector-wide review of employment standards, including salary, benefits, and retirement plans to ensure equity with other related sectors. Develop indicators for measuring engagement and advance mechanisms for dealing with issues such as trauma, grief burnout, and addictions.

Social Sciences: Engaging (with) Communities in HIV Research
Sciences sociales : Participation des collectivités à la recherche sur le VIH

SS2.03

REMOTE CONTROL: Implementing Community Based HIV/AIDS Research in Rural, Remote, and Northern MB

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Remote Control is a CIHR funded community-based HIV/AIDS participatory action research project of the Manitoba Harm Reduction Network exploring the relational support role of Peers in rural, Northern, and remote communities, and how those most impacted by HIV/AIDS create the support and community that motivates and allows them to remain in their community. Three Peer research teams were created in three different communities in Manitoba (Selkirk/Wusqwi Sipihk First Nation/Flin Flon) and are made up of people who use drugs, youth, Knowledge Keepers, people impacted by HIV/AIDS and HCV, and other community members. In Flin Flon, the group is made up of people who use drugs and youth who met regularly at the Friendship Centre and, with the guidance and support of their Elder, Margaret Head, engaged in a research project that centered Indigenous Knowledge and Science as a core component of destigmatizing HIV/AIDS and substance use in their community.

This presentation will describe the long term relational work that was done to create the conditions where Peer led research was possible in small communities, provide an overview of the Manitoba Harm Reduction Network's approach to community-led, community based research, an overview of the project as a whole, and will describe the importance and value of Peer Research Teams leading research that impacts them. The Site Coordinator for Flin Flon's Thunder Bear Walkers Peer research group will describe their action research process and will present a poster series that they developed based on group conversations that took place, and their data analysis of these conversations. We will link the social impacts of drug use in small communities, the ways that broader drug policy and health practices impact people in small communities, and how the culturally grounded work being done on the ground should be informing health and drug policy, overall.

Social Sciences: Engaging (with) Communities in HIV Research
Sciences sociales : Participation des collectivités à la recherche sur le VIH

SS2.04

Capacity Bridging: Establishing Meaningful Collaboration between Peers and Academic Researchers in the Ontario Implementation of the HIV Stigma Index

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I**ntroduction:** The HIV Stigma Index is the world's largest social research project developed and implemented by people living with HIV. The survey measures nuanced effects of stigma and discrimination on the health and well-being of people with HIV. Meaningful engagement of people with lived experience in all stages of the research process is central to its mission. Unfortunately, quantitative data analysis is all too often where larger scale projects fall short in realizing the principles of GIPA/MEPA. Grounding analyses in capacity bridging builds an environment for shared learning and reciprocity and creates meaningful collaboration between peer researchers and academic researchers.

Methods: We developed a collaborative approach to analysis that places peer researchers at the centre of an integrated knowledge translation and exchange (KTE) process. 14 peer researchers were asked to develop data questions derived from three main areas of lived experience: (1) peer-to-peer interview experiences; (2) personal experiences with HIV stigma; and (3) supporting advocacy in their region. Guided online discussions were scheduled to contextualize and frame these questions via email, telephone and video conferencing. Academic researchers then reported back to peer researchers with answers to their questions, and further discussion around the findings and effective ways to communicate the key results.

Results: This process has led to an uptake in engagement from peer researchers, with deeper feelings of belonging and inclusion in the research process. The cyclical posing of and responding to questions built the capacity of peer researchers, study coordinator, and academic researchers and has guided the broader analyses and planned KTE activities. Examples will be shared on these important developmental milestones.

Conclusion: This peer-led process provides greater understanding of the key research findings and integrates peer researchers in the development of KTE strategies with the potential to make meaningful and "real-life" changes for people living with HIV.

Social Sciences: Indigenous Health
Sciences sociales : Santé des Autochtones

SS2.05

The Butterfly Project: an Indigenous Community-Based Research, Knowledge Translation Project

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B**ackground:** Indigenous women are traditionally the matriarchs, healers, care takers and leaders in their communities. Through colonization, patriarchy, oppression, trauma and persistent structural inequities, many Indigenous women have been denied their connection to culture, wellness and health service planning, while their voices are excluded and silenced by the mainstream. As a part of self-determination and research sovereignty, Indigenous communities have been turning to land- and culture-based activities for restoring wellness. The *Butterfly Project*, conducted in the Downtown Eastside of Vancouver (DTES), BC, is participatory research focused on community knowledge translation/exchange. The study will evaluate the involvement of participants in representing their experiences in previous studies and their wellness journeys.

Methods: The *Butterfly Project* builds upon Indigenous epistemologies to evaluate previous research studies conducted by the IWRL. The project uses Indigenous knowledge and land-based healing to promote wellness among Indigenous women and Two-spirited people living in the DTES. This high-risk environment both puts them at increased risk of HIV, addiction, homelessness and more, but also serves as their home. The butterfly theme was used to visually represent transformative healing. Through sharing circles, cultural-healing activities, arts-based methods and individual video-taped interviews, this project highlights identity strengthening, self-determination and the voices/wisdoms of Indigenous people engaged in research and wellness.

Results: Results will highlight preliminary analysis of qualitative data, and excerpts from a documentary video highlighting the entire process of the *Butterfly Project*.

Implications: Each research participant will add nuance to our understanding of their wellness journey. The documentary video will help engage facilitated discussions with peers/Elders: *'on how participants play a role in knowledge translation*' and '*what research sovereignty means for Indigenous people*'. The video will be a symbolic representation of the spiritual, cultural, and emotional journey of each participant. Finally, The *Butterfly Project* will render a knowledge translation process for Indigenous voices.

Social Sciences: Programming and Policy
Sciences sociales : Programmation et politiques

SS2.06

Getting to Zero Manitoba: a Collective Impact Approach

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B**ackground:** Manitoba has one of Canada's highest rates of HIV and very high rates of HCV and other STBBI's. Since 2016, the Manitoba HIV-STBBI Collective Impact Network (the Network) has brought together diverse stakeholders to address system issues with the goal of getting to zero and reaching the 90-90-90 targets. In 2019, the Network adopted a new framework for action aligning with the 2019 Federal Government STBBI Action framework. Getting to zero means targetting increased HIV/STBBI testing, reduction of new cases of HIV, reducing stigma and improving the lives for those living with HIV.

Methods: We are using a collective impact implementation strategy used in health and other sectors that brings together people and organizations to align their efforts toward a common goal-that typically alone each individual or organization would be unable to reach. We are also using a developmental evaluation approach. We have several flagship projects focusing on understanding gaps and barriers, innovative testing approaches, anti-stigma approaches, community-readiness for remote northern First Nations, and other projects as our mutually reinforcing activities.

Results: Our approach has created several research and project collaboratives that are working together on the common goals as well as increased collaboration with Indigenous organizations. Developmental evaluation of the Network processes are demonstrating: improved relationships and collaborations among stakeholders; increased understanding of system gaps and barriers through structured discussions and innovative research/evaluation projects; increased number of projects addressing pilot testing of innovative prevention, testing and linkage to care strategies novel tools, policy and practice ideas to promote anti-stigma, community-readiness and culturally safe and responsive approaches.

Conclusion: The collective impact implementation strategy is a promising approach to tackle HIV/STBBI's in Manitoba. Lessons are continuously being learned through the developmental evaluation. This strategy could be an asset for other entities working on HIV/STBBI in Canada and the world.

Social Sciences: Behavioral and Social Intervention and Implementation Research
Sciences sociales : Recherche en intervention et mise en œuvre sociale et comportementale

SS2.07

Culture and Connectedness: the Benefits of Participating in an Indigenous Participatory Positive Health Intervention for Indigenous Women Living with HIV

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B**ackground:** In 2015, Indigenous women living with HIV partnered with academic and community researchers to design a health intervention research study that would measure the effect of participating in Visioning Health (VH) - a culturally-grounded arts-informed program-in-development - on the health and wellness of Indigenous women living with HIV in eight sites across Canada.

Methodology: Using an Indigenous mixed-method community-based participatory approach, we conducted evaluation sharing circles and evaluation surveys at the end of each VH intervention, along with semi-structured interviews at three-month follow-up. We also selected and adapted four instruments for a VH Questionnaire that best reflected the effect of VH on HIV-positive Indigenous women participants: the Awareness of Connected Scale, the Pearlin Mastery Scale, the Communal Mastery Scale, and the MOS Social Support Scale. We used a pre- and post- intervention design with three-month follow-up.

Results: To date, 59 women have completed VH in six sites (ONx2, SKx2, BC, MB). They report feeling stronger after completing VH, and feeling more connected to themselves, their peers, their culture, and Creator. They also report feeling less alone, more 'alive', and more 'in control' of their future. These qualitative findings are supported by results of the VH Questionnaire in which statistically significant positive change over time was detected across all scales. The overall Connectedness Scale showed statistically significant change from T1-T3 ($p=0.03$), as did subscales Connectedness-Self ($p=.02$); Connectedness-Peers ($p=<0.001$); Connectedness-Culture ($p=<0.001$); and Connectedness-Creator ($p = .03$). Statistically significant positive change was detected from T1-T2 by the full Mastery/Self-Determination Scale ($p=0.04$) and by the Social Support Scale from T1-T2 ($p=0.02$) and T1-T3 ($p=0.04$).

Conclusion: Results to date suggest that VH is having positive and measurable effects on Indigenous women living with HIV. Quantitative results support women's descriptions of their experiences of VH and the ways in which they benefited from their participation.

Social Sciences: Communities of People Who Use Drugs and HIV
Sciences sociales : Le VIH et les collectivités d'utilisateurs de drogues

SS2.08

Lessons Learned in Engaging Communities as Allies in Harm Reduction

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Issue: With the increasing number of SCS and OPS operating in Canada, we have reached an important milestone for HIV and overdose prevention strategies for people who use drugs. Despite support from the current federal government which has authorized this expansion, in many areas SCS and OPS still face ongoing challenges to their operation due to a lack of support from segments of their surrounding community.

Description: The Dr. Peter AIDS Foundation leads a capacity building program which aims to equip community-based organizations with the skills and knowledge to offer SCS or OPS. As community backlash to these services has increased, efforts have focused on the knowledge and strategies needed to mainstream harm reduction among different sectors including nearby businesses and business associations, religious establishments, community-based organizations, and residents, and to engage them as allies.

Lessons Leaned: This presentation will offer new methods for mediating tension between SCS/OPS and their surrounding community in order to assist harm reduction organizations in overcoming the barriers to service delivery posed by backlash from their neighbors. Three tools tailored to different audiences will be shared, which utilize different tactics for improving relationships between SCS/OPS and the communities that surround them.

Recommendations: This presentation will recommend various strategies to speak to different audiences based on their knowledge of and comfort with harm reduction principles in order to counter negative assumptions about the impacts of the service, and the lack of understanding of the documented positive effects SCS and OPS can have on communities.

Social Sciences: Programming and Policy
Sciences sociales : Programmation et politiques

KP1.01

Successes and Challenges in Empowerment Strategies amongst Newcomer PHAs: Insights from the Ethno-racial Treatment Support Network Training Evaluation Study

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B**ackground:** The Ethno-racial Treatment Support Network (ETSN) program was established to build PHA's capacity in health literacy and peer support. Since 2003, ETSN has trained over 200 PHAs, their caregivers and service providers. This program evaluation study was conducted in 2018 to identify the long-term impact and challenges to inform improvement in peer empowerment strategies.

Methods: Using community-based research framework, a mixed-method study using self-administered surveys and focus groups was implemented during April – October 2018. We engaged graduates in both survey (n = 92) and focus groups (n = 62) to assess long-term program impact. Using standardized scales, we surveyed participants on six domains: health literacy, self-health management efficacy, treatment adherence, social connection and support (SCS), community engagement (CE) and sense of empowerment (SE). Community stakeholders including mangers of AIDS service organizations (ASOs) and training mentors (n = 15) also participated in focus group to identify overall long-term program impact and strategies for improvement.

Results: Quantitative data show significant positive impact in over 80% of the participants in SCS, CE and SE. Over 60% reported changes in their level of engagement and complexities of their roles within HIV or health service sectors. Qualitative data indicate major contributions of ETSN graduates as peer counsellors, support workers, service navigators and peer leaders. Key challenges that limited the positive impact of peer empowerment and engagement includes ASOs privileging professional credentials over lived experiences, lack of systemic resources to support employment opportunities for program graduates; and lack of recognition and utilization of their training experiences beyond the HIV sector due to HIV stigma.

Conclusion: Culturally competent, community-driven health promotion programs are effective in advancing PHA peer empowerment. However, the impact can be maximized with attention to eradicating HIV stigma, honoring lived experiences, and establishing consistent strategies and committed resources to support peer engagement.

Social Sciences: Models of Care and Improving Access
Sciences sociales : Modèles de soins et meilleur accès

KP1.02

Les barrières d'accès aux soins et aux traitements antirétroviraux (TAR) pour les personnes vivant avec le VIH (PVVIH) au statut d'immigration précaire ou temporaire au Québec

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Au Québec, les PVVIH au statut d'immigration précaire ou temporaire éprouvent des difficultés d'accès aux soins et aux TAR à cause de leur statut. Depuis 2017, environ 30% des PVVIH nouvellement diagnostiquées ne sont pas couvertes par le Régime de l'assurance maladie du Québec et sont immigrantes. Nous présentons un des axes de ce projet de recherche communautaire, dirigé par une équipe multisectorielle qui a pour objectif de réduire les barrières d'accès aux soins et aux TAR pour les PVVIH aux statut d'immigration précaire.

Nous avons conduit des entrevues individuelles (1h30) qualitatives semi-dirigées de 2018 à 2019 (n= 22) avec des professionnels de santé, intervenants communautaires, chercheurs engagés et décideurs politiques pour identifier les barrières d'accès aux soins. Deux groupes de discussion (2h) avec les membres de l'équipe du projet et deux réunions délibératives (2h) avec des PVVIH issues de l'immigration ont également été réalisés. Les entretiens et les groupes de discussion ont été enregistrés (audio) et des fiches synthèses ont été réalisées, puis analysées avec QDA Miner.

Certaines barrières sont directement liées aux statuts d'immigration, soit celles administratives, politiques, structurelles et financières, mais d'autres n'ont pas de lien direct avec le statut. Elles sont liées au fait que les professionnels de santé et les intervenants manquent d'information sur les réalités d'immigration. Nous avons aussi constaté que certaines personnes ne savent pas où se rendre pour recevoir des soins et que le manque de communication et de collaboration entre les milieux (communautaires, cliniques, institutions) contribue à réduire l'accès aux soins.

Pour réduire ces barrières, nous avons créé un second projet où nous proposons de coordonner un corridor de services où les professionnels de santé et les intervenants communautaires en santé sexuelle et en immigration travailleront en étroite collaboration tout en leur offrant des formations en immigration et en santé sexuelle.

Social Sciences: Arts-Based Approaches to HIV Research
Sciences sociales : Fondement artistique de la recherche sur le VIH

KP1.03

Celebrate: Love, Laugh & Live Together (Celebrate: 3LT). an Inter-generational Exploration of Grief and Loss Through Story-making

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B**ackground:** Racialized immigrant living with or affected by HIV, consistently experience loss, either in Canada or their country of origin. In 2018, community members expressed interest in an arts-based intervention focused on grief and loss. The Committee for Accessible AIDS Treatment (CAAT), in collaboration with 7.10 Stories, initiated a storytelling initiative to facilitate intergenerational dialogue around grief and loss through story-making. This presentation will showcase this intervention: Celebrate: Love, Laugh & Live Together (Celebrate 3LT).

Method: Storytelling is an arts-based approach that is grounded in everyday practices of remembering, relaying, and sharing personal and collective experiences and events. Participants worked together to draft and visualized a series of pictures books that convey their collective perspectives on grief, death and loss. Through a series of narrative exercises, participants reflected and co-developed picture books responding to three themes, (1) Letters to a loved one; (2) Designing the afterlife; and (3) Celebrating Life. Facilitated sessions offered participants suggested prompts under each theme that were then used to populate and design six (6) picture books.

Results: Seventeen racialized immigrants living with or affected by HIV participated in Celebrate 3LT: nine (9) in the adult group and eight (8) in the youth group. Program evaluation feedback indicated that Celebrate: 3LT was effective in promoting self-compassion and collective resilience. Using art and story-making as a medium for co-creation engaged participants in meaningful group reflection and sharing. Insights and learning from participant narratives will be shared along with the co-created picture books.

Conclusion: Celebrate: 3LT program represents a holistic arts-based intervention centered on the experiences of people living with and affected by HIV. This storytelling model shows promise in processing emotions, fostering reflection, and exchanging intergenerational knowledge. Story-making allows participants to contribute their wisdom and for audiences to listen, learn and share it amongst others.

Social Sciences: Social, Structural and Systemic Drivers of HIV
Sciences sociales : Moteurs sociaux, structurels et systémiques du VIH

KP1.04

Determinants of HIV Vulnerabilities and Resilience of Heterosexual Black Men in Ontario: Evidence from weSpeak

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B**ackground:** Epidemiological data indicate that heterosexual Black men (HBM) in Ontario experience a disproportionate burden of HIV and related vulnerabilities. However, HIV responses at the systems and community levels are slow to respond to this health disparity. weSpeak is a 5-year program of community-based action research, undertaken in London, Ottawa, Toronto and Windsor, to identify the structural drivers of HBM's HIV vulnerabilities and identify strategies to promote resilience and self-determination among HBM and community.

Methods: Guided by critical social theories and using mixed methods, we engaged 210 HBM and 41 community stakeholders in focus groups and individual interviews to explore HBM's HIV vulnerabilities and resilience in the context of their racialized-gendered identities and everyday experiences. We also engaged 879 HBM in a survey across all sites to assess their socioeconomic status, access to healthcare, masculine role identity, sexual practices, HIV knowledge, attitude of condom use, resilience, experiences of discrimination and social capital.

Results: Triangulation of data shows complex relationships between structural violence and HBM's vulnerabilities to HIV. While men in general may benefit from hegemonic masculine expectations, Black men's experience of structural violence means that this outcome is substantially less available to them. Experiences of microaggression and internalized racism negatively affects how HBM perform their masculine identities and sexual decision-making, putting them at increased vulnerability to HIV. Immigrant HBM experiencing access barriers to healthcare are less likely to be tested for HIV. Despite their alleged disinterest in HIV, weSpeak participants aspire to engage in and contribute to community responses to HIV.

Conclusion: There is increasing recognition that Canada's 90-90-90 HIV target may perpetuate social exclusion and health disparities. Effective and equitable HIV response in Ontario must focus on the structural drivers of HIV disparities and the effects anti-Black racism on HBM's racialized-gendered identities, sexualities and HIV vulnerabilities.

Social Sciences: Gay, Bisexual and other Men who have Sex with Men (MSM)
Sciences sociales : Guais, bisexuels et autres hommes ayant des relations sexuelles avec des hommes (HARSAH)

KP1.05

From Online Reach to Offline Services: Using PrEP Squad to To Increase Uptake of and Access to PrEP Among Black gbMSM in Toronto

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B**ackground:** About one-third of first-time HIV diagnoses among African, Caribbean and Black (ACB) people were men who identified as gbMSM. Pre-Exposure Prophylaxis (PrEP) can prevent HIV transmission among Black gbMSM; however, uptake has been low. PrEP Squad TO an online, social media and print campaign developed by the Black Coalition for AIDS Prevention (Black CAP) to increase PrEP awareness, uptake and access in Toronto's Black gbMSM community. An adaption of PrEP Squad Washington DC campaign, it will provide key messaging about PrEP, mobilize access through community partnerships with local ASOs, health care providers, among others.

Methods: In June 2019, an online survey was disseminated to 71 community members to deepen our understanding of perceptions, attitudes, barriers and access to PrEP. Focus group was hosted to explore key themes. From findings, PrEP Squad TO was developed to leverage social and sexual networks utilized by Black gbMSM to increase PrEP uptake. Final step is the delivery of another questionnaire and focus group among gbMSM who interacted with the campaign to better understand the outcomes.

Results: Focus group participants expressed limited knowledge of PrEP, no discussions with healthcare providers, trust issues with a new pharmacological intervention, and anticipated challenges with adherence and access. More than 50% survey respondents did not know the proper use of PrEP. Preliminary work on the campaign facilitated conversations and education about PrEP in the community. A majority of Black gbMSM demonstrated favorable attitudes towards PrEP and indicated high likelihood of using PrEP if it were available through the PrEP Squad TO campaign. The website and social media images are being developed. The campaign will officially launch on March 2020.

Conclusion: PrEP Squad TO campaign has the potential to reach diverse audience, increase uptake of PrEP among Black gbMSM by increasing knowledge and access, changing attitudes, and addressing stigma.

Epidemiology and Public Health: HIV in Priority Populations and Global Health Issues: Epidemiology and Public Health Aspects

Épidémiologie et santé publique : Le VIH dans les populations vulnérables et les enjeux de santé mondiale : aspects épidémiologiques et de santé publique

KP1.06

The A/C Study: a Cross-Sectional Study of HIV Epidemiology Among African, Caribbean and Black People in Ontario

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I**ntroduction:** African, Caribbean, and Black (ACB) communities are disproportionately affected by HIV in Ontario, Canada. They constitute only 5% of the population of Ontario yet account for 25% of new diagnoses of HIV. The aim of this study is to understand underlying factors that augment the HIV risk in ACB communities and to inform policy and practice in Ontario.

Methods: We conducted a cross-sectional study of first- and second-generation ACB adults aged 15-64 in Toronto and Ottawa and collected sociodemographic information, sexual health-seeking behaviors, and self-reported HIV infection. Factors associated with self-reported HIV infection were evaluated using logistic regression models adjusted for relevant covariates.

Results: A total of 1200 participants were recruited from Toronto (732/61.0%) and Ottawa (465 (38.8%) of which 743 (61.9%) were females. Further characteristics are described in Table 1. Overall, 8.2% (95% CI 6.5%-10.2%) reported being HIV-positive. Self-reported HIV was associated with being born out of Canada (Odds Ratio [OR] 3.85; 95% Confidence Interval[CI] 1.54-10.0; p=0.004), ever being tested for other sexually transmitted infections (OR 2.38; 95% CI 1.28-4.42; p=0.006), not completing high school (OR 3.36; 95% 1.55-7.26; p=0.002) and completed college/some university (OR 2.51; 1.31-4.79; p=0.005). Parent country of birth, sex, gender identity, current age, or age at first intercourse were not statistically significantly associated with self-reported HIV positive status.

Conclusions and implications: Place of birth, sexual health-seeking behavior practices, and education play a role in willingness to disclose HIV status. This may have implications for prevention programs and policy.

Table 1: Characteristics of participants in the A/C study

Variable	Statistic N=1200
City: n (%) *	
Toronto (or greater Toronto area)	732 (61.0)
Ottawa (or greater Capital region)	465 (38.8)
Age (years): n (%) *	
15 – 19	141 (11.8)
20 – 29	374 (31.2)
30 – 39	294 (24.5)
40 – 49	251 (20.9)
50 – 59	95 (7.9)
60 – 64	28 (2.3)
Sex at birth: n (%) *	
Male	443 (36.9)
Female	743 (61.9)
Intersex/other	2 (0.2)
Gender identity: n (%) *	
Man	436 (36.3)
Woman	732 (61.0)
Trans	4 (0.3)
Other	15 (1.3)
Tested for HIV (yes): n (%) *	**849 (70.8)**
HIV+	70 (5.8)
HIV-	755 (62.9)
Don't know	16 (1.3)
Born in Canada: n (%) *	265 (22.1)
Parent country of birth: n (%) *	
East Africa	310 (25.8)
West Africa	374 (31.2)
Central Africa	127 (10.6)
Southern Africa	49 (4.1)
Caribbean	293 (24.4)
Other	9 (0.8)
Employment: n (%) *	
Employed/self-employed full-time	416 (34.7)
Employed/self-employed part-time	255 (21.3)
Volunteering	149 (12.4)
Unemployed	254 (21.2)
Student full-time/part-time	220 (18.3)
Disability	42 (3.5)
Looking after children/family	30 (2.5)
Retired	9 (0.8)
Relationships: n (%) *	
Married	315 (26.3)
Steady partner (living together)	58 (4.8)
Steady partner (not living together)	103 (8.6)
Widowed	18 (1.5)
Separated/divorced	74 (6.2)
Single	623 (51.9)
*missing <5%	

Epidemiology and Public Health: HIV Prevention: Public Health Aspects
Épidémiologie et santé publique : Prévention du VIH : aspects de santé publique

KP2.01

The Cedar Project: Understanding Cessation of Injection Drug Use Among Young Indigenous People in British Columbia

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B**ackground:** British Columbia's ongoing overdose emergency necessitates looking beyond 'risk' to identify strength-based resources that promote wellness related to substance use. We examined protective and risk factors associated with periods of injection cessation among young Indigenous people who use(d) drugs in BC.

Methods: This longitudinal (2007-2016) analysis took place within the Cedar Project cohort involving young Indigenous people who use(d) drugs in BC. Since inception, the study has been governed by the Cedar Project Partnership. The primary outcome was a self-reported six-month period of injection cessation measured at semi-annual follow-ups. The Prentice-Williams-Peterson counting process model for recurrent events tested for associations between study variables and cessation, adjusting for age, sex, and location.

Results: A total of 272 participants who ever reported injecting attended 1633 follow-up visits since first reporting injecting (median: 5; IQR: 3-9). Overall, 488 six-month cessations were reported; 60.3% of participants reported at least one cessation, and 42.3% reported more than one. Cessation incidence was 29.9/100 visits. No significant differences were observed between women (32.6/100 visits; 95%CI: 27.8–37.6) and men (25.5/100 visits; 95%CI: 19.8-31.4). Ever participating in traditional ceremonies (aHR: 1.38; 95%CI: 1.11-1.71) and recent access to any drug/alcohol treatment (aHR: 1.29; 95%CI: 1.07-1.55) were associated with cessation. Every 1-unit increase in mean resilience score was associated with 1% increase in odds of cessation (aHR: 1.01; 95%CI: 1.00-1.01). Factors associated with reduced likelihood of cessation included: living in Vancouver (aHR: 0.81; 95%CI: 0.68-0.98); homelessness (aHR: 0.55; 95%CI: 0.43-0.71); survival sex work (aHR: 0.52; 95%CI: 0.40-0.67); sexual assault (aHR: 0.50; 95%CI: 0.29-0.85); overdose (aHR: 0.15; 95%CI: 0.07-0.34); psychological distress (aHR: 0.74; 95%CI: 0.64-0.87); and hepatitis C infection (aHR: 0.66; 95%CI: 0.52-0.83).

Conclusion: To our knowledge, this is the first study identifying associations between cultural connection and injection cessation. Increased investments in culturally-safe harm reduction and treatment programs are essential.

Social Sciences: Indigenous Health
Sciences sociales : Santé des Autochtones

KP2.02

Evaluating Dried Blood Spot Testing from a Métis Community Perspective

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B**ackground:** Métis service providers identified dried blood spot testing (DBST) as an approach to potentially increase access to testing for sexually transmitted and blood borne infections (STBBI) for Métis people. In September 2019, the Métis community in Red Deer, Alberta (AB) through Shining Mountains Living Community Services launched the first provincial pilot of DBST for HIV, HCV, HBV and syphilis, through a partnership with the National HIV Reference Laboratory and Alberta Health Services. Team members of the DRUM & SASH implementation science team grant supported the evaluation of the acceptability of DBST from a Métis community perspective.

Methods: Survey, gathering circle and interview instruments were developed in partnership with the Métis community. Surveys were administered to self-identifying Métis recipients of DBST at two Métis community events in AB. Four gathering circles with DBST recipients were held, and three semi-structured interviews were conducted with individuals who provided DBST at the events to obtain testing providers' perspectives. Gathering circles and interviews were audio recorded, transcribed and thematically analyzed.

Results: 30 Métis individuals received testing; of those 26 completed surveys and 19 participated in a gathering circle. 50% of survey participants reported they had never received HIV testing previously; 92% indicated they would be willing to receive DBST again. Key emergent themes include ease of testing process, potential to improve access, existing relationship with test providers, reduced stigma, and increased awareness of HIV/STBBI at community events.

Conclusion: Results suggest that DBST was an acceptable form of testing among Métis community members who participated in DBST within community event settings. Participants were supportive of DBST being offered at future events, particularly in rural and remote Métis communities, to increase access to STBBI testing.

Epidemiology and Public Health: Indigenous HIV Prevention and Control Programs - Implementation and Program Science
Épidémiologie et santé publique : Programmes de prévention et de contrôle du VIH chez les Autochtones - mise en œuvre et science des programmes

KP2.03

Tracks Survey of People Who Inject Drugs in Canada, Phase 4 2017-2019 – Selected Findings Among Indigenous Participants

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B**ackground:** A partnership approach is expanding to examine findings among Indigenous respondents from the Tracks survey among people who inject drugs (PWID), which monitors HIV and hepatitis C prevalence and associated risk behaviours, conducted in Phase 4 (2017-2019). The partners include the Canadian Aboriginal AIDS Network, the Public Health Agency of Canada and an advisory group comprised of members from national Indigenous organizations and people with living experience.

Methods: Information was collected through confidential interviewer-administered questionnaires and included socio-demographics, social determinants of health, drug use and injecting behaviours, sexual behaviours, use of health and prevention services, and HIV and hepatitis C testing and treatment. A biological specimen was collected and tested for HIV and hepatitis C. Descriptive analyses for selected indicators were examined among Indigenous respondents. The partnership has met through conference calls, supported by in person meetings between staff, email correspondence and secure access data sharing.

Results: Of 2383 participants in Phase 4, 997 participants (42.2%) self-identified as Indigenous: 82.9% First Nations, 14.9% Métis, 2.2% Inuit. Nearly one-third (33.8%) reported living in stable housing; 84.0% indicated fair to excellent mental health; and 90.2% reported ever experiencing any stigma or discrimination.

Borrowing used needles and/or syringes in the 6 months prior to the interview was reported by 10% and 93% used both a sterile needle and syringe at last injection. Consistent condom use was higher with regular partners (85.6%) compared with casual partners (57.6%).

HIV prevalence was 15.4% with 78.2% aware they were HIV-positive. One-third (36.4%) were hepatitis C RNA-positive and 49.4% were aware of their current hepatitis C infection.

Conclusions: A collaborative analysis is an important step in reconciliation. The future development of knowledge products will share Indigenous-specific results contextualized for where the data is most relevant.

Social Sciences: Indigenous Health
Sciences sociales : Santé des Autochtones

KP2.04

Culturally Specific and Gender Based STBBI Interventions Designed by and for Incarcerated Indigenous Women

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Summary: Through engagement sessions with incarcerated Indigenous women, we heard that they face barriers accessing health services and supports, including education, within prisons and upon release. These barriers may increase their risk of sexually transmitted blood borne infections (STBBIs) and may contribute to a deterioration of HIV/HCV infections. The aim of this project was to develop an evidence-based, culturally relevant STBBI intervention, designed by and for incarcerated Indigenous women, to increase their knowledge, awareness and self-efficacy towards STBBIs.

B**ackground:** Data indicates that prevalence rates of HCV and HIV are highest among incarcerated Indigenous women compared to any other population group. They experience gaps in accessing health and support services, including education, in prisons and upon release**.** The intervention intends to increase knowledge, reduce stigma and increase awareness of STBBIs. In doing so, it will inform participants' future choices, improve health outcomes and prevent further transmission of STBBIs while increasing awareness of services available to them within federal correctional institutions, and upon release.

Processes: The project team completed an environmental scan on STBBI resources for incarcerated Indigenous women and held sharing circles with women at three federal correctional institutions and a Section 81. The aim of the sharing circles was to assess participants' knowledge of STBBIs and evaluate their needs concerning STBBI education. This information is being used to inform the development of an evidence-based, culturally relevant STBBI intervention, designed by and for incarcerated Indigenous women.

Learnings: Results from the sharing circles showed an overall moderate to low level of knowledge of HIV, HCV, and other STBBIs and an overall high willingness to increase knowledge and awareness towards STBBIs.

Conclusion: The project provided insights on incarcerated Indigenous women's drive to obtain knowledge surrounding STBBIs. It also highlighted the importance of having culturally safe, gender specific educational resources, services and supports.

Social Sciences: Arts-Based Approaches to HIV Research
Sciences sociales : Fondement artistique de la recherche sur le VIH

KP2.05

Exploring the Efficacy of Foxy and Smash Arts-based HIV Prevention Strategies with Northern and Indigenous Youth: Implications for Tailored HIV Prevention

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B**ackground:** There is limited knowledge of efficacious approaches for HIV prevention among Indigenous and Northern young men and women in the Northwest Territories (NWT). The objective was to explore the effectiveness of arts-based HIV/STI prevention workshops to increase HIV/STI knowledge and safer sex-self-efficacy (SSSE) among Northern and Indigenous youth in the NWT.

Method: We offered school-based arts-based HIV/STI prevention workshops in 17 NWT communities. We conducted pre- and post-test surveys to assess STI knowledge and SSSE scores using validated instruments. Descriptive statistics explored differences in STI knowledge and SSSE scores pre-post workshop, with statistical comparisons made using a paired student's t-test. To account for the effect of baseline differences in STI knowledge and SSSE scores, we used multivariable regression models adjusting for socio-demographic variables. We conducted sensitivity analyses stratified by age and gender.

Results: There were 610 participants (mean age 12.2 [SD: 1.5], 49.5% cisgender women, 48.9% cisgender men) and most (73.3%) were Indigenous. After accounting for baseline differences, there was a 6.2 point (CI: 5.4, 7.0, $p<0.001$) increase in STI knowledge, and a 1.8 point (CI: 1.10, 2.52) increase in SSSE scores, across participants post-intervention in comparison with pre-intervention. Age related subgroups such as those ≥15 years (difference: 0.04, $p=0.689$), sexually active (difference: -0.26, $p=0.968$), and that use alcohol/drugs (difference: -0.26, $p=0.340$) showed no statistically significant differences between pre-and post-test scores, all other groups were significant. When stratified by age/gender, increased STI knowledge scores were significantly higher among younger age groups (<15 year old vs. ≥15), whereas SSSE scores revealed greater increases among women than men.

Conclusions: This study provides novel findings regarding the efficacy of arts-based strategies for increasing STI knowledge and SSSE among Northern and Indigenous youth. Future research should tailor HIV/STI prevention for age, gender, alcohol and drug use, and sexual experience in the NWT.

Social Sciences: Gay, Bisexual and other Men who have Sex with Men (MSM)
Sciences sociales : Guais, bisexuels et autres hommes ayant des relations sexuelles avec des hommes (HARSAH)

KP2.06

HIV Prevention and Care among Indigenous Two-Spirit, Gay, Bisexual, and Queer Men in Manitoba

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B**ackground:** Very little is known about HIV prevention, and the care needs of Indigenous Two-Spirit, gay, bisexual, queer, and other men who have sex with men (2SGBQM) in Manitoba. This study examined HIV testing and PrEP use among Indigenous 2SGBQM in Manitoba.

Methods: Data for this presentation were drawn from a community-based online survey that examined the health and wellbeing of 2SGBQM in Manitoba. Eligibility criteria included: age 18+, live/work in Manitoba, and identify as 2SGBQM. The survey included data on demographics, HIV testing, and PrEP use. Chi-square analyses were used to assess the relationship between socio-demographics, HIV testing, and PrEP use.

Results: The survey included 358 2SGBQM, among who 70 (15.9%) were Indigenous, including 40 (9.1%) First Nations and 30 (6.8%) Métis 2SGBQM. Among Indigenous 2SGBQM, 10 (15.4%) self-reported as living with HIV, and 10 (15.4%) reported never being tested for HIV. No significant differences emerged with regards to self-reported HIV status (p=.47), HIV testing (p=.22), and knowledge of PrEP (p=.55) between Indigenous and non-Indigenous 2SGBQM. Compared with non-Indigenous men, Indigenous 2SGBQM were more likely to have lower household incomes ($\chi 2$=41.08, p<.001) and less likely to be employed full-time ($\chi 2$=29.82, p<.001). Furthermore, compared with non-Indigenous men, Indigenous 2SGBQM were more likely to report an undetectable viral load (χ2=10.42, p<.01), and less likely to report ever using PrEP ($\chi 2$=22.65, p<.001) or report current use of PrEP ($\chi 2$=14.60, p<.001).

Conclusion: Indigenous 2SGBQM may exhibit distinct experiences with, and access to health care and HIV prevention compared with other sexual and gender minority men in Manitoba. HIV policy makers, researchers, and practitioners should pay attention to social determinants of health, and other socio-economic factors that affect the use of HIV prevention and care for Indigenous 2SGBQM in Manitoba.

Epidemiology and Public Health: Evaluations of Public Health Policies, Programs or Interventions
Épidémiologie et santé publique : Évaluation des programmes, des politiques et des interventions en santé publique

KP3.01

"I felt safe there": Implications of an Acute Care Supervised Consumption Service for the Hospital Risk Environment

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Supervised consumption services (SCS) mitigate harms associated with overdose and reduce risk of HIV/HCV transmission amongst people who use drugs (PWUD) in community settings. However, SCS have not been widely implemented or studied in acute care. Hospital bans on substance use can lead to increased risk of overdose, infections, and premature discharge. In April 2018, the Royal Alexandra Hospital in Edmonton implemented North America's first acute care SCS to help mitigate these harms.

We adopted a focused ethnographic design to examine the perspectives of hospitalized PWUD on the acute care SCS. We conducted 28 semi-structured interviews with patients who were eligible to access the SCS to understand barriers and facilitators to SCS access and impacts of the SCS on patients and hospital outcomes. Thirteen participants identified as women, 16 as Indigenous, and 20 had used the hospital SCS. We employed latent content analysis, and the risk environment framework guided our interpretation of the findings.

The SCS interacts with social-structural characteristics of the hospital environment, shaping patient experiences positively and negatively. Fear of drug-related stigma from hospital staff and policing/surveillance discouraged some patients from accessing the SCS, while peer support and relational care encouraged uptake and ongoing use. Patients who used the SCS perceived it to be a culturally and structurally safe space within a potentially hostile environment. SCS use also reduced harms associated with substance use, decreased self-reported risk of premature discharge, and improved patient satisfaction. However, many patients reported changes in care (e.g., judgement from staff, medication titration) after SCS use.

Acute care SCS may reduce certain risks associated with in-hospital substance use and provide a safer environment for hospitalized PWUD. However, barriers to SCS access and potentially negative implications associated with SCS use must be addressed to facilitate wider uptake and implementation of SCS in acute care.

Epidemiology and Public Health: HIV in Priority Populations and Global Health Issues: Epidemiology and Public Health Aspects
Épidémiologie et santé publique : Le VIH dans les populations vulnérables et les enjeux de santé mondiale : aspects épidémiologiques et de santé publique

KP3.02

HIV and HCV Cascade of Care Among People Who Inject Drugs in the SurvUDI Network – 2003 to 2017

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Objectives: To examine trends from 2003 to 2017 in testing, awareness of seropositivity, consultation with a physician (6 months), and treatment for HIV and HCV among people who inject drugs (PWIDs) in the SurvUDI network.

Methods: Since 1995, PWIDs (injection in the past 6 months) are recruited in harm reduction and health programs across Québec and in Ottawa. Participants provide consent, complete a questionnaire and give saliva samples for anti-HIV/anti-HCV antibody testing. The first questionnaire per participant per year was retained (13,836 interviews). Wald tests from GEE regressions were used.

Results: The observed prevalence was 13.0% for HIV and 62.6% for HCV. The proportion of participants ever tested increased from 89.6% to 96.0% ($p<0.001$) for HIV, and from 85.8% to 94.4% ($p<0.001$) for HCV. During the same period, the proportion of participants tested in the past year slightly increased, from 64.1% to 65.6% ($p=0.002$) for HIV, and from 48.7% to 57.2% ($p<0.001$) for HCV. Among HIV-positive participants, the proportion unaware of their infection decreased from 22.7% to 10.3% ($p<0.001$). For HCV, this proportion decreased from 28.4% to 18.1% ($p<0.001$). Among those aware of being HIV-infected, the proportions who consulted a physician for HIV, and currently taking HIV medication both increased significantly (from 89.1% to 100.0%, $p<0.001$, and from 60.9% to 92.9% $p<0.001$, respectively). Among those aware of being HCV-positive, the proportion who consulted a physician for HCV significantly decreased (from 55.2% to 36.3%, $p<0.001$), and the proportion of participants who ever took HCV medication increased from 11.6% to 34.0% (from 2006 to 2017, $p<0.001$).

Conclusions: Most indicators improved for HIV and HCV. Regular testing must be enhanced. Treatment seems well accessible for HIV, but not for HCV. Services must be strengthened and new approaches developed to better link infected PWIDs to care, especially for HCV.

Epidemiology and Public Health: Interdisciplinary Epidemiology (Biological, Behavioural and Social) of HIV infection, including structural, social and individual determinants

Épidémiologie et santé publique : Épidémiologie interdisciplinaire (biologique, comportementale et sociale) de l'infection au VIH et déterminants structurels, sociaux et individuels

KP3.03

Substance Use Patterns Among Gay, Bisexual and Other Men Who Have Sex with Men in Toronto, Vancouver and Montreal: Results from the Engage Study

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B**ackground:** HIV/STI risk among gay, bisexual and other men who have sex with men (GBM) may differ by the substance(s) they use as substances can differentially influence sexual risk behavior. Knowing more about the substance(s) GBM use could inform HIV/STI interventions. We investigated substance use patterns among GBM across Toronto, Vancouver and Montreal using Latent Class Analysis.

Methods: Data were collected from 2,449 sexually-active GBM (>16years) recruited via respondent-driven sampling (RDS) in Toronto, Vancouver, and Montreal for the Engage Study. For each city, we estimated 2-, 3-, 4- and 5-class latent models based on self-reported substance use (24 substances: no/yes, last 6 months). After identifying best fit models, we fit RDS-adjusted multinomial regression models identifying psychosocial correlates of class membership.

Results: Across all cities, alcohol was the most prevalent substance used/reported, followed by marijuana, poppers, cocaine, sex-enhancing drugs, and ecstasy; each having a prevalence of >10% in each city. Fit indices indicated a 3-class model in Toronto and 4-class models in Vancouver and Montreal. We found an *Alcohol-only* class and *Multiple-use* class in each city. These class sizes were similar across cities (RDS-adjusted proportions: Toronto-0.75; Vancouver-0.70; Montreal-0.71 and Toronto-0.04; Vancouver-0.05; Montreal-0.04). Further, we found an *Alcohol-Marijuana* class in Toronto (0.21) and Vancouver (0.17), a combined *Alcohol-Marijuana-Cocaine* class in Montreal (0.20), and a fourth *Crystal-Poppers-Viagra* class in Vancouver (0.08) and in Montreal (0.04). Multivariable models identified varied correlates that distinguished classes within as well as between cities; e.g., HIV-positive men were more likely to be in *Multiple-use* class in each city, whereas White participants were more likely to be in *Multiple-use* class in Montreal and Vancouver, but not in Toronto.

Conclusion: Observed similarities and dissimilarities across cities highlight that treating GBM as a homogenous group can be misleading. Tailored and targeted interventions for substance using HIV-positive and HIV-negative GBM are warranted.

Social Sciences: Models of Care and Improving Access
Sciences sociales : Modèles de soins et meilleur accès

KP3.04

The Adherence and Community Engagement (ACE) Team- An Inner City Outreach Team Improving Adherence and Linkage to Care for High Barrier Individuals Who Live with HIV

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B**ackground:** The ACE Team is an Edmonton outreach team created by pharmacists in response to an identified need among a marginalized population with HIV/AIDs, who had fallen through the cracks, where experiencing multiple barriers engaging in care, and had a quickly deteriorating health status. The ACE Team is an intensive case management team dedicated to improving health outcomes among some of Edmonton's most vulnerable individuals.

Description of model of care/intervention: The ACE Team utilizes pharmacists, a nurse and outreach worker to provide daily outreach to a caseload of 38 HIV positive patients. They outreach to shelters, patients' homes, or the street to provide medications, health and social interventions. ACE works to secure housing, food access, funding supports and manage acute health concerns, chronic diseases, optimize or initiate therapy, and connect individuals to care. Since its conception in 2016 ACE received over 120 referrals. At referral, 61% of patients are homeless, 50% have AIDs, 54% are hepatitis C positive, 100% have active addictions, 48% inject drugs, and 24% work/worked in the sex trade.

Effectiveness: ACE intervention improves antiretroviral treatment adherence from 0% to over 80%, achieves HIV viral suppression in 86% of patients and improves retention in HIV care from 0% to 79% of active patients. ACE reduces emergency room visits and hospitalizations related to substance use by 40% and 80%, respectively, and overall hospitalizations by 58%. Additionally, ACE intervention results in a reduction in average days hospitalized from 29 to 9 days.

Conclusion and next steps: ACE is effective in engaging and stabilizing hard to reach individuals and those experiencing multiple barriers to care. The ACE Team is currently Alberta Health government funded for 2 years as a demonstration project and recently expanded to a second team in response to the growing need for this model of outreach healthcare delivery.

Social Sciences: Responding to the Opioid Crisis
Sciences sociales : Réaction à la crise des opioïdes

KP3.05

How a Group of Current and Former Substance Users Advocated for the First Overdose Prevention Site in Atlantic Canada

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Increasing public awareness of why it should be a right to open an Overdose Prevention Site anywhere in Canada, when your city has demonstrated a public health emergency because of the opioid crisis.

As members of HANDUP (Halifax Area Network of Drug Using People) we all come from very different back grounds, different genders, ages, races & sexual identities. We all know how desperately we need an OPS in Halifax for us and to set precedence for other provinces in our region. After losing multiple members of our community we started to advocate stronger to open an OPS.

Through First Voice Engagement our members have spoken at multiple Symposiums sharing their experiences with not having a safe place to use. The effects it on our past and why we want to open one in our community to help other people struggling with substance use disorder.

At this time, after years of fighting with the provincial government. HaliFIX Overdose Prevention Society have offically opened a legal “Urgent Public Health Need Site”, applying directly to Health Canada in response to the Opioid Crisis.This will allow us to reduce HIV/HCV, reduce Injection-related-onfections and overdose deaths. We still do not have the support of the NS Goverment.

We have an ongoing Opioid Epidemic that kills 11 people a day in Canada. Yet in the Atlantic Region we do not have the same services as other parts of Canada. We need to look at the research, see what works and implement it as a proactive measure to this Opioid Crisis to try and curb the crisis and reduce the deaths.

This is the story of how a group of drug users changed poliicy, advocated for a life saving service & is translating knowledge to the rest of the Atlantic Region to fight this crisis.

Social Sciences: Communities of People Who Use Drugs and HIV
Sciences sociales : Le VIH et les collectivités d'utilisateurs de drogues

KP3.06

Chronic Disease Self-management Experiences among Marginalized People who Use Drugs

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B**ackground:** Self-management is a key component of the Expanded Chronic Care Model, recommended for preventing and managing the increasing prevalence of chronic disease. Despite calls to consider drug use as a chronic health issue, chronic disease self-management supports have rarely been applied to people who use drugs (PWUD), a group experiencing extensive multimorbidity and intersectional stigma. Self-management programs improve health behaviours, health outcomes, and quality of life across chronic diseases, yet it is unclear if similar benefits can be achieved among PWUD. Our objective is to explore the chronic disease self-management and self-management support experiences of socioeconomically marginalized PWUD.

Methods: Community-based participatory research methods were employed, with meaningful engagement of five people with a range of relevant lived experience ("peers"). Guided by this Community Advisory Committee, a qualitative interview guide was developed and aspects of study design adapted to be appropriate for the intended population. Participants will include approximately 30 people with self-identified long-term experience using drugs illicitly, drug use within the past 12 months, having at least one other chronic condition, and experiencing current socioeconomic marginalization. Purposeful sampling with the maximum variation strategy will help capture a diversity of perspectives, and a peer-led recruitment approach is being used to identify participants. Data will be analyzed using intersectionality-informed, reflexive thematic analysis.

Results: We will report findings on how PWUD understand their chronic health issues, including the interplay with their drug use. Findings will highlight impacts on activities and strategies for self-management, including relevant supports or services they access. In addition, any needs for further support will be explored.

Conclusions: Findings will inform people working in public health, health care or research areas, with respect to developing new chronic disease self-management supports for PWUD and other disadvantaged groups, as well as expanding access to currently available self-management support.

Clinical Sciences: STDs (Chlamydia, gonorrhea, syphilis)
Sciences cliniques : ITS (Chlamydia, gonorrhée, syphilis)

KP4.01

Preliminary Results of the Dual Daily HIV and Syphilis Pre-exposure Prophylaxis (DuDHS) Trial

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B**ackground:** The incidence of syphilis is rising and HIV is overrepresented among men who have sex with men (MSM). Daily doxycycline has shown promising results as syphilis pre-exposure prophylaxis (PrEP); however, little is known about the feasibility of combined syphilis and HIV PrEP. A pilot study assessed the feasibility of dual daily syphilis and HIV PrEP use among MSM in Vancouver.

Methods: The DuDHS trial is a randomized controlled trial to determine the feasibility of combined HIV and syphilis PrEP among MSM. From May 2018 to June 2019, HIV-negative MSM with at least one prior diagnosis of syphilis in the past 36 months were recruited through sexual health clinics. Participants received emtricitabine/ tenofovir and were randomized (1:1) to immediate or deferred (by 24 weeks) daily doxycycline (100mg) for 48 week follow-up. Incidence rates for sexually transmitted infection (STI), drug side effects, and adverse events in the first 24 weeks of follow-up are reported.

Results: Of the 52 participants enrolled, 20 cases of STIs were reported in 24 weeks of follow-up; 16 (139.8 per 100 person-years) in the deferred arm and 4 (33.9 per 100 person-years) in the immediate arm. Compared to the immediate arm, the deferred arm experienced increased incidence of syphilis (8.74 vs. 0 per 100 person-years), chlamydia (69.9 vs. 0 per 100 person-years), and gonorrhea (61.2 vs. 33.9 per 100 person-years). No HIV sero-conversions were observed. Gastrointestinal side effects were reported in 4 (15.3%) deferred arm participants and 11 (42.3%) in the immediate arm. 6 (52.4 per 100 person-years) and 2 (16.9 per 100 person-years) cases of adverse events were reported in the immediate and deferred arm, respectively.

Conclusions: In combination with HIV PrEP, participants taking daily doxycycline experience decreased incidence of syphilis and chlamydia as well as increased prevalence of side effects in comparison to deferred doxycycline participants.

Social Sciences: Gay, Bisexual and other Men who have Sex with Men (MSM)
Sciences sociales : Guais, bisexuels et autres hommes ayant des relations sexuelles avec des hommes (HARSAH)

KP4.02

How Does HIV Optimism Feature Within the Perspectives and Experiences of Young Sexual and Gender Minority Men? A Discourse Analysis

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B**ackground:** Epidemiological research indicates that confidence in the availability and effectiveness of HIV treatment (referred to as HIV optimism) is associated with high-risk sexual behaviour among HIV-negative young sexual and gender minority men (SGM). To date, there is a dearth of critical social analyses interrogating how HIV optimism features within the perspectives, experiences, and HIV-related risk behaviour of young SGM.

Methods: Drawing on interviews with 50 young SGM (15-30-years-old) in Vancouver, we employed a discourse analysis to explore how SGM's sexual risk behaviour is constituted by HIV optimism.

Results: Our analysis revealed three discourses. First, a discourse of realism featuring positive attitudes about the state of the HIV intervention landscape. This discourse featured their knowledge about U=U and personal use of PrEP, including an emphasis on how PrEP has served to reduce their HIV-related anxiety. Second, a discourse of fear regarding the social repercussions of becoming HIV positive featured in descriptions of HIV-related concerns about the perceived stigma that they would experience in the event of seroconversion. This discourse was underpinned by the perceived negative stigma-related impacts of HIV. Third, a discourse of (re)individualization focused on the need for SGM to manage their own HIV prevention strategies, including an emphasis on the need to be "well educated" about HIV. This discourse featured a heavy burden and sense of individual-level responsibility.

Conclusion: Our findings reveal how HIV optimism does not account for a variety of factors that influence how HIV risk is understood by today's young SGM, including the extent to which their concerns about HIV focus on the social implications of seroconversion, rather than the health-related concerns. Future work in this area should more fulsomely address how features of the evolving intervention landscape (e.g., availability of PrEP) may interact with socially-relevant understandings of HIV (e.g., stigma) to influence risk behaviour.

Social Sciences: Trans and Nonbinary Communities
Sciences sociales : Collectivités trans et non binaires

KP4.03

"Canada's Got Talent" — Trans Latinas Ontario (TLO) & Economic Integration Through Employment. A program for HIV+/- Individuals, HIV Prevention Program, CSSP

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B**ackground:** Transgender social-economic integration has been proved challenging in Toronto, Ontario. Particularly for trans immigrants to Canada who were raised/educated in the Spanish/Latino culture. Sexual-migration explains the journey of geographic relocation for those who have not been accepted in their home networks, and have moved here (voluntary or forced migration) to start a better life. Despite the fact of still, in 'safer" Canada, having to face transphobia and having to trade social mobility as immigrants (language barriers, job/educational credentials, name change, transition process, social isolation), presents unique challenges for this group.

The Problem: Immigrants to Canada struggle to have access to the same gradients of wellness and economic inclusion when compared to their peers who are Canadian born. This situation holds back immigrants' economic and social integration, a problem that is worse for trans immigrants because they coexist in a deeper intersectional marginalized position. Building job/labour integration capacity for those individuals was one of TLO's main goals.

Results: TLO, 75 sessions (2015-2019, n=40) has yielded at this point in time (final numbers will be delivered at conference time), 8 stories of employment success (so far). TLO's participants have gained job security from part-time jobs in some programs such as CBW, to full-time coordinators of the Trans Employment Program (TEP, IRCC funded), as well as part-time facilitators of the Trans S.P.A. workshop-series and even becoming members of HIV/Sexual Health agencies' Advisory Committee Boards.

Lessons Learned: Transgender individuals are fully employable if given the training and opportunity to gain skills and improve their lives. Coaching for learning how to access full social and economic integration may be needed. All the TLO employed members, have already become peer educators and natural leaders for other peers and groups, creating tiers of wellness and social justice. Economic integration is associated with wellness and social empowerment.

Social Sciences: Models of Care and Improving Access
Sciences sociales : Modèles de soins et meilleur accès

KP4.04

Mobilise!: Development and Validation of a Evaluative Monitoring Tool to Assess Access to Services for gbMSM Based on a Community-based Participatory Research

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B**ackground:** Since 2014, the Mobilise! Project, a participatory research, aims to improve access to services for gbMSM. Based on a framework by Lévesque, Harris and Russell (2013), access to services is characterized using 5 dimensions (approachability, acceptability, availability and accommodation, affordability and appropriateness) and targets changes both on the users' level and on the intra and interorganizational level. Building on these dimensions, a monitoring tool comprised of indicators and criteria was created for organizations to monitor access to their services for gbMSM.

Method: Since 2016, a four-step process has led to the development and validation of the monitoring tool: 1) an environmental scan using an ethnographic approach with more than 400 health services (Montreal=140; Ottawa=76; Toronto=136; Vancouver=53) offered to gbMSM (screening, sexual health, PEP, PrEP, mental health, etc.), 2) 22 focus groups in 4 cities with gbMSM and service providers, 3) an online questionnaire completed by key informants and community members using the Delphi method, and 4) the repetition of the environmental scan in 3 pilot organizations.

Results: The environmental scan allowed testing a first version of the monitoring tool. The focus groups helped refining the indicators and criteria that capture the 5 dimensions of access to services. The online questionnaire and repetition of the environmental scan allowed finalizing and validating them. This process led to a validated monitoring tool and ensured that the indicators were mutually exclusive. A guide, integrating the evaluative monitoring tool and a description of the final indicators and criteria, was produced in order to support organizations in the process of monitoring access to their services (available at www.projetmobilise.org) .

Conclusion: The evaluative monitoring tool allows organizations to review the strategies put in place to optimize access to their services and ensure that they are approachable, acceptable, available and accommodating, affordable and appropriate for gbMSM.

Social Sciences: Gay, Bisexual and other Men who have Sex with Men (MSM)
Sciences sociales : Guais, bisexuels et autres hommes ayant des relations sexuelles avec des hommes (HARSAH)

KP4.05

HIV Testing and PrEP Use among Manitoba's Two-Spirit, Gay, Bisexual, and Queer Men

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B**ackground:** This study examined the socio-demographic correlates of lifetime HIV testing and recent PrEP use among Two-Spirit, gay, bisexual, queer, and other men who have sex with men (2SGBQM) in Manitoba.

Methods: Data were drawn from a community-based, Manitoba-wide online survey of 2SGBQM (age 18+). Chi-square analyses and logistic regression were used to examine the relationships between socio-demographics (age, ethnicity, income, education, sexual orientation, urban/rural area, employment) on both lifetime HIV testing and recent PrEP use.

Results: Of 386 participants, 82 (21.2%) reported never being tested for HIV. Among 300 (78.8%) men who reported being tested for HIV, 72 (24%) reported being HIV-positive, 8 (2.7%) unsure, and 220 (73.3%) HIV-negative. Among participants living with HIV, 46 (66.7%) reported a detectable viral load (<50copies/m). Among respondents, 96 (32.1%) had to leave their home community (town/village/reserve) to complete their HIV test. Having been tested for HIV was associated with younger age (AOR=0.89,95%CI:0.83-0.96), and was less likely among participants with lower household incomes (<$30,000) versus incomes of $30,000-$59,999 (AOR=5.50,95%CI:1.22-25.14) or $60,000-$100,000 (AOR=7.40,95%CI:1.62-33.34), and less likely among participants who lived in Winnipeg versus men who lived in semi-urban (AOR=14.10,95%CI:4.42-45.32) or rural areas (AOR=3.85,95%CI:1.45-10.17). Among 94 men who provided information on PrEP, 15 (7.3%) were not aware of PrEP, 48 (51.1%) had never been on PrEP, 21 (22.3%) used PrEP in the past year but stopped using it, and 25 (26.6%) currently used PrEP. Those who currently used PrEP were more likely to have higher annual incomes of $60,000-$100,000 versus <$30,000 ($\chi 2=24.5$,$p<.001$) and more likely to be employed full-time versus unemployed ($\chi 2=14.4$, $p<.01$).

Conclusion: Differing HIV testing patterns should help inform targeted testing promotion for 2SGBQM in Manitoba. Policy makers should pay attention to provincial policies on PrEP coverage, extended health benefits, and socio-economic disparities that affect Manitoba 2SGBQM's acces to HIV testing and PrEP.

Social Sciences: Intersecting Identities and HIV
Sciences sociales : Identités et VIH : contextes en croisement

KP4.06

The Role of Perceived Discrimination on Suicidal Ideation Among Gay, Bisexual and Other Men Who Have Sex with Men in Montreal

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B**ackground:** Suicidal ideation (**SI**) in gay, bisexual and other men who have sex with men (GBM) is more common among those living with HIV (GBM-LWH); postulated to be driven by discrimination. Similarly, racial microaggression is associated with **SI**. For many GBM, these axes of discrimination intersect. We determined **SI** prevalence for such GBM and examined the effects of intersectional membership, defined by ethnicity and HIV status on **SI**, operating through discrimination.

Methods: Baseline data (02/2017-06/2018) involving computer-assisted self-interview of sexually-active GBM aged≥16 years recruited via respondent-driven-sampling (RDS) from the Engage-Montréal study were analyzed. Four intersectionalities were defined: white & HIV-negative(**G1**); white & HIV-positive(**G2**); visible-minority & HIV-negative(**G3**); visible-minority & HIV-positive(**G4**). RDS-weighted proportions estimated **SI** prevalence for each group. Using causal mediation intersectionality analysis (Bauer et al, 2019), we evaluated the total, direct and indirect effects of being in each group on **SI** (any vs none), in the **prior 6-months**; mediated by perceived discrimination (**PD**), measured using the Everyday Discrimination Scale. Parameters were estimated using logistic natural effect models adjusting for potential confounders (age, gender identity).

Results: Of 1089 GBM participants, 17% were GBM-LWH, 77% were white, median age was 34 years (IQR: 27-49). RDS-adjusted prevalence[%(95%CI)] of SI were: **G1(n=686):** 34.8(28.5,41.1); **G2(n=152):** 23.6(10.8,36.4); **G3(n=219):** 34.5(24.4,44.6); **G4(n=32):** 21.3(0,100). Mean (SD) **PD** scores were highest for **G3:** 1.91(0.98) and lowest for **G1:** 1.50(0.74). Relative to the impact of **PD** in G1, **PD** increased the odds (95%CI) of **SI** by 1.18(1.05,1.31) in G3, and by 1.08(0.97,1.22) in G2. No direct effects were significantly associated with **SI**, indicating observed **SI** was largely attributable to **PD**.

Conclusion: PD appears to affect **recent SI** across intersections and within intersections to be ethnicity or HIV-status related. Future analytical plans include sensitivity analyses for robustness of estimates, extending analyses to other Canadian cities and exploring mechanisms to explain lower than expected SI and PD in G4.

Basic Sciences: Eradication Strategies Towards an HIV Cure
Sciences fondamentales : Stratégies d'éradication, vers un remède contre le VIH

BS3.01

Productively-Infected Cd4 T Cells are Resistant to Non-neutralizing Antibodies

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The conformation of the HIV-1 envelope glycoprotein (Env) substantially impacts antibody recognition and ADCC responses. In its unliganded form, the Env samples a closed conformation that is preferentially recognized by broadly-neutralizing antibodies (bNAbs). CD4 engagement drives Env into the "open" CD4-bound conformation, preferentially targeted by non-neutralizing Abs (nnAbs). The virus prevents exposure of CD4-induced epitopes by downregulating CD4 via Nef and Vpu. Despite significant advances on the understanding of HIV resistance to ADCC, the capacity of nnAbs to mediate ADCC against productively-infected cells remain controversial. Here, we used multiparametric flow cytometry and RNA-flow fluorescent in situ hybridization (FISH) techniques to characterize cell populations targeted by bNAbs and/or nnAbs in the context of HIV-1-infected primary CD4+ T cells. Productively-infected cells are recognized by bNAbs, efficiently downregulate CD4, express high levels of Nef and p24 proteins and are enriched in HIV-1 mRNA ($CD4^{-}p24^{+}Nef^{+}$HIV $mRNA^{+}$). In contrast, cells targeted by nnAbs are CD4-positive, express little or no p24 and are negative for Nef expression and HIV-1 mRNA ($CD4^{+}p24^{-}/p24^{LOW}Nef^{-}$HIV $mRNA^{-}$). Moreover, cells recognized by nnAbs are Env mRNA negative, suggesting that they represent cells coated with either shed Env and/or non-infectious viral particles. As expected, we observed that CD4 downregulation precedes the expression of HIV-1 late transcripts. Thus, confirming that the $CD4^{+}p24^{LOW}Nef^{-}$HIV $mRNA^{-}$ cells targeted by nnAbs are not part of the viral replication cycle. Finally, we found that *ex vivo* expanded CD4+ T cells isolated from HIV-1-infected individuals are sensitive to ADCC mediated by bNAbs but resistant to those mediated by nnAbs. This information is important for the development of immunotherapy-based strategies aimed at targeting and eliminating productively-infected cells.

Basic Sciences: Eradication Strategies Towards an HIV Cure
Sciences fondamentales : Stratégies d'éradication, vers un remède contre le VIH

BS3.02

Latency Reversing Agents: impact on Human Macrophages Susceptibility to HIV-1 Infection and Viral Production

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B**ackground:** Long term persistence of HIV-1 is thought to be the consequence of viral latency in some T CD4+ cell populations. It is postulated that viral reactivation combined with antiretroviral treatment would allow clearance of these latently infected cells. This so-called "shock and kill" strategy relies on the use of latency reversing agents (LRAs). These non-discriminant agents were reported to reverse latency of T cells *in vivo*. However, knowledge regarding their effect on other latently infected populations such as macrophages is scarce. Therefore we aimed to monitor the impact of 3 different classes of LRA agents on macrophage's susceptibility to HIV-1 infection and viral production.

Methods: Primary human monocyte-derived macrophages (MDMs) were exposed for 24h with optimal doses of LRAs either used alone or in dual combinations. Studied LRAs were bryostatin-1 (protein kinase C agonist), JQ-1 (Bromodomain inhibitor) and romidepsin (histone deacetylase inhibitor). Susceptibility to infection and viral production were assessed using a reporter gene detected by flow cytometry, or via an ELISA of the viral capsid. Viability was determined by fluorescent dye exclusion.

Results: Treatment of MDMs with LRAs did not alter cell viability. Bryostatin-1 or romidepsin stimulation prior to HIV-1 inoculation was associated with a 90% and a 50% decrease of infection rate, respectively. This could be linked to the downregulation of CD4 and CCR5 expression induced by bryostatin-1 and romidepsin, respectively. Furthermore, treatment with bryostatin-1 after HIV-1 infection induced a strong decrease in viral and cell-associated CAp24 production without modulating HIV-1 transcription.

Conclusions: None of the LRA tested was able to increase HIV-1 production *in vitro*. Actually, our data indicate that bryostatin-1 stimulation of infected macrophages dramatically decreases HIV-1 production. Thus, our data suggest that LRAs treatments have distinct outcomes in macrophages and T cells, which need to be better deciphered to achieve an HIV-1 cure.

Basic Sciences: Eradication Strategies Towards an HIV Cure
Sciences fondamentales : Stratégies d'éradication, vers un remède contre le VIH

BS3.03

Stabilization of HIV-1 Env State 2A in vivo Reduces the Size of the HIV-1 Reservoir and Prevents Virus Rebound After ART Interruption in Humanized Mice

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Antiretroviral therapy (ART) controls HIV-1; it however does not eliminate the virus, and virus re-emerges upon ART interruption. Thus, new approaches aimed at eradicating or functionally curing HIV are needed. A promising approach to eliminate latently infected cells after viral reactivation relies on the ability of immune cells to mediate antibody-dependent cellular cytotoxicity (ADCC). Through ADCC, effector cells such as NK cells and monocytes can kill infected cells expressing envelope glycoproteins (Env) through recognition by HIV-specific antibodies (Abs). Small CD4-mimetic compounds (CD4mc) sensitize infected cells to ADCC mediated by CD4-induced (CD4i) Abs present in HIV+ sera [1,2]. Two families of CD4i Abs are required to sensitize infected cells to ADCC in the presence of CD4mc: anti-cluster A and anti-coreceptor binding site Abs [2,3]. These CD4i Abs in combination with CD4mc stabilize a new Env conformation, State 2A, which is highly vulnerable to ADCC [2]. Using new-generation humanized mice supporting NK cell function [4], we demonstrate that stabilization of State 2A *in vivo* significantly decreases HIV-1 replication, reduces the size of the viral reservoir (VR) and dramatically, prevents viral rebound after ART interruption. This is only observed with Fc-competent Abs, indicating a role for Fc-mediated effector functions in VR elimination. *Altogether, these results indicate that CD4mc are a promising approach to eliminate infected cells by recruiting immune elements present in infected individuals, and thus could have therapeutic utility in decreasing the size of the VR and/or achieving a functional cure.*

1. Richard et al(2015) *PNAS* 112:E2687-2694
2. Alsahafi et al(2019) *Cell Host Microbe* 25:578-587
3. Richard et al(2016) *EBioMedicine*. 12:208-218
4. Herndler-Brandstetter et al(2017) *PNAS* 114:E9626-E9634

Basic Sciences: Eradication Strategies Towards an HIV Cure
Sciences fondamentales : Stratégies d'éradication, vers un remède contre le VIH

BS3.04

Development of an HIV Vaccine Component Based on Carbohydrate Mimicry

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The existence of several broadly neutralizing antibodies (bnAbs) specific for a patch of oligomannose-type glycans on the HIV spike has highlighted it as a vaccine target. However, immunogens that evoke nAbs to this patch have not been forthcoming, possibly because of immune tolerance restrictions related to the mammalian origin of the glycans. We are exploring antigenic mimicry, using bacterially derived analogs of mammalian oligomannose, as a means to overcome this apparent restriction. We report here on a neoglycoconjugate, dubbed NIT211 (avg. 4-6 glycosides), composed of a previously published oligomannose mimetic conjugated to the Cross-Reactive Material CRM197. We show by ELISA and SPR that members of the PGT128/130 bnAb families bind NIT211 with high avidity. Other oligomannose patch-specific bnAbs bind ~10 fold less avidly (BG18, PGDM21, VRC41) or poorly (PGDM12, PCDN-33A), probably due to their greater dependence on interactions with the HIV protein backbone. NIT211 is also recognized, albeit with the expected low avidity, by inferred germline precursors of oligomannose patch-specific bnAbs. To identify an adjuvant that best evokes glycan-specific responses, we immunized human-antibody transgenic Trianni mice with NIT211 formulated with Alhydrogel (Th2-inducing), GLA-SE (Th1-inducing), or AddaVax (Th1+2-inducing). We found that NIT211 formulated with GLA-SE elicits the most robust antibody response and was the only formulation to yield glycan-specific antibodies, which were restricted to the IgG3 subclass. These sera also bound recombinant HIV SOSIP trimers by ELISA at appreciable titers. Analyses are underway to determine the neutralizing activity of these sera and their specificity.

Basic Sciences: Immunology of HIV and Vaccines
Sciences fondamentales : Immunologie du VIH et vaccins

BS3.05

Frequencies and Correlates of Endocervical Regulatory T Cells (Treg) Amongst HIV Seronegative Female Sex Workers (FSWs) in Nairobi

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B**ackground:** CD4+ regulatory T cells (Tregs) play important roles in tissue homeostasis, but few studies have investigated these in the female reproductive tract (FRT). Here, we sought to characterize cervical and blood Tregs and correlated these to demographic variables, sexual behavior, and inflammation profiles, as surrogates of HIV/STI susceptibility.

Methods: Endocervical and blood samples were collected from 68 HIV seronegative FSW from the SWOP City clinic in Nairobi. Tregs were defined by flow cytometry as CD4+ T cells expressing CD25 but not CD127; these cells were then gated separately on FoxP3+ and CTLA-4.

Results: . Most cervical and peripheral Tregs expressed FoxP3 (45.3%, IQR 25.9-58.8). Cervical Tregs constitutively expressed higher levels of CTLA-4 compared to blood (50.8%, IQR 32.1-71.3 vs 6.04%, IQR 2.2-10.7; P<0.0001). The proportion of Tregs in the cervix correlated with those in blood (r=0.31, P=0.01), but Treg frequency was higher in the cervix (median 3.8%, IQR 2.2-7.1 vs 2.0%, IQR 1.3-2; P<0.0001). Tregs in the cervix correlated inversely with endocervical CD4+ T cells (r=-0.43, P=0.00003), which have been associated with genital inflammation. The frequency of sex with repeat but not casual clients correlated inversely with cervical Treg frequencies (r= -0.35, P=0.005 for repeat; r=0.038, P=0.766 for casual). History of stillbirth, miscarriage or spontaneous abortion was associated with lower frequencies of cervical Tregs (P=0.043). A trend toward lower Tregs was observed amongst women who used depot medroxyprogesterone acetate for contraception, compared to other methods (P=0.107), while the use of oral pills as contraception trended toward more endocervical Tregs.

Conclusion: . These data add to our basic understanding of the role of Tregs in the FRT. Efforts are underway to elucidate how Tregs regulate inflammation and microbiome diversity, which might provide critical insights in reducing HIV susceptibility through better HIV prevention interventions for key populations such as FSWs.

Basic Sciences: Immunology of HIV and Vaccines
Sciences fondamentales : Immunologie du VIH et vaccins

BS3.06

Breg Function of Marginal Zone Precursor B-cells is Modulated by BAFF-expressing Dendritic Cells

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Our lab identified a subset of human blood B-cells that express markers of both transitional immature and marginal zone (MZ) B cells, called henceforth precursor-like MZ (MZP) B-cells. B-cells with similar attributes have been associated with a regulatory potential (Breg). As such, RNA-seq transcriptomic analyses of this population revealed high expression of several regulatory markers, such as the nuclear receptors NR4A1-3 (shown to be essential for the expression of FoxP3 in regulatory T cells (Tregs)), CD83 and CD39/CD73. We found that these MZP presented Breg function which involved signals delivered via CD83. Preliminary data in our lab suggest that the B Lymphocyte Stimulator/Activation Factor (BLys/BAFF), essential to the selection of the MZ B-cell pool, is involved in shaping Breg responses from MZP B-cells. As such, Dendritic cells (DC), which are involved in MZ T-independent responses, are one of the main producers of BLyS/BAFF. We thus decided to analyze the interplay between BLys/BAFF^{+} DCs and MZP B-cells, as to regulation of expression of regulatory markers such as NR4A1-3. We noticed that in NR4A3$^{-/-}$ mice, which lack Monocyte Derived Dendritic Cells (MoDC), BLyS/BAFF levels are lower following an immune challenge than their WT counterparts, which suggests the importance of MoDC in production of this cytokine. Moreover, we noticed that co-culture of human tonsillar BLys/BAFF^{+} DC and autologous total B-cells up-regulated NR4A1-3 as well as CD83 protein levels in MZP, and this was dependent on BLyS/BAFF. Together, these results show the importance of the interplay between DC, MZP B-cells and BLyS/BAFF in shaping Breg functions. Blood BLyS/BAFF levels and MZP frequencies are increased in the context of HIV infection, early on and beyond therapy. It is possible the higher levels of the MZP B-cells impede on an adequate immune response and clearance of the disease.

Basic Sciences: Immunology of HIV and Vaccines
Sciences fondamentales : Immunologie du VIH et vaccins

BS3.07

Epigenetic Control of Human Regulatory T Cells (Tregs) During HIV-1 Infection

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B**ackground:** Immunosuppressive Tregs originate either from the thymus, or in the peripheral blood during inflammation. Demethylation of *foxp3* locus is required for stable FoxP3 expression and suppressive functions of Tregs. Conserved non-coding sequences (CNS) regulate *foxp3,* controlling either thymic (CNS2) or peripheral (CNS1) origin of Tregs, or FoxP3 stability (CNS0/CNS3). HIV infection is characterized by increased Treg frequencies and functions which contribute in HIV-related immune dysfunction. However, the epigenetic control of Tregs during HIV infection is understudied.

Methods: We assessed the *foxp3* epigenetic status and the distribution of Treg subsets among 6 study groups: HIV-infected individuals in acute and chronic phases, ART-treated, elite controllers, immunological controllers and uninfected individuals (n=7-10/group). Bisulfite conversion followed by nested-PCRs of each region was performed on genomic DNA of FACS-sorted Tregs. *foxp3* methylation status was assessed by NGS using Illumina MiSeq technology (≈25,000 sequences/sample). In parallel, flow cytometry was performed to assess markers associated with recent thymic emigrants (CD31) and thymic Tregs (Helios).

Results: CNS1 region has the highest variability within the study groups. No changes were observed in the demethylation of CNS0, enhancer and proximal promoter within the groups. Highest demethylation of CNS1 and CNS2 were observed in HIV+ individuals in acute phase followed by chronic phase. CNS2 demethylation was reversed in the Tregs from ART-treated individuals. Interestingly, elite controllers represent a similar CNS1 signature than uninfected individuals. Frequencies of total Tregs and Helios+ thymic Tregs were highest in chronically infected HIV+ individuals, which was reduced by ART. Recently migrated CD31+ Tregs were decreased in all HIV+ groups. We also observed a negative correlation between CD31+ Tregs and demethylation of CNS1.

Conclusion: Overall, during HIV infection, Treg differentiation is promoted in both thymus and peripheral blood and epigenetic status of *foxp3* in HIV elite controllers is similar to uninfected individuals.

Basic Sciences: Immunology of HIV and Vaccines
Sciences fondamentales : Immunologie du VIH et vaccins

BS3.08

ADCC Competent Antibodies Against HIV-1-Infected Cells in Plasma from HIV-infected Subjects

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B**ackground:** Envelope (Env)-specific antibody dependent cellular cytotoxicity (ADCC)-competent antibodies (Abs) in HIV$^+$plasma wereimplicated in protection from HIV infectionin the RV144 trial. However, measuring Env-specific ADCC-competent Abs is challenging because Env displays distinctive epitopes when in a native closed trimeric conformation on genuinely infected cells or in a CD4-bound conformation on uninfected bystander cells. We developed an ADCC model, which distinguishes Env-specific ADCC-competent Abs based on their capacity to eliminate infected, bystander or Env rgp120 coated cells as a surrogate for shed gp120 on bystander cells.

Methods: CEM.NKr.CCR5 (CEM) cells, coated with rgp120 or infected with an HIV virus expressing Bal-Env and a reporter gene (HSA), were opsonized with monoclonal broadly neutralizing (bNAb) and non-neutralizing (nNAb) Abs, to Env or HIV$^+$plasma and used as target cells. Killing of target cells by ADCC was quantified by measuring the frequency of apoptotic target cells using annexin V.

Results: TheAb panel used to opsonize these target cells, showed that infected CEMs were preferentially recognized/eliminated by bNAbs to CD4 binding site, V3 loop and viral spike epitopes while bystander/coated CEMs were preferentially recognized/eliminated by Abs to CD4-induced (CD4i) epitopes. In HIV$^+$plasma, Env-specific Abs recognized and supported ADCC of infected CEM cells though a majority were directed towards CD4i epitopes on bystander cells.

Conclusion: In contrast to many ADCC assays currently being used that do not distinguish infected and bystander cells or use rgp120-coated cells as targets, our assay simultaneously quantifies the ADCC competence of Env-specific Abs on both infected and uninfected bystander cells. Only a minority of Env-specific Abs in HIV$^+$plasma mediates ADCC of genuinely HIV infected cells displaying Env in its native closed conformation.Most were directed towards CD4i epitopes on bystander cells, a phenomenon that could be associated with the CD4 depletion *in vivo*.

Clinical Sciences: Clinical Trials and Observational Studies of Antiretrovirals and Other HIV Therapies
Sciences cliniques : Essais cliniques et études d'observation des antirétroviraux et autres thérapies anti-VIH

CS3.01

Effectiveness and Safety of Bictegravir/Emtricitabine/Tenofovir Alafenamide (B/F/TAF in Canadians Living with HIV; the BICSTaR Cohort

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In clinical studies, B/F/TAF is highly efficacious and well tolerated in antiretroviral treatment (ART)-naïve (TN) and ART-experienced (TE) HIV-1-positive participants, with zero resistance through three years.

BICSTaR Canada is an ongoing, non-interventional, prospective, multi-center, cohort study with 200 adult participants from six clinics to evaluate the effectiveness, safety and tolerability of B/F/TAF in routine clinical practice. Outcomes included HIV-1 RNA, drug-related (DR) adverse events (AEs), weight changes and persistence of the B/F/TAF regimen.

A total of 123 HIV-1-positive participants (9 TN, 114 TE) initiated B/F/TAF and had completed 6 months (M6) of follow-up at the time of data cut-off. Median age was 38 and 51 years for TN and TE participants, respectively and 12% were female. Main reasons for starting B/F/TAF were "early treatment" (56%, TN) and "simplification" (68%, TE). Ongoing comorbidities at baseline included neuropsychiatric disorders (28%), hyperlipidemia (28%), arterial hypertension (22%) and cardiovascular disorders (12%). Of those participants with available HIV-1 RNA data at M6 (n=116), HIV-1 RNA was <50 copies/mL in 9/9 (100%) TN participants and in 105/107 (98%) of TE participants. Median CD4 cell counts increased from 356 to 590 in TN participants and remained stable in TE participants (574 to 554 cells/µL). Median absolute [relative] weight changes at M6 was 0kg [0% (IQR, -5.1; 8.0); baseline weight 81kg] and 0.4kg [0.5% (IQR, -1.5; 2.4); 79kg] in TN and TE participants, respectively. Persistence with B/F/TAF was high (98% on treatment) with 3 TE (2%) participants discontinuing B/F/TAF (2/3 due to DRAEs; 1/3 participant decision). No discontinuations were due to renal or bone AEs. Overall, DRAEs were reported in 6 (5%) participants, with psychiatric disorders being the most common in 3 (2%). No serious DRAEs were reported.

In the BICSTaR study B/F/TAF in Canadian clinical practice showed high effectiveness, safety and tolerability through 6 months.

Clinical Sciences: Clinical Trials and Observational Studies of Antiretrovirals and Other HIV Therapies
Sciences cliniques : Essais cliniques et études d'observation des antirétroviraux et autres thérapies anti-VIH

CS3.02

Effect of Metformin Treatment on Non-Diabetic HIV-Infected Individuals on ART

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HIV preferentially infects gut-homing CCR6$^+$Th17 cells *via* mechanisms dependent on the mechanistic target of rapamycin (mTOR), a positive regulator of HIV transcription. Here, we evaluated immunological/virological effects of Metformin (an indirect mTOR inhibitor) in a cohort of ART-treated people living with HIV (PLWH).

Metformin (850 mg bid) was administered for 12 weeks in 22 ART-treated PLWH. Participants were non-diabetic, on ART for >3 years, with <40 HIV-RNA copies/ml plasma for >3 months, and CD4/CD8 ratios ≤ 0.7. Blood was collected at baseline (Visit 1), after 12 weeks of Metformin (Visit 2), and 12 weeks after the end of Metformin (Visit 3). Sigmoid colon biopsies (≈32 biopsies/participant) were collected at Visits 1 and 2 (n=13). Matched blood/colon memory CD4$^+$ T-cells were phenotypically characterized and sorted by flow cytometry. HIV-DNA/RNA were quantified by ultrasensitive real-time nested-PCR/RT-PCR. Plasma soluble factors were quantified using the R&D Systems Multiplex Assay and ELISA (sCD14, LBP, I-FABP).

Investigations on matched blood/colon samples revealed that Metformin *i)* decreased the frequency of colon CD4$^+$ T-cells (7.34% vs. 4.71%; p=0.019; Visit 1 *vs*. 2), suggestive of reduced colon inflammation; *ii)* decreased mTOR phosphorylation in colon CCR6$^+$CD4$^+$ T-cells (13% vs. 7.87%; p=0.0087; Visit 1 *vs*. 2); *iii)* tended to decrease the expression of CCR5 and integrin β7, and to increase expression of SAMHD1 in colon CCR6$^+$CD4$^+$ T-cells; and *iv)* decreased sCD14 plasma levels (1,893 vs. 1,519 ng/ml; p=0.02; median, Visit 1 *vs*. 3). HIV-DNA levels were stable in blood/colon memory CD4$^+$ T-cells at Visit 1 *vs.* 2. Noteworthy, residual HIV transcription was decreased in the colon at Visit 2 *vs.* 1.

Together, these results suggest benefits of Metformin in reducing immune activation and residual HIV transcription and support its further investigation in an HIV remission/cure strategy.

Clinical Sciences: Complications of Antiretroviral Therapy
Sciences cliniques : Complications des traitements antirétroviraux

CS3.03

Declining Prevalence of Drug Interactions Between Antiretroviral and Other Drugs in Antiretroviral Therapy (ART)-Treated Persons in British Columbia (BC), 2010-2016

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B**ackground:** Drug interactions (DI) between antiretroviral (ARV) and non-ARV ("ARV+Other") medications are potentially harmful. This observational study sought to characterize possible changes in prevalence of ARV+Other drug DIs over time, during a period of evolving ART prescribing patterns.

Methods: Linked health administrative data were obtained from BC's Seek and Treat for Optimal Prevention of HIV/AIDS (STOP-HIV/AIDS) population-based cohort. HIV-1-infected adults (≥19 years) were included in each calendar year they received ART, between 01-Jan-2010 and 31-Dec-2016. Co-prescribed ARV+Other drug combinations were identified from prescription data, and DIs assessed using HIV DI databases (see Table footnote). The annual proportion of persons with ≥1 "Caution" or "Avoid" DI was calculated for all ART-treated persons, and for ARV class-specific DIs. Trends in DI prevalence over time were tested by generalized linear mixed models, adjusted for age and sex.

Results: In total, 9035 persons were included. Table 1 shows demographics, ARV use, and DIs by year. From 2010 to 2016, prevalence of any ARV+Other drug DI declined from 76% to 61% ($p<0.001$) and "avoid" DIs declined from 4.9% to 2.8% ($p<0.001$). Within ARV classes, DI prevalence was highest for PIs and hepatic enzyme-inducing NNRTIs (>60%) and lowest for unboosted INSTIs (11%). The downward trend in overall prevalence of ARV+Other drug DIs mirrored an observed prescribing shift from PIs and NNRTIs towards unboosted INSTIs (see Table).

Conclusions: Although prevalence of ARV+Other drug DIs has declined in recent years, DIs of potential clinical importance affect more than half of ART-treated persons annually; therefore, monitoring remains important.

Demographic Characteristics, Antiretroviral (ARV) Usage and Drug Interaction (DI) Prevalence 2010-2016 (showing three representative years).			
Variable	**2010**	**2013**	**2016**
Population Characteristics, n (% N-All ART treated)			
N-All ART-treated	5949	6944	7585
Age, median (Q1-Q3) years	47 (41-53)	48 (41-55)	50 (42-57)
Biological sex, male	4976 (84)	5758 (83)	6299 (83)
≥1 Other co-prescribed drug	5272 (89)	6122 (88)	6519 (86)
Overall prevalence of ARV+Other Drug Interactions (% of N-All ART-treated)			
≥1 Caution or Avoid DI	4494 (76)	4962 (71)	4648 (61)*
≥1 Avoid DI	294 (4.9)	250 (3.6)	211 (2.8)*
Distinct ARV+Other drug DI, median (Q1-Q3), among persons with any DI	3 (2-5)	3 (1-5)	2 (1-4)*
Prevalence of class-specific ARV+Other drug interactions (DI), for commonly prescribed ARV classes			
Boosted PI, (% of N-All)	3547 (60)	3821 (55)	3492 (46)
Any DI (% of Boosted PI)	*2801 (79)*	*2990 (78)*	*2571 (74)*
Unboosted PI, (% of N-All)	221 (4)	254 (4)	186 (3)
Any DI (% of Unboosted PI)	*151 (68)*	*178 (70)*	*122 (66)*
NNRTI-Inducer, (% of N-All)	2685 (45)	2914 (42)	2275 (30)
Any DI (% of NNRTI-Inducer)	*1731 (64)*	*1787 (61)*	*1355 (60)*
NNRTI-Rilpivirine (% of N-All)	0	271 (4)	300 (4)
Any DI (% of NNRTI-Rilpivirine)	-	*34 (13)*	*56 (19)*
Boosted INSTI, (% of N-All)	0	136 (2)	674 (9)
Any DI (% of Boosted INSTI)	-	*59 (43)*	*392 (58)*
Unboosted INSTI, (% of N-All)	643 (11)	1050 (15)	2460 (32)
Any DI (% of Unboosted INSTI)	*67 (10)*	*117 (11)*	*273 (11)*

N-All ART-treated, number of persons receiving Antiretroviral Therapy in that year; Other drug, co-prescribed non-ARV medication; Caution or Avoid DI, ARV+Other drug interaction with "Caution" or "Avoid" classification, assessed by HIV clinicians based on University of Liverpool and Toronto General Hospital HIV DI databases; Any DI, ≥1 Caution or Avoid DI; Boosted PI, ritonavir or cobicistat-boosted Protease Inhibitor (atazanavir, darunavir, lopinavir, fosamprenavir, indinavir, saquinavir, tipranavir); Unboosted PI, atazanavir, nelfinavir; NNRTI-Inducer, Non-Nucleoside Reverse Transcriptase Inhibitors which induce hepatic enzymes (efavirenz, nevirapine, etravirine); Boosted INSTI, boosted Integrase Strand Transfer Inhibitor (elvitegravir-cobicistat); Unboosted INSTI, dolutegravir, raltegravir. *Declining trend 2010-2016, p<0.001, tested by generalized linear mixed models, adjusted for age and sex, using data from all years.

Clinical Sciences: Pharmacology, Pharmacokinetics and Pharmacoeconomics
Sciences cliniques : Pharmacologie, pharmacocinétique et pharmacoéconomie

CS3.04

Untimed Plasma Efavirenz Levels after Switching from Brand to Generic Formulations

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B**ackground:** In British Columbia, ARVs are distributed by the publicly-funded BC Centre for Excellence in HIV/AIDS Drug Treatment Program (DTP), using generic formulations when possible. A generic efavirenz-emtricitabine-tenofovir DF (EFV-FTC-TDF) combination pill became available in April 2018. To estimate bioequivalence of the generic product, we compared EFV untimed drug levels (UDL) in DTP participants switching from brand to generic EFV-FTC-TDF.

Methods: Archived plasma samples were identified for consenting DTP participants who switched to generic EFV-FTC-TDF. For each person, 3 pre-switch and 2-3 post-switch samples collected ≥1 month apart were selected. EFV dosing time was unknown ("untimed") relative to plasma collection. EFV concentrations were determined using LC-MS/MS. Participants' mean pre- and post-switch EFV levels were compared using the Wilcoxon signed-rank test. We also evaluated the number of participants with EFV levels in the range associated with decreased risks of virologic failure and central nervous system toxicity (1000-4000 ng/mL) before and after switch.

Results: EFV levels were measured in 261 pre-switch and 225 post-switch samples from 87 participants. Participants had a median 103 (Q1-Q3: 87-116) and 12.7 (Q1-Q3: 12-14) months of exposure to brand and generic EFV, respectively. The final brand sample was collected a median 97 (Q1-Q3: 78-109) days pre-switch, the first generic sample a median 123 (96-176) days post-switch. No significant differences were observed in participants' mean EFV levels before (median 1968 ng/mL; Q1-Q3: 1534-2878 ng/mL) and after (median 1987 ng/mL; Q1-Q3: 1458-2800 ng/mL) switch (p=0.70). In total, 69 participants had mean EFV levels within the 1000-4000 ng/mL range while on brand drug, of which 65 (94%) remained within this range following switch.

Conclusion: No statistically significant differences in untimed EFV concentrations were observed in patients switching from brand to generic EFV combination pill. Given the long elimination half-life of EFV, UDL may be a convenient method to estimate bioequivalence

Clinical Sciences: Resistance
Sciences cliniques : Résistance

CS3.05

Utility of HIV Drug Resistance Testing in Low Viral Load Samples

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B**ackground:** Genotypic HIV drug resistance testing (DRT) is recommended before treatment initiation and at virologic failure. While many DRT assays are approved for use in samples with plasma viral load (pVL)>1000 HIV RNA copies/mL, the BC Centre for Excellence in HIV/AIDS (BC-CfE) Laboratory is accredited to test samples as low as 250 copies/mL, and under exceptional circumstances can also test samples with pVL<250 copies/mL under a research protocol. Performing DRT in low pVL samples, however, is resource-intensive and the clinical relevance of these genotypes is unclear. We investigated whether DRT of low pVL samples can identify emergent drug resistance not captured by previous testing.

Methods: All BC physician-ordered HIV DRT requests from 1998-2018 were retrospectively analyzed. HIV Protease-RT sequences collected from low pVL samples (<250 copies/mL) were compared to all prior clinical DRT results from the same patients.

Results: From 1998-2018 the BC-CfE Laboratory received 40,153 DRT requests, of which 2045 (5%) were low pVL. In total, 1248 (61%) low pVL samples were successfully tested, compared to 82% and 95% of samples with pVL 250-1000 and pVL>1000 copies/mL, respectively (p<0.0001). A total of 1129 (90%) low pVL samples were from patients with prior DRT (median 4; Q1-Q3: 2-7 samples/patient), where the low pVL sample was collected a median of 31 (Q1-Q3: 7-81) months following the past DRT. Only 72 (6%) of low pVL genotypes revealed new or worsening resistance to one or more antiretrovirals. The majority of newly-identified resistance in low pVL genotypes was to 3TC/FTC and NNRTIs. The high test failure rate (~40%) and the infrequent detection of novel resistance mutations indicate that <4% of requested DRTs reveal additional resistance information not already captured in historical resistance genotypes.

Conclusions: Routine DRT of samples with pVL<250 copies/mL is not recommended for patients for whom historic genotype information is available.

Clinical Sciences: Resistance
Sciences cliniques : Résistance

CS3.06

A Clinically-derived HIV Integrase Sequence Harboring High Levels of Genotypic and Phenotypic Resistance to Integrase Strand Transfer Inhibitors

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B**ackground:** HIV drug resistance impacts long-term treatment success. While major integrase strand transfer inhibitor (INSTI) resistance mutations have been identified *in vitro* and in patients failing INSTI, the effect of mutation combinations on phenotypic resistance are less well understood. We investigated phenotypic resistance in a clinically-derived sequence harboring high-level INSTI genotypic resistance.

Methods: Routine clinical testing (consisting of bulk RT-PCR and sequencing) identified a sample that carried the major resistance mutations E138K, G140S and Q148H and the accessory resistance substitution T97A. This rarely-observed mutation combination conferred high-level genotypic resistance to all INSTI (HIVdb v8.8). Following RNA extraction from plasma, three integrase amplicons were independently re-amplified from endpoint-diluted templates and sequenced (Illumina MiSeq). Clonal recombinant viruses were constructed by co-transfection of the integrase amplicon and linearized integrase-deleted pNL4.3 plasmid into a *tat*-driven GFP reporter CEM-GXR cell line. Recombinant virus stocks were harvested when CEM-GXR cultures reached >15% GFP+ cells. Viral infectivity (titer) assessments and subsequent INSTI resistance phenotyping were also performed in CEM-GXR cells. For the phenotyping, recombinant viruses were grown in the presence of 0.01-1,000nM raltegravir (RAL), elvitegravir (EVG), dolutegravir (DTG), bictegravir (BIC) and cabotegravir (CAB). EC50 fold-changes (FC) relative to a NL4.3 control were determined on day 4 post-infection.

Results: Sequencing confirmed that all three single-genome-amplified integrase amplicons were clonal and identical, and all carried T97A/E138K/G140S/Q148H on the same genome. First-generation INSTI (RAL and EVG) did not inhibit recombinant virus replication at any tested concentration, yielding a minimum of >435-fold decreased susceptibility to these INSTI relative to NL4.3. Across the three replicates, the recombinant virus exhibited 185-, 152-, and 8,300-fold decreased susceptibility to the second-generation INSTI DTG, BIC, and CAB respectively, relative to NL4.3 control.

Conclusion: The combination of Integrase mutations T97A/E138K/G140S/Q148H completely abolishes RAL and EVG activity, and confers extremely high-level phenotypic resistance to DTG, BIC, and CAB.

Clinical Sciences: Resistance
Sciences cliniques : Résistance

CS3.07

Delayed Development of Resistance to Doravirine and Islatravir (EFdA) in Dual Selections

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I**ntroduction:** Doravirine, a recently approved non-nucleoside reverse transcriptase inhibitor (NNRTI) (2018), shows high efficacy and tolerability. In this study, we performed *in vitro* experiments to compare the drug resistance profiles of doravirine and rilpivirine, alone & paired with each of two nucleoside reverse transcriptase inhibitors (NRTIs), lamivudine (3TC) and Islatravir (EFdA).

Methods: Cord blood mononuclear cells were infected with subtype B (n=4) and non-B subtype (n=3) viral supernatants and passaged in rising concentrations of single & dual drug treatments. Genotypic analysis monitored the acquisition and accumulation of drug resistance mutations at weeks 8 and 24 following selective drug pressure. Cell-based phenotypic assays assessed levels of resistance and cross-resistance of selected variants to NNRTIs.

Results: Sustained doravirine pressure resulted in the acquisition of V108I (4/7) and V106A/I/M (1/7) mutations at week 8, followed by secondary mutations F227L (4/7), Y318F (4/7), M230L(2/7) and L234I (2/7) by week 24. In contrast, rilpivirine favoured the appearance of E138K (5/7), V106I/A, L100I (3/7) and other secondary mutations. Of note, doravirine-resistant variants frequently retained sensitivity to rilpivirine. When doravirine was combined with Islatravir or 3TC, there was a delay and diminution in the emergence of resistance mutations. At 24 weeks, V108I mutation (9/15) prevailed with fewer or no other changes. A lesser delay in the emergence of resistance to rilpivirine was observed in combined selections.

Conclusion: Doravirine retains activity against viruses with resistance to RPV and EFV, specifically, K103N, Y181C and G190A, known to be transmitted drug resistant mutants. In this study, the genetic barrier to doravirine resistance was improved when paired with Islatravir. The long intracellular half-life of Islatravir, suggest the opportunity for a new dual therapy option.

Clinical Sciences: Complications of Antiretroviral Therapy
Sciences cliniques : Complications des traitements antirétroviraux

CS3.08

Dolutegravir-containing HIV Therapies Appear to Increase Cellular Apoptosis and Mitochondrial Toxicities in Human PBMCs

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B**ackground:** Several older antiretrovirals, including NRTIs and PIs, are associated with mitochondrial toxicity and adverse effects. However, little is known about the cellular and mitochondrial toxicities of integrase inhibitors (InSTIs) such as Dolutegravir (DTG) and Raltegravir (RAL), which are widely used in first-line regimens. Recent studies have associated DTG treatment with weight gain in adults, and with neural tube defects in Botswanian children exposed *in utero* since conception. Our objective was to characterize cellular and mitochondrial toxicities of InSTI-cART exposure in peripheral blood mononuclear cells (PBMCs) *ex vivo*.

Methods: PBMCs from 6 healthy volunteers were activated with soluble anti-CD3/CD28 and exposed to pharmacological concentrations (1x Cmax) of clinically relevant cART for six days. Following this, cell counts and viability were determined, and mitochondrial mass (mt mass), intermembrane potential (MMP), reactive oxygen species (mt ROS), and cellular apoptosis were assessed via flow cytometry. Additionally, baseline (Day 0) and post-treatment (Day 6) DNA extracts were obtained and mtDNA content was measured using monochrome multiplex qPCR.

Results: Compared to 0.1% DMSO control, PBMCs treated with TAF+FTC+DTG (p=0.03) and ABC+3TC+DTG (p=0.03) showed increased cellular apoptosis. TDF+FTC+DTG showed a similar but non-significant effect (p=0.06), however TDF+FTC+RAL was comparable to the control. DTG-cART also increased mt ROS compared to RAL-cART on the same TDF+FTC backbone (p=0.03). TDF+FTC+DTG increased MMP whereas ABC+3TC+LPVr and ABC+3TC+DRVr reduced MMP (p=0.03). Both TDF+FTC+EFV and ABC+3TC+LPVr reduced mt mass (p=0.03). Lastly, no detectable differences were observed with mtDNA content or cell viability for any of the conditions tested.

Significance: DTG-cART induced greater mitochondrial and cellular toxicities than RAL-cART in live PBMCs by a yet unknown mechanism. This highlights the importance of continued testing in regards to the safety of DTG.

Epidemiology and Public Health: HIV in Priority Populations and Global Health Issues: Epidemiology and Public Health Aspects
Épidémiologie et santé publique : Le VIH dans les populations vulnérables et les enjeux de santé mondiale : aspects épidémiologiques et de santé publique

EPH3.02

Sporadic Clustered Outbreaks of HIV Among MSM Persist in Treatment-as-Prevention Era

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B**ackground:** Phylogenetic **a**nalyses of the interrelationships of viral sequences, using novel statistical tools, provide molecular epidemiological frameworks to reconstruct HIV transmission networks. We applied these methods to gain novel insights on HIV transmission patterns across Quebec, uncover cryptic at-risk populations, and elucidate epidemic drivers that cannot be identified by traditional epidemiological approaches.

Methods: Genetic analyses were performed on subtype B *pol* sequences derived from newly-infected Men having Sex (MSM, n=4800) and Heterosexuals subgroups, including People who Inject Drugs (PWID) and Migrants from Haiti and the Americas (n=1836). Phylogenetic analyses were also conducted on non-B viral subtypes originating from Migrants from Africa, Asia and Europe (n=1578). Growth trajectories of transmission networks (6+ members/cluster) from 2004 to 2017 were analyzed using Maximum-Likelihood MEGA10 and/or HIV-TRACE (Transmission Cluster Engine) platforms.

Results: Among MSM, half of the subtype B epidemic is attributable to viral strains (n=1839) leading to "dead-end" transmissions (n= 1478) or short-lived clusters (2-5 members) (n=850). The remaining half of viral infections (n=2371) could be ascribed to sporadic large outbreaks, averaging 42 members/cluster. There has been a 48% decline in new singleton/small cluster transmissions over the 2011-2017 (n=673) vs. 2004-2010 (n=1271) periods, concomitant to advances in Treatment-as-Prevention paradigms. In contrast, ongoing genesis and/or expansion of clustered outbreaks persist over the 2011-2017 (n=1056) and 2004-2010 periods (n=1110). Heat maps of individual clusters can distinguish "actively-growing" clusters and "newly emerging" clusters from older low-risk clusters. HIV-TRACE maps showed differential features of forty large cluster sub-epidemics (e.g. subjects' ages, recency of infection, geographic locations). Phylogenetics uncovered the cryptic introduction and spread of subtype B and non-B subtype sub-epidemics among migrants to the province.

Discussion: The ability to predict, identify and respond to emerging "active" HIV transmission clusters may tailor public health interventions to avert transmission cascades and control the HIV epidemic.

Epidemiology and Public Health: HIV Prevention and Control Programs Towards key Populations - Implementation and Program Science
Épidémiologie et santé publique : La prévention du VIH dans les populations clés - science des programmes et de la mise en oeuvre

EPH3.03

Short-Term Impacts of the Phénix Program: a Promising Community-Based Intervention to Improve gbMSM's Sexual Health and Wellbeing

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B**ackground:** Phénix is an intervention program for gbMSM that combines the adoption and maintenance of HIV and STI risk reduction strategies without compromising sexual wellbeing. In 2015, the program was updated to integrate a combined HIV prevention approach. The revised program was implemented in 2018-2019 into 10 community organizations across Quebec, delivered in small groups or on an individual basis, in-person or online.

Method: 81 gbMSM participated in the pre-experimental evaluation. Using a generalized estimating equation autoregressive model, controlling for sociodemographic variables (age, sexual orientation, gender modality, ethnicity, etc.), and implementation characteristics (intervention exposure and format, implementation sites), we compared baseline data to: 1) posttest data (1 month after the last session), and 2) follow-up data (6 months later).

Results: Participants were aged from 21 to 69 years old (M = 46; SD = 12.3). About 60% reported a university degree (58%), and an annual income of $40,000 CAD or more (62%). Three-fourths were HIV-negative (73%), and single (75%). Satisfaction toward the program was high (M = 5.1/6). Baseline and posttest comparisons suggest a significant improvement on the following key psychosocial variables: Empowerment, intention to implement risk reduction strategies, sexual satisfaction, sexual self-assertiveness, sexual self-esteem, sexual self-efficacy, sexual control, motivation in self-care and risk avoidance, and perceived control over risk avoidance. We also observed a significant decrease in six barriers to HIV risk reduction strategy implementation: quest for intimacy, eroticism interference, condom availability, assumed partners' serostatus, safer sex fatigue, and sexual compulsivity. Follow-up data suggest improvement maintenance for all variables except intention to implement risk reduction strategies, motivation in self-care and risk avoidance, and one barrier to HIV risk reduction strategy implementation (assumed partners' serostatus).

Conclusion: Phenix is a promising intervention program in improving sexual wellbeing and HIV prevention among gbMSM.

Epidemiology and Public Health: HIV Prevention and Control Programs Towards key Populations - Implementation and Program Science
Épidémiologie et santé publique : La prévention du VIH dans les populations clés - science des programmes et de la mise en oeuvre

EPH3.04

HIV Acquisition among Federal Offenders in Canada 2005-2018

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B**ackground:** The prevalence of HIV is higher among incarcerated populations compared to the general Canadian population. While the burden of prevalent infection is acquired prior to incarceration, there is still a risk of in-prison HIV transmission.

Methods: Offenders in CSC are offered routine screening for HIV on admission and throughout incarceration according to national guidelines. Enhanced surveillance data between 2005 and 2018 were examined for repeat HIV serology testing. HIV seroconversion was defined as a negative HIV antibody test result followed by a positive serology result. Data were extracted December 2019.

Results: Between 2005 and 2018, a total of 14,453 offenders had repeat HIV serology testing and 36 were identified as HIV seroconverters. The mean time between first laboratory testing and subsequent positive test was 3.9 years (range 73 days to 8.5 years). Based on the total number of days under observation in this open cohort, the incidence rate for newly acquired HIV among offenders at risk was 0.69 HIV cases per 1,000 at-risk per year.

A total of 4,225 indigenous offenders had repeat HIV serology testing and n=11 of 36 (31%) were identified as HIV seroconverters, for an estimated incidence rate of 0.68 HIV cases per 1,000 at-risk per year (incidence rate ratio of 0.98 compared to non-indigenous offenders). Of the HIV seroconverters n=2 (6%) were female.

Conclusion: Among the offenders at risk of HIV infection, the rate of newly acquired HIV between 2005 and 2018 was estimated to be 0.69 cases per 1,000 at-risk per year. Further study is required to gain a better understanding of the role of in-community and in-prison risk behaviours in viral acquisition.

Epidemiology and Public Health: HIV in Priority Populations and Global Health Issues: Epidemiology and Public Health Aspects
Épidémiologie et santé publique : Le VIH dans les populations vulnérables et les enjeux de santé mondiale : aspects épidémiologiques et de santé publique

EPH3.05

Cango Lyec - Healing The Elephant: HIV Prevalence And Vulnerabilities Among Young Women Under 25 Years In Post-Conflict Northern Uganda

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B**ackground:** Young women account for disproportionate new HIV infections in sub-Saharan Africa. Concerns remain that impacts of prolonged civil war in Northern Uganda continues to affect HIV-related health and wellbeing of young people post-conflict, particularly young women. We estimated the prevalence of HIV infection and related vulnerabilities among young women under 25 years in post-conflict Northern Uganda.

Methods: The 'Cango Lyec' Project is an open cohort involving conflict-affected populations in mid-Northern Uganda. Eight study communities randomly selected in the Districts of Gulu, Nwoya, and Amuru were mapped and house-to-house census conducted to enumerate the entire community population. Consenting participants aged 13-49 years were enrolled over three study rounds (2011-2015), of whom 533 were young women under 25. Interviewer-administered data were collected on trauma, depression and socio-demographic-behavioural characteristics, in local Luo language. Venous blood was taken for HIV and syphilis serology. Multivariable logistic regression determined baseline factors associated with HIV prevalence among young women, adjusting for study round, age, and location.

Results: HIV prevalence among young women was 9.7%. Young women living in Gulu (aOR: 2.93; 95%CI: 1.13-7.58) or Nwoya (aOR: 3.34; 95%CI: 1.13-9.87) districts were more likely than those in Amuru to be living with HIV. Having self-reported genital ulcers (aOR: 2.64; 95%CI: 1.06-6.58) or active syphilis (aOR: 8.21; 95%CI: 2.26-29.88) were associated with increased risk of HIV infection among young women. Finally, likelihood of living with HIV was higher among young women who experienced sexual violence in the context of war (aOR: 3.2; 95%CI: 1.36-7.51) and/or probable depression (aOR: 2.38; 95%CI: 1.08-5.25).

Conclusion: Ongoing legacies of war – especially gender violence and trauma – contribute to HIV vulnerability among young women. Wholistic approaches integrating HIV prevention with culturally-safe mental health initiatives are urgently required in Northern Uganda.

Epidemiology and Public Health: HIV in Priority Populations and Global Health Issues: Epidemiology and Public Health Aspects
Épidémiologie et santé publique : Le VIH dans les populations vulnérables et les enjeux de santé mondiale : aspects épidémiologiques et de santé publique

EPH3.06

HIV-Related Complications and Overdose are Primary Drivers of Mortality Among Women Living with HIV in the Modern Treatment Era

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I**ntroduction:** There is greater attrition across the cascade of care for women living with HIV(WLWH), compared to men, contributing to elevated rates of morbidity and mortality. The objective of this study was to identify drivers of mortality amongst WLWH in BC in the modern antiretroviral treatment era.

Methods: We assessed mortality between January 1, 2000 to December 31, 2018 amongst WLWH in BC, who were diagnosed with HIV from 1996 onwards through the Drug Treatment Program(DTP) registry, which contains clinical and demographic data for every person receiving HIV-related treatment in BC. DTP data were linked to provincial Vital Statistics to assess date, cause, and age at death. Multivariable Cox regression with backwards elimination was used to determine if year of entry into HIV care was associated with mortality.

Results: Of 1,921 WLWH, 514 (27%) died during follow-up (30 per 1,000 PY). Median age at death was 46[IQR: 39, 53]. Cause of death was recorded for all women, highest for HIV-related causes (40%), followed by accidental poisonings inclusive of overdoses (15%), and non-HIV related malignancies (6.8%). For virally suppressed WLWH (VL<200 copies/mL within one year end of follow-up), non-HIV related mortality increased in 2015, peaking in 2018 at 23 per 1,000 population. Risk of dying was highest in Northern and Vancouver Coastal Health(VCH) compared to the rest of the province, at 11-and 7-fold respectively. Adjusted hazard ratios found mortality was elevated province-wide for women who entered HIV care between 2015-2018 compared to prior to 2000 (4.1 aHR, 95% CI: 1.43-11.8).

Conclusions: Mortality among WLWH in BC is high despite universal access to ART, with high proportions of overdose deaths in recent years. Women-centered interventions to ensure engagement in HIV care and address substance use are critical, particularly for women who are young, recently diagnosed, and living in VCH and Northern BC.

Epidemiology and Public Health: HIV in Priority Populations and Global Health Issues: Epidemiology and Public Health Aspects
Épidémiologie et santé publique : Le VIH dans les populations vulnérables et les enjeux de santé mondiale : aspects épidémiologiques et de santé publique

EPH3.07

HIV Prevention and Treatment Cascades Among Female Sex Workers (FSW) and Men Who Have Sex with Other Men (MSM) in Benin, West Africa

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Background & Objectives: Benin has a long-standing history of HIV prevention programs aimed at FSW whereas such programs for MSM are less than 10-years old. A test-and-treat strategy for antiretroviral (ARV) treatment was first implemented in Benin in 2017. We used data from a national key population survey to assess the prevention and care cascades among these two populations.

Methods: FSW were recruited through cluster sampling of sex work sites, whereas respondent-driven sampling was used to recruit MSM. After informed consent, a questionnaire was administered, and HIV tested with sequential rapid tests whose results were given back to participants. After a second consent, HIV-positive participants were asked to provide dried-blood spots (DBS). DBS were tested for ARV and viral load (limit of quantification of 839 copies/mL on DBS). We report cascade indicators as percentages with exact 95% Confidence Intervals (95%CI).

Results: Mean age of the 1086 FSW was 30 years. Only 35% of them were Beninese and two-thirds had a primary school education level or less. Mean age of 359 MSM was 26 years, 98% were Beninese and 91% went at least to high school. The table below shows the HIV prevention and treatment cascade indicators.

Conclusion: Despite long-standing HIV prevention programs for FSW, the prevention indicators were often lower among them compared to MSM, likely due to high FSW mobility, as most of them are migrants. The treatment cascade indicators were poor for both populations, except for undetectable viral load among FSW with detectable ARV in their blood.

Cascade	Steps	FSW (N=1086)		MSM (N=359)	
	Among those from the previous line % (95%CI)	Among those from the previous line % (95%CI)	Among all FSW % (95%CI)	Among all Among those from the previous line % (95%CI)	Among all MSM % (95%CI)
Prevention cascade (testing branch)					
	Ever heard of HIV/AIDS	99.0 (98.3 - 99.5)	99.0 (98.3 - 99.5)	100.0 (98.9 - 100.0)	100.0 (98.9 - 100.0)
	Ever tested for HIV	79.2 (76.6 - 81.6)	79.1 (76.5 - 81.6)	88.0 (84.2 – 91-2)	88.0 (84.2 - 91.2)
	Tested for HIV in the last year	84,1 (81. 4 - 86.6)	66.4 (63.4 - 69.3)	94.3 (91.1 - 96.6)	83.0 (78.7 - 86.8)
Prevention cascade (safer sex branch)					
	Ever heard of HIV/AIDS	99.0 (98.3 - 99.5)	99.0 (98.3 - 99.5)	100,0 (98.9 - 100.0)	100.0 (98.9 - 100.0)
	Saw prevention messages in the last 6 months	91.4 (89.2 - 92.7)	90.1 (88.1 - 91.8)	100.0 (99.0 - 100.0)	100.0 (99.0 - 100.0)
	Saw condom demonstration in the last 6 months	72.8 (69.9 - 75.6)	65.4 (62.5 - 68.2)	85.2 (81. - 88.7)	85.2 (81.1 - 88.8)
	Received free condoms in the last 3 months	92.0 (89.7 - 93.9)	76.1 (73.4 - 78.6)	81.0 (76.2 - 85.3)	75.5 (70.1 - 79.9)
	Consistent condom use in the last month for vaginal (anal) sex	70.9 (67.2 - 74.3)	66.1 (63.2 - 68.9)	63.6 (56.5 - 70.2)	58.4 (52.5 - 64.1)
			Among all HIV+ FSW (N=84)		Among all HIV+ MSM (N=29)
Treatment cascade	HIV+ status	7.7 (6.2 - 9.5)	100.0 (95.7 - 100.0)	8.1 (5.5 - 11.4)	100.0 (88.1 - 100.0)
	Knows HIV+ status	40.5 (29.9 - 51.7)	40.5 (29.9 - 51.7)	-	-
	ARV detected in blood	67.6 (49.5 - 82.6)	27.4 (18.2 - 38.2)	34.5 (17.9 - 54.3)	34.5 (17.9 - 54.3)
	Undetectable viral load	86.4 (65.1 - 97.1)	39.7 (28.0 - 52.3)	44.4 (13.7 - 78.8)	26.1 (10.2 - 48.4)

Epidemiology and Public Health: HIV Prevention and Control Programs Towards key Populations - Implementation and Program Science
Épidémiologie et santé publique : La prévention du VIH dans les populations clés - science des programmes et de la mise en oeuvre

EPH3.08

Male Involvement in the Prevention in the Prevention of Mother to Child Transmission of HIV in Burkina Faso

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Background. Low male involvement in preventative HIV mother-to-child-transmission (MTCT) in Burkina Faso is partially attributed to increased MTCT rates in the country.

Objective: . To provide a deeper understanding of male involvement in MTCT prevention in Burkina Faso.

Methods. We used an intersectional theoretical approach as it positions male involvement at the intersection of social location, systemic forces, individual experiences, and dynamics within couples. We opted for an interpretative qualitative description design. This study was performed at St-Camille's hospital in Ouagadougou, Burkina Faso. Our sample was theoretical with a maximum variation rationale, to contrast for individual experiences and socioeconomic characteristics. Eligible women were identified via chart review and invited to participate with their male partners. We conducted individual semi-structured interviews (12 French; 12 Mooré) with 12 couples using tailored interview grids. We performed a semantic thematic analysis using QDA Miner to identify themes and patterns among subjective perspectives, while accounting for variations between individuals.

Results. Male involvement is multidimensional: financial, psychological or relational. Male reactions at the discovery of their partners HIV-positive status range from rejection to true partnership and can include denial. Male involvement varies over time: some male partners initially aggressive became attentive while others initially supportive end up abandoning their partners. These changes often occur at the discovery of the HIV-positive status, during pregnancy or at childbirth. Finally, male involvement was limited by competing priorities, contradictory expectations, organizational opportunities and societal beliefs. Interactions with caregivers impacted male involvement. In fact, men feel unwelcome in the health care services which were not thought nor designed "with" or "for" them. In addition, health care professionals are not trained to jointly care for women and their partners in MTCT prevention services.

Conclusion. Male involvement is a constant negotiation between interconnected individual, organizational and systemic experiences.

Social Sciences: Intersecting Identities and HIV
Sciences sociales : Identités et VIH : contextes en croisement

SS3.01

Index de la stigmatisation des personnes vivant avec le VIH (PVVIH) au Québec : Intersectionnalité et stigmatisation

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Contexte : La stigmatisation persiste toujours en tant que facteur de stress profond dans la vie des PVVIH. Pour mieux comprendre les déterminants sociaux de la stigmatisation liée au VIH au Québec, une équipe intersectorielle a réalisé l'Index de la stigmatisation des PVVIH en collaboration avec PRATICS 3.0.

Méthodologie : En 2019, un questionnaire quantitatif a été administré en face-à-face auprès de 281 PVVIH. Ces entretiens étaient conduits par 9 pair.es associé.es de recherche, dans 8 régions du Québec. Le questionnaire explorait différents types de stigmatisation : structurelle, effective, perçue, intériorisée et intersectionnelle, ainsi que des stratégies d'adaptation et de résilience. Des analyses descriptives ont été produites.

Résultats : Les participantes sont âgées de 19 à 79 ans (M=52 ans; É-T=12,1). Plus de la moitié sont des hommes (61%) et 34% sont des femmes; 49% s'identifient comme hétérosexuelles et 36% comme homosexuelles. Quant au groupe ethnoculturel, 49% s'identifient comme Caucasiennes, 14% comme Africaines et 9% comme personnes autochtones. Le niveau de stigmatisation intériorisée est plutôt élevé, avec un score moyen de 48,6 (É-T : 9,63; échelle variant de 23 à 75). En lien avec la stigmatisation liée à l'appartenance à un groupe marginalisé, 62% des PVVIH s'identifiant comme gais rapportent au moins une forme de stigmatisation liée à leur orientation sexuelle, alors que 42% des PVVIH racisées et 25% des PVVIH autochtones rapportent au moins une forme de stigmatisation en lien avec leur origine culturelle.

Conclusion : Ces données mettent en lumière l'importance de multiples stigmates et de tenir compte de l'intersectionnalité dans les interventions adressant la stigmatisation des PVVIH. Pour certaines, la stigmatisation intériorisée est vécue à la fois en raison de leur séropositivité, mais aussi de leur appartenance à un groupe marginalisé. La stigmatisation en raison de l'orientation sexuelle présente le score le plus élevé pour notre échantillon.

Social Sciences: Models of Care and Improving Access
Sciences sociales : Modèles de soins et meilleur accès

SS3.02

Making "Risk" Visible in Perinatal Care for Mothers Living with HIV in Ontario: An Institutional Ethnography

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B**ackground:** In Canada, pregnancies of women living with HIV are typically classified as "high-risk," and numerous clinical procedures are employed to mitigate HIV-associated risks to the fetus and infant. Limited research has examined what these procedures mean in women's lives, and how they might be connected to institutional imperatives and regulatory regimes that do not serve women's interests. This study explored the social organization of perinatal care to understand what institutional discourses and arrangements organize the experiences of women living with HIV and the work of maternity care providers.

Methods: An institutional ethnography was conducted within a regional hospital in Ontario. Four women living with HIV and 12 health and social care providers were interviewed between March 2016 and April 2018. Interviews were analyzed to trace and map the connections between women's care experiences, providers' work activities, and the regulatory texts and discourses that organized the prevention of perinatal HIV transmission.

Results: "Risk" emerged as an omnipresent discourse that coordinated women's lives and was visible through the treatments women were prescribed, the prenatal appointment schedule women were expected to follow, and the application of clinical procedures during childbirth and postpartum. Providers sometimes blurred the lines between medical and social "risks" through their activities to monitor women's pregnancies. For example, women's non-compliance with prenatal care appointments activated consideration of the need for child welfare surveillance. Although women expressed concern for and took significant measures to prevent perinatal HIV transmission, their concerns were often overshadowed within an institutional context that prioritized fetal risk reduction and ideological discourses about motherhood.

Conclusion: Institutional arrangements must be critically examined to uncover how they coordinate and organize women's care experiences and maternity care providers' work activities. Women's experiences reveal important lessons for crafting perinatal care policies and procedures that are responsive to women's needs and realities.

Social Sciences: Social, Structural and Systemic Drivers of HIV
Sciences sociales : Moteurs sociaux, structurels et systémiques du VIH

SS3.03

Hiv and Improvement in Mental Health Symptoms Among Gay, Bisexual and Other Men Who Have Sex with Men (gbMSM) in Vancouver

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B**ackground:** Depression and anxiety are associated with HIV risk and poorer health outcomes for HIV-positive gbMSM. We explored factors associated with improvements in mental health among a sample of gbMSM with clinical depression and anxiety.

Methods: Participants were sexually-active gbMSM ≥ 16 years, recruited using respondent-driven sampling. Participants completed a computer-assisted questionnaire which included the Hospital Anxiety and Depression Scale (HADS) and met with a nurse, every 6-months. We used generalized-linear mixed models to assess factors associated (measured at visit when transition reported) with transitions from abnormal scores (≥ 11) to normal/ borderline HADS scores (<11).

Results: Of 580 participants with follow-up, 43.8% ever had a HADS anxiety score >=11. Of these, 76.8% reduced anxiety scores to <11 at follow-up visits. For depression, 16.2% ever had a HADS depression score >=11, among which, 50% reduced their depression scores to <11 at follow-up visits. The number of gbMSM seen /spoken to in the past-month and increased self-esteem were associated with reducing anxiety scores at subsequent visits. Additionally, we found HIV-positive gbMSM with high transmission risk or HIV negative/unknown gbMSM with high acquisition risk more likely to reduce their anxiety scores at subsequent visits. We found no differences in symptom improvement based on serostatus itself.

Conclusion: High perceived HIV transmission/ acquisition was associated with improvements in anxiety scores, although not for depressive symptoms. Findings suggest social and individual factors, including perceived HIV risk/transmission should be included in mental healthcare and efforts should connect marginalized gbMSM born outside of BC to mental health services.

	Anxiety (262 never reduced vs 486 reduced scores) *						Depression (106 never reduced vs 102 reduced scores) *					
	Univariable			Multivariable			Univariable			Multivariate		
Categorical Variables	RR	95%	CI	aRR	95%	CI	RR	95%	CI	aRR	95% I	C
Education												
Less than High School	Ref			Ref.			Ref					
High School or Greater	**1.48**	**1.04**	**2.10**	1.35	0.96	1.89	1.84	0.95	3.55			
Province Born												
BC	Ref						Ref			Ref.		
Other Province in Canada	0.94	0.70	1.27				**0.55**	**0.30**	**0.99**	**0.50**	**0.28**	**0.91**
Outside of Canada	1.26	0.87	1.82				0.74	0.34	1.62	0.57	0.26	1.29
Current Health												
Excellent/ Very Good	Ref						Ref					
Good/ Fair/ Poor	**0.72**	**0.55**	**0.93**				0.75	0.42	1.34			
Self-Reported HIV Status												
Negative	Ref						Ref					
Positive	0.94	0.73	1.23				1.26	0.72	2.20			
Unknown	1.97	0.84	4.62									
HIV transmission/acquisition risk												
Low	Ref			Ref.			Ref					
High/Already think HIV+	1.42	0.93	2.16	1.55	1.04	2.31	1.49	0.43	5.10			
Told Male Guardian/Parent about Sexual Orientation												
No	Ref			Ref.			Ref					
Yes	0.72	0.49	1.04	**0.56**	**0.38**	**0.82**	0.99	0.49	2.00			
Out to Family Doctor												
No	Ref						Ref					
Yes	0.78	0.47	1.29				2.28	0.50	10.45			
No Family Doctor	0.98	0.57	1.69				2.81	0.52	15.36			
Continuous Variables												
Self-Esteem	**1.14**	**1.10**	**1.17**	**1.10**	**1.06**	**1.14**	1.06	0.99	1.12			
Loneliness Emotional Score	0.65	0.58	0.73	**0.80**	**0.70**	**0.92**	**0.73**	**0.57**	**0.93**	**0.76**	**0.59**	**0.98**
Number of gbMSM seen/ spoken to in Past Month	1.00	1.00	1.00	**1.02**	**1.00**	**1.04**	1.00	1.00	1.00			
Loneliness Social Score	0.79	0.72	0.88				0.80	0.64	0.99	0.81	0.65	1.02
Treatment Optimism Scale	1.01	0.99	1.04			1.00	0.96	1.04				
Social Support	**1.05**	**1.01**	**1.09**			1.05	0.98	1.13				

Social Sciences: Trans and Nonbinary Communities
Sciences sociales : Collectivités trans et non binaires

SS3.04

Mental Health Among Transgender Women Living with HIV: Findings from the Canadian HIV Women's Sexual and Reproductive Health Cohort Study

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B**ackground:** Mental health is essential to the health and wellbeing of all people. This includes transgender (trans) women living with HIV (WLWH), whose mental health may be negatively impacted by pervasive stigma and discrimination related to gender identity/expression and HIV status, among other facets of their identities/experiences. Moreover, antiretroviral therapy adherence among trans WLWH is negatively impacted by depression and post-traumatic stress disorder (PTSD). Yet, little is known about factors associated with depressive or PTSD symptoms among trans WLWH.

Methods: Using cross-sectional survey data from a national community-based study of 1422 WLWH (including n=53 trans women with complete outcome data), we measured the prevalence of depressive and PTSD symptoms among trans WLWH, which were captured using the 10-item Center for Epidemiologic Studies Depression (CES-D) Scale and 6-item Post-traumatic Stress Disorder Checklist Civilian (PLC-C) scale, respectively. We examined associations between factors (e.g. trans stigma) and depressive and PTSD symptoms using bivariate linear regression.

Results: Nearly half of participants reported clinically significant PTSD (45.3%) and depressive symptoms (45.3%) [mean PCL-C score 13.8 (SD=5.8); mean CES-D score 9.4 (SD=8.0)]. Higher levels of internalized HIV-related stigma, higher frequency of past-month hazardous alcohol use, and current injection drug use were significantly associated with higher scores in both PTSD and depressive symptoms, while higher resilience and social support associated with lower scores. A history of violence in adulthood was associated with higher depressive symptoms scores; whereas higher sexual relationship power and less difficulty meeting housing costs were associated with lower scores.

Implications: These analyses inform future mental health-focused research and practice with trans WLWH, and, perhaps most importantly, provide an important step towards holistically conceptualizing and addressing trans WLWH's health. Findings suggest a need for multi-level interventions to reduce barriers to mental wellbeing while fostering resilience and social support among trans WLWH.

Social Sciences: The Health of African, Caribbean and Black Communities
Sciences sociales : La santé des collectivités africaines, caraïbéennes et noires

SS3.05

Exploring Young, Black Gay, Bisexual and Other Men Who Have Sex with Men's PrEP Knowledge in Toronto, Ontario

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B**ackground:** While PrEP offers a promising addition to the biomedical HIV prevention landscape, significant access barriers exist in Toronto, Ontario for many people, including young Black-Canadian gay, bisexual and men who have sex with other men (YBGBM). Limited research has examined YBGBM's sexual health literacy and PrEP knowledge.

Methods: Twenty-two, individual, semi-structured interviews occurred with YBGBM who access healthcare in Toronto. Participants were 15-30 years of age and identified as gay (n=16), queer (n=2), pansexual (n=2), heterosexual (n=1), non-identified (n=1). Interviews were digitally recorded, transcribed verbatim, and analyzed using grounded theory. We drew upon intersectionality and the social-ecological model to help us conceptualize how participants' social locations (race, sexual orientation, etc.) interacted with individual, interpersonal, and community contexts to impact PrEP knowledge.

Results: While participants had varied levels of PrEP knowledge, their narrative accounts revealed two consistent factors impacting their reported knowledge. First, many institutions' (e.g. healthcare clinics) general PrEP dissemination strategies are ineffective at reaching YBGBM. Second, YBGBM's social locations and perceptions of PrEP users informs their PrEP knowledge. Their social locations (e.g. age, low socio-economic status), perceptions of PrEP users as promiscuous and some participants' distrust of western medicine often deterred them from seeking additional PrEP information. We argue that general PrEP dissemination strategies' failure to acknowledge YBGBM's social locations and ecological contexts (e.g. interpersonal relationships, LGBT+ community) inhibited many from perceiving PrEP information as valuable sexual health knowledge and, in turn, prevented PrEP knowledge uptake.

Conclusion: While policy-informed, institutions-based, PrEP dissemination strategies seek to increase PrEP knowledge, gaps in YBGBM's PrEP knowledge persist. Institutions must acknowledge the two aforesaid factors and revise their strategies in a way that addresses how these factors can act as barriers to PrEP knowledge. This knowledge gap will likely persist if these strategies fail to consider YBGBM's unique social locations and ecologies.

Social Sciences: Gay, Bisexual and other Men who have Sex with Men (MSM)
Sciences sociales : Guais, bisexuels et autres hommes ayant des relations sexuelles avec des hommes (HARSAH)

SS3.06

Social Support and STBBI Transmission Behaviours Among HIV-Negative Gay, Bisexual, and Other Men Who Have Sex with Men (GBM)

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B**ackground:** Social support may have direct and indirect effects on behaviours associated with STI/HIV acquisition among GBM, including buffering against the effects of social stressors. We aimed to determine whether social support is associated with condomless anal sex (CAS) and whether social support has a moderating effect on the association between experiencing anti-gay harassment and CAS with PrEP use among HIV-negative GBM.

Methods: Sexually active HIV-negative GBM were recruited via respondent-driven sampling (RDS) in Montreal, Toronto, and Vancouver (n=1,753). Participants completed computer-assisted questionnaires in French or English. Social support and anti-gay harassment were measured using the Social Support Survey Instrument and the Heterosexist Harassment, Rejection, and Discrimination Scale (HHRD). We examined the association of social support with CAS at last sexual encounter and HHRD score, controlling for age and accounting for clustering by RDS recruitment chain and city. We also examined the buffering effect of social support on the association between HHRD and CAS with PrEP use at last sexual encounter, using a moderation analysis.

Results: Median age of participants was 31 years, ~56% identified as White. Social support mean=3.82, SD=.89, range=1-5. HHRD mean=1.81, SD=.74, range=1-6. Regression analyses indicated that greater social support was associated with a lower likelihood of CAS (coefficient=-.09, p<.001) and lower HHRD scores (coefficient=-.16, p<.001). Higher HHRD scores were associated with lower likelihood of CAS with PrEP use (OR=0.20, p<.001) and this effect was attenuated by higher social support, controlling for age and city (HHRDxSocialSupport: OR=1.53, p<.001).

Conclusion: This analysis shows that higher levels of social support may be associated with less CAS among HIV-negative Candian GBM and buffers against the effects of HHRD on HIV risk behaviour. Future research will explore the role of social support in HIV/STI prevention among GBM.

Social Sciences: Gay, Bisexual and other Men who have Sex with Men (MSM)
Sciences sociales : Guais, bisexuels et autres hommes ayant des relations sexuelles avec des hommes (HARSAH)

SS3.07

Reducing Risks While Increasing Sexual Pleasure: the Effects of the Phénix Program for GbMSM

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B**ackground: :** Created in 2006, Phénix is an intervention for gbMSM, which combines the adoption and maintenance of HIV and STI risk reduction strategies with erotic skills training. Since 2015, the program has been updated to integrate a combination HIV prevention approach, and then implemented in 10 organizations across Quebec.

Method: : To evaluate the effects and appreciation of this version, multiple data collection were put in place. Among them, telephone interviews with voluntary participants (N=37) were held before their participation in the program, and 6 months after the end of the program. Pre- and post-intervention data were compared using content analysis.

Results: : gbMSM increased their awareness of HIV and STI transmission and risk reduction strategies, which reduces their fears and allows them to expand their sexual practices while feeling safer. A majority of participants feel more in control of their sexuality and more able to reduce their at-risk behaviors, which they do by reducing the number of sexual partners, being more selective in choosing sexual partners or implementing new risk reduction strategies. After Phénix, participants were more likely to engage in discussions about sex with their partners and to feel they have increased their erotic skills. Most of the men reported greater sexual satisfaction than before, feel more attentive to their own needs and express more easily what they like.

Discussion: Phénix creates a favourable context for gbMSM to adapt their sexual practices and risk reduction strategies in light of the intervention they received. Adding combination HIV prevention and discussions about sexual well-being in this new version of the program seems successful. Programs such as Phénix would be useful to reduce HIV and STI transmission among gbMSM, increase their sexual quality of life, and help to reconcile risk reduction with sexual pleasure. An e-health version of the program is being considered.

Social Sciences: Gay, Bisexual and other Men who have Sex with Men (MSM)
Sciences sociales : Guais, bisexuels et autres hommes ayant des relations sexuelles avec des hommes (HARSAH)

SS3.08

Sexual Practices among Two-Spirit, Gay, Bisexual, and Queer Men of Different HIV Statuses in Manitoba

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B**ackground:** We sought to examine the relationship between self-reported HIV status and HIV sexual risk behaviours among Two-Spirit, gay, bisexual, queer and other men who have sex with men (2SGBQM) men in Manitoba.

Methods: Data were drawn from a community-based online survey that examined the health of 2SGBQM (age 18+) in Manitoba. Sexual behaviour questions focused on bottoming and/or topping during anal intercourse (in the past six month) without using a condom with a partner whose: 1) HIV status was not known, 2) HIV viral load they did not know, or 3) HIV viral load was detectable. Chi-square analyses assessed the relationship between HIV status (self-report results of last HIV test) and sexual risk behaviours.

Results: Among 300 2SGBQM, 72 (24%) reported living with HIV, 8 (2.7%) unsure, and 220 (73.3%) HIV-negative. 2SGBQM living with HIV in Manitoba were more likely to bottom without using a condom with a partner whose HIV status was unknown than HIV-negative 2SGBQM (22% versus 10% respectively) ($\chi 2$=6.506, p<.05). 2SGBQM living with HIV were also more likely to bottom condomless with a male HIV-positive partner whose viral load they did not know (27.8% versus 4.5% for HIV-negative men) ($\chi 2$=31.642, p<.001), and to top condomless with an HIV-positive partner whose viral load they did not know (27.8% versus 4.5% for HIV-negative men) ($\chi 2$=35.803, p<.001). There were no differences in the proportion reporting condomless anal intercourse with a detectable partner when bottoming (4.2%, p=0.614) or topping (0%, p=0.397).

Conclusion: The findings show that HIV-positive 2SGBQM in Manitoba are engaged in serosorting and strategic positioning. Future research needs to examine how 2SGBQM take their sexual partners' HIV viral load into account during sex. Health promotion for HIV combination prevention strategies should continue to ensure 2SGBQM are aware of a variety of preventive practices to optimize their sexual health.

Basic Sciences: HIV Pathogenesis and Animal Models
Sciences fondamentales : Pathogénèse du VIH et modèles animaux

BS4.01

Nef Inhibitors as Adjuvants Towards a Cure for HIV/AIDS

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HIV-1 Nef is a leading contributor to HIV virulence and is required for progression to AIDS. The role of Nef in HIV pathogenesis is multifactorial and includes mediating impaired T cell activation and maturation, subverting apoptosis and down-regulating cell surface molecules like major histocompatibility complex class I (MHC-I). Specifically, Nef mis-directs host cell intracellular signaling and membrane trafficking to endocytose cell surface MHC-I and thus, minimize immune recognition of HIV-1-infected cells. To achieve this, Nef binds phosphofurin acidic cluster sorting proteins in an acidic cluster- ($EEEE_{65}$)-dependent manner and shuttles them to the trans-Golgi network (TGN). Here, Nef interacts with Src family tyrosine kinases (SFK) via its $PXXP_{75}$ motif to initiate a signaling cascade culminating in MHC-I internalization and sequestration to the TGN. Herein, we performed an *in silico* drug discovery screen to identify small molecules that could interfere with the Nef:SFK interaction. Compound H3-1 blocked the Nef:SFK interaction in HIV-1-infected cells, reduced HIV-1 replication in a Nef-dependent manner and resulted in limited cytotoxicity. Importantly, H3-1 counteracted Nef-dependent MHC-I down-regulation in HIV-1-infected primary $CD4^+$ T cells, suggesting that H3-1 treatment enhanced antigen presentation. Additionally, experiments assessing the feasibility of H3-1 treatment *in vivo* were conducted in a HIV transgenic mouse model which expresses Nef in $CD4^+$ T cells. H3-1 *in vivo* pharmacokinetics were evaluated using mass spectrometry. Next, *ex vivo* H3-1 treatment of HIV transgenic mouse-derived splenocytes resulted in improved MHC-I presentation of a model epitope (SIINFEKL) from ovalbumin on Nef-expressing $CD4^+$ T cells. Collectively, these results highlight how Nef inhibitors can function as adjuvants by improving antigen presentation and thus, combating Nef-mediated MHC-I down-regulation that is omnipresent during latent reservoir reactivation.

Basic Sciences: HIV Pathogenesis and Animal Models
Sciences fondamentales : Pathogénèse du VIH et modèles animaux

BS4.02

Dynamics of Regulatory and Effector CD8 T-Cells in Mesenteric Lymph Nodes and Blood During SIV Infection of Rhesus Macaques and Following Early Art Initiation

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B**ackground:** CD8 T-cells play pivotal roles in clearance of HIV-infected cells, such that CD8 exhaustion contributes to their dysfunction and consequently, viral persistence. Mesenteric lymph nodes (MLNs) are critical sites for the maintenance of gut mucosal immunity. However, the dynamics of CD8 T-cells in MLNs is less known due to the lack of accessibility to these tissues in human.

Methods: 32 female Chinese Rhesus Macaques **(**RMs) were enrolled including 25 intravenously SIVmac251-infected animals. Nine monkeys were treated by ART starting at day 4 post-infection. Furthermore, 5 RMs after ART interruption (8 weeks post-ART initiation) and 4 untreated chronically infected were also studied. Peripheral blood and mechanically isolated cells from MLNs were analyzed by flow cytometry.

Results: Acute SIV infection was associated with decreased CD4/CD8 ratio and increased memory CD8 T-cell immune-activation (CD39/HLA-DR), exhaustion (PD1) and immunosuppressive CTLA-4 expression in both blood and MLNs which were all normalized by early ART initiation. ART decreased significantly αα+αβ-CD8 but not αα+αβ+CD8 T-cells in MLNs, while, αα+αβ-CD8 T-cells were increased in blood. Furthermore, acute SIV infection resulted in the expansion of FoxP3+ CD8 Tregs in blood and MLNs, while early ART decreased CD8 Tregs only in blood. Helios+ FoxP3+ thymic CD8 Tregs were also increased in both tissues in acute infection which were normalized by ART. Analyzing the trafficking of CD8 T-cells, we found that the acute SIV infection results in decreased $CCR6^{+}$ but not $CXCR3^{+}$CD8 T-cells in both MLNs and blood, which was recovered following early ART along with increased IL17+ CD8 T-cells. ART interruption was associated with increased HLA-DR+CD8 T-cells and decreased $CCR6^{+}$CD8 T-cells within MLNs.

Conclusion: Overall, early ART initiation during acute infection normalized CD4/CD8 ratio and CD8 activation and exhaustion in both MLNs and blood, but elevated levels of immunosuppressive CD8 Tregs persists within MLNs despite early ART.

Basic Sciences: HIV Pathogenesis and Animal Models
Sciences fondamentales : Pathogénèse du VIH et modèles animaux

BS4.03

Impact of Early Antiretroviral Therapy on B and CD4 T Cell Dynamics in Lymphoid Tissues of SIV Infected Rhesus Macaques

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In SIV-infected rhesus macaques, previous studies showed an early loss of splenic and mesenteric CD4 T cells. To date, under antiretroviral therapy (ART), HIV-infected patients exhibit low viral load along with restoration of CD4 T cells counts. However, we and others had recently showed that despite early ART, HIV and SIV can persist in lymphoid tissues as spleen and mesenteric lymph nodes, resulting in viral rebound when treatments are interrupted. Therefore, viral persistence may impact T and B cell dynamics in deep tissues. Herein, we addressed the impact of early ART on B and CD4 T cells in lymphoid tissues in SIV infected rhesus macaques.

Rhesus macaques (RMs) were infected with SIVmac251 (20 AID50) and treated at day 4 with a cocktail of antiretroviral drugs. RMs were sacrificed under ART, and after ART interruption (ATi). In addition to peripheral blood, spleen, mesenteric lymph nodes (MLN) and peripheral lymph nodes (PLN) were recovered. Cells were stained with specific antibodies and analyzed by flow cytometry. We also evaluated the viral load in ART and ATi monkeys.

We provide evidences that early ART restore efficiently CD4 T cells in MLN, PLN, spleen and blood. However, in reservoir tissues (MLN and spleen) in which SIV persists, Tfh cells as well T effector memory cells (TEM) are partially restored compared to the blood and PLN. Moreover, we observed that B cells expressed higher levels of CD95 and PD1 under ART compared to healthy RMs that persist after ATi. We further addressed the presence of specific SIV antibodies to assess viral recognition.

These results indicated that early ART does not fully restore immune system as “naïve” suggesting that persistent viral reservoir impairs immune response.

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Basic Sciences: HIV Pathogenesis and Animal Models
Sciences fondamentales : Pathogénèse du VIH et modèles animaux

BS4.04

Humanized Mice for Studying HIV Persistence in Long-lived Tissue-resident Macrophages

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The contribution of myeloid cells to HIV reservoir persistence during antiretroviral therapy (ART) remains controversial. Recent advances revealed the existence of two pools of tissue resident-macrophages (TRM): one long-lived with self-renewal capacity (LL-TRM), derived from embryonic stem cells of the yolk sac and the fetal liver; and another one short-lived (SL-TRM), derived from bone-marrow monocytes. Although the presence of LL-TRM in the brain, liver, lungs and dermis is well-established, recent studies demonstrated the existence of LL-TRM in multiple other tissues including blood vessels and heart. In contrast, gut-associated lymphoid tissues are mainly infiltrated by monocyte-derived SL-TRM.

Our previous studies demonstrated that blood monocytes and colon SL-TRM rarely carry HIV-DNA reservoirs in ART-treated people living with HIV. Our capacity to investigate HIV persistence in myeloid cells is limited by difficulties in accessing deep tissues from PLWH. Humanized mice (hu-mice) represent appropriate models for HIV reservoir studies. Here, we used bone marrow/liver/thymus (BLT) hu-mice to explore HIV persistence in TRM sorted based on their expression of the monocyte marker CCR2 to distinguish between CCR2+ SL-TRM and CCR2- LL-TRM. CD4+ T-cells served as positive controls. Cells sorted from liver, lungs and spleen were used for extensive phenotypic characterization by flow cytometry and quantification of integrated HIV-DNA by real-time PCR.

HIV-DNA was detected in CD4+ T-cells from liver, lungs and spleen of both untreated and ART-treated HIV-infected hu-mice. HIV-DNA was also detected in CCR2- and CCR2+ TRMs sorted from liver, lungs and spleen of untreated HIV-infected hu-mice. Experiments are in progress to determine HIV persistence in CCR2+/CCR2- TRM of ART-treated HIV-infected hu-mice.

These results will provide evidence on the contribution of LL-TRM *vs* SL-TRM to HIV reservoir persistence during ART. This study will also provide original insights into the development of the human myeloid system from specific fetal precursors in different tissues.

Basic Sciences: Other
Sciences fondamentales : Autres

BS4.05

Examining Bacterial-Host Interactions in the Female Reproductive Tract for HIV Prevention

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B**ackground:** Currently young women in sub-Saharan Africa have the highest risk for acquiring new HIV-1 infection, mainly via heterosexual transmission. One key factor associated with more than fourfold increased risk of HIV acquisition is bacterial vaginosis (BV). BV is defined as a shift from a protective vaginal microbiota dominated by specific *Lactobacillus* species, to an unfavourable microbiota comprised of a diverse mix of anaerobes. However, the mechanism by which specific vaginal species interact with host epithelial cells to influence protection or susceptibility to HIV-1 is not completely understood.

Methods: *Lactobacillus* spp. associated with protection (*L. crispatus*), intermediate status (*L. iners*) and BV-associated bacteria (*Gardnerella vaginalis* and *Prevotella bivia*) were added, individually and in combinations, to Air-Liquid Interface (ALI) co-cultures of vaginal epithelial cells (VK2/E6E7). Cell viability, cytotoxicity, and bacterial adherence was measured using trypan-blue exclusion assay, lactate dehydrogenase assay and Triton X-100 lysis buffer, respectively. Vaginal epithelial integrity was determined through trans-epithelial resistant (TER) measurements and FITC-Dextran leakage assay. Cytokine production was measured using a Luminex-MagPix assay. Metabolic capabilities of each species were measured for various carbohydrates and proteins.

Results: *L. iners* and BV-associated bacteria reduced cell viability and barrier integrity, as well as significantly increased inflammatory cytokine production and leakage across the vaginal epithelial layers. However, the addition of *L. crispatus* to these co-cultures was able to significantly attenuate the increased leakage, cytotoxicity and inflammation observed. Moreover, metabolism assays suggest *L. crispatus* has the widest range of carbohydrate utilization.

Conclusions: Our findings support the hypothesis that *L. crispatus* provides greater protection by enhancing vaginal barrier function and lowering inflammation. Moreover, glycogen and its breakdown products may select for *L. crispatus* dominance. A better understanding of host epithelial-bacterial interactions can help develop novel strategies to select for *L. crispatus*-dominated microbiota to reduce HIV acquisition in the women most susceptible.

Basic Sciences: HIV Pathogenesis and Animal Models
Sciences fondamentales : Pathogénèse du VIH et modèles animaux

BS4.06

IL-17A Promotes HIV-1 Dissemination/Reactivation by Abrogating the Interferon-Mediated Antiviral Immunity in Intestinal Epithelial Cells

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The crosstalk between Th17 cells and intestinal epithelial cells(IEC) is critical for the maintenance of the intestinal mucosal homeostasis and drive the course of HIV pathogenesis. Mucosal Th17 are the first targets of infection and contribute to viral reservoir persistence during antiretroviral therapy(ART).Th17 cells produce the cytokine IL-17A and act on IEC to mediate their effects. Here, we investigated the unexplored effects of IL-17A in regulating HIV dissemination/reactivation in a model of IEC:Th17 interaction *in vitro.*

HIV dissemination was studied upon HT-29 IEC activation with IL-17A, exposure to HIV, and co-culture with memory CD4+T-cells from uninfected individuals. HIV replication/reactivation was studied upon the co-culture of IL-17 activated IEC with T-cells infected *in vitro* or isolated from ART-treated people living with HIV (PLWH). RNA-sequencing was performed on cytokine-activated IEC before/after co-culture with memory CD4+T-cells from ART-treated PLWH. HIV-p24 and type I-IFN levels were measured in cell culture supernatants.

The ability of IEC to transmit HIV to T-cells was boosted by IL-17A and was concomitant with the downregulation of genes belonging to the type I-interferon and mTOR signaling pathway on IEC. Inline, the highest levels of viral replication/reactivation were observed when T-cells infected with HIV *in vitro* or isolated from ART-treated PLWH were co-cultured with IL-17A-activated IEC. On CD4+T-cells/IL-17-activated IEC co-cultures, genes related to defense to virus, type I-IFN, and IFN-gamma responses, as well as IFN-stimulated genes (ISGs) acting as HIV restriction factors were downregulated. Finally, decreased levels of type I-interferon in the presence of IL-17A correlated with ISG expression on CD4+ T-cells.

In conclusion, we demonstrated for the first time that IL-17A acts on IEC to favor HIV dissemination and burden at the intestinal level, by impairing the IFN-mediated antiviral immunity. This highlights the relevance of studying the lack of antiviral activity of Th17 cells to establish HIV cure and preventive strategies

Clinical Sciences: Adherence
Sciences cliniques : Respect du traitement

CS4.01

Effectiveness of an Intervention to Reengage HIV-Positive Patients Into Care (Lost & Found)

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B**ackground:** The McGill University Health Centre (MUHC) provides care to ~2000 people living with HIV. Annually, 10% do not return for follow-up. Using implementation science frameworks (e.g. Replicating Effective Programs), we introduced a nurse-led clinic-based intervention, Lost & Found, (L&F) to reengage out-of-care (OOC) patients. While both implementation and effectiveness were studied, we report on intervention effectiveness only.

Methods: L&F consists of two evidence-based practices: i. automated OOC-list, informed by an electronic medical record risk-prediction-tool (RPT), and ii. telephone contact. The RPT classifies patients as high, intermediate, or low-risk of HIV progression based on clinical criteria (Table 1), and as potentially OOC based on no clinical visits within three, six, or 12 months, respectively. Nurses confirm patients' risk and OOC statuses. We report effectiveness outcomes after one year.

Results: As of April 2019, 54%(1327/2440) of patients were identified as potentially OOC. Of these, 585(44%) were receiving care elsewhere, while 443(33%) were confirmed OOC. Among OOC patients contacted (361/443; 81%), 253(70%) reengaged in care, 13(3.6%) were unreachable and 95(26%) were contacted, but not yet reengaged. Overall, reengaged patients were OOC for a median of 315 days [IQR: 245-444] and 52(21%) had detectable VLs at reengagement (Table 1). High-risk OOC patients required more contact attempts (med: 4.5; IQR: 2.2-6.8) and 63%(19/30) had detectable VLs at reengagement.

Conclusions: Using implementation science, we delivered an intervention reengaging 70% of contacted OOC patients. Importantly, two-thirds of reengaged high-risk OOC patients had detectable VLs. Our work underscores the importance of patient reengagement interventions.

Table 1: Characteristics of patients contacted and reengaged Data from April 2018 to April 2019						
Risk category*			**Overall**	**High**	**Intermediate**	**Low**
N (%)			253	30 (11.9%)	196 (77.5%)	27 (10.7%)
CD4	At re-engagement	CD4 count (cells/µL), median [IQR]	518 [338, 745]	126 [68, 222]	545 [378, 790]	704 [574, 850]
	At previous visit	CD4 count (cells/µL), median [IQR]	535 [344, 741]	129 [95, 254]	552 [381, 741]	751 [612, 873]
	At re-engagement	Copies/mL, median [IQR]	<40 [<40, <40]	2782 [<40, 49348]	<40 [<40, <40]	<40 [<40, <40]
VL	Undetectable VL, n (%)	198 (78.3%)	11 (36.7%)	163 (83.2%)	24 (88.9%)	
	At previous visit	Copies/mL, median [IQR]	<40 [<40, <40]	292 [<40, 40422]	<40 [<40, <40]	<40 [<40, <40]
		Undetectable VL, n (%)	195 (77.1%)	8 (26.7%)	160 (81.6%)	27 (100.0%)
Days from last visit to re-engagement, median [IQR]			315 [245, 444]	229 [157, 354]	304 [247, 422]	444 [427, 514]
Days from first contact attempt to re-engagement, median [IQR]			71 [34, 134]	80 [34, 107]	78 [34, 144]	57 [34, 78]
Number of contact attempts, median [IQR]			3.0 [1.0, 4.0]	4.5 [2.2, 6.8]	3.0 [1.0, 4.0]	2.0 [1.0, 3.0]

*High risk: CD4 <100 cells/µL (irrespective of VL) OR CD4 100-200 cells/µL + VL>40 copies/mL OR New patient

Intermediate risk: CD4 100-300 cells/µL + VL < 40 copies/mL OR CD4>200 cells/µL + VL > 40 copies/mL OR Non-ART polypharmacy (>5 non-ARVs) OR Hx of chronic HCV infection (HCV RNA+) OR Youth (<25 yrs old) OR CD4 nadir <200 cells/µL

Low risk: CD4 >300 cells/µL + VL < 40 copies/mL

Clinical Sciences: Adherence
Sciences cliniques : Respect du traitement

CS4.02

Syndemic Effects of Childhood Adverse Experiences, Depression, and Substance Use on Antiretroviral Non-adherence among Participants of the OHTN Cohort Study

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B**ackground:** Previous research has linked childhood adverse experiences (ACEs), substance use, and depression with poor antiretroviral (ARV) adherence. In the current study, we investigated the syndemic effects of these three factors on ARV non-adherence among participants of the OHTN Cohort Study (OCS).

Methods: Sample included OCS participants on ARV treatment. ARV non-adherence was assessed using a single question “Have you missed any of your doses of ARV over the past 4 days?”. We used the ACE-10 scale to assess ACEs and the PHQ-9 scale to measure depressive symptoms. Substance use was assessed using single question “In the past 6 months, have you used any substances for non-medicinal reasons?” We created syndemic factors (SFs) count (range: 0-3) by adding presence of ≥3 ACEs (Yes vs. No), current depression (Yes vs. No), and substance use (Yes vs. No). We used logistic regression modeling to examine the association between number of SFs and ARV non-adherence.

Results: Participants (N=2026) were middle-aged (median age: 52 years) men (82%) and identified as gay/bisexual/lesbian (67%), and white (65%). Most had post-secondary education (70%), annual income < $40,000 (61%), and drug insurance coverage for ARVs (56%).

Over one-third (38%) had ≥3 ACEs, 14% had significant depression, 17% used substances, and 9% reported ARV non-adherence. ARV non-adherence increased with greater number of syndemic factors (No SF: 6.0%; 1 SF: 6.8%; 2 SFs: 8.2%; 3 SFs: 12.3%; linear trend test, p<0.001). In multivariable regression model, having two or more SFs remained associated with higher odds of ARV non-adherence (2 SFs: aOR= 2.42, 95% CI: 1-65-3.54, p<0.001; 3 SF: aOR=3.66, 95% CI: 2.15-6.23, p<0.001) after adjusting for other potential confounders.

Conclusions: Our results suggest additive effects of ACEs, depression, and substance use on ARV non-adherence. Integrating mental health and substance use interventions into HIV care may help improve HIV treatment outcomes.

Clinical Sciences: Co-infections (including HCV, HBV, HPV, TB)
Sciences cliniques : Coinfections (y compris VHC, VHB, papillomavirus, tuberculose)

CS4.03

Population-level Hepatitis C Cascade of Care Among Men Who Have Sex with Men in British Columbia, Canada

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Aims: : We constructed the cascade of care among people diagnosed with HCV infection living in British Columbia (BC), Canada in 2018, stratified by MSM status, to compare progress in care and treatment in this population.

Method: The BC Hepatitis Testers Cohort (BC-HTC) was used for this analysis. The BC-HTC includes all individuals tested for HCV in BC since 1990, with their data linked to all prescription drugs, medical visits, hospitalizations and mortality data. We defined six cascade of care stages: 1) anti-HCV positive(diagnosed); 2) RNA tested; 3) RNA positive, 4) genotyped; 5) initiated treatment; and 6) achieved a post-treatment sustained virologic response SVR). We compared progression through the care cascade by MSM status. MSM identification was based on self-report as well as validated algorithm which imputed missing information with 95% specificity.

Results: Of 33,647 males diagnosed with HCV and alive in 2018, 3,940 were MSM and 29,707 were non-MSM. Slightly more MSM (3,314, 84%) received confirmatory HCV RNA testing compared non-MSM 24,264, 82%). Among those with a positive RNA test, there was no difference in progression to genotyping between the MSM and non-MSM groups (2,231, 90% vs 16,514, 90%). However, slightly more MSM initiated treatment than non-MSM (1,406, 63% vs 9,964, 60%). There was a substantial increase in treatment uptake between 2012 and 2018 among both groups(MSM: 37% to 63%; Non-MSM: 36% to 60%). Among those who were RNA positive, treatment uptake was slightly higher among MSM than non-MSM (1,406/ 2,473, 57% vs. 9,964/ 18,427, 54%). Among those who received treatment and were assessed for SVR, a similar proportion achieved SVR (MSM: 1,011/1,111, 91% vs non-MSM: 6,608/7,319, 90%).

Conclusion: There has been substantial progression across the care cascade stages after introduction of DAAs. MSM had slightly better progression than non-MSM across the testing, care and treatment cascade.

Clinical Sciences: Co-infections (including HCV, HBV, HPV, TB)
Sciences cliniques : Coinfections (y compris VHC, VHB, papillomavirus, tuberculose)

CS4.04

The HPV Screening and Vaccine Evaluation (HPV-SAVE) Study: Risk Behaviours and Anal Dysplasia in MSM Living with HIV

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B**ackground:** Men who have sex with men (MSM) living with HIV are disproportionately affected by HPV-associated anal cancer, with incidence rates up to 100-times higher than the general population. We sought to describe risk factors and anal cancer screening outcomes among a sample of MSM living with HIV.

Methods: The HPV-SAVE study is a multi-city Canadian study investigating the screening and treatment of anal pre-cancerous lesions among MSM living with HIV. Participants underwent anal Pap testing in their physician's offices and completed self-administered questionnaires. Cytology results, graded per Bethesda classification, were dichotomized into 'normal' or 'abnormal'. Descriptive statistics and odds ratios were calculated to quantify the relationship between anal cancer risk factors and abnormal cytology.

Results: Of 318 HIV-positive men who underwent anal Pap testing (median age: 49 years, 68% white, 55% completed at least college/university, median absolute CD4 count: 626/mL), more than half were diagnosed with abnormal cytology (n=169, 53.1%). Cytological abnormalities included LSIL (n=50, 15.7%), LSIL-H (n=2, 0.6%), HSIL (n=10, 3.1%), ASCUS (n=99, 31.1%), and ASC-H (n=8, 2.5%). Having >10 (versus ≤10) receptive anal sex partners in the past 6 months was positively associated with abnormal cytology (Odds Ratio: 3.28, 95% confidence interval: 1.24-10.35). Age, smoking status, HPV vaccination, history of dysplasia or anogenital warts, and other recent sexual risk behaviours (i.e. number of casual male sex partners, and frequency of condomless sex) were not associated with abnormal cytology.

Conclusions: Cytological abnormalities were common-place and not confined only to those with traditional risk factors such as smoking, older age, or clinical histories of past HPV-related disease . Additionally, abnormalities are positively associated with having increased numbers of receptive sex partners in the past 6 months. These results highlight the continued need to develop screening guidelines to meet the needs of MSM living with HIV.

Clinical Sciences: Mental Health Issues and HIV Positive Persons
Sciences cliniques : Problèmes de santé mentale et personnes séropositives au VIH

CS4.05

Identifying Intersectional Gaps in Secondary Mental Health Service Use in the Ontario HIV Treatment Network Cohort Study (OCS)

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B**ackground:** Previous research has shown that the incidence of depression is higher among people living with HIV than the general population, with only half of those diagnosed seeking mental health services within Ontario. As a result, targeted efforts are required to identify existing gaps in secondary mental health service use (psychiatrist and psychologist) across Ontario.

Objectives: To explore the differences in secondary mental health service use among depressed participants in the Ontario HIV Treatment Network Cohort Study (OCS).

Methods: The OCS is a community-governed, province-wide research study aimed at improving the health and well-being of Ontarians living with HIV. Depressed participants were identified as those with a current diagnosis of depression, and/or currently prescribed antidepressants, and/or a greater severity of depression, as measured by a standard depression tool (PHQ-9). Crosstabs were run to identify disparate patterns of secondary mental health service use across priority populations.

Results: Of 2,353 OCS participants, 724 (30.8%) were identified as depressed with just over 10% (n=78) of depressed participants accessing secondary mental health services. A consistent pattern of secondary mental health service underuse by depressed participants is evident in each priority population (Table 1). Importantly, depressed African, Caribbean, and Black (ACB) participants exhibit a lower likelihood of accessing services compared to non-ACB participants (Table 1).

Conclusions: Depressed participants in the OCS are reporting consistent underuse of secondary mental health services across priority populations. These identified gaps within priority populations will help inform targeted, equitable approaches in order to facilitate access to mental health services.

Table 1. Secondary mental health service use across priority populations for depressed OCS participants (n=724).

Priority Population	Total n of Population	Percentage of Depressed Participants in Population	Percentage Accessing Secondary Mental Health Services in Population	Percentage of Depressed Participants Accessing Secondary Mental Health Services in Population
Gay, Bisexual Men who have Sex with Men (gbMSM)	1,627	29.8% (n=485)	7.2% (n=117); p<0.05	12.8% (n=62); **p<0.05**
African, Caribbean, and Black (ACB)	465	20.9% (n=97); **p<0.0001**	1.3% (n=6); **p<0.0001**	Small cell, percent less than non-ACB; **p<0.05**
People who use Injection Drugs (PWID)	381	48.0% (n=183); **p<0.0001**	9.7% (n=37); **p<0.05**	10.4% (n=19)
Women*	464	34.5% (n=160)	3.0% (n=14); p<0.05	6.3% (n=10); **p<0.05**
Total	2,353	30.8% (n=724)	6.1% (n=144)	10.8% (n=7

Clinical Sciences: Other
Sciences cliniques : Autres

CS4.06

The Relationship Between Inflammatory Biomarkers and CD4 Count Decline During Antiretroviral-untreated HIV: a Substudy of the VALIDATE (CTN-240)Trial

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B**ackground:** Chronic immune activation and systemic inflammation are associated with adverse health outcomes among those with advanced HIV, but few studies have examined their significance during early stages of HIV infection.

Methods: Treatment-naïve HIV-positive adults in VALIDATE (CTN-240), a multicentre randomized trial of valacyclovir versus placebo for slowing HIV disease progression, underwent quarterly plasma sampling until meeting the primary endpoint of two consecutive CD4 counts ≤350 cells/mm^3 or starting antiretroviral therapy (ART) for any reason. We tested plasma for D-dimer, soluble CD14 (sCD14), C-reactive protein (CRP) and interleukin-6 (IL-6). We used linear mixed models adjusted for study arm as well as baseline CD4 count, viral load and biomarker levels to estimate the relationship between time-updated biomarker levels and the rate of CD4 count decline.

Results: 183 participants included 80% men, and median (interquartile range, IQR) age was 35 (30,42) years. Each participant provided a median (IQR) of 5 (3,8) pre-ART plasma samples. 44%, 39% and 16% of participants were enrolled in Canada, Brazil and the United Kingdom, respectively. Baseline CD4 count was 593 (492, 692) cells/mm^3 or 28% (23%, 33%), and VL was 4.0 (3.6, 4.5) $\log_{10}$ copies/mL. Model results are presented in the Table.

Conclusions: Higher D-dimer levels were associated with more rapid CD4 cell count decline during ART-untreated HIV infection, independent of baseline CD4 count and baseline viral load.

Difference in rate of CD4 count decline per year per unit increase in biomarker

Biomarker	Baseline value:	Time-updated biomarkers	
	Median [IQR] or n (%) detectable	Estimate (95%CI)	p
D-dimer (log10)	2.27 [2.07, 2.46]	-60.4 (-108, -12.7)	0.01
sCD14 (per 0.1 of a log10)	33 [32, 34]	-6.19 (-13.6, 1.24)	0.1
CRP (log10)	3.34 [3.04, 3.74]	-22.5 (-46.5, 1.43)	0.07
Detectable IL-6	108 (69.7)	5.85 (-16.9, 28.5)	0.61

Epidemiology and Public Health: HIV Prevention: Public Health Aspects
Épidémiologie et santé publique : Prévention du VIH : aspects de santé publique

EPH4.01

Developing a Predictive Index for HIV Pre-exposure Prophylaxis (PrEP) Use among Gay, Bisexual and Other men Who Have Sex with Men

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I**ntroduction:** While many HIV-negative gay, bisexual and other men who have sex with men (GBM) are PrEP-aware, a minority of those who may benefit use it. We developed a predictive index using individual-based PrEP-related perceptions to identify GBM likely to use PrEP.

Method: Sexually-active GBM≥16yrs were recruited using respondent-driven-sampling (RDS). Data (02/2017-06/2018) from HIV-negative/unknown and PrEP-aware GBM in Engage-Montréal were analysed. Seventeen questions regarding PrEP-access were filtered using item-to-item (sampling weighted) correlations (0.2<r<0.9). β-weights for the 9 remaining items were obtained (univariate logistic regression; outcome=PrEP-use, past 6 months). Non-different response categories were combined and a final set of β-weights used to calculate participants' index scores. Multivariate logistic regression estimated how well the index related to use, adjusted for whether PrEP is indicated (Canadian guidelines). An index-threshold was determined using quantile distribution. Analyses were RDS-adjusted.

Results: Among 802 HIV-negative PrEP-aware GBM, 10.3% reported PrEP-use. Index items, corresponding β-weights, and total score (mean:4.7; standard deviation (SD):3.1; range:0-19) are presented (Table 1). A one-unit difference in index was associated with greater odds of PrEP use (OR:1.5;95%CI:1.3-1.7), after adjusting for clinical indication (5.3, CI:1.7-16.5). Standardized to make model inputs comparable, the OR of PrEP-use for a one-SD difference in index was 3.81(CI:2.6-5.7). Using a threshold score of ≥6 (best explanatory properties), the OR was 9.3(CI:4.3-20.3).

Conclusions: This PrEP index identified GBM likely to use PrEP as well as possible individual-level perceptions as targets to improve uptake. Future research includes validation in a different sample of GBM and examination of its predictive validity over time.

Table 1: Items included in the PrEP use index and their equivalent weights contributing to a total score

Items	Responses	Univariate B Weights
I don't feel that I am at high enough risk to use PrEP	0*	2.38
	1*	1.59
	2*	Referent
	3*	
	4*	
PrEP would allow me to have the sex I want.	0	Referent
	1	
	2	1.1
	3	
	4	2.37
I was taking PrEP, I would most likely stop using condoms.	0	Referent
	1	1.24
	2	1.84
	3	
	4	
I know where to go to get a prescription for PrEP.	0	Referent
	1	
	2	
	3	
	4	2.05
Clinics where I could get PrEP are too far away.	0	1.31
	1	Referent
	2	
	3	
	4	
I am worried about the short- and long-term side effects of taking PrEP.	0	1.15
	1	0.23
	2	
	3	Referent
	4	
I don't like the idea of being required to go to the regular medical follow-up visits involved in taking PrEP.	0	1.31
	1	Referent
	2	
	3	
	4	
I have not sought a prescription for PrEP in the past because of the cost of the medication.	0	0.49
	1	Referent
	2	
	3	
	4	
I would have difficulty taking PrEP medication every day.	0	1.08
	1	Referent
	2	
	3	
	4	
Total (Mean; SD)		19 (4.7±3.1)

* 0=strongly disagree; 1=disagree; 2=Neutral; 3=agree; 4=strongly agree
Note: Participants were asked "at this time, thinking about PrEP as an HIV prevention method, how much do you agree with the following statements?". Items were derived from the conceptual framework of health services access (Levesque et al., International Journal for Equity in Health, 2013).

Epidemiology and Public Health: HIV Prevention and Control Programs Towards key Populations - Implementation and Program Science
Épidémiologie et santé publique : La prévention du VIH dans les populations clés - science des programmes et de la mise en oeuvre

EPH4.02

Prep Uptake Amongst MSM Accessing Sexual Health Services in Ontario and British Columbia – Results of the PrIMP Community Survey

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B**ackground:** Pre-exposure Prophylaxis is recommended for Canadian gbMSM at high HIV risk MSM. In Ontario (ON), PrEP has been partially publicly funded since 2017 while in British Columbia (BC) it has been fully funded for those meeting high-risk criteria since January 2018. We evaluated PrEP use amongst gbMSM sexual health services by Province.

Methods: gbMSM attending sexual health clinics were invited to participate in an online questionnaire between July 2019 and December 2019, assessing HIV risk, PrEP knowledge and use. We summarized responses using descriptive statistics and compared responses in BC and ON using chi square test.

Results: Overall 435 individuals completing the survey (n=290 in BC, 145 in ON). The median age was 31 years (Q1Q3 26 – 39 years), 73% identified as gay, and 49% as white. Regular HIV testing at q 1-6 month intervals was reported by 77% of those in BC vs 54% in ON ($p < 0.0001$). Of those with response, 31% had experienced gonococcal infection in the prior 6 months, and 13.8% had had syphilis. Overall amongst 413 individuals with response, 38% had ever used PrEP, of which 85% were current users. More BC than ON respondents had ever used PrEP (47% vs. 21%, p=0.0001), while fewer BC than ON respondents cited medication costs as a reason for non-use (5.4% vs 35%, $p < 0.001$); similar proportions reported concerns about side effects (34% vs 37%, p 0.60) and believing themselves to be at low risk (32% vs 33%, p=0.72).

Conclusions: Use of PrEP amongst gbMSM accessing sexual health clinics in BC and Ontario was modest at 38% overall, but higher in BC than Ontario. Cost of medications was identified in Ontario as a reason not to access PrEP. Programs to promote PrEP and to support costs of medications may improve PrEP uptake in Canada.

Epidemiology and Public Health: HIV Prevention and Control Programs Towards key Populations - Implementation and Program Science
Épidémiologie et santé publique : La prévention du VIH dans les populations clés - science des programmes et de la mise en oeuvre

EPH4.03

Implementing the PrEP Cascade at Sexual Health Clinics in British Columbia and Ontario: Preliminary Findings from the PRIMP Study

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B**ackground:** To maximize public health impact, health systems should actively link those at greatest HIV risk to pre-exposure prophylaxis (PrEP).

Methods: The PRIMP project is implementing a cascade of steps to achieve this goal: 1) identification of gay, bisexual and other men who have sex with men (gbMSM) meeting high-risk criteria, 2) recommending PrEP, 3) acceptance of the recommendation, 4) referral to PrEP, 5) PrEP clinic attendance, 6) PrEP initiation, and 7) retention on PrEP. We documented this PrEP cascade among gbMSM seen at eight sexual health clinics in Victoria and Toronto between 12/2018-11/2019. Sequential patients were categorized according to a hierarchy of risk criteria (infectious syphilis, rectal gonorrhea/chlamydia, HIRI-MSM (high incidence risk index for MSM) score ≥25, recurrent post-exposure prophylaxis (PEP) use, 'other') and the proportion completing each subsequent step was tabulated using program data or chart review.

Results: Available data for steps 1-4 are shown in the Table. Common reasons that PrEP was not recommended to gbMSM meeting criteria included current PrEP use (25.9%) and being HIV-positive (1.4%), although another 4.6% were not offered PrEP for unclear reasons. PrEP was only accepted by 50.2% of clients. Reasons for refusal were similar in Victoria and Toronto, with many clients declining because they did not feel at risk for HIV acquisition.

Conclusions: Despite implementing routine procedures at sexual health clinics to recommend PrEP to gbMSM meeting evidence-based criteria, only half of clients were referred. Interventions to support gbMSM in recognizing risk for HIV are urgently needed.

Number (percentage of previous step) of gbMSM achieving successive steps in the PRIMP PrEP referral cascade

	Toronto	Victoria	TOTAL
STEP 1. IDENTIFIED	**771**	**617**	**1388**
STEP 2. PrEP RECOMMENDED	**653 (84.7)**	**292 (47.3)**	**945 (68.1)**
Not recommended; HIV+	7 (0.9)	13 (2.1)	20 (1.4)
Not recommended; on PrEP	65 (8.4)	294 (47.6)	359 (25.9)
Not recommended; other reason	46 (6.0)	8 (2.9)	64 (4.6)
STEP 3. ACCEPTED PrEP	**322 (49.3)**	**152 (52.1)**	**474 (50.2)**
Declined; Referred elsewhere	38 (5.8)	(1.0)	1 (4.3)
Declined; Doesn't feel at risk	103 (15.8)	56 (19.2)	159 (16.8)
Declined; Concern for side effects 17 (2.6)	8 (2.7)	25 (2.6)	
Declined; other reason	173 (26.5)	3 (25.0)	246 (26.0)
STEP 4. REFERRED FOR PrEP	**322 (100)**	**151 (99.3)**	**473 (99.8)**
Not referred	0 (0)	1 (0.7)	4 (0.2)

Epidemiology and Public Health: HIV Prevention and Control Programs Towards key Populations - Implementation and Program Science
Épidémiologie et santé publique : La prévention du VIH dans les populations clés - science des programmes et de la mise en oeuvre

EPH4.04

Population-Based HIV Pre-Exposure Prophylaxis (PrEP) in British Columbia (BC): an 18-Month Update on Client Enrollment and Prescriber Participation

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B**ackground:** In January 2018, a centralized, province-wide HIV PrEP program launched in BC. PrEP is available through the BC Centre for Excellence in HIV/AIDS at no charge to BC residents at high-risk of HIV infection (as defined by BC PrEP Guidelines). Any licensed BC prescriber may prescribe PrEP. Here we provide an update on client and prescriber participation during the program's first 18-months.

Methods: Individuals enrolled in the BC PrEP program from 01-Jan-2018 to 30-Jun-2019 (follow-up until 31-Aug-2019) were characterized by clinical, demographic and prescriber characteristics.

Results: During the first 18-months, 4570 individuals enrolled for PrEP, with a median monthly uptake of 221 enrollees (range, 163-443). Participants were 98.3% cis-male, 0.8% trans-female, 0.6% cis-female, and 0.3% trans-male, with median age 33 years (Q1-Q3, 27-44). Most participants (95%) qualified with an HIV Incidence Risk Index for men who have sex with men (MSM) score ≥10 (median score 19), 83% resided in Greater Vancouver and 70% received PrEP care in sexual health or HIV-focused clinics (Table 1). Of 664 PrEP prescribers, 54% had no prior HIV treatment-prescribing experience in BC; 63% prescribed PrEP for one client, 33% for 2-20 clients, and 4% for >20 clients. Among participants dispensed PrEP, there were 8 HIV-seroconversions in 4141 person-years of follow-up, 6 (75%) of whom had >1 month lapse in medication prior to diagnosis.

Conclusion: Participation in the BC PrEP program continues to grow at 18-months, with few seroconversions to date. At-risk MSM residing in Greater Vancouver continue to comprise the majority of the cohort.

Table 1. Client and Enrolling Prescriber Characteristics in the BC PrEP Program, at 18-months		
	Clients	**Enrolling Prescribers***
	N = 4570	N = 664
Characteristic		
Enrolling Prescriber Type		
Physician	4411 (96.5)	656 (98.8)
Nurse Practitioner	159 (3.5)	8 (1.2)
Healthcare Setting		
Sexual Health Clinic	2173 (47.6)	21 (3.2)
HIV-focused Clinic	1038 (22.7)	37 (5.7)
General Practice/ Other	1359 (29.7)	615 (92.5)
Location**		
Vancouver	2709 (59.3)	250 (37.7)
Greater Vancouver (except Vancouver)	1070 (23.4)	133 (20.0)
Outside Greater Vancouver	756 (16.5)	281 (42.3)
Unknown	35 (0.8)	0
Rural location		
Non-rural	4438 (97.1)	621 (93.5)
Rural	97 (2.1)	43 (6.5)
Unknown	35 (0.8)	0
* Enrolling prescribers submitted the client's first BC PrEP Program prescription request, and may be counted in more than one healthcare setting or location ** Location by client address or by enrolling prescriber address		

Epidemiology and Public Health: HIV in Priority Populations and Global Health Issues: Epidemiology and Public Health Aspects
Épidémiologie et santé publique : Le VIH dans les populations vulnérables et les enjeux de santé mondiale : aspects épidémiologiques et de santé publique

EPH4.05

Uptake of PrEP among Users of Non-occupational PEP: A Longitudinal Analysis of Attendees at a Large Sexual Health Clinic in Montréal (2013 – 2019)

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B**ackground:** Reducing HIV transmission using pre-exposure prophylaxis (PrEP) requires targeting individuals at high acquisition risk. This group includes men who have sex with men (MSM) with a history of non-occupational post-exposure prophylaxis (PEP). This study aims to characterize longitudinal trends in uptake and determinants of PrEP use among PEP users in Montréal.

Methods: Eligible attendees at Clinique médicale l'Actuel were recruited prospectively starting in October 2000 for PEP and 2013 for PrEP. Linking these cohorts, we characterized the PEP-to-PrEP cascade. Determinants of PrEP uptake after PEP use were examined using Cox proportional-hazard models. Kaplan-Meier curves were used to assess whether PrEP persistence differed by PEP use history.

Results: Of 2,845 MSM participants who initially consulted for PEP at l'Actuel from 2013 to August 2019, 30% (N=866) had two or more PEP consultations during follow-up. Consultations for PrEP subsequently occurred among 36% (N=1,027) of PEP users, of which 98% were prescribed PrEP, and 14% sought PEP again afterwards. Among the 2,718 participants who consulted for PrEP during the same period, 46% reported previous PEP use. Among PEP users, those who returned for their follow-up consultation (HR=1.6, 95% confidence interval (CI): 1.3-2.0), those aged 25 years or more (HR=1.4; CI: 1.1-1.6), had been prescribed PEP ≥2 times (HR=1.8; CI: 1.5-2.1), and reported lifetime STI history (HR=1.2; CI: 1.0-1.4) were more likely to consult for PrEP. There was no difference in PrEP persistence between PEP-to-PrEP and PrEP only participants.

Conclusion: Understanding PEP-to-PrEP linkages could help optimize PrEP delivery. Among PEP users, those with greater risk profiles were more likely to subsequently seek PrEP. However, a notable proportion of PEP-to-PrEP users sought PEP again after PrEP discontinuation. Interventions that improve PrEP persistence should be prioritized among MSM with a PEP history.

Social Sciences: Indigenous Health
Sciences sociales : Santé des Autochtones

SS4.01

Examining Land-Based and Indigenous Approaches to HIV and STI Prevention with Northern and Indigenous Young Women in the Northwest Territories

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B**ackground:** Land-based and Indigenous approaches are important for decolonization and have been associated with wellness. Less research has explored the potential of land-based approaches for HIV prevention. This is particularly salient in the Northwest Territories (NWT), where there are among Canada's highest rates of sexually transmitted infections (STI), suicide, and gender-based violence, rooted in intergenerational trauma and effects of colonization. This study with Indigenous and Northern young women in the NWT evaluated whether, in comparison to before a land-based retreat, participants demonstrated increased leadership, emotional empowerment, HIV knowledge, and safer sex self-efficacy following the retreat.

Methods: We conducted a 10-day land-based peer leadership training at a fly-in only location in the NWT that included daily arts-based and Indigenous knowledge practices (including drumming, smudging, beading, working with Elders, hiking), combined with leadership training and HIV information. Young women aged 13-17 from across the NWT were purposively invited to apply for the retreat. We assessed socio-demographic characteristics and used validated scales to measure emotional empowerment, leadership skills, HIV knowledge, and safer sex self-efficacy. Univariate analyses were conducted to test associations between sociodemographic variables and pre-retreat total scores across scale scores. Pre- and post-retreat differences were compared using paired sample t-tests.

Results: Among 42 participants the mean age was 14.0 years (SD=1.1; range: 13-17) and most (n=33, 78.6%) were Indigenous; two-thirds were from smaller communities (n=28, 66.7%), while one-third (n=14; 33.3%) were from Yellowknife, the capital city. Statistically significant increases ($p<0.05$) in post-retreat scores vs. pre-retreat scores were reported across variables, including increased HIV knowledge (6.95 units, $p<0.00001$), leadership skills (3.08 units, $p=0.03$), emotional empowerment (5.13 units, $p=0.0004$), and safer sex self-efficacy (0.87 units, $p=0.001$).

Conclusions: Findings suggest that land-based and Indigenous approaches hold promise for nurturing protective factors to reduce HIV vulnerabilities through building HIV knowledge, leadership, empowerment, and safer sex self-efficacy.

Social Sciences: Indigenous Health
Sciences sociales : Santé des Autochtones

SS4.02

Mapping the Journey: Developing Culturally Appropriate, Geographically-responsive HIV Care for Northern Manitoba First Nations People

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There is a critical need to understand the journey experienced by northern Manitoba First Nations people living with HIV who are living with HIV and are navigating the HIV care cascade. We hypothesize that First Nations people in northern Manitoba experience barriers (stigma, access to services, geographic isolation, historical racism and trauma, colonialism, poverty) and use resilient ways to navigate HIV testing, treating and care. However, there is limited documentation of these barriers and resilient ways from an individual, provider and community perspective.

We are investigating the complexities of HIV testing, linking to care, and supporting northern First Nations to live with HIV by creating an ethical space/two-eyed seeing guidance and discussion table that builds on existing relationships between northern First Nations knowledge keepers (people and organizations), academia, Provincial and Federal health organizations and the Manitoba HIV Collective Impact Network. We are documenting three perspectives on barriers and facilitators: a) the personal experiences and journeys of northern Manitoba First Nations people using visual imagery, journey mapping, storytelling and oral narratives; 2) the experiences of healthcare providers via surveys and interviews and 3) the community-readiness assessments of five First Nation communities. A key aspect of the early stage of the project is the development of a community-readiness tool that is being pilot tested in five communities.

This project focuses on the experiences of communities, the people and the health providers dealing with HIV in northern Manitoba to understand what is different compared to the main urban centre, Winnipeg. We will also discuss the next phase of the project which will include working collectively to develop culturally appropriate interventions, tools, programs and policies that can be used by communities, northern First Nation health organizations, and provincial and federal HIV related programs to better support northern First Nations people living with HIV.

Social Sciences: Indigenous Health
Sciences sociales : Santé des Autochtones

SS4.03

Cedar HCV Blanket Program: Understanding Factors Impacting Hepatitis C Treatment Uptake Among Indigenous People Who Use Drugs in BC, Canada

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B**ackground:** Indigenous people who use drugs in Canada face extensive structural-social barriers to health care, including access to new hepatitis C (HCV) therapies. The Cedar HCV Blanket Program addresses barriers to care by providing culturally-safe, strengths-based case management for Indigenous people who use drugs to support HCV treatment. We examined factors associated with enrollment into the Blanket Program to understand what barriers persisted.

Methods: The Blanket Program, developed by our Indigenous governance, is a pilot study nested within the Cedar Project, a community-governed prospective cohort examining HIV/HCV structural-social vulnerabilities among Indigenous people who use drugs in Vancouver and Prince George, BC. Cox proportional hazard regression models were used to identify factors associated with uptake into the Blanket Program (2017-2019), adjusting for age, sex, and location.

Results: Of 99 Indigenous people who were screened and eligible, 60 (61%) enrolled in the Blanket Program over the 2-year period. Attending substance use treatment (adjusted hazard ratio (aHR): 2.84; 95% Confidence Interval (CI): 1.56-5.19) and current opioid agonist therapies (aHR: 2.07; 95%CI: 1.13-3.77) were associated with enrollment. Experiences associated with non-enrollment included: recent homelessness (aHR: 0.37; 95%CI: 0.20-0.65), sharing non-injection equipment (aHR: 0.43; 95%CI: 0.21-0.85), actively seeking drug treatment (aOR: 0.47; 95%CI: 0.23-0.93), and combined heroin-methamphetamine injection use (aHR: 0.46; 95%CI: 0.25-0.84). Ever having suicidal thoughts (AOR: 0.57; 95%CI: 033-0.99) and past hospitalization for mental health (aHR: 0.40; 95%CI: 0.17-0.93) were also associated with non-enrollment. We found marginal associations with enrollment among intentionally using fentanyl in past 12 months (aHR: 0.12; 95%CI: 0.24-1.09) and non-injection cocaine use (aHR: 0.45; 95%CI: 0.19-1.03). Although not statistically significant, historical trauma was also recognized as a barriers to enrollment.

Conclusion: Structural-social barriers impede HCV treatment uptake among Indigenous peoples who use drugs. Integration of harm reduction and healing-centered approaches are needed to facilitate critical access to HCV treatment.

Social Sciences: Models of Care and Improving Access
Sciences sociales : Modèles de soins et meilleur accès

SS4.04

Peer Health Advocacy Wellness Network (PHAWN): Commencing a Network of Peers within First Nations Communities in Saskatchewan

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I**ntroduction:** Peer Health Advocacy Wellness Network (PHAWN) originated from a call for peer-to-peer engagement by partner communities participating in the Canadian Institutes of Health Research (CIHR) grant, Enhancing and Expanding the "Know Your Status" Initiative in on-reserve Indigenous Communities in Saskatchewan: A Community-engaged Intervention to Increase Diagnosis, Linkage to Care and Prevention of HIV, HCV and STBBIs. PHAWN connects peers to each other and to external resources for support and professional development.

Methods: Partner communities develop individual peer programs/models from general recommendations. Recruited peers, or Peer Health Advocates (PHAs), reflect their community's health priorities, and possess similar lived experiences to others not able to access care in the current Western healthcare system. PHAs will be supported to build health literacy and knowledge in navigating the healthcare system – skills to assist other people with lived-experience (PWLE), taking leadership roles in healthcare delivery in community. PHAs liaise with healthcare providers ensuring program delivery is informed by the needs of clients.

Results: PHAWN will develop a toolkit to include practice-based, culturally-responsive wise-practices to guide PHAs. PHAs are encouraged to use traditional protocols to support wholistic wellness and culturally-appropriate care. PHAWN aims to provide social and emotional support for PWLE via empathetic and active listening in a non-judgmental, culturally safe environment.

Conclusion: PHAs are integral to overall community wellness – inclusive of the healthcare system, providing practical assistance for PWLE – whether newly diagnosed, engaged in care, or lost to care – addressing barriers in mainstream healthcare, supporting appointments and treatment adherence, and assisting with harm reduction. PHAs bring forth cultural competence for care providers and awareness of cultural intelligence in care for PWLE.

Future Directions: PHAWN's goal is for PHAs to be well-supported to assist testing and treatment delivery, in conjunction with physicians and nurses, to deliver a wholistic, culturally-directed care model.

Social Sciences: Models of Care and Improving Access
Sciences sociales : Modèles de soins et meilleur accès

SS4.05

Creating a Métis-specific Model of Culturally-relevant Shared Care for Métis Individuals Living with or Affected by HIV/STBBI

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B**ackground:** Shared models of care are used to improve access to, and quality of, HIV and sexually transmitted and blood borne infections (STBBI) care. The Métis community in Red Deer has served as a pilot community for the development and implementation of a Métis-specific model of culturally-relevant shared care as part of the DRUM & SASH *implementation science team grant*. Our objective for this sub-study was to develop a grassroots-led, community-grounded Métis-specific model of shared care for Métis people in Alberta living with or affected by HIV or STBBI.

Methods: Drawing upon community-based and Indigenous research methodologies, a Métis-specific (SASH) advisory committee was created. Eight diverse Métis individuals including Elders/Knowledge Keepers, were engaged for three, day-long discussions to develop a Métis-specific shared care model. Members worked iteratively in a culturally-grounded way to define and describe necessary Métis-specific components of wellness. Sessions were audio recorded, transcribed, and analyzed to aid in the identification of model components. An additional circle with three language holders was held to identify components in Cree-Michif, giving more cultural context to the model.

Results: Through this process, a Métis-specific shared care model was developed. Components of this model were identified and discussed using the imagery of a Métis Red River Cart and its contents. For example, the medicine bag (makhihkî maskimut) is used to illustrate connection to clinicians and treatment, and a Métis stove (kotawanapisk – “place where you make fire”) represents housing.

Conclusion: This Métis-specific model of culturally-relevant shared care will be used as an intake assessment tool, and to guide ongoing care at Shining Mountains Living Community Services, the community organization responsible for piloting the Métis-specific model of care. The model will be used with each client as a culturally-grounded approach to identify resources needed to establish and maintain wellness while living with/recovering from HIV/STBBI.

Social Sciences: Engaging (with) Communities in HIV Research
Sciences sociales : Participation des collectivités à la recherche sur le VIH

SS4.06

A Two-Eyed Seeing Approach to Publication: The Journal of Indigenous Research (JIHR) and 2SHAWLS Research Project

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B**ackground:** Academic writing and publishing among Indigenous communities presents unique tensions due to differing worldviews between academic and Indigenous researchers. The Journal of Indigenous HIV Research (JIHR) is an open-access, peer-reviewed journal published by The AHA Centre, (a project of the Canadian Aboriginal AIDS Network) which works with researchers on best publishing practices to demonstrate Indigenous leadership, and strengths-based approaches to research.

Our approach: This presentation tells the story of engaging the Two-Spirit HIV/AIDS Wellness and Longevity Study (2SHAWLS) research team in a collaborative, Two-Eyed Seeing (TES)-informed publication process. TES *"is the gift of multiple perspective[s] … it is the requisite guiding principle for the new consciousness needed to enable integrative science work, as well as other integrative or transcultural, transdisciplinary, or collaborative work" (*http://www.integrativescience.ca/Principles/TwoEyedSeeing/). Editors/authors worked together on a supplemental volume of the JIHR to showcase three peer-reviewed articles reporting on Two-Spirited men's experiences of resilience living long-term with HIV. Both teams include Indigenous, allied, academic and community researchers. Our goal was to demonstrate how TES results in ebb and flow of reciprocal learning that strengthens one's work for the common good. TES "is not meant to question the integrity of an action or the integrity of a word" (Marshall) but rather open one's eyes to opportunities when multiple perspectives are employed. Attention to the importance of relationship, storytelling, reciprocity throughout our publication process was integral.

Lessons Learned: Working through a TES-informed approach to authorship and publication provided opportunities for open, frank and honest dialogue between Indigenous and non-Indigenous editors and researchers, which then led to a richer and better-articulated presentation of the work of the 2SHAWLS research team.

Conclusions: By engaging a TES approach to publication, we could tell a more honest and fulsome story about the 2SHAWLS project—giving voice to and celebrating the complexities of working cross-culturally.

Basic Sciences: Antivirals, Microbicides and Mechanisms of HIV Resistance
Sciences fondamentales : Antiviraux, microbicides et mécanismes de résistance au VIH

BSP1.01

Increased Inflammatory Markers and HIV Target Cells in the Ectocervical Epithelium of Women Using Depot Medroxyprogesterone Acetate (DMPA)

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B**ackground:** Millions of women worldwide use the effective and practical injectable hormonal contraceptive depot medroxyprogesterone acetate (DMPA). However, observational epidemiological studies have indicated that DMPA may be associated with increased risk of HIV acquisition. Using a multi-omics approach, we here characterized the genital tissue environment from DMPA-using women to decipher potential mucosal HIV susceptibility markers.

Methods: Ectocervical tissue samples were collected from HIV-uninfected Kenyan women using either DMPA (n=30) or no hormonal contraception (control group) (n=40). Quantitative image analysis revealed that the DMPA group had more CD4+CCR5+ cells out of total CD4+ cells (median 38% vs. 24%, p=0.007), and these cells were more superficially located as compared to the control group. Protein profiling of cervicovaginal lavage and transcriptomic profiling of ectocervical tissue biopsies showed differences in inflammatory markers between the groups. Analyses are ongoing and details of affected pathways will be presented.

Conclusion: This study shows that women using DMPA have more HIV target cells (CD4+CCR5+) in the ectocervical tissue and that these cells were located closer to the vaginal lumen. The data thus provides new biological information about the potential impact of DMPA usage and HIV susceptibility and highlights the importance of using intact tissue samples and quantitative image analysis for a spatial perspective on the tissue microenvironment.

Basic Sciences: Antivirals, Microbicides and Mechanisms of HIV Resistance
Sciences fondamentales : Antiviraux, microbicides et mécanismes de résistance au VIH

BSP1.02

An Antiviral Role for p53 Against HIV-1 in Macrophages: Implication of the Δ133p53 Isoform

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Macrophages play an important role in the establishment and propagation of HIV-1 infection. We previously showed that the ubiquitin ligase MDM2 acts as a positive regulator of HIV-1 infection in macrophages by causing the degradation of the p53 antitumor protein. When stabilized, the transcription factor p53 induces p21, resulting in a higher level of active SAMHD1. To better understand the function of p53 in HIV infection, we investigated the role of its isoforms, more precisely the Δ133p53 isoform, lacking the transactivation domain. Δ133p53 forms a complex with full-length p53 and inhibits its activity.

Monocyte-derived macrophages (MDMs) were transfected with siRNAs targeting all p53 isoforms or specific to the Δ133p53 isoform, then exposed to a fully competent HIV-1 reporter virus. In some experiments, MDMs were treated with Nutlin-3, a chemical inhibitor of the MDM2-p53 interaction, stabilizing the level of p53, before being infected. Infection rate was measured by flow cytometry. qRT-PCR and western blots analyses were performed to evaluate the expression of p21 and the level of inactive SAMHD1, phosphorylated at Thr 592.

In contrast to the broad p53 knockdown, specific knockdown of Δ133p53 reduced the number of productively infected cells. While knockdown of p53 reduced the level of p21, which led to SAMHD1 inactivation, targeting only the Δ133p53 isoform had the opposite effect on p21 induction and SAMHD1 activation level. Furthermore, stabilisation of p53 with Nutlin-3 combined with Δ133p53 knockdown increased p53 antiviral activity compared to Nutlin-3 treatment alone.

Altogether, our results highlight the important role of p53 and its isoforms in antiviral immunity. p53 restricts HIV-1 infection in macrophages by shaping the cellular environment via SAMHD1 activation and this effect is attenuated by the presence of Δ133p53. The balance between these p53 isoforms might be an important factor in the overall susceptibility of MDMs to HIV-1 infection.

Basic Sciences: Antivirals, Microbicides and Mechanisms of HIV Resistance
Sciences fondamentales : Antiviraux, microbicides et mécanismes de résistance au VIH

BSP1.03

Characterization of the Role of Host Cell Decapping Activators DDX6, LSm1-7 and PatL1 in HIV-1 Replication

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Retroviral full-length RNA (vRNA) has a dual role in the replicative cycle: (i) it is used as a template for viral proteins synthesis, and (ii) must be encapsidated as a genome to generate new infectious viral particles. The different models proposed to explain how the HIV-1 vRNA is engaged towards packaging and/or translation are controversial and the mechanisms that regulate this crucial stage in the formation of new viral particles are still poorly understood. It is known that HIV-1 co-opts the cellular RNA helicase DDX6 in complexes that promote the assembly of viral particles, however its role in these complexes is unknown. Interestingly, DDX6 promotes decapping during mRNA decay through its activity as a translational repressor. From this evidence arises the question: Does other activators of decapping, such as LSm1-7 or PatL1, participate in HIV-1 replication? By using the CRISPR Cas9 system, in this work we show that the single depletion of DDX6, LSm1 and PatL1 has little effect on Gag expression. However, a significant decrease in intracellular vRNA levels was found when LSm1 was depleted, suggesting that it could act to stabilize the vRNA. On the other hand, we observed that the overexpression of DDX6 induced a significant decrease in intracellular Gag without affecting vRNA levels, suggesting that DDX6 represses vRNA translation. While the overexpression of either LSm1 or PatL1 has little effect on intracellular levels of Gag and vRNA, we show that when these proteins are overexpressed together with DDX6, the repressive role of DDX6 on HIV-1 Gag expression is potentiated, suggesting that they act in complex to repress Gag expression. These results suggest novel roles for the decapping activators DDX6, LSm1 and PatL1 in regulating HIV-1 expression levels. Progress towards elucidating the precise mechanism of action will be presented.

Basic Sciences: Antivirals, Microbicides and Mechanisms of HIV Resistance
Sciences fondamentales : Antiviraux, microbicides et mécanismes de résistance au VIH

BSP1.04

Impact of in vitro HIV Infection and TGF-β Stimulation on Human Thymic Regulatory T-cell Development

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B**ackground:** Regulatory T-cells (Tregs) are immunosuppressive T-cells expressing the master transcription factor FoxP3 that controls their differentiation and suppressive functions. HIV infection is associated with increased Treg frequencies and immunosuppressive functions in the peripheral blood and lymphoid tissues, which contribute to disease progression and immune dysfunction. Furthermore, thymic dysfunction during HIV infection is associated with rapid disease progression. FoxP3 expression by thymic Tregs (tTregs) is partly regulated by TGF-β, which also contributes to Treg development in the peripheral blood and lymphoid tissues. TGF-β-mediated fibrosis of lymphoid tissues in HIV-infected individuals is associated with disease progression. However, the role of TGF-β in the induction and maintenance of Tregs within the thymus during HIV infection remains unclear.

Methods: Thymocytes were isolated from fresh human thymic tissues obtained from pediatric patients undergoing cardiac surgery. Infection by both R5- and X4-tropic HIV-1 strains and TGF-β treatment of human thymocytes was performed in an *in vitro* co-culture model with OP9-DL1 cells expressing Notch ligand delta-like 1.

Results: Despite significantly higher expression of CCR5 and CXCR4 by tTregs, *in vitro* infection of thymocytes with R5- and X4-tropic HIV strains showed that FoxP3+CD3^{high}CD8- thymocytes were much less susceptible to infection compared to FoxP3-CD3^{high}CD8- thymocytes. As expected, TGF-β treatment of thymocytes induced CD127 expression and resulted in increased Treg frequencies. However, TGF-β treatment had no effect on the rate of HIV infection. Upon HIV infection and TGF-β treatment, FoxP3 expression and Treg frequencies remained unchanged.

Conclusions: *In vitro* HIV infection of human thymocytes alone does not increase FoxP3 expression and tTreg differentiation, nor does the combination of HIV infection and TGF-β. Our results suggest that differentiation of tTregs within thymus is not the same as in blood and secondary lymphoid tissues. Additional inflammatory mechanisms might be involved in differentiation and thymic outputs of tTregs during HIV infection.

Basic Sciences: Antivirals, Microbicides and Mechanisms of HIV Resistance
Sciences fondamentales : Antiviraux, microbicides et mécanismes de résistance au VIH

BSP1.05

The Use of Aspirin to Reduce Inflammation Does Not Adversely Affect Systemic T Regulatory Cells

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B**ackground:** With 1.8 million new HIV infections occurring yearly, new prevention methods are needed. Inflammation is a known risk factor for HIV acquisition as it attracts HIV target cells to the female genital tract (FGT). The presence of inflammation can even completely negate the benefits of preventative anti-retroviral therapy. Our lab has conducted a study aimed at reducing HIV target cells at FGT using a safe and globally affordable anti-inflammatory drug: acetylsalicylic acid (ASA/Aspirin). We found ASA decreased the proportion of HIV target cells (CD4+CDCR5+Tcells) at the FGT by 35%. However, the effect of aspirin on regulatory Tcells (Tregs) which play an important role in limiting immune activation is unknown.

Hypothesis: We expect ASA to decrease HIV target cells without affecting Tregs in the blood.

Methods: Women from Nairobi, Kenya took low dose ASA (81mg) daily for 6 weeks. Blood was drawn prior to the first dose of ASA and following 6 weeks of daily ASA treatment. Peripheral blood mononuclear cells (PBMCs) were isolated and frozen for shipment to Winnipeg, Canada where function and activation of Tregs was determined using flow cytometry.

Results: Preliminary results show that the proportion of Tregs (CD4+CD25+FoxP3+Tcells) in the blood did not change between baseline (mean percent: 1.55±1.06) and after 6-weeks on ASA (mean percent: 1.71±0.95) (p=0.16). In addition, Treg activation status (CD69 and HLA-DR) and functional markers (CTLA-4 and Helios) were not affected by the 6-week ASA treatment. However, a small but significant decrease in TIGIT expression was observed (p=0.015).

Conclusion: Previously, we showed ASA decreased the proportion of HIV target cells at the FGT. T regulatory cells also limit immune activation and inflammation. Our observation that ASA decreases HIV target cells at the genital tract without altering systemic Tregs is significant and supports ASA's further assessment as a new HIV prevention tool.

Basic Sciences: Antivirals, Microbicides and Mechanisms of HIV Resistance
Sciences fondamentales : Antiviraux, microbicides et mécanismes de résistance au VIH

BSP1.06

Duration of In Vitro Viral Suppression After Bictegravir, Dolutegravir & Cabotegravir Washout

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I**ntroduction:** Second-generation integrase strand transfer inhibitors (INSTIs), including dolutegravir (DTG), bictegravir (BIC) and cabotegravir (CAB), are highly potent and show strong binding to the IN-DNA complex. This allows for streamlined and long-acting options for PrEP and maintenance therapy. In past studies, we performed *in vitro* washout experiments to show a more durable suppression of wild-type (WT) and integrase-resistant HIV-1 for DTG as compared to raltegravir (RAL) or elvitegravir (EVG) where viral rebound occurred following drug washout. Here, we were interested in comparing DTG, BIC and CAB.

Methods: Site-directed mutagenesis generated pNL4-3 plasmid constructs harbouring wild-type (WT), R263K, G118R, and G140S/Q148H integrase. MT-2 cells were infected with WT or resistant clones to establish IC_{50} and IC_{90} concentrations. MT-2 cells were then subjected to maximal drug pressure (20 x IC_{90}) for each drug. Three days post-infection, drugs were washed out from the cells. Viral rebound was assessed at days 3, 7 and 11 post-infection.

Results: BIC showed a higher potency than DTG and CAB against all variants. All three drugs retained suppression on WT and R263K viruses following drug washout at day 11. While replication of G118R was suppressed in all three drug control conditions, viral rebound occurred following DTG washout. There was a minimal viral rebound following CAB washout and no rebound following BIC washout. The G140S/Q148H variant was resistant to CAB. While DTG maintained suppression against G140S/Q148H, viral rebound occurred following washout at day 7. BIC successfully suppressed replication through the 11 days of infection, showing minimal rebound after drug removal.

Conclusion: Overall, BIC showed an extended suppression of HIV-1 replication following drug washout than either DTG or CAB against WT and viruses harboring mutations conferring low-, moderate- and high-level drug resistance. These findings show that BIC may be more pharmacologically forgiving than DTG and CAB.

Basic Sciences: Antivirals, Microbicides and Mechanisms of HIV Resistance
Sciences fondamentales : Antiviraux, microbicides et mécanismes de résistance au VIH

BSP1.07

Characterization of a G118k plus R263K Combination of Integrase Resistance Mutations Associated with HIV Viral Load Rebound in a Patient Failing Dolutegravir-based Therapy

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Human immunodeficiency virus (HIV) is widely known for being the etiological agent of the HIV/AIDS epidemic which began in the late 1970s and continues to this day. Recent estimates suggest that approximately 40 million people are living with HIV worldwide with 940,000 deaths having occurred due to AIDS-related illnesses in 2017 alone. Fortunately, current antiretroviral therapies have transformed HIV from a deadly disease to a chronic, manageable illness in countries where treatment is available. An integrase strand transfer inhibitor by the name of dolutegravir is currently the basis of the recommended first-line treatment for HIV infection by the World Health Organization, and also boasts a high genetic barrier to resistance. It remains however that the development of mutations conferring resistance to antiretroviral drugs poses a threat to successful viral suppression in patients. A recent clinical trial saw the emergence of the G118R plus R263K combination of integrase substitutions in one patient following treatment with dolutegravir. As such, we have investigated this novel combination of HIV-1 integrase resistance mutations. We have characterized these mutations, individually and in combination, in terms of integrase catalytic activity using recombinant proteins as well as resistance to various integrase strand transfer inhibitors (INSTIs). Furthering characterization of HIV mutations allows the appropriate selection of treatment regimens for patients and may help to relieve some of the anxiety that may result from being diagnosed with a resistant strain and needing to change to a new treatment regimen.

Basic Sciences: Antivirals, Microbicides and Mechanisms of HIV Resistance
Sciences fondamentales : Antiviraux, microbicides et mécanismes de résistance au VIH

BSP1.08

A Complex Interplay Between the HIV-1 Env gp120 Inner Domain and the Phe43 Cavity Shapes the CD4-binding Site

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The HIV-1 envelope glycoproteins (Env) undergo conformational changes upon interaction with the CD4 receptor. The gp120 inner domain topological layers facilitate Env transition to the CD4-bound conformation. CD4 engages the gp120 by introducing its phenylalanine 43 (Phe43) in a cavity located at the interface between the inner and outer gp120 domains, known as the Phe43 cavity. Despite lack of contact with CD4, the gp120 inner domain layers govern CD4 triggering by participating in conformational transitions within gp120 and regulating the interaction with gp41. Small CD4-mimetic compounds (CD4mc) have been shown to engage within the Phe43 cavity and to trigger conformational changes similar to those induced by CD4. Interestingly, certain HIV-1 strains (such as CRF01_AE) exhibit intrinsic resistance to CD4mc, likely resulting from the presence of a Phe43 cavity-filling residue (H375). Surprisingly, we found that replacement of this bulky residue by a small polar residue (H375S) did not restore CD4mc sensitivity. However, when this change was combined with alteration of six co-evolving residues within the gp120 inner domain layers, sensitivity to CD4mc was restored. Crystal structures of CD4mc in complex with a modified CRF01_AE gp120 core revealed the importance of these gp120 inner domain residues in stabilizing the Phe43 cavity and shaping the CD4 binding site. Our studies reveal the complex interplay between the gp120 inner domain and the Phe43 cavity required to form the CD4 binding site and generate useful information for the development of more potent CD4mc.

Basic Sciences: Antivirals, Microbicides and Mechanisms of HIV Resistance
Sciences fondamentales : Antiviraux, microbicides et mécanismes de résistance au VIH

BSP1.09

Investigation of Integrase Inhibitor Resistance Mutations in gp41 in Clinical Samples

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B**ackground:** *In vitro* studies suggest mutations conferring resistance to HIV Integrase strand transfer inhibitors (INSTI) can occur outside *integrase*, including in *env*, but it remains unclear whether these arise *in vivo*. Using a database of clinically-derived HIV-1 sequences, we sought to identify mutations in gp41 associated with INSTI exposure *in vivo*.

Methods: We identified 146 BC-CfE Drug Treatment Program (DTP) participants infected with HIV-1 subtype B, who had a genotypic INSTI resistance test following ≥3 months of INSTI exposure and whose genotype was susceptible to all INSTI (HIVdb v8.8; score<15). HIV-1 gp41 was sequenced from these samples. We assembled reference datasets of subtype B Integrase (INT) and gp41 sequences from INSTI-naïve DTP participants collected during clinical drug resistance testing. Amino acids (AA) significantly over-/under- represented among INSTI-treated and -naïve participants at INT and gp41 codons were identified by Fisher's exact test. Analyses were restricted to AA observed ≥5 times. Multiple comparisons were addressed using the Benjamini-Hochberg method (q-values).

Results: INT and gp41 sequences from raltegravir- (79; 54%), elvitegravir- (27; 18%) or dolutegravir-treated (40; 27%) participants were collected after a median 32 (Q1-Q3:13-56) months of INSTI exposure. Of 146 INSTI-experienced participants, 16% were antiretroviral-naïve at their first INSTI prescription, while 84% had prior NNRTI- and/or PI-based cART. INT sequences from 146 INSTI-treated and 2472 INSTI-naïve individuals were compared. Gp41 sequences from 115 (79%) INSTI-treated individuals were compared to 1222 sequences from INSTI-naïve individuals. Lower frequencies of gp41 polymorphisms I182V (OR=0.40, p=9.1x10-6, q=0.0085) and H209R (OR=0.47, p=1.9x10-4, q=0.086) were observed in INSTI-experienced individuals. No significant differences in AA frequencies were observed in INT (q>0.2).

Conclusion: Differences in gp41 AA frequencies in INSTI-experienced vs. -naïve individuals were observed only at highly polymorphic positions. No substitutions in gp41 previously associated with INSTI resistance *in vitro* were identified, suggesting these may arise rarely *in vivo*.

Basic Sciences: Antivirals, Microbicides and Mechanisms of HIV Resistance
Sciences fondamentales : Antiviraux, microbicides et mécanismes de résistance au VIH

BSP1.10

pH-Responsive Intravaginal Ring for the Combination Delivery of siRNA-Encapsulated Nanoparticles and Hydroxychloroquine as a Potential Microbicide

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Purpose: Microbicides are an excellent alternative to condoms to help reduce transmission of human immunodeficiency virus (HIV). An intravaginal ring (IVR) would be a suitable platform that can provide controlled delivery of drugs within the female genital tract. We propose to develop a segmented combination IVR whereby one-half of the IVR will be loaded with hydroxychloroquine (HCQ), an immuno-modulatory drug that can induce T-cell immune quiescence and the other half will be coated with a pH-responsive film for the rapid release of small interfering RNA (siRNA)-encapsulated solid lipid nanoparticles (siRNA-NP) targeting CCR5 gene, triggered by an increase in vaginal pH due to the presence of seminal fluid as a strategy for preventing HIV infection.

Methods: NP made of glyceryl monosterate and L-α-phosphatidylcholine was used to encapsulate siRNA using the double emulsion method, mixed with a pH-sensitive polymer (Eudragit L100) and used to coat a matrix-type IVR segment, fabricated by injection molding from polyurethane. HCQ was loaded in a reservoir-type IVR segment. Release study was performed for each segment. The biocompatibility of the IVR was evaluated in cervicovaginal epithelial cell lines and in *Lactobacilli*.

Results: IVR segments coated with a pH-sensitive polymer rapidly released fluorescent NP at pH8.2 (12.8±1.7%) at 4 hours' time point but negligible amount at pH4.2 (0.26±0.042%). The reservoir-type IVR segment containing HCQ continuously released drug up to 21 days with a near zero-order release profile (R^2 value =0.99) with a mean daily release of 17.01±3.6 mg/mL. The IVR segments were not cytotoxic to the vaginal cells or microflora. The relative gene expression of CCR5 in cells treated with the siRNA-NP was significantly reduced to 58.60±17.36%

Conclusion: We described for the first time an IVR system that is non-cytotoxic towards lactobacilli and vaginal/cervical epithelial cells and is capable of releasing HCQ and siRNA-NP at high pH.

Basic Sciences: Antivirals, Microbicides and Mechanisms of HIV Resistance
Sciences fondamentales : Antiviraux, microbicides et mécanismes de résistance au VIH

BSP1.11

Anti-HIV Activity of the Human Antimicrobial Peptide, LL-37, and Its Truncated Peptide, 17BIPHE2

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B**ackground:** Lack of access to contraception is a key contributor to unwanted pregnancies. Concurrently, sexually transmitted infections (STIs) such as HIV are a major health concern worldwide. Together, these issues prompted the development of Multipurpose Prevention Technologies (MPT), capable of providing contraception and preventing STIs. One potential MPT is the human antimicrobial peptide, LL-37, and its truncated and modified version, 17BIPHE2, both known to have spermicidal activity.

Methods: Increasing concentrations of HIV were incubated with LL-37 or 17BIPHE2 prior to infection of target cells. In an HIV luciferase reporter TZM-bl cell line, infection was quantified by luciferase activity. In PBMC and CD4+ T cells, infection was measured by concentration of p24 via ELISA in the supernatant. These experiments were repeated with cells pre-incubated with peptide prior to HIV infection. The effect of the peptides on cell phenotype and viability, measured by Sytox green staining, were evaluated by flow cytometry.

Results: Co-incubation with LL-37 decreased the ability of HIV to infect TZM-bl in a dose-dependent manner across multiple titers of HIV. When LL-37 was incubated with HIV before infecting PBMC or CD4+ T cells, p24 concentration increased with increasing amounts of LL-37. Infection also increased when PBMC were incubated with LL-37 prior to infection with HIV. Incubation with LL-37 did not increase cell death of PBMC, but HLA-DR and CCR5 expression on CD4+ T cells was increased.

Conclusion: LL-37 can reduce infectiousness of HIV but is also capable of activating cells, increasing their susceptibility to infection, indicating that the anti-HIV activity of LL-37 may be dependent on cell type and/or culture conditions. 17BIPHE2 will also be evaluated as, given its modified nature, it may retain anti-HIV activity without activating cells. This could provide the foundation for studies of the activity of these peptides in other cells/tissues of the female reproductive tract.

Basic Sciences: Biomarkers and Diagnostics
Sciences fondamentales : Biomarqueurs et diagnostics

BSP2.01

Evaluation of a Magnetic Bead Depletion Protocol to Generate Low CD4+ T-lymphocyte Blood Samples for Use in an External Quality Assessment Program for CD4+ T Cell Enumeration

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B**ackground:** The Canadian Quality Assessment Program (CIQAP) for CD4 T Cell Enumeration utilizes whole blood to create External Quality Assessment (EQA) panels. EQA panels for CD4+ T cell enumeration must represent low and normal CD4+ T cell counts. Antiretroviral therapy regimens have allowed most HIV positive patients to maintain a normal CD4+ T cell count. Here, we evaluated a CD4+ T-lymphocyte depletion technique to create proficiency samples with low CD4+T cell percentage and absolute counts.

Method: CD4+ T cell depletion from whole blood utilizing magnetic bead selection was optimized. Depleted and un-depleted blood was combined to create samples with low CD4+ T-lymphocyte counts. The stability of depleted samples was assessed on the FACSCalibur to monitor absolute counts and percentage results for T cells, NK and B cells over 2 days. Similar parameters were also assessed in stabilized whole blood over 2 months.

Results: Anti-Human CD4 beads utilized at a 1:1 ratio (beads/target cells) allowed for CD4+ T lymphocyte depletions of up to 99%. Combining whole blood to depleted blood at various ratios created CD4+ T-cell samples ranging from 100–300 cell/uL (9%-20% of total lymphocytes respectively). In fresh samples, the results for the assessed parameters of CD3+, CD3+ 4+, CD3+8+, CD19+, CD56+16+ remained stable over the evaluation period. Similarly, stability was observed in depleted samples treated with blood preservative.

Conclusion: We have developed a protocol to allow for the manipulation of whole blood to create proficiency samples with low CD4+ T cell counts. This is a tremendous asset to EQA programs for CD4+ T cell enumeration requiring the inclusion of low CD4+ T cell samples in their panels. These manipulated samples can also be utilized to validate new CD4+ T cell enumeration technologies without relying on patient samples with low CD4+ T cell counts.

Key words: Low CD4 Counts, Depletion

Basic Sciences: Biomarkers and Diagnostics
Sciences fondamentales : Biomarqueurs et diagnostics

BSP2.02

HIV-1 Infection Disrupts Circadian Patterns of Extracellular Vesicles Abundance and microRNA Contents

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Extracellular vesicles (EVs) and their microRNA contents are involved in modulating immune responses and consequently the pathogenesis of HIV infection. In plasma, EV abundance reflects immune activation states associated with infection, making them and their contents biomarkers of disease progression. Herein, we investigated day and night variations of EV abundance and microRNA contents in a cohort of people living with HIV (PLWH) receiving viral suppressive antiretroviral therapy (ART).

Venous blood samples from 10 ART-treated PLWH and 10 HIV-uninfected participants were collected at 10AM and 10PM on the same day. Populations of large and small EVs were separated sequentially from platelet-free plasma treated with proteinase K. Vesicle hydrodynamic size was estimated with dynamic light scattering and abundance was assessed by flow cytometry upon staining. Total RNA was extracted and qRT-PCR was used to quantify microRNAs involved in immune response and regulation of circadian clock.

The mean age of patients was 52.80 for PLWH, 50 for HIV-uninfected and $CD4^+$ T-cells count mean was respectively 570±155 and 601±199. In HIV-uninfected participants, EV abundance was 4-fold greater at night and the amounts of 5/5 microRNAs (miR-29a, miR-29b, miR-92, miR155 and miR-223) in large EVs were significantly increased in plasma collected at night *versus* morning. These daily variations were abrogated in ART-treated PLWH. However, in ART-treated levels of miR-155 in small EVs were significantly increased at night vs morning and were significantly correlated with CD8 count ($r=0.78$; $p=0.0279$). Noteworthy, miR-155 was documented to modulate the expression of circadian clock machinery components/regulators.

These results reveal that daily variations in EV abundance and microRNA contents are disrupted in ART-treated PLWH. This disturbance could explain the mechanism of mRNA and/or protein levels changes observed in PLWH and confirm that the timing of biological sample collection matters for analyzing and interpretating study results in comparing un-infected and ART-treated participants.

Basic Sciences: Biomarkers and Diagnostics
Sciences fondamentales : Biomarqueurs et diagnostics

BSP2.03

Validity of Dried Blood Spot Testing for Sexually Transmitted and Blood Borne Infections: a Systematic Review

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Background. Testing for HIV and hepatitis C using dried blood spot (DBS) specimens has been used in Canada for integrated bio-behavioural surveillance for almost two decades; and is increasingly being used for screening and diagnostic purposes. A systematic review was conducted to compile and assess the evidence regarding the validity of sexually transmitted and blood-borne infections (STBBI) testing on DBS specimens.

Methods. A literature search was conducted using a peer-reviewed search strategy. Eligibility criteria included studies reporting use of DBS specimens collected from any research participant or patient population and tested for certain STBBI. The intervention of interest was either commercially available or “in-house” tests used to detect STBBI from DBS specimens. Studies that reported a measure of validity such as sensitivity and specificity were eligible for inclusion.

Results. A total of 5,252 records were identified. Of these records, 148 full-text articles met the criteria for inclusion. The STBBI with the most articles reporting a measure of validity for testing on DBS was HIV (n=72), followed by hepatitis C (n=38), hepatitis B (n=22), syphilis (n=5), HTLV (n=4), hepatitis A (n=3), HSV (n=3) and HPV (n=1). The majority of studies reported high sensitivity (≥90%) and specificity (≥90%), however the quality of the studies varied greatly. No evidence was found on the validity of chlamydia and gonorrhoea testing on DBS specimens.

Conclusion. The majority of literature on validity of STBBI testing on DBS pertained to HIV and hepatitis C. Preliminary analysis of findings support the validity of DBS testing for certain STBBI where sufficient evidence was available. More research is needed into the validity of DBS testing for some STBBI.

Basic Sciences: Biomarkers and Diagnostics
Sciences fondamentales : Biomarqueurs et diagnostics

BSP2.04

Daily Variations of Gut Microbial Translocation Markers in ART-treated People Living with HIV

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B**ackground:** Gut microbial translocation and increased intestinal barrier permeability are significant contributors to inflammatory non-AIDS co-morbidities in people living with HIV (PLWH). However, daily variations of markers of bacterial and fungal translocation and of intestinal damage are not yet characterized. Herein, we assessed the variation of these markers over 24 hours in PLWH receiving antiretroviral therapy (ART) in a well-controlled environment.

Methods: A total of 11 male ART-treated PLWH were recruited for the study. Blood samples were collected every 4 hours over 24 hours before snacks/meals from 8:00 in the morning to 8:00 the next day. All participants consumed similar meals at set times, and had a comparable amount of sleep, physical exercise and light exposure. Plasma levels of bacterial lipopolysaccharide (LPS) and fungal (1→3)-β-D-Glucan (BDG) translocation markers, along with markers of intestinal damage fatty acid binding protein (I-FABP) and regenerating islet-derived protein-3α (REG3α) were assessed by ELISA or the Fungitell® assay.

Results: Plasma levels of BDG and REG3α were stable during the day. In contrast, plasma levels of LPS and I-FABP were subject to daily variations, with the lowest levels at 12:00 and 16:00, respectively, and the highest levels at 00:00 and 4:00-8:00, respectively.

Conclusion: In contrast to the fungal translocation marker BDG and the gut damage marker REG3α**,** time of blood collection matters for the proper evaluation of LPS and I-FABP as markers linked to the risk of inflammatory non-AIDS co-morbidities. These insights are instrumental for orienting clinical investigations in PLWH.

Basic Sciences: Biomarkers and Diagnostics
Sciences fondamentales : Biomarqueurs et diagnostics

BSP2.05

A Study to Evaluate the Accuracy, Usability and Readability of the INSTI HIV Self-Test Performed by Observed Intended Users in Canada: Preliminary Results

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B**ackground:** HIV self-testing is an accepted, effective method to reach undiagnosed individuals in global settings, however there is no licensed self-test in Canada. A multi-site study of the INSTI HIV Self-Test, funded by CIHR and CANFAR, was initiated in August 2019 to provide performance data for license application to Health Canada.

Methods: This observational prospective study of the blood-based INSTI HIV Self-Test measures its performance, usability and readability in 1,000 consenting adults with broad demographic diversity, from sites in Toronto, Montreal, Winnipeg, Saskatoon and Victoria. All subjects participated in the performance study, comparing self-test results to 4th generation Abbott Architect results from venous blood, along with a qualitative usability study. Selected study participants also participated in a readability study arm. The study was initiated at Toronto sites (Hassle Free Clinic and Women's Health in Women's Hands) in August 2019, and in one Winnipeg site (Nine Circles) in November, under respective Ethical Review Committee approvals.

Results: Performance data presented for the first 500 participants having self-test and lab results. Compared to Abbott Architect, the negative percent agreement for valid INSTI HIV Self-test results was 99.4% (488/491) and positive percent agreement for previously undiagnosed individuals was 100% (4/4). Participants reported 5 self-test invalid results. For the usability study, 96.2% found the test easy to use; 86.7% added a free-falling blood droplet into INSTI bottle 1; 97.7% indicated willingness to use the test again; 98.3% would recommend the kit to a partner. For the 325 subjects in the readability study, correct interpretations were 97.8% for the strong positive, 90.4% for the weak positive, 99.1% for the negative, 94.1-97.8% for the two invalids.

Conclusions: This first Canadian field study of the blood-based INSTI HIV Self Test provides strong indications that it is accurate, acceptable and easy to use by self-testers with diverse backgrounds.

Basic Sciences: Comorbidities, Coinfections and Complications
Sciences fondamentales : Comorbidités, coinfections et complications

BSP3.01

IL-17A Negatively Regulates IL-32 Isoform Expression in Intestinal Epithelial Cells in the Context of HIV-1 Infection

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The interplay between intestinal epithelial cells (IEC) and Th17 cells is key for mucosal immunity homeostasis. HIV infection provokes impaired intestinal barrier functions and chronic immune activation, which are not repaired by antiretroviral therapy (ART). Such alterations coincide with Th17 cell depletion and the overexpression of IL-32, a newly described cytokine composed of multiple isoforms, linked to uncontrolled HIV replication and cardiovascular disease (CVD). The involvement of specific IL-32 isoforms in HIV pathogenesis remains poorly investigated. Here, we monitored IL-32 isoform expression in the colon and blood of ART-treated people living with HIV (ART+PLWH), and explored the relationship between IL-32 and IL-17A, the Th17 hallmark cytokine.

Matched blood and sigmoid colon biopsies were available from n=17 ART+PLWH and n=5 uninfected controls. The IEC line HT-29 was used to study the modulation of IL-32 expression upon exposure to TNF-α, the TLR-3 agonist Poly:IC, or the $HIV_{NL4.3BaL}$ or HIV_{THRO} strains, in the presence/absence of IL-17A. IL-32 mRNA expression was measured by real-time RT-PCR. Total IL-32 protein levels were quantified by ELISA.

Our results demonstrate a significant overexpression of IL-32β in blood and colon samples of ART+PLWH compared to uninfected controls. In contrast, IL-17A mRNA levels were downregulated, with a negative correlation between IL-32β and IL-17A. In HT-29 cells, the expression of IL-32β, γ and ε mRNA, as well as intracellular but not soluble IL-32 protein, was induced by TNF-α, Poly:IC and HIV_{THRO} exposure *in vitro*. IL-17A decreased IL-32 expression in a dose dependent manner.

Our results revealed an altered IL-32β:IL-17A ratio that may underlie intestinal mucosal immunity alterations leading to exaggerated inflammation and CVD in ART-treated PLWH. Our results also demonstrate that IL-17A negatively regulates IL-32 expression in IEC, linking the paucity of Th17 cells to IL-32 overexpression. Specific IL-32 isoforms, as IL-32β, may be therapeutic targets for preventing inflammation in PLWH.

Basic Sciences: Eradication Strategies Towards an HIV Cure
Sciences fondamentales : Stratégies d'éradication, vers un remède contre le VIH

BSP5.01

The Circadian Clock Machinery Regulates HIV Transcription in CD4+ T cells

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Th17-polarized CD4+ T-cells are key HIV infection targets and are highly enriched in viral reservoirs in people living with HIV (PLWH) receiving viral-suppressive antiretroviral therapy (ART). Current ART targets different steps of the viral replication cycle but not the transcription, a process under the control of host-cell transcription factors. Residual viral transcription under ART is a major cause of chronic immune activation and non-AIDS co-morbidities. In previous studies, we demonstrated that the transcriptional signature associated with HIV permissiveness in Th17 cells incorporates the circadian clock components/regulators CLOCK, BMAL1 and REV-ERBα. Of note, REV-ERBα acts as a transcriptional regulator of RORγt activity (master regulator of Th17) and BMAL1 (a transcriptional activator putatively binding to E-boxes in the HIV promoter). Thus, we hypothesized that REV-ERBα regulates both RORγt-mediated effector functions and BMAL1-mediated HIV replication in Th17 cells.

To test this hypothesis, we used available REV-ERBα agonists shown to be efficient for the treatment of Th17-mediated autoimmune diseases. Memory CD4+ T-cells from uninfected individuals were stimulated *via* αCD3/αCD28 and exposed to HIV *in vitro*. A viral outgrowth assay (VOA) was performed with memory CD4+ T-cells of ART-treated PLWH activated *via* αCD3/αCD28. Experiments were performed in the presence/absence of the REV-ERBα agonists SR9009 and SR9011. Cytokines and HIV-p24 levels were measured by ELISA. HIV-DNA integration was quantified by PCR.

REV-ERBα agonists potently reduced RORγt/BMAL1 mRNA expression and inhibited HIV replication *in vitro* and in VOA. The antiviral effect coincided with decreased IL-17A and IFN-γ production. Studies are in progress to define molecular mechanism by which REV-ERBα interferes with HIV transcription.

These results provide a strong rationale for further evaluating the possibility to therapeutically target REV-ERBα to block residual HIV transcription as a way to limit chronic immune activation and non-AIDS co-morbidities during ART.

Basic Sciences: Eradication Strategies Towards an HIV Cure
Sciences fondamentales : Stratégies d'éradication, vers un remède contre le VIH

BSP5.02

The Efficacity of DCIR Inhibitors to Limit HIV-1 Infection

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The HIV-1 pandemic continues to expand while there is no effective vaccine or cure yet available against HIV-1 infection. Current therapies do limit mortality and control viral proliferation, but they cannot cure the disease, they are associated with co-morbidities and they are subject to the development of resistance. Therefore, the search for new therapeutic targets and drugs against HIV-1 infection is crucial. The Dendritic Cell ImmunoReceptor (DCIR) is one of the novel therapeutic targets against HIV-1 infection. Expressed mainly on dendritic cells and HIV-1 infected or apoptotic CD4+ T lymphocytes (CD4TL), DCIR is a C-type lectin which act as an attachment factor for HIV-1. The association of DCIR and HIV-1 occurs from interactions between the Carbohydrate Recognition Domain (CRD) of DCIR and certain glycosylation patterns of HIV-1 gp120. DCIR contributes to HIV-1 transmission to CD4LT using both *trans*- and *cis*- infection pathways. Moreover, HIV-1 attachment to DCIR inhibits both innate immune responses such as TLR8 and TLR9 activation and adaptative immune responses such as antigen presentation by DC-SIGN and Baff production. Consequently, our hypothesis is that the use of DCIR inhibitors would prevent HIV-1 attachment to DCIR and transmission of the virus to CD4LT, while also preventing the inhibition of anti-viral immune responses. The objectives of our study are to identify DCIR inhibitors able to limit HIV-1 attachment and transmission and to analyse their impact on the immune response against different virus subtypes with multiple resistances. Sixteen DCIR inhibitors were previously identified using virtual screening. Some inhibitors blocked HIV-1 attachment to Raji CD4+ DCIR+ cells. They also interacted in a dose-dependant manner with DCIR in Surface Plasmon Resonance (SPR) experiments. The inhibitors will be studied in HIV-1 infected NSG mice with a human immune system. According to these results, a lead compound will be identified for further drug optimization.

Basic Sciences: HIV Latency and Viral Reservoirs
Sciences fondamentales : Latence du VIH et réservoirs viraux

BSP6.01

Validation of Integration Date Estimation Methods Using a Simulation of HIV Latent Genomes

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The presence of transcriptionally latent HIV proviruses is a major barrier to an effective HIV cure. However, there are substantial gaps in our knowledge of HIV viral latency; for example the precise timing of integration and duration of persistence of latent provirus is unclear. Bioinformatic tools must be employed in order to fill these knowledge gaps and these tools require validation for precision and accuracy. However, no *in silico* genome simulator currently exists to validate these methods. We present a tool, an extension of the SANTA-SIM software, which is specifically tailored towards simulating HIV latent genomes. Our tool simulates the HIV within host evolution of genomes in an active compartment and a latent compartment. We employed two simulations both with active infection periods, periods of therapy, and longitudinal sampling. The first simulation sampled from the active compartment every year during a ten-year active period and then sampled from the latent compartment every two years during a ten-year period on therapy. In the second simulation, the active compartment was sampled 50 days after infection, one year after infection and four years after infection whereupon treatment commenced and then the latent compartment was sampled then and at 6 months after and one year after treatment initiation. We then used the simulated genomes to compare five different methods of estimating proviral integration dates (closest sequence, cladistic method, linear regression, least squares dating, and maximum likelihood). In both models, the most accurate dating method was least squares dating (average root mean squared error (RMSE): 0.119 and 0.089 years), which had significantly lower RMSEs than the other methods (Friedman tests: $p < 0.01$). Accurate bioinformatic tools will enable us to glean valuable information about the HIV latent reservoir, and this in turn is a step towards developing a durable HIV cure.

Basic Sciences: HIV Latency and Viral Reservoirs
Sciences fondamentales : Latence du VIH et réservoirs viraux

BSP6.02

HIV Diversity Considerations in the Application of the Intact Proviral Detection Assay (IPDA)

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B**ackground:** The Intact Proviral Detection Assay (IPDA) was developed as a quantitative, scalable assay to estimate intact HIV reservoir size and an attractive tool to evaluate the efficacy of cure interventions. IPDA's robustness to detect naturally-occurring HIV diversity however remains incompletely explored.

Methods: IPDA was used to quantify intact proviruses in CD4+ T-cells from 40 virally-suppressed participants across North America. For 29 participants, inducible reservoirs were concurrently measured by QVOA. Single-genome amplification was used to recover near-full length proviruses from the reservoir and *env* sequences from QVOA outgrowth wells. Susceptibility of individual viruses to bNAbs was assessed by ADCC assays.

Results: No correlation was observed between intact (IPDA) and infectious (QVOA) provirus frequencies (r= -0.1, p=0.6, N=29). Notably, in 11/40 (28%) participants no intact proviruses were detected, despite recovery of replication-competent HIV in 10 such cases. Sequencing of select IPDA false-negative participants revealed that their autologous viruses harbored at least one nucleotide mismatch to the IPDA *env* or Ψ primers/probes. Autologous primers/probes rescued this signal, demonstrating that a single mismatch can yield a false-negative IPDA result. A secondary *env* primer/probe set rescued detection for all *env* false-negative IPDA participants (8/8) and detected *env* in 13/14 IPDA-positive participants. Importantly, where successful, the secondary set yielded comparable reservoir measures to the original assay (p=0.9). We further identified an individual harboring heterogeneous replication-competent reservoir viruses that exhibited opposing susceptibility profiles to 3BNC117 and 10-1074 by ADCC, where one of these strains was detectable by IPDA, while the other was not.

Conclusions: Given the observed instance of false-negative IDPA results, caution is warranted in assay scale-up. Secondary primers/probes can mitigate challenges posed by inter-individual reservoir diversity. Failure to capture intra-individual diversity however is a greater challenge, as this may lead to underestimation of reservoir size and erroneous conclusions regarding the efficacy of candidate interventions.

Basic Sciences: HIV Latency and Viral Reservoirs
Sciences fondamentales : Latence du VIH et réservoirs viraux

BSP6.03

A Case of Super-infection with Two Highly Divergent HIV-1 Strains: Implications for the Latent Reservoir

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I**ntroduction:** The dynamics of HIV co-/super-infections with multiple subtypes are poorly understood, particularly as these relate to reservoir seeding and persistence. We describe a unique case of initial subtype B infection followed by super-infection by a unique recombinant form (URF) in a participant of an HIV cohort study in Canada.

Methods: Single-template *pol* and *gp120* HIV RNA sequencing was performed on pre-ART plasma from October 2010 (early infection) and April 2012. Single-template near-full genome proviral sequencing was performed on CD4+ T-cells isolated during suppressive ART in 2017 and 2019. Replication competent reservoir viruses were isolated (QVOA, 2017 sample) and sequenced for gp120. Maximum likelihood phylogenies were constructed using PhyML; HIV subtype was determined using RIP (3.0).

Results: The participant's clinically estimated infection date was March 2010. All (n= 56) *pol* and *gp120* sequences isolated from plasma in October 2010 were subtype B. Prior to ART initiation in April 2012, clinical genotyping yielded a subtype B result but retrospective sequencing revealed that 101/112 (90%) of plasma viral *pol* and *gp120* sequences represented a unique recombinant form (URF) comprising subtypes G, A1 and CRF02_AG. Together this indicates initial infection with B and subsequent super-infection with the URF. Viremia was largely suppressed on ART with the exception of a treatment interruption in May 2018. Near full-length proviruses isolated in 2017 and 2019, before and after the interruption respectively, reflected the circulating plasma virus distribution pre-ART (12% subtype B, 4/33; 88% URF, 29/33). Notably, no within-host recombinants were detected despite recovery of both subtype B and URF replication competent reservoir viruses in 2017 by QVOA.

Conclusions: Super-infection yielded a genetically complex replication competent reservoir comprising highly divergent HIV quasispecies, where treatment interruption carries the theoretical risk of *de novo* within-host recombination. Such cases of extreme within-host HIV diversity may also complicate HIV remission strategies.

Basic Sciences: HIV Latency and Viral Reservoirs
Sciences fondamentales : Latence du VIH et réservoirs viraux

BSP6.04

The Characterizing and Understanding the HIV Reservoir for Eradication (CURE) Cohort: a New Resource for Understanding HIV Persistence

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B**ackground:** The development of effective HIV remission or cure strategies will require a deeper understanding of inter-individual variation in HIV reservoir size and composition. To this end, we have established the *Characterizing and Understanding the HIV Reservoir for Eradication* (CURE) cohort comprising individuals living with HIV on long-term cART. We describe CURE and explore associations between clinical history and latent reservoir size.

Methods: For each participant, PBMCs were isolated from a large volume blood draw (450mL) and cryopreserved. $CD4^+$ T-cells were then purified from PBMCs by negative selection and genomic DNA extracted. Total and intact proviruses were measured using the Intact Proviral DNA Assay, a droplet digital PCR assay that simultaneously targets the HIV packaging signal and env-RRE regions along with similarly-spaced regions in the human RPP30 gene. Autologous probes were used if published probes failed.

Results: To date, 27 participants (25 males, 2 females; median age 57 [IQR 52-63] years) have been recruited. Clinical histories varied markedly: the median estimated duration of uncontrolled infection was 10 (IQR: 2-18) years, subsequent median cART duration was 13 (IQR: 9-20) years. Median nadir $CD4^+$ T-cell count was 260 (IQR 110-570) cells/mm^3. Reservoir size was assessed for 15 participants, yielding a median 1,729 (IQR 1,140-2,236) total and a median 97 (IQR: 40-126) genetically-intact HIV copies/million $CD4^+$ T-cells; these measurements correlated positively (Spearman's rho=0.60, p=0.01). No significant correlations were observed between uncontrolled infection duration, cART duration, nadir CD4 count, and reservoir size (p>0.20). Unique to CURE, archived pre-cART plasma is available for each participant (median 8 [IQR 2-17] samples/participant), allowing for the interpretation of reservoir diversity in the context of HIV's within-host evolutionary history.

Conclusion: CURE, a new Canadian HIV cohort comprising individuals with diverse clinical histories, including those treated in early infection and long-term HIV survivors, will advance our understanding of HIV persistence.

Basic Sciences: HIV Latency and Viral Reservoirs
Sciences fondamentales : Latence du VIH et réservoirs viraux

BSP6.05

Effect of Thymic Output on the Homeostasis of the HIV Reservoir

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I**ntroduction:** . The thymus is a key player in the homeostasis of the T cell compartment. However, its impact on the HIV reservoir remains unclear. We hypothesized that thymic output could modulate the size of the HIV reservoir, by (1) enhancing homeostatic pressure on the pool of reservoir cells through the production of uninfected naïve CD4+ T cells and (2) increasing the pool of HIV-specific CD8+ T cells.

Methodology. We measured total and integrated HIV DNA by qPCRs, as well as the inducible reservoir by the Tat/Rev Induced Limiting Dilution Assay (TILDA) in CD4+ T cells from 89 individuals (21-71 years old) on suppressive ART for >3 years. Thymic production was assessed by measuring the frequency of recent thymic emigrants (RTEs: CD45RA+CCR7+CD27+CD95-CD31+) by flow cytometry as well as by the quantification of T-cell Receptor Excision Circles (TRECs) by qPCR. Frequencies of T cells expressing memory, activation and senescence markers were measured by flow cytometry.

Results. The frequency of RTEs in the CD4 compartment was negatively associated with the levels of integrated HIV DNA (p=0.035, r=-0.236). The frequency of naive CD8+ T cells was negatively associated with levels of total and integrated HIV DNA as well as with TILDA measures (p=0.003, r=-0.332). Although there were strong associations between the frequencies of RTEs, TRECs measures and age of the participants, age and TRECs levels did not predict the size of the reservoir. Also, there was no association between the expression of activation and senescence markers and the size of the HIV reservoir.

Conclusion. Our results suggest that the production of both naive CD4+ and CD8+ T cells has an impact on the size of the HIV reservoir in long term ART-treated participants. Restoring the thymic function of people living with HIV may accelerate the decay of the HIV reservoir during ART.

Basic Sciences: HIV Pathogenesis and Animal Models
Sciences fondamentales : Pathogénèse du VIH et modèles animaux

BSP7.01

Daily Immunological/Virological Variations in Aviremic ART-treated HIV Participants

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B**ackground:** Biological functions fluctuate in a circadian manner to align with environmental changes. In healthy uninfected individuals, variations in T-cell trafficking are documented in the blood, with nadir CD4 counts in the morning. Daily variations are also observed for plasma cortisol and melatonin, two regulators of immune functions. HIV infection is associated with profound alterations in CD4 T-cell homeostasis and chronic immune activation. HIV transcription is regulated by BMAL1, a circadian clock master regulator. However, daily variations in immunological/virological parameters during ART-treated HIV infection remain unknown.

Methods: Eleven ART-treated people living with HIV were hospitalized at the CRCHUM Phase I Clinic a Friday afternoon for 40 hours. Starting the next morning, blood was collected/processed every 4 hours for 24 hours before food intake. Polychromatic flow cytometry allowed cell counting/phenotypic analysis on fresh blood. Plasma levels of cortisol/melatonin and markers of mucosal barrier impairment (FABP2, LBP) were measured by ELISA. HIV DNA/RNA were quantified by PCR on sorted CD4+ T-cells.

Results: The memory/naive/regulatory T-cell counts showed daily variations, with maximal counts observed 20:00-4:00 (nadir 12:00). The expression of the HIV co-receptors CCR5/CXCR4, gut-homing molecules CCR6/integrin ß7, and the immune checkpoint PD-1 on memory T-cells showed similar maximal expression 20:00-4:00. Pro-inflammatory non-classical monocyte counts were similarly high 8:00-00:00 but dropped significantly at 4:00. Plasma FABP2 levels peaked at 4:00, while LBP levels significantly dropped at 4:00. Daily variations in plasma cortisol (peak 4:00-8:00) and melatonin (peak 4:00) levels were observed. HIV-DNA reservoirs were stable. HIV-RNA levels in CD4 T-cells collected at night were higher compared to morning.

Conclusion: Daily variations in the blood T-cell/myeloid compartments, mucosal permeability markers, HIV transcription, and melatonin/cortisol levels, were observed in a cohort of aviremic ART-treated PLWH. These findings provide a rationale for studying the role of the circadian clock machinery in regulating residual HIV transcription under ART.

Basic Sciences: HIV Pathogenesis and Animal Models
Sciences fondamentales : Pathogénèse du VIH et modèles animaux

BSP7.02

Development of a Humanized BLT Mouse Model for Imaging HIV-1 Latency

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B**ackground:** There is no reliable animal model to test drugs or biologics to activate latent HIV-1 let alone the optimal drug penetration at specific anatomical sites to access the activation of latently infected cells. We are developing a new “humanized mouse” for HIV.

Methods: We made a vector construction designed to specifically image latently infected cells. A full-length molecular clone of HIV was used as the cloning vector. The gene for Monomeric Red Fluorescent Protein (mRFP) followed by the “self-cleaving” 2A peptide HSV thymidine kinase (TK) gene were inserted into the gag ORF between the MA and CA domains. The final vector, pHIV-1_Gag-mRFP-TK_deltaEnv, was tested in cell lines. The vector was co-transfected with helper plasmids into 293T cells to produce HIV-1-like particles in cell-free supernatant. VLPs were purified and then used to infect the PM-1 cell line.

Results: We confirmed the presence of RFP by fluorescence microscopy and flow cytometry within transfected cells to produce the virus like particles. Cells transduced with pHIV-1_Gag-mRFP-TK_deltaEnv were treated with gancyclovir to determine concentrations for effective cell killing and cells latency. “Actively” infected T cells expressing mRFP and HSV-TK were cleared by GCV. Latently infected T cells, that were not killed by GCV, could be activated to express mRFP after PHA stimulation. With a similar vector with mRFP replaced with AkaLuc, we will be infecting humanized mice to be treated with GCV to establish mice latently infected with HIV-1.

Conclusions: We have developed a viral latency vector that involves negative/positive selection to establish latently infected cells without clonal selection and outgrowth. Within animal models, latency can be established without antiretroviral treatment. Following treatment with LRAs, latency reversal and the fate of these T cells can be tracked in vivo with highly sensitive/specific imaging using IVIS-CT, PET-MRI, and multiphoton microscopy of affected tissue.

Basic Sciences: HIV Virology (Viral and Host Factors)
Sciences fondamentales : Virologie du VIH (Facteurs liés au virus et à l'hôte)

BSP8.01

New Tools to Study the Expression of the Antisense Protein Gene in the Proviral DNA Context

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Recent *in silico* analyses of different HIV-1 isolates have confirmed the existence of an antisense open reading frame overlapping the HIV-1 *env gene*, termed Antisense Protein (ASP). The detection of this protein has been difficult and, although we were successful in studying ASP in transfected cells, mechanisms responsible for the regulation of its expression remain unclear. As ASP expression is likely modest in infected cells, better tools are needed to study its regulation in the context of proviral DNA. Our objective was thus to test new proviral DNA-based constructs. Detection of ASP from different clades (including those from T/F viruses) was first confirmed in cells transfected with a strong expression vector. We then constructed a NL4.3-based vector in which the luciferase gene was inserted next to the ASP initiation codon (termed NL4.3LucASP). A significant signal was detected in transfected cells, but, as expected, was lower than the classical NL4.3Luc+env- vector. Interestingly, signals were lost in versions of NL4.3LucASP deleted of its 3'LTR or of a previously identified polyA signal. Furthermore, Tat could importantly induce luciferase expression. As full length proviral DNA could not be used to study ASP expression due to the lack of detection, we thus generated another vector, in which the 3' end of NL4.3 containing a Myc-tagged version of ASP along with the corresponding upstream sequence, except for the 3' LTR, was inserted downstream of a CMV promoter. ASP was detected in transfected cells by WB and confocal microscopy with anti-Myc and/or anti-ASP antibodies. Of interest, certain WB signals were indicative of the presence of spliced transcripts, which were confirmed by RT-PCR. These results hence support the existence of ASP. Such new tools should provide important information on the transcriptional and post-transcriptional regulation of ASP expression and lead to novel approaches for ASP detection in infected cells.

Basic Sciences: HIV Virology (Viral and Host Factors)
Sciences fondamentales : Virologie du VIH (Facteurs liés au virus et à l'hôte)

BSP8.02

IFITM3 and SERINC5 Exert Distinct Inhibitory Pressures on HIV-1 Env Over the Course of Viral Infection

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HIV-1 envelope protein (Env) is the only viral protein present at the surface of HIV-1 particles and infected cells, thus becomes the primary target of host adaptive immunity including neutralizing antibodies. Interestingly, recent studies reported host innate restriction mechanisms that inhibit HIV-1 infection also by targeting Env and impairing viral entry. Two prominent examples of these innate antiviral mechanisms are IFITM3 (interferon-induced transmembrane 3) protein and SERINC5 (serine incorporator 5) protein. Both IFITM3 and SERINC5 get incorporated into HIV-1 particles and inhibit viral Env-mediated entry. Just as HIV-1 Env changes to resist neutralizing antibodies, our lab reported that HIV-1 Env can also mutate and become refractory to the restriction by IFITM3 and SERINC5; however, it is unclear whether Env sensitivity to either IFITM3 or SERINC5 has any correlation with the progression of HIV-1 infection, and how HIV-1 Env acquires resistance to these restriction factors. To answer these questions, we tested a large panel of HIV-1 Env clones that were collected at different stages of HIV infection (transmission, acute and chronic), for their susceptibility to IFITM3 or SERINC5 inhibition. The data showed that the transmitted founder HIV-1 Env clones were the most resistant to IFITM3 whereas the chronic Env clones are the most sensitive; an opposite trend was observed for the susceptibility to SERINC5 restriction. Therefore, over the course of HIV-1 infection, HIV-1 Env tends to become more sensitive to IFITM3 but more resistant to SERINC5. We also observed a strong correlation between SERINC5 restriction of HIV-1 Env and the efficiency of Env using CD4 and CCR5. We are currently evaluating how Env conformation modifies susceptibility to these restriction factors by using small molecule compounds with the capacity to stabilize different Env states.

Basic Sciences: HIV Virology (Viral and Host Factors)
Sciences fondamentales : Virologie du VIH (Facteurs liés au virus et à l'hôte)

BSP8.03

Impact of Calprotectin on microRNA-155 Expression and Its Incorporation Into Extracellular Vesicles: the Consequences of HIV-1 Infection

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B**ackground:** During HIV-1 infection, a state of sustained inflammation arises due to the virus itself and to pro-inflammatory molecules secreted by immune cells or transported by extracellular vesicles (EVs). EV-borne proteins, RNA and microRNA are involved, in particular microRNA-155 (miR-155). The mechanism leading to miR-155 upregulation during HIV-1 infection is not yet understood. Its transcription can be activated by transcription factor NF-κB. Calprotectin appears to be among the pro-inflammatory molecules that activate NF-κB. We therefore tested the hypothesis that calprotectin can induce miR-155 enrichment in EVs and thus promote infection by suppressing SOCS-1 expression.

Methods: CD4 T lymphocytes (CD4TL) isolated from the peripheral blood of healthy donors were incubated with HIV-1 and then with calprotectin. EVs from the supernatant of this primary culture and from cultured HEK293T cells transfected with a miR-155 plasmid were purified by filtration and ultracentrifugation. MiR-155 expression was measured by qRT-PCR. The impact of EV-miR-155 on its target SOCS-1 and on HIV-1 infection was measured using qRT-PCR and capsid protein p24 ELISA.

Results: MiR-155 expression in EVs derived from infected CD4TL was increased in the presence of calprotectin. PBMCs incubated with miR-155-enriched EVs and HIV-1 had an increased viral production compared to those incubated with HIV-1 only and showed a 69% decrease in SOCS1 mRNA expression level in comparison with the control (HEK293T EVs).

Conclusion: Calprotectin can induce miR-155 expression in CD4TL and increase the incorporation of this microRNA into EVs. This study provides evidence that miR-155-enriched EVs are produced under inflammatory conditions and these EVs increase HIV-1 infection, possibly by decreasing expression of SOCS-1.

Basic Sciences: HIV Virology (Viral and Host Factors)
Sciences fondamentales : Virologie du VIH (Facteurs liés au virus et à l'hôte)

BSP8.04

Identifying the Cellular and Viral Determinants for the Selective Incorporation of Host Proteins into the HIV-1 Envelope

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While many strategies are available to inhibit the spread and replication of HIV *in vivo*, current treatments require lifelong adherence and can cause adverse effects over time. Therefore, the need for novel treatments and a preventative vaccine remain dire. While targeting gp120 has been the focus of most vaccine designs, host proteins displayed on the outer HIV envelope may provide additional targets on the virus for this purpose. Cellular proteins that are acquired by virions during viral egress (budding) often remain biologically active and enhance viral infectivity. One well studied example of this is the cellular adhesion molecule ICAM-1, which is selectively incorporated into the HIV envelope in a matrix-dependent manner. More recently, the T cell gut homing receptor, integrin alpha 4 beta 7 (α4β7), was also shown to be incorporated within the HIV envelope. Notably, virions displaying the cellular α4β7 retained the protein's function and were able to rapidly home to gut tissue in a mouse model. This result may mirror what occurs in HIV-infected individuals in which α4β7+ virions are present in their sera at high levels during acute infection. Interestingly, α4β7 is more abundant in the HIV envelope than both gp120 and ICAM-1 suggesting its significant role in HIV infection. Indeed, the integrin's use as a predictor of HIV acquisition, viral set point and T cell decline further point to its importance in HIV infection and disease progression. Here, we investigated lipid rafts and a series of HIV Gag mutants to study prospective cellular and viral determinants involved in the acquisition of α4β7. The result of these studies will inform more targeted experiments that may uncover the exact mechanism by which HIV hijacks α4β7, which may in turn provide new information on how the virus is able to hijack other host proteins.

Basic Sciences: HIV Virology (Viral and Host Factors)
Sciences fondamentales : Virologie du VIH (Facteurs liés au virus et à l'hôte)

BSP8.05

The ARYL Hydrocarbon Receptor Negatively Regulates HIV Replication in TH17/TH22 Cells

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B**ackground:** ART fails to restore the depletion of Th17-polarized CCR6+CD4+ T-cells in PLWH. Novel Th17-targeted HIV remission/cure strategies are needed to restore Th17-mediated mucosal immunity. Autoimmunity studies demonstrated the existence of pathogenic and non-pathogenic Th17 cells and identified the aryl hydrocarbon receptor (AhR) as a marker of non-pathogenic Th17 cells. AhR is a ligand-dependent transcription factor that regulates the expression of several genes (IL-22, IL-10, integrin B7) and is involved in proteasomal degradation via its E3 ubiquitin ligase activity. We hypothesized that AhR negatively regulates HIV replication in non-pathogenic Th17 cells.

Methods: PBMC of ART-treated PLWH and uninfected controls were used in this study. Total/CCR6+/CCR6- memory CD4+ T-cells were isolated by magnetic/flow cytometry sorting. Cells of uninfected donors were stimulated via CD3/CD28, exposed to HIV, and cultured 9 days. Viral outgrowth assay (VOA) was performed with cells of ART-treated PLWH. AhR silencing was performed using CRISPR/cas9, with efficacy evaluated by T7 endonuclease assay and Western blotting. AhR agonist (FICZ) and antagonist (CH223191) were used. Cell viability/proliferation, HIV replication, cytokines, and gene expression were quantified by ELISA, flow cytometry and/or real-time PCR.

Results: AhR mRNA/protein expression was induced by T-cell receptor triggering. CRISPR/cas9-mediated AhR silencing significantly inhibited IL-22, IL-17A, IL-10 and integrin beta7 expression ($p<0.01$) and increased viral replication upon infection in vitro ($p=0.0084$). Similarly, CH223191 significantly down regulated IL-22, IL-17A, IL-10, production ($p<0.0001$); increased wild type HIV replication , as well as HIV-DNA integration/transcription upon single-round infection with HIV-VSVG pseudotyped viruses ($p=0.001$); and increased >2-fold HIV reactivation in VOA. At the opposite, FICZ significantly increased IL-22 and IL-10 production and inhibited viral replication in vitro and reactivation in VOA.

Conclusion: Our results identify the AhR as a novel negative regulator of HIV replication in Th17/Th22-polarized cells thus raising the interest in testing natural/synthetic AhR agonists/antagonists for HIV remission/cure strategies.

Basic Sciences: HIV Virology (Viral and Host Factors)
Sciences fondamentales : Virologie du VIH (Facteurs liés au virus et à l'hôte)

BSP8.06

Genotyping of HIV-1 Isolates Infecting Children and Adolescents with Undetectable Viral Load Under Antiretroviral Therapy

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B**ackground:** The genetic diversity of HIV-1 is a major obstacle to prevention and cure. Group M, which is responsible for the AIDS pandemic, is subdivided into 9 subtypes and many more recombinant forms. Knowledge of HIV clade is important as it may influence HIV outcomes such as levels of viremia, disease progression and antiretroviral drug resistance.

Methods: By sequencing the HIV-1 gag gene, we determined the subtype of HIV-1 isolates in vertically-infected patients under combination antiretroviral therapy (cART; n=15) who were participants in the EPIC[4] (Early Pediatric Initiation, Canada Child Cure Cohort) Study and whose HIV-1 clade was unknown due to absence of prior genotyping and/or suppression of virus below the level of detection. The gag gene was amplified by nested PCR following HIV-1 DNA extraction from PBMC. Amplicons were then subcloned into pCR4-TOPO and subjected to Sanger sequencing. Clade assessment was based on phylogenetic analysis (neighbor-joining method) using sets of reference sequences.

Results: The genotyping procedure was successful in 12 of 15 participants. Phylogenetic analysis revealed that 3 subjects were infected with clade C, 3 with clade B, and 6 with clade A1. One participant, who could be infected by a recombinant virus, presented the lowest proportion of CD4+ T cells (19%; average=36%), congruous with the fact that this was the only participant whose viremia remained detectable under cART. The high prevalence of non-B subtypes our study group (75%) is consistent with the ethnic origin of study participants.

Conclusion: Sequencing analysis can be helpful in determining HIV-1 clade in persons with viral loads below the limit of detection. The increase of non-B infections in previously subtype B dominant regions such as Canada and Europe highlights the need to better understand the impacts of different HIV subtypes on the course of perinatal infection.

Basic Sciences: HIV Virology (Viral and Host Factors)
Sciences fondamentales : Virologie du VIH (Facteurs liés au virus et à l'hôte)

BSP8.07

Identifying miRNAs for Inhibition of Active and Latent HIV-1 by In-Depth Characterization of Host-Virus Interactions

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B**ackground:** A major barrier for curing HIV-1 infection is the establishment of latently infected reservoir cells that can reactivate upon treatment termination. One promising approach towards a functional cure, termed 'Block & Lock', is to deepen latency such that integrated viral genomes are locked from ever reverting. HIV-1 interferes with host machinery including the RNA interference (RNAi) pathway. Previous work in our lab has identified an interaction between HIV-1 Gag protein and Dicer, a key RNAse for RNAi function. Several micro (mi)RNAs and long non-coding RNAs have an increased interaction to the Gag-Dicer complex compared to Dicer alone, which are being explored in a Block & Lock strategy.

Methods: RNA immunoprecipitation followed by sequencing (RIP-seq) experiments and quantitative reverse transcription polymerase chain reaction (qRT-PCR) in cells expressing Dicer and/or Gag were used to characterize the Dicer interactome. Gene reporter assays with complementary sequences to miRNAs (cmiRNA) alongside Western Blot assays with shRNAs against the target and plasmids expressing the miRNAs (p-miRNA) validated the targets. miRNA mimics and anti-miRNAs were then tested for their effect on HIV replication.

Results: RIP-seq identified several miRNAs that associated preferentially with Dicer-Gag. Their expression was confirmed by qRT-PCR. The miRDB database identified predicted mRNA targets of three increased miRNAs. The targeted sequences were confirmed by a gene reporter assay. miRNA knockdown of the target was confirmed by Western blot using p-miRNA compared to an shRNA. miRNA mimics and anti-miRNAs are now being explored for their impact on HIV-1 replication and on latency by setting-up a novel RNA Block & Lock assay in J-Lat cells.

Conclusions: This study identified that HIV modifies the Dicer-binding miRNA landscape via direct Dicer-Gag interactions. Mimicking or antagonizing specific miRNAs will help to design compounds that could be used to either inhibit the virus or lock it in an inactive state.

Basic Sciences: HIV Virology (Viral and Host Factors)
Sciences fondamentales : Virologie du VIH (Facteurs liés au virus et à l'hôte)

BSP8.08

HIV-1 Vpu Downregulates Tim-3 from the Surface of Infected CD4+ T Cells

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Along with other immune checkpoints, the T cell immunoglobulin and mucin domain-containing protein 3 (Tim-3) is expressed on exhausted CD4+ and CD8+ T cells and is upregulated at the surface of these cells upon infection by Human Immunodeficiency Virus Type 1 (HIV-1). Recent reports have implicated Tim-3 in preventing HIV-1 egress; however, the molecular determinants of HIV-1 which modulate cell surface Tim-3 levels have yet to be determined. In the current report, we demonstrate that the HIV-1 accessory protein Vpu downregulates Tim-3 from the surface of infected primary CD4+ T cells using flow cytometry. Upon infection of CD4+ T cells with a virus expressing a mutant form of Vpu ($A_{14/18}L$), we determined that the transmembrane domain of Vpu is required for this Tim-3 downregulation. At the cellular level, we used immunofluorescence microscopy and bimolecular fluorescence complementation (BiFC) to determine that Vpu is in complex with Tim-3. We also found that Vpu alters the subcellular localization of Tim-3 by directing it to early endosomes and targeting it for sequestration within the *trans*-Golgi network. Intriguingly, Tim-3 knockdown and Tim-3 blockade increased HIV-1 replication in primary CD4+ T cells, thereby suggesting that Tim-3 expression might represent a natural immune mechanism limiting viral spread. Therefore, viral antagonism of Tim-3 may be a novel therapeutic target to improve the prognosis of individuals infected with HIV-1.

Basic Sciences: HIV Virology (Viral and Host Factors)
Sciences fondamentales : Virologie du VIH (Facteurs liés au virus et à l'hôte)

BSP8.09

Interactions Between HIV-1 and Membrane Trafficking Proteins

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Like many viruses, HIV-1 usurps host proteins at multiple steps for its own purposes, including membrane trafficking proteins involved in membrane dynamics and fusion, directed transport, endocytosis and lysosomal degradation. Despite their potential as possible targets for novel antiviral therapies, only a few of these host proteins have been functionally characterized. To elucidate the roles for members of the membrane trafficking pathway during HIV-1 replication, we performed a CRISPR-Cas9 screen of 140 membrane trafficking genes. In scoring effects on infectivity, we identified that the individual knockout of nine host genes led to significantly decrease in infectivity in TZM-bl reporter cells. The majority of these (seven) were found to be functionally associated with clathrin-mediated endocytosis, such as AP2B1, a component of the most important endocytic adaptor protein AP-2, while the remaining two were found to be associated with the endoplasmic reticulum unfolded protein response and the c-Jun N-terminal kinase signalling pathway. These genes were subsequently edited in SUP-T1 T cells and stable knockout (KO) cell lines were selected. We are currently employing these KO cells to define the contributions of each host gene in virus replication including steps involved in membrane fusion, virus entry and in intracellular trafficking of HIV-1 protein and ribonucleoprotein complexes (RNPs) that include $pr55^{Gag}$ and the viral genomic RNA. New data will be presented at CAHR 2020. This work will decipher the relationships between HIV-1 and members of the membrane trafficking pathway and provide new targets with therapeutic potential.

Basic Sciences: HIV Virology (Viral and Host Factors)
Sciences fondamentales : Virologie du VIH (Facteurs liés au virus et à l'hôte)

BSP8.10

Role of Atg5 in the TRIM5α-induced Innate Immune Response in HIV-1-infected Monocytic Cells

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The retrovirus restriction factor TRIM5α inhibits early post-entry replication stages of sensitive viruses following direct binding to the capsid core. In addition to restriction, TRIM5α binding to its viral target activates innate immune pathways NF-κB and AP-1, resulting in an antiviral state.

Recent studies suggest the existence of physical interactions between TRIM5α and autophagy proteins, and suggest that TRIM5α promotes autophagy. However, other investigators found that autophagy does not seem to influence restriction by TRIM5α. We hypothesize is that autophagy is involved in the TRIM5α-mediated innate immune activation.

We explored the functional relationships between TRIM5α and autophagy in a model of THP-1 monocytic cells acutely infected with TRIM5α-sensitive HIV-1 vectors derived from elite controllers. For this, we used CRISPR-Cas9 to knock out TRIM5α and/or the essential autophagy factor Atg5. Cells were analyzed for the autophagy flux and the induction of pro-inflammatory pathways (NF-κB, AP-1) following infection or not with the HIV-1 vectors. We observed that TRIM5α promoted the autophagic flux in HIV-1-infected but not in uninfected cells. Furthermore, TRIM5α modulated the levels of selective autophagy receptor CALCOCO2 but not p62. Autophagy inhibition by Atg5 depletion did not affect HIV-1 restriction by TRIM5α, consistent with previously published findings. However, Atg5 knockout resulted in a decrease in the nuclear translocation of phosphorylated AP-1 following infection. Atg5 depletion also resulted in a decrease in the activation of the NF-κB pathway and down-regulated IFNb mRNA levels.

In conclusion, our results suggest that Atg5 has a role in TRIM5α-dependent innate immune activation but not restriction; in addition, TRIM5α modulates the autophagy process.

Basic Sciences: HIV Virology (Viral and Host Factors)
Sciences fondamentales : Virologie du VIH (Facteurs liés au virus et à l'hôte)

BSP8.11

Differential Host Restriction Factor Expression in the Human Brain: the OAS Gene Family is Highly Induced in HIV-infected Brains

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B**ackground:** HIV-1 invades the central nervous system early in infection and causes neurological disorders in 15-25% of patients. HIV-1 infects microglia and blood-derived macrophages in the brain and is associated with increased inflammatory cytokine expression, underlining the importance of the immune response in HIV-associated neurological disorders (HAND). However, the impact of host restriction factors in the brain during HIV-1 infection is unclear.

Methods: Brain-derived RNA was extracted from a cohort of HIV-infected and uninfected individuals. Four groups were identified: Group 1, HIV-1(-) without neurological disorder; Group 2, HIV-1(+) without neurological disorder; Group 3, HIV-1(+) with HAND; and Group 4, HIV-1(+) with encephalitis (HIVE). We performed RNAseq to determine differentially expressed host restriction factor genes among groups. We verified our results with qRT-PCR measuring the relative fold change compared to Group 1, with threshold cycles normalized to GAPDH.

Results: We compared the expression of restriction factors in Groups 2, 3, and 4 to control Group 1. The top 10 most highly upregulated restriction factors were: *OAS1, OAS2, OAS3, OASL, MX-2, BST2, ISG-15, GBP2, GBP5,* and *IFITM3*. qRT-PCR confirmed upregulation of the OAS gene family ($p<0.0001$) in Group 4. OAS proteins are a group of antiviral restriction factors that activate *RNase L* which itself is interferon inducible. Activated *RNase L* degrades viral and cellular RNA which can contribute to neuronal damage. We tested expression of *RNase* L by qRT-PCR and determined that it is highly upregulated in Group 4 correlating with OAS expression and neurological disorders.

Conclusion: In this study several host restriction factor genes, all inducible by Type 1 interferons, were upregulated in the brains of HIV-1(+) individuals with both HAND and HIVE. Higher upregulation of the OAS family was correlated with induction of RNase L which can contribute to cell death and subsequent neurological disorders.

Basic Sciences: HIV Virology (Viral and Host Factors)
Sciences fondamentales : Virologie du VIH (Facteurs liés au virus et à l'hôte)

BSP8.12

Pseudotyping the Oncolytic Virus MG1 to Enhance Its Ability to Selectively Kill HIV Infected Cells

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B**ackground:** The CD4+ T-cells latently infected with HIV cannot be phenotypically distinguished from their un-infected counterparts, making them difficult to target for therapy. However, we have recently demonstrated that the CD4+ T-cells latently infected with HIV have impaired interferon signalling and this defect allows them to be selectively infected and killed by the interferon sensitive oncolytic virus MG1. As MG1 has broad tropism, it is important to make it more specific to its target, if it is to be used therapeutically. This project aims to pseudotype MG1 with the HIV envelope protein gp160 to restrict its tropism to CD4 expressing cells.

Methodology: Full length gp160 insert was generated from p96zm651 expression vector by adding the cut-sites of Acc651 restriction enzyme and artificial start and stop codons by PCR. The insert was ligated into MG1 G-less backbone by T4 ligase. The truncated insert was cut up to 4 amino acids after the transmembrane region of gp160. MG1 G-less backbone was linearized by inverse PCR and overlapping regions to both the insert and the backbone were added by PCR. The truncated clone was generated by Gibson Assembly.

Results: As verified by sequence analysis, the first MG1 clone contains the full length gp160 insert and named Mgp160. The second clone contains the truncated gp160 insert and named MG1_4aa. Both of the MG1 clones have the inserts between the M and eGFP genes. The clones are in the process of being rescued by transfection on HOS CD4+ CCR5+ cells.

Conclusion: The pseudotyped MG1 clones have been designed to specifically target CD4 positive cells. These will now be tested for their ability to selectively kill HIV infected cells in different models of HIV latency. This work will to potentially identify a novel strategy to target the viral HIV reservoir.

Basic Sciences: HIV Virology (Viral and Host Factors)
Sciences fondamentales : Virologie du VIH (Facteurs liés au virus et à l'hôte)

BSP8.13

A Previously Unidentified Residue Within the Dileucine Motif is Required for HIV-1 Nef Antagonism of the SERINC5 Restriction Factor

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A contributing factor to HIV-1 persistence within the human population is its ability to evade both innate and adaptive immunity. The recently identified host restriction factor SERINC5 restricts HIV-1 virion infectivity by incorporating into the viral membrane during egress. To overcome this, HIV-1 Nef triggers SERINC5 internalization from the cell surface, thereby preventing virion incorporation and restoring infectivity. Although the exact mechanism(s) underlying Nef-mediated antagonism of SERINC5 are not fully elucidated, evidence suggests similar Nef motifs are utilized to downregulate the cell surface CD4 receptor. Importantly, both Nef functions require an interaction with AP-2 via the conserved [D/E]xxxLL$_{166}$dileucine motif. Herein, we demonstrated that primary Nef isolates acquired from acutely HIV-1 infected patients, termed 2410 and 2391, downregulated CD4 from the cell surface. Interestingly, isolate 2410, but not 2391, retained SERINC5 downregulation ability. Considering isolate 2391 downregulated CD4, but not SERINC5, we hypothesized that HIV-1 Nef possesses a novel domain additionally required to downregulate SERINC5. To elucidate this Nef region, we generated N-terminal Nef chimeras by swapping the N-terminal region of isolate 2410 with 2391 and *vice versa*. Cell surface CD4 and SERINC5 levels were then determined in CD4+ HeLa cells expressing our respective Nef isolates using flow cytometry. While both N-terminal chimeras retained CD4 downregulation ability, no differences were observed in SERINC5 downregulation, suggesting the domain resides within the C-terminus. Accordingly, C-terminal 2410 Nef chimeras were generated by swapping incremental regions of 2410 with 2391. We noticed impairments in both SERINC5 and CD4 downregulation when residues 151-174 of 2410 were replaced with 2391. Point mutations revealed D163 within the [D/E]xxxLL$_{166}$motif was required for SERINC5 antagonism. While this residue has yet to be implicated in either antagonistic Nef functions, we speculate 2391 suffers defects in AP-2 binding, explaining the observed retention of CD4 but complete abolition of SERINC5 downregulation.

Basic Sciences: HIV Virology (Viral and Host Factors)
Sciences fondamentales : Virologie du VIH (Facteurs liés au virus et à l'hôte)

BSP8.14

R5 HIV-1 Preferentially Translocates Across Genital Mucosa While X4 Virus is Selectively Sequestered Inside Genital Epithelial Cells and Activates Type I IFN Signalling

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Women constitute more than 50% of the population currently living with human immunodeficiency virus worldwide. Majority of HIV-1 transmission in women is through heterosexual intercourse. Although both CCR5-tropic (R5) and CXCR4-tropic (X4) HIV-1 strains are present in semen, transmission occurs predominantly through R5 HIV-1. The mechanism underlying this preferential selection of R5 HIV-1 is incompletely understood. In the female genital tract (FGT), HIV-1 has to first cross the epithelial barrier lining before it can infect target cells. Here, we examined the interactions between X4 and R5 strains of HIV-1 with genital epithelial cells (GECs) that could result in preferential selection of R5 strains for mucosal transmission. Fluorescently labelled X4 and R5 HIV-1 were added to primary GEC grown as polarized monolayers. While X4 HIV-1 was selectively sequestered in GECs, R5 virus was translocated through the cells to the basolateral side in infectious state. To determine if the uptake of HIV was differentially mediated through co-receptors expression, CXCR4 and CCR5 expression was determined before and after HIV-1 exposure. Both co-receptors were expressed on GECs but while both HIV-1 strains upregulated expression of CXCR4 co-receptor, CCR5 co-receptor expression was downregulated by both X4 and R5 HIV-1. Our previous studies have demonstrated that Type I IFN is induced in GECs through a TLR-2 dependent mechanism following HIV-1 exposure. When we examined the involvement of IFN pathway in differential selection of HIV-1, X4 HIV-1 induced significantly higher levels of TLR2, IFN-β and interferon stimulated genes (ISGs) in GECs compared to R5-tropic HIV-1. Altogether, we found that GECs show a differential response to X4 vs R5 HIV-1 both in the uptake of virus and innate immune responses, which could explain the preferential transmission of R5 over X4 HIV-1 across female genital mucosa. Better understanding of transmission mechanisms could provide information about prevention strategies.

Basic Sciences: HIV Virology (Viral and Host Factors)
Sciences fondamentales : Virologie du VIH (Facteurs liés au virus et à l'hôte)

BSP8.15

Env Proteolytic Cleavage Protects HIV-1-Infected Cells from ADCC Mediated by Non-neutralizing Antibodies

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The HIV-1 envelope glycoproteins (Env) is synthesized in the endoplasmic reticulum as a trimeric gp160 precursor. Proteolytic cleavage by cellular furin is required to generate mature fusion-competent Env. Env tightly controls its transition from the unbound "closed" conformation (State 1) to the downstream CD4-bound conformations (States 2/3) required for fusion. HIV-1 evolved several mechanisms to avoid the premature "opening" of Env which otherwise exposes highly-conserved epitopes recognized by non-neutralizing antibodies (nnAbs) capable of mediating antibody-dependent cellular cytotoxicity (ADCC). Interestingly, it has been previously reported that Env cleavage decreases its conformational transitions, resulting in the adoption of the "closed" State 1 conformation. On the other hand, uncleaved Env is more flexible and able to spontaneously sample downstream conformations including the newly identified Env State 2A which is highly susceptible to nnAbs-mediated ADCC. Here we took advantage of well-characterized mutations within the gp160 furin cleavage site to affect Env cleavage and evaluate its impact on ADCC responses. Using transmitted/founder viruses, we found that cells infected with viruses expressing uncleaved Env were better recognized by nnAbs and become highly susceptible to ADCC responses mediated by nnAbs and sera from HIV-1-infected individuals. Our results indicate that HIV-1 limits the exposure of uncleaved Env at the cell surface in order to protect infected cells from ADCC responses mediated by nnAbs.

Basic Sciences: HIV Virology (Viral and Host Factors)
Sciences fondamentales : Virologie du VIH (Facteurs liés au virus et à l'hôte)

BSP8.16

Modulation of the Human Nuclear Pore Complex by HIV-1 and IFN-I

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HIV-1 nuclear entry requires nuclear pore complexes (NPCs). NPC is a large protein complex present in the nuclear envelope and made up of multiple copies of around 30 different kinds of nucleoporins (Nups) and NPC-associated proteins. NPCs tightly regulate the transport of large molecules such as DNA, RNA, and proteins between cytoplasm and nucleoplasm. Earlier studies suggested that some HIV-1 proteins such as capsid (CA) directly interact with specific Nups, influencing subsequent infection stages such as integration. In addition, NPCs are important for the targeting of HIV-1 by type I interferons (IFN-I)-induced restriction factors such as Mx2. Thus, we hypothesized that HIV-1 infection and/or innate immune responses to the infection, modulate the composition of NPCs. To investigate this, we infected monocytic cells with HIV-1 vectors in the presence or not of IFN-β, then extracted nuclear membranes and subjected them to mass spectrometry (MS). Label-free quantitative MS data indicate that we detected 33 different Nups and 4849 other quantifiable proteins; 15.9% of which showed statistically significant variation in different conditions. However, only one Nup, the nuclear basket protein Translocated Promoter Region (TPR), showed significant modulation levels. TPR was upregulated upon HIV-1 infection, as well as HIV-1 infection along with IFN-I treatment. Furthermore, an NPC-associated protein, vimentin, was downregulated upon HIV-1 infection and upregulated upon IFN-I treatment. Finally, Nup133 was ubiquitinated upon HIV-1 infection. Future experiments will aim at investigating the roles of Vimentin, TPR, and Nup133 in the interactions between HIV-1 and NPCs, and in the inhibition of HIV-1 infection by IFN-I-dependent restriction factors. This project might open the door toward the identification of novel HIV-1 drug targets.

Basic Sciences: HIV Virology (Viral and Host Factors)
Sciences fondamentales : Virologie du VIH (Facteurs liés au virus et à l'hôte)

BSP8.17

Identification of MxB Mutant Inhibiting MxB-resistant HIV-1

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The myxovirus resistance protein B (MxB) furnishes a key antiviral mechanism to establish the interferon-induced antiviral state. MxB acts by targeting and curbing the invading viral capsids such as those of HIV-1 and herpesviruses. This action of MxB leads to impairment of viral DNA nuclear import and thus suppression of viral replication. MxB recognition of viral capsids has been reported to primarily depend on its N-terminal 25-amino acid sequence. In the meantime, this 25-amino acid sequence also serves the function of nuclear localization. It is not immediately clear which nuclear localization signal (NLS) can replace the N-terminal sequence of MxB without compromising MxB antiviral activity. To address this, we have tested the monopartite NLS, bipartite NLS, PY NLS and arginine-rich NLS from HIV-1 Tat and Rev proteins by substituting for the first 25 amino acids of MxB. These chimeric MxB mutants inhibited HIV-1 infection to various extent. The data suggest that it is the arginine-rich property of the first 25-amino acid sequence, rather than its nuclear localization activity, that determines the antiviral function of MxB. Most interestingly, the Rev NLS allows the MxB variant to strongly inhibit the HIV-1 capsid mutants that we and other labs have reported to resist the inhibition by the wild type MxB. We have therefore identified a MxB variant which either targets HIV-1 capsid differently from the wild type MxB or inhibits HIV-1 by a new mechanism.

Basic Sciences: Host Genetics and Viral Evolution
Sciences fondamentales : Génétique de l'hôte et évolution virale

BSP9.01

Caractérisation des monocytes du sang circulant chez des travailleuses du sexe béninoises dans le contexte du VIH

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La majorité des infections par le VIH sont acquises de façon hétérosexuelle, et le nombre de femmes infectées augmente de façon significative, surtout en Afrique subsaharienne. Le tractus génital (TG) est la principale porte d'entrée pour le VIH, et joue un rôle important dans la défense de l'organisme. Avec la collaboration des cellules épithéliales, les cellules dendritiques (DCs) aident à maintenir une balance immunitaire entre tolérance et inflammation. Un groupe de travailleuses du sexe (TS) a été recruté à Cotonou (Bénin), dans lequel ont été identifiées des femmes dites hautement exposées séronégatives (HESN), et ce après plus de sept ans de travail sexuel actif. Les TS-HESN béninoises présentent un profil inflammatoire plus bas au niveau du TG comparé aux TS-VIH+ et non-TS VIH-. La fréquence de populations de cellules myéloïdes de type « Monocytes-Derived Dendritic Cells (MoDC) » présentant un potentiel antiviral et régulateur « tolérogénique » est augmentée au niveau du TG des TS-HESN. Le profil inflammatoire sanguin et un phénotype différentiel au niveau des monocytes pourraient être impliqués dans la génération de ces MoDCs. En ce sens, les résultats obtenus au FACS démontrent des proportions différentes au niveau des sous-populations de monocytes du sang, avec augmentation des non-classiques chez les TS-HESN. L'analyse du transcriptome des monocytes totaux par RNA-seq permet de constater entre autre chez les TS-HESN, une augmentation des β-chimiokines qui compétitionnent avec le co-récepteur du VIH CCR5. Par multiplex, nous observons une augmentation de CCL3 dans le sérum des TS-HESN, et une diminution significative d'IP-10, MIG, TNF-α, IFN-γ et IL-12 comparativement aux TS-VIH+. L'immunité naturelle contre le VIH des TS-HESN béninoises est associée à l'augmentation dans le sang de β-chimiokines et un profil inflammatoire bas. L'augmentation de la fréquence des monocytes non-classiques suggère un lien avec les MoDCs tolérogéniques observées dans le TG des TS-HESN.

Basic Sciences: Host Genetics and Viral Evolution
Sciences fondamentales : Génétique de l'hôte et évolution virale

BSP9.02

Associations of Host Genetic Variation with Regulation of Inflammatory Gene Expression and HIV Susceptibility

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Systemic and mucosal inflammation increase HIV susceptibility and ablate the efficacy of pre-exposure prophylaxis. Inflammatory cytokines recruit HIV target cells to the site of exposure, contributing to increased susceptibility through heightened target cell access and damage to the mucosal barrier. Extrinsic factors contributing to this inflammation have been well studied (e.g. STI infection, BV, condom use); however, the contribution of intrinsic factors, such as host genetics have yet to be elucidated. Genetic studies have observed significant heritability of inflammatory cytokine production in healthy populations but have not considered these in the context of HIV infection. To address the possible association between host genetic factors, differential levels of systemic inflammation and HIV susceptibility, genome-wide genotype and gene expression data are being collected on 60 women with available inflammatory cytokine profiles and known HIV outcomes from The Centre for the AIDS Programme of Research in South Africa (CAPRISA) – 004 HIV prevention trial. Pure inflammatory cell fractions (monocytes and dendritic cells) have been obtained from peripheral blood mononuclear cells and were left unstimulated or stimulated with interferon-b (IFN-b) or lipopolysaccharide (LPS). RNA has been isolated from the monocyte fraction and transcriptional profiles will be obtained by RNA sequencing. Differential gene expression analysis will be performed considering two phenotypes, mucosal inflammation (N=17 high inflammation; 43 low inflammation) and HIV acquisition (N=28 seroconverters; 32 HIV-), across the three different stimulation conditions. Differentially expressed genes will be assessed for genetic regulation using an expression quantitative trait locus (eQTL) framework comparing genome-wide genotype data to gene expression level. Variants that significantly associate with heightened inflammatory gene expression and/or HIV susceptibility will be tested for association in independent cohorts with HIV outcomes, allowing us to identify the impact of host genetics on inflammation and HIV susceptibility.

Basic Sciences: Host Genetics and Viral Evolution
Sciences fondamentales : Génétique de l'hôte et évolution virale

BSP9.03

Host Genetic Regulation of HIV Set-Point Viral Load in Individuals of African Ancestry

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HIV set-point viral load (spVL) is a strong predictor of disease progression with an estimated 25% of spVL variance attributed to host genetics. Previous genome-wide association studies (GWAS) of HIV disease progression have been predominately limited to individuals of European ancestry. These studies identified a strong impact of *HLA-B* and *CCR5* on spVL, but there is poor understanding of the host-pathogen interaction in other populations. Our group performed a GWAS in over 3,800 individuals of African ancestry to identify the effect of host genetics on HIV spVL. The study identified a novel region on chromosome 1 that is significantly associated with a decreased spVL of 0.3 logs. The top associated variant in the region, rs59784663 ($p = 6.53x10\text{-}10$), is only present in African populations and ranges in frequency from 4-12% depending on the population studied. This variant shows strong linkage disequilibrium ($R^2 \geq 0.6$) with variants that span 300kb and overlap 3 coding genes: *PRKAB2*, *CHD1L* and *FMO5*. Bioinformatics analysis of the genetic variants implicate *CHD1L* as the most likely candidate however additional genes in the region may also play a role. We hypothesize that genetic variants in the associated region regulate expression of *CHD1L* and/or other genes in HIV target cells. To test this, we performed fluorescent-activated cell sorting on PBMCs from 5 individuals carrying the variant allele at rs59784663 and 3 homozygous reference individuals and isolated the CD4+ T cell fraction. CD4+ T cells were separated into unstimulated or fractions stimulated with anti-CD3/CD28, we isolated RNA and performed transcriptional profiling by RNAseq. In this preliminary analysis, there was no significant differential expression of *PRKAB2*, *CHD1L* or *FMO5* between genotype groups. Larger sample sizes will be required to confirm this observation. Differential gene expression analysis and assessment of varying regulation of immune pathways between genotype groups is ongoing.

Basic Sciences: Immunology of HIV and Vaccines
Sciences fondamentales : Immunologie du VIH et vaccins

BSP10.01

Adaptive NK cells in HIV Subjects Co-infected with Cytomegalovirus (CMV) in the Canadian HIV Aging Cohort Study (CHACs)

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B**ackground:** Most HIV-infected people are CMV co-infected. CMV drives the expansion of Natural Killer (NK) cells expressing the NKG2C activating receptor. These cells also often lack the intracellular FcRγCD16 signalling cascade adaptor moleculeand have adaptive-like features.

Objective: To assess the frequency of NKG2C$^+$and NKG2C$^+$FcεRIγ$^-$ adaptive NK cells (adapNK) in HIV$^+$CMV$^+$, HIV$^-$CMV$^+$, HIV$^+$CMV$^-$and HIV$^-$CMV$^-$subjects enrolled in the CHACS.

Methods: The study population included 183 CHACS participants who were ≥ 40 years of age and on antiretroviral treatment. 115, 36, 6 and 26 HIV$^+$CMV$^+$, HIV$^-$CMV$^+$, HIV$^+$CMV$^-$and HIV$^-$CMV$^-$subjects were included.Frozen and thawed PBMCs from study subjects were stained for extracellular CD3, CD56, CD57, CD16, NKG2A and NKG2C and intracellular FcRγ. AdapNK cells were identified as NKG2C$^+$CD3$^-$CD56^{dim}NK cells. The frequency of FcRγ$^-$ cells was assessed among NKG2C$^+$NK cells. Kruskal-Wallis tests with Dunn's post tests were used to assess the significance of between-group differences in the mean frequency ±standard deviation of adapNK cells subsets.

Results: More HIV$^+$than HIV$^-$subjects were CMV$^+$(95% versus 58% (p= 0.0001, Chi-square test). The frequency of NKG2C$^+$NK cells was30.4±22.2%, 25.9±20.2%, 5.6±3.4% and 6.4±4.9%. The frequency of NKG2C$^+$ NK cells that were also FcεRIγ$^-$NK cells was 57.8±25%, 59.9±26.7, 29±9.8% and 33.2±19.5%, respectively. The CMV$^+$groups had higher frequencies of both NKG2C$^+$cells and NKG2C$^+$FcεRIγ$^-$ cells than the CMV$^-$groups (p< 0.0001, and p<0.0025 for NKG2C$^+$and NKG2C$^+$FcεRIγ$^-$cells, respectively, Kruskal-Wallis tests). Although HIV$^+$CMV$^+$subjects had more adapNK cells than HIV$^-$CMV$^+$persons differences were not significant. Most AdapNK cells were ≥ 90%CD16$^+$.

Conclusion: The frequency of adapNK cells was higher in HIV$^{+/-}$CMV$^+$than HIV$^{+/-}$CMV$^-$subjects. AdapNK cells should support antibody dependent (AD) functions due their CD16 expression. Future studies will test adapNK from HIV$^+$CMV$^+$versus HIV$^-$CMV$^+$persons for AD functionality.

Basic Sciences: Immunology of HIV and Vaccines
Sciences fondamentales : Immunologie du VIH et vaccins

BSP10.02

Development of a Novel DC-Targeting Vaccine Approach Against HIV Infection

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Global estimates of the HIV-1 pandemic indicate that 37.9 million people were living with HIV-1 and 1.7 million people had been newly infected with HIV in 2018. The development of an efficient protective vaccine to prevent AIDS dissemination still remains a priority. In this study, we developed a novel DC-targeting HIV vaccine approach by fusing the DC-targeting domain of an Ebola virus envelope glycoprotein (EbGP) with the HIV envelope glycoprotein (Env) C2-V3-C3 region (134 aa; EbGPΔM/HIV-V3), or C2-V3-C3-V4-C4-V5-C5 region (243 aa; EbGPΔM/HIVV3-V5). Results show that both fusion proteins are able to mediate efficient virus entry in various cell types including human macrophages and dendritic cells (DCs). Mouse immunization experiments revealed that HIV virus like particles (VLPs) containing these chimeric proteins, especially EbGPΔM/HIV-V3, induced significantly stronger systemic anti-HIV Env and Gag antibodies compared to HIV Env-VLPs. VLPs containing EbGPΔM/HIV-V3 induced the highest levels of anti-HIV Env and Gag IgG and IgAs in vaginal secretions. Furthermore, co-expression of EbGPΔM/HIVV3 and a native HIV Env glycoprotein in recombinant vesicular stomatitis virus (rVSV) vector elicited robust anti-HIV Env antibodies that can specifically recognize the outside or the inside of the C2-V3-C3 region in HIV-1 gp120 and can cross-react with gp120 from different HIV strains. Taking together, our study demonstrates the feasibility to develop a DC-targeting vaccine approach that improves immunogen delivery to DCs and potentiate immunogical efficacy against HIV. This EbGP-based vaccine fusion technology also provides further ground for the development of a dual action vaccine against both Ebola viral infection and HIV infection or other viral infections.

Basic Sciences: Immunology of HIV and Vaccines
Sciences fondamentales : Immunologie du VIH et vaccins

BSP10.03

Development of Replication-competent Vesicular Somatitis Virus-based Vaccines Against HIV Infection

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Despite significant progress in Antiretroviral therapy (ART), a preventive vaccine against HIV remains the best strategy to eradicate HIV/AIDS. Among the numerous vaccines tested in rhesus macaque modeling HIV infection, vaccinations with live-attenuated SIV has shown the greatest protection against a homologous challenge. This strategy, however, has been abandoned for human applications due to safety concerns. Replication-competent vaccine vectors typically generate increased immune responses in relation to non-replicating vectors. Therefore, the use of live vectors, capable of delivering HIV antigens has been an important focus. One such vector based on vesicular stomatitis virus (VSV) and engineered to express HIV antigens has shown to confer significant protection in rhesus macaques against SIV or a HIV-1/SIV recombinant (SHIV) challenge. Of note, a VSV-based vaccine against Ebola virus (EBOV) has recently been licensed for human use in Europe and the U.S.. This project set out to improve on past experiences on HIV and Ebola virus vaccine development by generating a novel VSV vaccine backbone capable of expressing multiple antigens to influence tropism and broaden immune responses against HIV (or SHIV). Engineering of the HIV envelop with the corresponding domains SIV or EBOV GP, retargeting of the VSV vaccine through pseudotyping resulted in enhanced immune responses (cellular and humoral) in rodents and macaques. This presentation will review the engineering and show corresponding impacts on replication in vitro and immune responses in vivo.

Basic Sciences: Immunology of HIV and Vaccines
Sciences fondamentales : Immunologie du VIH et vaccins

BSP10.04

LAG-3 and PD-1 Blocking Synergizes to Restore Invariant Natural Killer T Cell Functionality: Implications for HIV Treatment

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B**ackground:** Invariant Natural Killer T (iNKT) cells are innate lymphocytes and one of the first responders critical in combatting viral infection bridging the innate and adaptive immune systems. In HIV infection, our lab has shown expression of lymphocyte activation gene 3 (LAG-3), an inhibitory checkpoint marker, is increased on iNKTs and correlates with decreased cell functionality. What is not known is whether blocking LAG-3 alone or in conjunction with blocking another immune checkpoint program cell-death-1 (PD-1) will restore immune function of iNKT cells, especially in the context of HIV infection.

Methods: In HIV-negative donors, we optimized iNKT proliferation via α-GalCer and IL-12/15 stimulations and assessed using proliferation dye, while monitoring LAG-3 and PD-1 expression. Further, immunotherapeutic blockade intervention of both LAG-3 and PD-1 antibodies was attempted in the α-GalCer stimulation to enhance iNKT functionality throughout the proliferation.

Results: A 3-day 10ng/ml IL-12/15 stimulation showed iNKT proliferation with 88.6% LAG-3+ and 84.1% PD-1+ expression. This finding adds to our understanding of iNKT cells' relation to Natural Killer (NK) cellular function. A 10-day α-GalCer stimulation showed iNKT proliferation (~3-fold population increase), with LAG-3 and PD-1 upregulation. When the LAG-3 blockade antibody was administered, proliferation was increased with ~14x fold iNKT population, and when the PD-1 blockade alone was added or a combination of LAG-3 and PD-1 blockades were administered, the fold change of the iNKT population was ~17x and ~22x, respectively.

Significance: This study shows that blocking of LAG-3 and PD-1 synergistically restores the proliferative ability of iNKT cells and provides proof of concept of potential to target LAG-3 and PD-1 with immunotherapeutic agents. The long-term goal of this project is to fully characterize of iNKT cellular dysfunction in HIV and restore iNKT cell function by implementing LAG-3 and/or PD-1 blockades, restoring the overall immune system strength in HIV-positive individuals.

Basic Sciences: Immunology of HIV and Vaccines
Sciences fondamentales : Immunologie du VIH et vaccins

BSP10.05

Phenotype and Cytokine Expression of Peripheral and Gut-derived γδ T Cell Subsets from HAART-treated HIV+ Individuals and Healthy Controls

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I**ntroduction:** Despite successful treatment, alterations in gut immunity are still observed in highly active anti-retroviral therapy (HAART)-treated HIV+ patients. These changes are associated with elevated mucosal permeability which contributes to the chronic immune activation observed in these individuals. γδ T cells are important cells in the maintenance of homeostasis in the gut, however, the impact of HIV infection on the various γδ T cell subsets remains to be established.

Methods: Peripheral blood and pinch biopsies from the rectum were collected from HAART treated HIV+ individuals (CD4 count of 772 ± 194 cells/ul, ART suppression of 4.4 ± 1.6 years) and healthy controls. Phenotypic analysis of γδ T cell populations was performed using flow cytometry. γδ T cell population functionality was evaluated based on their expression of IFN-γ, TNF-α, IL-17, and IL-22 following stimulation with PMA and ionomycin.

Results: In the periphery, the overall proportion of γδ T cells among the $CD3^+$ population did not differ between HIV+ and healthy individuals, however the Vδ1:Vδ2 ratio was inverted in HIV+ individuals. In the gut, the proportion of γδ T cells among $CD3^+$ cells was not significantly different between the two groups. When evaluating cytokine expression, a similar γδ T cell cytokine profile was observed in the periphery between the two groups, however, there was a smaller proportion of polyfunctional cells ($IFN\text{-}\gamma^+$ $TNF\alpha^+$) in the gut of HIV+ compared to healthy individuals.

Conclusion: Despite effective therapy, the proportion of polyfunctional γδ T cells in the gut remains lower than that seen in the HIV uninfected individuals and might play a role in the impaired gut immunity and chronic immune activation that persists in treated HIV+ individuals.

Basic Sciences: Immunology of HIV and Vaccines
Sciences fondamentales : Immunologie du VIH et vaccins

BSP10.06

Correlation of Viral Rectal Shedding with Plasmatic Viral Load in a Rhesus Macaque Model of Simian-Human Immunodeficiency Virus Infection

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Developing an effective HIV-1 vaccine remains an important challenge. Most HIV infections are acquired sexually and the risk of transmission depends, amongst other factors, of the plasmatic viral load. High levels of rectal HIV shedding have also been associated with an increased risk of transmission.

We assessed the ability of a vesicular stomatitis virus (VSV)-based vector prime - DNA vaccine boost to prevent infection and/or to control viremia in a rhesus macaque model of simian-human immunodeficiency virus (SHIV) infection. We also studied viral rectal shedding and the potential impact of vaccination on it.

Two groups were primed with VSV expressing an Ebolavirus-glycoprotein and different types of HIV envelope: NL4.3/SIVtm (n=10) and A74/SIVtm (n=10). The control group (n=10) was vaccinated with VSV-Ebola-GP alone. Animals were boosted with a DNA vaccine expressing the same antigen as their prime and then challenged repeatedly with a low dose intrarectal SHIV. Blood tubes and rectal swabs were collected one week after every challenge for viral loads. Viral RNA was extracted from both and viral loads determined by RT-qPCR.

Although no protection from infection was observed for any group, the group vaccinated with VSV-Ebola-NL4.3/SIVtm showed a better control of infection: at the end of the study, 60% of animals were undetectable compared to only 20% in the control group. Viral rectal shedding correlated positively with plasmatic viral load ((r) =0,5, P <0,0001). This correlation was lower in the group vaccinated with VSV-Ebola-A74/SIVtm than in the control group (respectively (r) =0,41 and (r)=0,58, NS (P=0,06)) indicating a potential impact of the vaccine on rectal viral shedding that needs to be further investigated.

In conclusion, this prime-boost strategy elicited no protection but better control of infection in one animal group. Viral rectal shedding correlated positively with plasmatic viral load.

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Basic Sciences: Immunology of HIV and Vaccines
Sciences fondamentales : Immunologie du VIH et vaccins

BSP10.07

Functional and Structural Determinants of T-cell Receptor-mediated Control of HIV

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B**ackground:** We recently identified CD8 T cells that respond to HIV Gag TL9 epitope presented on both HLA B*42 and B*81, which were associated with lower viral loads in subtype C infection. Dual-reactive T cells from B*42 individuals encoded public T cell receptor (TCR) clones that displayed broader recognition of TL9 variants. To gain insight into mechanisms of HIV control, we conducted a detailed functional and structural analysis of 13 TL9-specific TCR.

Methods: We isolated TCR sequences from tetramer-labeled CD8 T cells following single-cell sorting. We measured the function of 8 dual-reactive and 5 mono-B*42-reactive TCR clones using a luciferase reporter cell assay where TCR+ Jurkat cells are co-cultured with peptide-pulsed target cells, allowing recognition of each TCR to be assessed against 171 single amino acid TL9 variants. Hierarchical clustering was used to classify TCR according to their TL9 variant recognition profiles. Finally, crystal structures were determined for two dual-reactive TCR clones in complex with TL9/HLA.

Results: Dual-reactive TCR displayed highly similar TL9 variant recognition profiles, including greater recognition of HIV escape variants, despite having unique sequences. Prior structural studies demonstrated that the TL9 peptide adopts different conformations when bound to HLA B*42 versus B*81. However, our new structures of dual-reactive TCR in complex with TL9/HLA indicate that the peptide adopts a “B*81-like” conformation on B*42 upon TCR engagement. Notably, a principal site of TCR contact with TL9 is encoded by CDR2 beta, rather than the canonical CDR3 domain.

Conclusions: We describe a strategy to isolate and comprehensively characterize antigen-specific TCR. Our work highlights the impact of TCR sequence and functional diversity on T cell-mediated control of HIV. Structural analyses identified a novel mechanism of TCR engagement that relies on the germ-line encoded CDR2 beta domain. Broadly cross-reactive TCR may be beneficial as immune-based therapeutics for HIV cure.

Basic Sciences: Immunology of HIV and Vaccines
Sciences fondamentales : Immunologie du VIH et vaccins

BSP10.08

Interplay Between IL-32 and CD96 Expression: Potential Role in Cell Senescence and Persistent Inflammation in HIV Infection

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I**ntroduction:** Persistent inflammation in HIV infection is associated with disease progression by impacting cellular functions, differentiation and survival. This inflammation also underlies the premature aging of immune cells as reflected by their limited replicative capacity and inflammatory nature which predicts morbidity and mortality in HIV-1 infected individuals. We have previously shown that persistent upregulation of the proinflammatory cytokine IL-32 is associated with loss of immunological and virological control in HIV^{pos} individuals with a history of slow progression. In this study, we aim to further investigate the impact of IL-32 on CD96, a surface immunoglobulin that restricts T-cells activation and that is also downmodulated upon loss of control. **Materials and Methods:** CD96 expression together with activation and senescence markers were tested on PBMCs from HIV^{neg} and HIV^{pos} individuals from the Canadian Cohort of HIV-infected slow progressors (SP) and Montreal Primary Infection (PRIMO cohort), by flow cytometry. IL-32 recombinant isoforms were used to stimulate T-cells at 500ng/ml. Mitogenic stimulation was used to measure proliferation of T-cells with high and low CD96 expression. **Results:** *In vitro* activation of T-cells with IL-32 mediated a significant downregulation of CD96 expression on both CD4 and CD8 cells. Furthermore, our *ex vivo* phenotypic analysis showed that T-cells (CD4 and CD8) from HIV^{pos} individuals (both typical progressors and SP) compared to non-infected controls expressed significantly lower levels of CD96. Importantly, CD8+CD96^{low} compared to CD8+CD96^{high} T-cells exhibited a CD28-CD27-CD57+ phenotype, indicative of cell senescence. In addition, CD96^{low} *versus* CD96^{high} cells showed inferior proliferation capacity in response to mitogenic stimulation. **Conclusions:** Our results suggest that IL-32 is involved in mechanisms underlying down-regulation of CD96 in HIV infection. This phenotype is likely associated with high level of T-cell activation and potentially cell senescence, which may sustain persistent inflammation. Work is in progress to validate the senescence phenotype at the functional level.

Basic Sciences: Immunology of HIV and Vaccines
Sciences fondamentales : Immunologie du VIH et vaccins

BSP10.09

Impact of Sustained Viral Suppression on HIV-specific Immune Responses and T Cell Exhaustion in Children and Adolescents with Perinatally-acquired HIV Infection

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B**ackground:** Sustained viral suppression (SVS) is critical to prevent HIV transmission and HIV disease progression. Both antiretroviral therapy (ART) and HIV-specific cell-mediated immunity contribute to the establishment and maintenance of SVS. We explored associations between cumulative proportion of life under SVS (cPLUS), HIV-specific cell-mediated immune responses, and expression of cell surface markers of T cell exhaustion in children and adolescents with perinatally-acquired HIV infection.

Methods: Peripheral blood mononuclear cells (PBMC) were used in ELISpot assays to measure IFN-γ production [expressed as spot-forming units (SFU)/10^6 PBMC] following stimulation with clade-matched HIV-1 Gag peptide pools, and in flow cytometry to measure expression of T cell exhaustion markers (PD-1, CD160, CTLA-4, LAG-3, TIGIT, Tim-3).

Results: Study participants (n=43; median age=14 years, interquartile range=10-18 years) were stratified based on the median value of cPLUS (cPLUS <41 %, n = 21; cPLUS ≥41 %, n=22). Age at sample collection was not significantly different between participants with cPLUS<41% versus cPLUS≥41%. Participants with lower cPLUS exhibited higher magnitude of HIV-specific IFN-γ responses (p=0.0313), and had higher frequencies of $CD8^+$ T cells and lower frequencies of $CD4^+$ T cells (p=0.0096 and p=0.0155, respectively). Higher proportion of cells co-expressing of CD160, PD-1 and TIGIT was observed in naive (p=0.0193), central memory (p=0.0014), effector memory (p=0.0021), and terminally differentiated effector memory (p=0.0300) $CD8^+$ T cells in participants with low cPLUS as compared to participants with high cPLUS. Finally, a positive correlation was observed between the frequencies of $CD8^+$ T cells co-expressing CD160, PD-1 and TIGIT, and HIV-specific IFN-γ responses (p<0.0005).

Conclusion: These results indicate that greater overall exposure to HIV-1 antigens (lower cPLUS) is associated with a higher magnitude of HIV-specific IFN-γ responses and up-regulation of markers of immune exhaustion (CD160, PD-1 and TIGIT) in multiple $CD8^+$ T cell subpopulations.

Basic Sciences: Immunology of HIV and Vaccines
Sciences fondamentales : Immunologie du VIH et vaccins

BSP10.10

BAFF/BLyS est impliqué dans la modulation du phénotype Breg des lymphocytes B de la zone marginale

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De fortes concentrations de BAFF/BLyS dans le sang sont souvent associées à des maladies autoimmunes, comme par exemple le lupus et notamment dans le contexte du VIH. Ceci mène à une dérégulation des lymphocytes B et à l'hyperglobulinémie, en plus d'augmenter une population ayant des caractéristiques des précurseurs des cellules B de la zone marginale (pMZ). L'analyse du transcriptome par RNASeq de ces cellules chez des patients VIH+ a révélé une modulation des molécules CD83 et NR4A qui sont associées au contrôle de l'inflammation. Aussi, TACI, un récepteur de BAFF, majoritairement exprimé par les pMZ est plus augmenté en surface. Nous avons également démontré que les pMZ précurseurs possèdent un phénotype et une fonction Breg. Afin de mieux comprendre l'effet de BAFF/BLyS sur la dérégulation des lymphocytes B, nous avons étudié son impact sur l'expression des molécules NR4A1-3, CD83, CD73 et CD39 ainsi que sur la production de différents isotypes d'immunoglobulines. Pour se faire, des lymphocytes B enrichis d'amygdales humaines ont été soumis à plusieurs traitements composés de différentes concentrations de BAFF/BLyS. Nous avons également déterminé le niveau d'inflammation initial présent dans les tissus d'amygdales fournis par des donneurs sains en se basant sur l'expression de BAFF/BLyS. Les résultats obtenus nous ont permis de démontrer qu'un excès de BAFF/BLyS module l'expression des NR4A1 et 3, CD83 et CD39 chez les pMZ précurseurs, en plus d'augmenter la production d'IgM et d'IgG1 chez les cellules B totales. De plus, leur fonction Breg est fortement modulée lorsque les tissus possèdent de forts niveaux de BAFF/BLyS. Donc, BAFF/BLyS est impliqué dans la modulation du phénotype et de la fonction Breg chez les pMZ.

Basic Sciences: Immunology of HIV and Vaccines
Sciences fondamentales : Immunologie du VIH et vaccins

BSP10.11

Detecting LAG3: Antibody Discrepancies in Flow Cytometry

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I**ntroduction:** Immune checkpoints are negative co-receptors upregulated during HIV infection. Immune checkpoints are enriched on HIV infected cells and have been implicated in HIV latency, making them potentially important molecules in HIV pathogenesis and candidates for treatment.

However, reports on the expression of the immune checkpoint LAG3 are frequently contradictory. In reviewing the literature, we realized that the >25 studies that used a polyclonal antibody (pAb) to measure LAG3 expression consistently showed higher LAG3 expression compared to studies that used one of the several monoclonal antibodies (mAb) on the same cell types.

We hypothesized that the LAG3 pAb binds to cells at higher levels than mAbs due to non-specificity of the pAb.

Methods: Using flow cytometry, we evaluated LAG3 expression on healthy donor PBMCs to evaluate and compare results of the pAb to mAbs. We will test antibody specificity by western blot using LAG3 transduced Jurkat cells and activated PBMCs.

Results: pAb detected LAG3 expression of ~10% on all lymphocytes evaluated, including $CD8^+$ T cells, bulk T cells, conventional B cells, plasma cells, $CD56^+CD16^{++}$ and $CD56^{++}CD16^-$ NK cells, compared to < 1% shown by the mAbs. pAb also detected very high LAG3 expression on classical monocytes (~85%), which are thought not to express LAG3, compared to much lower expression detected by the mAb (~2%).

We validated these results using three different lots of pAb and three separate monoclonal antibody clones.

Conclusion: pAb detected greater LAG3 expression than the mAb for all cell types evaluated. Therefore, comparing studies that use these different antibodies can be problematic. We suspect this increased binding is due to non-specific interactions of the pAb, but this hypothesis will need to be confirmed by Western blot.

Basic Sciences: Immunology of HIV and Vaccines
Sciences fondamentales : Immunologie du VIH et vaccins

BSP10.12

Implications of Long-term Solvent Use on NK Activation and Function: a Risk Factor for HIV Acquisition

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B**ackground:** Inflammation is a risk-factor for HIV infection. Clinical reports of long-term solvent use demonstrate increased tracheal inflammation. Therefore, in collaboration with Sunshine House, a community-based organization working with street-involved Winnipeggers, we engaged solvent-using community members interested in determining the effects of solvent use on their health. Solvent use is the use of readily available lipid-soluble substances resulting in psychoactive effects. Products such as lacquer thinner are sniffed, huffed, bagged or sprayed into the mouth. The Canadian Community Epidemiology Network on Drug Use (2010) reported 5% of adults and 9% of Winnipeg youth use solvents, with numbers likely higher in the homeless population.

Hypothesis: Solvent users will have elevated levels of immune activation than community matched non-solvent users.

Objectives: Assess the impact of solvent use on natural killer (NK) cell activation and function.

Methods: Twenty-seven individuals were enrolled in the pilot study, 14 solvent users and 13 matched controls who didn't use solvents. *Ex Vivo* immune cell activation was assessed using flow cytometry. Peripheral blood mononuclear cells (PBMCs) were stimulated with the K562 cell line to replicate a natural NK response and markers of function, activation, inhibition, exhaustion, migration, and memory were assessed.

Results: We found that solvent users had increased innate immune activation characterized by activated natural killer cells defined as lower mean fluorescent intensity of CD38 on NK cells (p=0.033) and fewer CD38 positive NK cells (p=0.042). In addition, these NK cells were unable to properly respond to stimulation with reduced KIR responsiveness (KIR2DL1 p=0.034/KIR3DL1 p=0.004) and IFNγ/CD107a dual production (p=0.030).

Conclusion: Inflammation is a known risk factor for HIV acquisition. Solvent users exhibit higher levels of innate immune activation than solvent non-users. These NK cells exhibit a loss in function when stimulated *in vitro*, indicating that while active, they are unable to properly perform their role.

Basic Sciences: Immunology of HIV and Vaccines
Sciences fondamentales : Immunologie du VIH et vaccins

BSP10.13

Humoral Responses Against HIV gp140 and EBOGP in Rhesus Macaques Vaccinated with Different VSV-based Constructs

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The 1,8 million new HIV infections in 2017 is yet another reminder that an effective vaccine against HIV is needed to prevent the spread of the disease and to, one day, eradicate it. The E.U and U.S.A. regulatory bodies (EMA and FDA) have just recently licensed a highly effective Ebola vaccine based on the Vesicular Stomatitis Virus (VSV), expressing the pathogen glycoprotein (VSV-EBOV). We hypothesise that an HIV-vaccine using the same vaccine-platform expressing both the HIV envelope and the Ebolavirus glycoprotein (EBOV-GP), could be amenable to clinically compatible production and protect against HIV replication and disease.

Three groups of 10 rhesus macaques (NHPs) were vaccinated with different VSV-based constructs expressing different HIV envelope glycoproteins (HIV env). 11 weeks post-immunization, NHPs were boosted with DNA plasmids encoding the homologous HIV env mixed with HIV Rev for proper nuclear transport and expression. A control group was vaccinated with a VSV-EBOV vector and boosted with a plasmid DNA encoding the homologous antigen. Animals were then challenged intrarectally with SHIVSF162p3 repeatedly. Humoral responses were measured by ELISA using HIV gp140 and EBOGP recombinant proteins.

Four weeks after vaccination, all three experimental groups showed a robust IgG humoral response against HIV gp140 compared to the control group, with one group displaying higher IgG levels than the other groups. Higher humoral response against HIV gp140 was correlated with higher in vitro HIV env expression by the different constructs. Interestingly, IgG levels against EBOGP were observed throughout the 9 months experiment in the construct showing the strongest humoral response against HIV gp140.

This presentation will review the complete humoral responses of this first evaluation of a combined HIV-Ebola glycoproteins expressing VSV vectors in macaques and discuss its potential protective efficacy against infection and disease sequelae.

Basic Sciences: Immunology of HIV and Vaccines
Sciences fondamentales : Immunologie du VIH et vaccins

BSP10.14

Aspirin Use Impacts T Cell Trafficking and Correlates with Lower HIV Target Cells at the Genital Mucosa

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Inflammation is a risk factor for HIV infection. Studies have shown that genital inflammation is associated with higher proportion of HIV target cells, loss of lactobacillus dominant flora and abolishing the effectiveness of 1% tenofovir microbicide. In a pilot clinical study, we aimed to determine if taking an anti-inflammatory drug, acetyl-salicylic acid can decrease genital inflammation. We observed that after six weeks on aspirin, participants had a 39% reduction in the proportion of HIV target cells at the genital tract. This raised the question, are the T cells in the mucosa becoming less activated or is it that less activated cells migrate to the mucosa?

Methods: Blood was collected from 40 women before and after six weeks on a daily 81mg aspirin. By flow cytometry, we measured the expression of cell trafficking markers (CD103, CD29, CCR5, CXCR3, CCR6) at baseline and at the end of the aspirin regimen.

Discussion:

We observed that aspirin use leads to a lower proportion of CD4+CXCR3+T cells (p=0.02) and a lower proportion of CD4+CCR6+T cells (p=0.002) in the blood. This suggests that aspirin use leads to a lower proportion of T cells migrating to the mucosa such as the genital tract or the gut.

Conclusion: The lower proportion of activated T cells observed at the female genital tract after taking low dose aspirin can be, in part, explain by the changes in the expression of cell trafficking markers. This adds mechanistic understanding on how aspirin can reduce inflammation which is a new tool for HIV prevention.

Basic Sciences: Immunology of HIV and Vaccines
Sciences fondamentales : Immunologie du VIH et vaccins

BSP10.15

Pre-vaccination Immune Signatures may Predict Influenza Vaccine Responses in HIV

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B**ackground:** Chronic HIV infection leads to persistent immune changes even with antiretroviral disease control. While less immunogenic, the influenza vaccine is still recommended in people living with HIV. To better understand influenza vaccine responsiveness in HIV$^+$ individuals we determined clinical, functional, phenotypic, and transcriptomic markers that are associated with influenza vaccine.

Methods: Peripheral blood mononuclear cells from 15 HIV$^+$ individuals were isolated pre-influenza vaccination and 6 months post, after obtaining informed consent. Hemagglutinin inhibition assays for the 3 components of the 2015-2016 trivalent influenza vaccine were performed. NK cell, B cell and T cell immunophenotypes were determined by flow cytometry. Functional B and T cell responses to CMV, HIV, and influenza were examined by ELISPOT. Anti-CMV and anti-influenza antibody levels were determined by in-house serologic assay. RNA-Seq analysis was performed on poly-A RNA isolated from magnetically isolated CD19$^+$ B cells and CD4$^+$ T cells.

Results: Vaccine titers were limited and only 40% responded to at least 2 components of the flu vaccine, regardless of previous vaccination. Influenza response was not predicted by CD4$^+$ T cell count or CD4:CD8 ratio but was more common in those with controlled HIV viral load (controlled 6/12 vs uncontrolled 0/3). Flu responders had decreased PD-1$^+$ and CTLA-4$^+$ CD8$^+$ T cells, a trend for fewer CD56^{dim}CD16^{hi} NK cells and tissue-like memory B cells, and higher CMV reactive, IFN-γ producing T cells and anti-CMV antibody titers. Transcriptomic analysis demonstrated distinct pre-vaccine B cell and CD4$^+$ T cell gene expression in responders and non-responders.

Conclusion: HIV$^+$ individuals that respond to influenza vaccine have immunologic differences marked by unique transcriptomic signatures, skewed innate and adaptive immune subsets, and higher immune reactivity to another viral antigen, CMV. Together these data suggest that genetic factors in addition to just HIV immune dysfunction may be important for flu responses in HIV$^+$ individuals.

Basic Sciences: Immunology of HIV and Vaccines
Sciences fondamentales : Immunologie du VIH et vaccins

BSP10.16

Investigating Oxytocin's Potential as an Anti-inflammatory Approach for HIV Prevention

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I**ntroduction:** In this study we tested if oxytocin is able to protect against HIV infection by improving barrier function of epithelial cells from the female genital tract (FGT) and reducing the activation status of HIV target cells. Oxytocin, a neurological hormone, has traditionally been associated with social bonding, uterine labour contractions, and milk ejection from the breast. Recent research has shown that it is able to reduce the inflammatory response of macrophage to bacterial antigen, as well as improve wound healing in a skin punch mouse model; reduced inflammation and improved barrier function suggest potential as an HIV preventative.

Methods: Using vaginal, ectocervical, and endocervical epithelial cell lines (Vk2, Ect1, and End1) we were able to model FGT epithelium. To test the ability of oxytocin to improve wound healing at the FGT we performed scratch assays with each cell line, and added oxytocin after wounding. RNA and supernatants were also taken from oxytocin treated cells with or without stimulation to characterize oxytocin's effect on the inflammatory response. Work to test the effects of oxytocin on susceptibility to HIV-infection *in vitro* and *in vivo* is currently ongoing.

Results and Conclusion: Oxytocin had no effect on wound healing in any of the three cell lines, but did reduce RNA expression of the pro-inflammatory cytokines IL-6 and IL-1B by two-fold in End1 cells. Supernatant cytokine analysis revealed that oxytocin reduced IL-28A expression in both Vk2 and Ect1 cells by 20-50%, but not in End1 cells. At the concentrations of oxytocin used it does not appear that oxytocin is able to directly influence wound healing in FGT epithelium, but may reduce expression of pro-inflammatory cytokines. Future work aims to characterize oxytocin's direct effect on HIV susceptibility, as well as potential tissue models for wound healing that address the limited nature of cell mono-cultures.

Basic Sciences: Immunology of HIV and Vaccines
Sciences fondamentales : Immunologie du VIH et vaccins

BSP10.17

Upregulation of Bst-2 by Type I Ifns Reduce the Capacity of Vpu to Protect HIV-1-Infected Cells from NK Cell Responses

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The HIV-1 accessory protein Vpu enhances viral release by counteracting the IFN-inducible restriction factor BST-2/tetherin. Furthermore, Vpu contributes to NK cell evasion by downmodulating NTB-A and PVR, known ligands of the activating NK cell receptors NTB-A and DNAM-1, respectively. While it has been established that Vpu's transmembrane domain (TMD) is required for the interaction and intracellular sequestration of BST-2, NTB-A and PVR, it remains unclear how Vpu manages to target these different proteins simultaneously. In this study, we show that BST-2 is preferentially downregulated by Vpu over its other TMD substrates. We found that type I IFNs-mediated BST-2 upregulation greatly impairs the ability of Vpu to downregulate NTB-A and PVR. Our results suggest that occupation of Vpu by BST-2 affects its ability to downregulate other TMD substrates, including NTB-A, PVR, CD62L and Tim-3. Accordingly, knockdown of BST-2 increased Vpu's potency to downmodulate NTB-A and PVR in presence of type I IFNs treatment. Moreover, we show that expression of human BST-2, but not that of the macaque orthologue, decreases Vpu's capacity to downregulate NTB-A. Importantly, by preventing Vpu-mediated NTB-A and PVR downmodulation, we show that type I IFNs efficiently sensitize HIV-1-infected cells to NTB-A- and DNAM-1-mediated direct and ab-dependent NK cells responses. Altogether, our results reveal that type I IFNs decrease Vpu polyfunctionality, thus reducing its capacity to protect HIV-1-infected cells from NK cell responses. This reveals a potential weakness in HIV-1's immunoevasion mechanisms that may be exploited therapeutically to harness NK cell responses against HIV-1.

Basic Sciences: Immunology of HIV and Vaccines
Sciences fondamentales : Immunologie du VIH et vaccins

BSP10.18

Activation of Mucosal Associated Invariant T Cells by Dendritic Cells Following Toll-like Receptor Stimulation

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Mucosal associated invariant T (MAIT) cells activated by microbial riboflavin metabolites presented by MHC-like related protein1 (MR1) on antigen presenting cells (APCs) including dendritic cells (DC) or cytokines expressed by APCs following Toll-like receptor (TLR) stimulation express cytokines/chemokines which may modulate immunity responses. However, the effects of MAITs on CD4+ activation and HIV susceptibility (HS) are unknown.

Aim: To examine how MAIT cells, activated by DCs following TLR-7/-8 stimulation modulate immune activation (IA) and the susceptibility of CD4+ cells to HIV-infection.

Methodology: Monocyte-derived DCs (MDDCs) were derived from human peripheral blood monocytes, (n=10 healthy donors) by treatment with interleukin (IL)-4 and granulocyte colony stimulating factor (GM-CSF) for 7 days. MDDCs were then stimulated with TLR-7/-8 ligands or *Escherichia coli* (*E.coli*, positive-control) for 48 hours. Culture supernatants were collected for multiplex cytokine assay. MAIT cells will be sorted from matched PBMCs and activated by co-culturing with either activated MDDCs, supernatants from the MDDC cultures or IL-12 & IL-18 for 24 hours. The effects of activated MAIT cells on CD4+T cells activation and the susceptibility to HIV-infection will then be tested.

Results: Preliminary data from stimulating whole PBMCs with TLR-7/-8 ligands or *E.coli* showed increased frequency of activated MAIT cells (CD69+^{high}) in flow cytometric analyses. Using this MDDCs experimental-model, we aim to identify soluble factors from MDDCs that are critical in activating MAIT cells and will further determine whether this has downstream effects on CD4+ T cell activation and HS. We expect to see immune mediators such as IL-12 and IL-18 and surface MR1 on MDDCs associated with MAIT cell activation, resulting in secretion of pro-inflammatory cytokines/chemokines and cytotoxic molecules that may increase IA. Experiments are ongoing to test these hypotheses.

Significance: Understanding the role of MAIT cells in the immune milieu modulation will educate development of novel preventative options against HIV-infection.

Basic Sciences: Other
Sciences fondamentales : Autres

BSP11.01

Phylodynamics of HCV Genotypes 3a and 1a in Pakistan

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B**ackground:** Characterizing the molecular dynamics of the HCV epidemic may provide crucial information for optimizing public health interventions in Pakistan. Towards this goal, we analyze HCV sequences from people who inject drugs (PWID) in Pakistan to identify phylogenetic clusters and quantify mixed-HCV infections. We also investigate whether HCV spread in Pakistani PWID is temporally concordant with HIV-epidemic dynamics.

Methods: Dried blood spots (DBS) were collected from 1453 PWID recruited from five Pakistani cities during 2014-2015: Karachi, Hyderabad, Larkana, Quetta, and Peshawar. DBS were screened with anti-HCV ELISA. HCV RNA was extracted, NS5B gene amplified and sequenced via Illumina MiSeq. Sequences were processed and genotypes assigned using MiCall. Sequences were aligned using MAFFT and maximum-likelihood trees inferred with PhyML. Phylogenetic clusters of 5 or more PWID were identified using tip-to-tip (patristic) distance cut-off<0.02 substitutions/site. HCV effective population size was estimated in BEASTv2.6.

Results: 462bp of NS5B gene was sequenced from 367 DBS, representing 25% success. In 322 (88%) PWID, only one genotype was detected, where 3a was dominant (56%). Mixed-HCV infections were detected in 45 (12%) PWID and confirmed by ELISA; 3a+1a was dominant (44%). We identified a large cluster of genotype 3a sequences comprising 51 individuals from disparate regions of Pakistan and a second cluster of five from Larkana and Karachi. Bayesian skyline plots of genotype 3a and 1a suggest periods of exponential growth of HCV from 2005 to 2010, followed by a decline and subsequent exponential growth during 2014-2015, which mirror published analyses of HIV-epidemic dynamics in Pakistan.

Conclusion: The identification of transmission clusters, mixed-HCV infections, and recent exponential growth suggest rapid HCV spread; concordance with HIV-epidemic suggests common routes of infection by both HIV and HCV. Expansion of harm reduction strategies and treatment as prevention for PWID are urgently needed to reduce HCV-related incidence and mortality in Pakistan.

Basic Sciences: Other
Sciences fondamentales : Autres

BSP11.02

Functional Expression of Drug Efflux Transporters and Metabolic Enzymes in Human Circulating and Testicular T-cell Subsets: Relevance to HIV Pharmacotherapy

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B**ackground:** ATP-Binding Cassette (ABC) drug efflux transporters and drug metabolic enzymes play an important role in antiretroviral drugs (ARVs) disposition and could reduce the intracellular concentrations of these drugs in HIV-1 target cells. The functional expression of these transporters and enzymes in various circulating and testicular T-cell subsets are unknown. Furthermore, the testis is demonstrated to be a sanctuary site, displaying suboptimal ARV concentrations and persistent HIV infection. Therefore, we compared the expression and/or function of several ABC transporters and metabolic enzymes in CD4+ and CD8+ T cells isolated from human peripheral blood mononuclear cells (PBMCs) and testicular tissues, and further assessed their expression in circulating naïve and memory T-cell phenotypes.

Methods: Testicular tissue and blood were collected from 15 uninfected participants undergoing gender affirmation surgery. Testicular interstitial cells were isolated by enzymatic digestion, while PBMCs were isolated from blood by density gradient centrifugation. The expression and/or function of ABC transporters and metabolic enzymes were examined in blood and testicular T-cell subsets by flow cytometry.

Results: We detected expression of ABC transporters (P-gp, BCRP and MRP1) and metabolic enzymes (CYP3A4, UGT1A1) in circulating and testicular CD4+ and CD8+ T-cells, as well as in naïve, central, transitional and effector memory T-cell phenotypes. P-gp and BCRP demonstrated high frequencies, and functional activity in T-cells isolated from both PBMCs and testes. However, MRP1 demonstrated lower frequencies in testicular T-cells compared to matched circulating T-cells, as well as in circulating naïve T-cells compared to memory T-cell phenotypes.

Conclusion: To the best of our knowledge, this is the first report demonstrating that ABC drug efflux transporters and metabolic enzymes are functionally expressed in T-cell subsets infiltrating the human testis. These transporters and enzymes can reduce ARV intracellular concentrations, potentially contributing to residual HIV replication and negatively impact on HIV cure strategies.

Clinical Sciences: Adherence
Sciences cliniques : Respect du traitement

CSP1.01

Chatbot MARVIN: Development study of an Intelligent Conversational Agent to Promote HIV Patients' Engagement in Care and Management of ART Adherence Barriers

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B**ackground:** Access to effective antiretroviral therapy (ART) is increasing, but certain barriers still impact long term adherence among many people living with HIV (PLHIV). Mobile health, intelligent conversational agents (ICA) and real-time virtual assistants are proven to be cost-effective tools to improve adherence-related barriers in chronic health conditions and to facilitate patient-provider interactions.

Objective: To design, develop, and test an ICA to promote engagement of PLHIV in care with a specific focus on the management of barriers to ART adherence.

Methods: Using a co-design methodology, a multidisciplinary group of physicians, patients, pharmacists, engineers guided the development of the ICA. A user-centered systematic design approach was applied in the conceptual phase to elucidate end-user needs and assess design parameters. Then, six Polytechnique Montréal software engineering students supervised by senior engineers, developed the ICA based on an online natural language processing engine. This was subsequently validated with patients any user-interface issues resolved, leading to a beta l version.

Results: MARVIN was created as a retrieval-based ICA trained to converse with patients via text or voice messaging on four specific case scenarios that are common among PLHIV who have reported barriers to adherence barriers: (1) guidance for ART utilization (e.g., with or without food, time management, difficulties with recognition, etc.) (2) perceived ART side effects ; (3) financial difficulties with ART coverage; and (4) ART management when traveling. MARVIN completes consultation tasks within 24h, in a confidential way, and sends automatic notifications. Also, MARVIN received positive responses from patient testers for its simplicity and flexibility.

Conclusion: MARVIN is expected to reduce barriers to ART adherence among PLHIV while simultaneously saving time for patients and their healthcare providers. This project is in early stage of development and will be modified and tested to improve usability and interface to train MARVIN to simulate real-life conversation.

Clinical Sciences: Clinical Trials and Observational Studies of Antiretrovirals and Other HIV Therapies
Sciences cliniques : Essais cliniques et études d'observation des antirétroviraux et autres thérapies anti-VIH

CSP2.01

Lifetime Antiretroviral Exposure and Neurocognitive Impairment in HIV

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Despite the availability of modern antiretroviral therapy (ART), neurocognitive deficits continue to persist amongst some people living with HIV (PLWH). Neurocognitive impairment in treated HIV is multifactorial and the role of ART and non-ART medications needs to be better understood. We ask here whether years of exposure to four major classes of ARTs are related to neurocognitive impairment HIV, in conjunction with concomitant non-ART medication burden, while accommodating a large number of potential cofactors. A single-site cohort of 343 PLWH was recruited from the Southern Alberta Clinic. Latent Profile Analysis (LPA) was used to identify neurocognitive profiles. Univariate and random forest analyses were then conducted to test differences in demographic and clinical factors between these profiles. LPA identified three neurocognitive profiles, one with neurocognitive impairment (N=59). A longer duration of antiretroviral medication exposure was characteristic of individuals with neurocognitive impairment, as was the number of non-ART medications. Integrase inhibitor exposure was one of the most important predictors of neurocognitive impairment overall, superseding effects of age and HIV duration. Among the integrase inhibitors, exposure duration to dolutegravir showed the strongest negative association with neurocognitive performance. Although this cross-sectional epidemiological study cannot address causality in these findings, a longer duration of ART exposure, in particular exposure to integrase inhibitors, may negatively impact cognition in PLWH. The mechanisms through which integrase inhibitors may impact CNS functions in HIV remain to tested.

Clinical Sciences: Clinical Trials and Observational Studies of Antiretrovirals and Other HIV Therapies
Sciences cliniques : Essais cliniques et études d'observation des antirétroviraux et autres thérapies anti-VIH

CSP2.02

Long-term Efficacy and Safety of Bictegravir/Emtricitabine/Tenofovir Alafenamide (B/F/TAF) in ART-Naïve Adults

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To evaluate comparative efficacy and safety of B/F/TAF and dolutegravir (DTG)-containing regimens through 144 weeks (W).

We conducted two randomized, double-blind, active-controlled phase 3 studies of B/F/TAF in treatment-naïve adults living with HIV. Study 1489 randomized HLA-B*5701-negative adults without HBV to receive B/F/TAF or DTG, abacavir, and lamivudine (DTG/ABC/3TC). Study 1490 randomized adults to B/F/TAF or DTG+F/TAF. Participants were pooled into three groups: B/F/TAF (Studies 1489, 1490), DTG/ABC/3TC (Study 1489), and DTG+F/TAF (Study 1490). A pre-specified pooled analysis at W144 assessed efficacy as the proportion with HIV-1 RNA<50 c/mL (FDA Snapshot) and safety; proteinuria and bone mineral density (BMD) were measured in 1489 only.

1274 adults were randomized/treated (634 B/F/TAF, 315 DTG/ABC/3TC, 325 DTG+F/TAF), 89% male, 33% black. Baseline characteristics were similar across groups. At W144, 82% on B/F/TAF, 84% on DTG/ABC/3TC, and 84% on DTG+F/TAF achieved HIV-1 RNA<50 c/mL. No participant developed resistance. The proportion with drug-related adverse events of any grade was 26% (B/F/TAF), 42% (DTG/ABC/3TC), and 29% (DTG+F/TAF). Adverse events led to discontinuation for 1% (B/F/TAF), 2% (DTG/ABC/3TC), and 2% (DTG+F/TAF). Changes in eGFR at W144 were similar across groups. In Study 1489, comparing B/F/TAF to DTG/ABC/3TC, changes in proteinuria and renal biomarkers were similar and mean percentage change from baseline in hip and spine BMD by DXA at W144 were similar. Small treatment differences in changes from baseline in fasting LDL, HDL, and TC:HDL ratio were observed with B/F/TAF vs DTG/ABC/3TC but not vs DTG+F/TAF.

Through 3 years of follow-up in ART-naïve adults, use of B/F/TAF resulted in high rates of virologic suppression through W144. B/F/TAF was well tolerated, had fewer drug-related adverse events compared with DTG/ABC/3TC, and no clinically relevant effect on bone and renal safety or fasting lipids.

Clinical Sciences: Clinical Trials and Observational Studies of Antiretrovirals and Other HIV Therapies
Sciences cliniques : Essais cliniques et études d'observation des antirétroviraux et autres thérapies anti-VIH

CSP2.03

Dual Therapy with Boosted Darunavir and Dolutegravir: a Review of the Literature

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B**ackground:** Dual therapy with ritonavir- or cobicistat-boosted darunavir (bDRV) and dolutegravir (DTG) may be considered as a simplification antiretroviral therapy (ART) strategy in cases with drug intolerance, toxicity or resistance. The objective is to summarize available evidence regarding the efficacy, resistance and tolerability of this regimen.

Methods: A literature review from Medline, Google Scholar and conference abstracts (to end Sept/19). Search terms included DTG, DRV, dual therapy and included both observational and experimental studies.

Results: Ten studies were identified, including 9 observational studies and one non-inferiority open-label randomized controlled trial. Studies ranged from 13 to 263 patients (total of 611 patients) and the follow-up time was 48 weeks to 29 months. All studies were switch studies either in suppressed (n=3) or mixed suppressed/unsuppressed (n=7) viral loads (VL). The mean baseline VL ranged from 1,259 to 31,623 copies/mL in the 3 studies that reported it and the mean CD4 148 to 598 cells/µL. There was large variability in pre-switch regimens. Many patients had underlying resistance associated mutations (RAMs), but detailed information on specific RAMs was often lacking. Most patients received dual ART once daily and a small portion twice daily dosing to accommodate for prior ART resistance. Viral suppression ranged from 86 to 100% and failures 0-8%. No patients developed new treatment emergent RAMs. ART discontinuation due to adverse effects was 2.1% (n=13), including neuropsychiatric events (insomnia, headache, anxiety) (n=4), decreased or no improvement in eGFR (n=2), myalgias (n=1) and other (n=6). Non-significant increases in serum creatinine and lipids were reported in some studies.

Conclusion: Rates of virologic suppression ranged from 86 to 100 % with the combination of bDRV and DTG when used as switch therapy in ART experienced patients. There were no reports of treatment emergent resistance. The combination was well-tolerated with few patients requiring discontinuation of therapy.

Clinical Sciences: Clinical Trials and Observational Studies of Antiretrovirals and Other HIV Therapies
Sciences cliniques : Essais cliniques et études d'observation des antirétroviraux et autres thérapies anti-VIH

CSP2.04

Effect of Doravirine on Body Weight and Body Mass Index in Treatment Naïve Adults with HIV-1

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B**ackground:** Studies suggest InSTIs may cause more weight gain than PIs and NNRTIs in ART-naïve patients. Female sex, black race, and disease stage have been associated with weight gain in some studies. We compared effects of doravirine (DOR), ritonavir-boosted darunavir (DRV+r), and efavirenz (EFV) on weight and BMI in treatment-naïve, Phase 2/3 clinical trials of DOR.

Methods: Median weight change was summarized by treatment group. Proportions with ≥10% weight gain and with BMI increase (from underweight/normal to overweight/obese, or from overweight to obese) were estimated using a generalized linear model with binomial distribution and variables for treatment group, region, gender, race, age, and baseline BMI, CD4 count, and HIV-1 RNA.

Results: Median weight change was comparable between DOR (1.0 kg) and DRV+r (0.6 kg) and lower for EFV (0.0 kg) at week 48 (W48) and was similar across all groups at W96 (1.5, 0.7, and 1.0 kg). Proportions with ≥10% weight gain were comparable between DOR, DRV+r, and EFV at W48 (8.6%, 6.4%, and 6.1%) and W96 (15.8%, 16.9%, and 13.0%). Proportions with BMI increase were similar across treatment groups at both timepoints (table). Baseline CD4 count and HIV-1 RNA predicted ≥10% weight gain and BMI increase at both timepoints; sex predicted BMI increase at W48 but not W96.

Conclusions: Weight gain over 96 weeks was low in all treatment arms and similar to average yearly change in adults without HIV-1. Low CD4 count and high viral load at baseline were associated with ≥10% weight gain and BMI class increase.

Change in Body Weight (kg) from Baseline, Median (IQR)								
Week	**Combined DOR Group**		**DRV+r Group**		**Combined EFV Group**			
48	N=751	1.0 (-1.2, 3.9)	N=316	0.6 (-1.9, 3.4)	N=402	0.0 (-2.6, 2.8)		
96	N=677	1.50 (-1.0, 4.9)	N=268	0.70 (-1.9, 5.1)	N=362	1.0 (-2.2, 4.6)		
Proportion of Participants with ≥10% Weight Gain (kg) from Baseline								
Week	**Combined DOR Group**		**DRV+r Group**		**Difference (95% CI) DOR-DRV+r**	**Combined EFV Group**		**Difference (95% CI) DOR-EFV**
48	N=751	8.6%	N=316	6.4%	2.2 (-2.9, 7.3)	N=402	6.1%	2.4 (-1.8, 6.7)
96	N=677	15.8%	N=268	16.9%	-1.2 (-5.5, 3.1)	N=362	13.0%	2.8 (-1.5, 7.1)
Proportion of Participants with BMI Class Increase								
48	N=751	11.4%	N=315	11.1%	0.4 (-3.1, 3.9)	N=402	7.9%	3.5 (-0.2, 7.2)
96	N=677	15.8%	N=267	15.3%	0.6 (-4.5, 5.6)	N=362	14.2%	1.7 (-2.9, 6.2)

IQR, interquartile range. CI, confidence interval

Clinical Sciences: Clinical Trials and Observational Studies of Antiretrovirals and Other HIV Therapies
Sciences cliniques : Essais cliniques et études d'observation des antirétroviraux et autres thérapies anti-VIH

CSP2.05

Changes in Liver Steatosis, Body Mass Index and Hepatocyte Apoptosis After Switch to Raltegravir

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B**ackground:** HIV-infected patients have multiple risk factors for nonalcoholic fatty liver disease (NAFLD), including frequent metabolic comorbidities. The effect of antiretroviral therapy (ART), particularly integrase inhibitors, is less known. We aimed to evaluate the effect of switching to raltegravir (RAL) on hepatic steatosis among HIV-infected patients with NAFLD.

Methods: This was a phase IV, open-label, randomized controlled trial (ClinicalTrials.gov: NCT02210715). HIV mono-infected patients were randomized 1:1 to switch RAL (400 mg BID): continuing any other ART regimen not containing integrase inhibitors. All patients had NAFLD at baseline, defined as controlled attenuation parameter (CAP) values ≥238dB/m, and received standardized nutritional counselling. Changes in hepatic steatosis (measured by CAP), Body Mass Index (BMI) and cytokeratin-18 (biomarker of hepatocyte apoptosis) were measured at baseline and 48 weeks of follow-up.

Results: 31 patients, of whom 12 subjects randomized to RAL, were included. The baseline median (interquartile range [IQR]) values for RAL vs. non-switch group were: CAP, 251 (241-271) vs. 252 (239-265)(p=0.88); BMI, 27.6 (25.1-29.2) vs. 27.5 (23.8-30.5)(p=0.59); cytokeratin-18, 100 (65-157) vs. 63 (30-112)(p=0.07). Table 1 shows the median (IQR) change between baseline and 48 weeks. At 48 weeks, 53% of patients in the RAL arm and 54% in the non-switch arm had CAP <238 dB/m, suggesting NAFLD resolution.

Conclusion: After 48 weeks, HIV mono-infected individuals with NAFLD switching to RAL showed similar decrease in the degree of hepatic steatosis compared to the control group. Patients switching to RAL did not experience weight gain and had reduction in hepatocyte apoptosis compared to the control group.

Median (IQR) of the difference in CAP, BMI and cytokeratin 18 between baseline and 48 weeks in the two trial arms

Change at 48 weeks compared to baseline	CAP (dB/m)	BMI (kg/m2)	Cytokeratin18 (units/L)
RAL	-25 (-94, 19)	-0.6 (-0.5, 0.2)	-26 (-27, -45)
Control	-26 (-40, 40)	-0.3 (0.5, 0.4)	27 (-14, 21)

Clinical Sciences: Clinical Trials and Observational Studies of Antiretrovirals and Other HIV Therapies
Sciences cliniques : Essais cliniques et études d'observation des antirétroviraux et autres thérapies anti-VIH

CSP2.06

Islatravir Efficacy and Safety for Selected Demographic and Baseline Subgroups from a Phase 2 Trial in Treatment Naïve Adults with HIV-1 Infection

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B**ackground:** Islatravir (ISL, MK-8591) is the first nucleoside reverse transcriptase translocation inhibitor (NRTTI) in development for treatment of HIV-1 infection. We analyzed the week 48 results of a Phase 2 ISL trial in treatment naïve adults with HIV-1 infection by pre-specified subgroups for efficacy and safety.

Methods: In this randomized, double-blind, dose-ranging trial, participants were initially assigned to receive ISL (0.25 mg, 0.75 mg, or 2.25 mg) with doravirine (DOR, 100 mg) and lamivudine (3TC, 300 mg) or a fixed-dose combination of DOR, 3TC, and tenofovir disoproxil fumarate (DOR/3TC/TDF) once daily. Participants receiving ISL who achieved HIV-1 RNA<50 copies/mL at Week 20 or later stopped taking 3TC at their next visit and continued DOR+ISL at initial dosage; most participants stopped 3TC at Week 24. Efficacy endpoints included the overall proportion of participants at week 48 with HIV-1 RNA<50 copies/mL. For the current analysis, efficacy results were summarized within pre-specified subgroups (age, sex, race, region, baseline HIV-1 RNA, baseline $CD4^+$ T-cell count) using the Observed Failure Approach (excludes participants with data missing for reasons other than lack of efficacy).

Results: 121 participants received study drug and were included in analyses (mean age 31 yr, 92.6% male, 76.0% white, 49.6% Hispanic or Latino, 22% HIV-1 RNA>100,000 copies/ml, median $CD4^+$T-Cell Count 456 cells/mm^3). At week 48, 92.9% (26/28), 93.1% (27/29), 85.7% (24/28), of participants achieved HIV-1 RNA<50 copies/mL in the 0.25mg, 0.75mg, 2.25mg dose of ISL respectively, compared to 92.9% (26/28) with DOR/3TC/TDF. Across the prespecified and selected demographic and baseline subgroups, proportions of participants with HIV-1 RNA<50 copies/mL at week 48 were comparable between all treatment arms. In the safety analysis, similar adverse event rates between treatment groups were observed across subgroups.

Conclusion: At week 48, across all baseline subgroups, the ISL regimens demonstrated similar efficacy and safety comparable to DOR/3TC/TDF.

Clinical Sciences: Clinical Trials and Observational Studies of Antiretrovirals and Other HIV Therapies
Sciences cliniques : Essais cliniques et études d'observation des antirétroviraux et autres thérapies anti-VIH

CSP2.07

Neurodevelopment of HIV/ARV-Exposed Uninfected Children Compared with HIV-unexposed Uninfected Children During Early Childhood

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Purpose: HIV-exposed uninfected children (HEU) may be at risk for neurodevelopmental challenges due to in utero and perinatal exposure to HIV and anti-retroviral (ARV) medications. We compared the neurodevelopment of HEU to HIV-unexposed uninfected children (HUU) during the preschool and early school ages.

Methods: HEU from SickKids in Toronto and HUU from the community, matched for age and area of residence, were recruited and tested at 3.5 and 5.5 years of age. Demographic and medical information and measurements of intelligence, visuomotor skills, and adaptive functioning were obtained. Non-parametric tests assessed group differences and multiple regression analyses adjusted for potential confounders. Linear mixed effects models evaluated age-related developmental changes by group and the impact of medical factors on outcomes. For all analyses, $p \leq 0.01$ was considered significant.

Results: A total of 355 HEU and 89 HUU were included. At 3.5 years, 211 HEU and 31 HUU were assessed; at 5.5 years 144 HEU and 58 HUU were assessed (77 HEU assessed at both time-points). At 3.5 years, HUU scored significantly higher than HEU on measures of Full-Scale IQ (FSIQ), Performance IQ (PIQ), visual motor integration (VMI), and adaptive functioning. Among HEU, those whose mothers were employed achieved higher scores on FSIQ, verbal IQ (VIQ), and adaptive measures. At 5.5 years, HUU scored significantly higher than HEU on every measure. Across age, differences in FSIQ and VIQ became more pronounced. Controlling for age, females demonstrated significantly higher scores than males on VMI and adaptive functioning. Modest associations were found between later onset of ARV medications in pregnancy and higher PIQ and FSIQ scores.

Conclusion: HEU demonstrated significantly lower scores on developmental measures than HUU during early childhood. Gaps in verbal intellectual skills widened with age, indicating an area of vulnerability in the HEU and highlighting the importance of ongoing follow-up.

Clinical Sciences: Co-infections (including HCV, HBV, HPV, TB)
Sciences cliniques : Coinfections (y compris VHC, VHB, papillomavirus, tuberculose)

CSP3.01

Attitudes Towards Anal Cancer and Screening among Men Who Have Sex with Men Living with HIV: Preliminary Results from the HPV-SAVE Study

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I**ntroduction:** Human papillomavirus (HPV)-associated anal cancer is a leading cause of non-HIV-related death in men who have sex with men (MSM) living with HIV. Anal cancer rates in this population are up to 100-times higher than the general population, yet there are no universally accepted guidelines for anal cancer screening. We sought to describe awareness and attitudes on anal cancer and anal cancer screening among MSM living with HIV.

Methods: The HPV Screening and Vaccine Evaluation (HPV-SAVE) Study is a Canadian study on screening and treatment of anal pre-cancerous lesions in MSM living with HIV. Eligible participants were invited to have anal cytology (or Pap) testing in their physician's office. Prior to screening, men were asked to complete a self-administered questionnaire. Results describing awareness of and attitudes toward anal cancer screening are shown.

Results: Of 318 men who underwent anal cancer screening (68% white, median age: 49 years, 55% completed at least college/university), more than half (53%) were diagnosed with abnormal cytology. 79% of participants were not aware of the availability of anal cancer screening prior to their participation in the study. 92% of participants reported that receiving anal cancer screening was important, and 75% were moderately or very concerned about anal cancer. 89% reported that they were comfortable discussing anal health with their HIV doctor and 92% of participants met with their HIV doctor at least every six months. However, 63% had never discussed anal cancer with any healthcare professional.

Conclusions: Anal cancer is of concern to MSM living with HIV, yet many are unaware of screening options and have not discussed their anal health with a healthcare professional, despite the fact that they are well-connected to care. These findings suggest a pressing need to increase awareness and uptake of anal cancer screening opportunities for MSM living with HIV.

Clinical Sciences: Co-infections (including HCV, HBV, HPV, TB)
Sciences cliniques : Coinfections (y compris VHC, VHB, papillomavirus, tuberculose)

CSP3.02

Hiv-negative, Elderly CMV-seropositive Individuals Have a Senescent T Cell Profile Characterized by High Numbers of Activated Temra Cells Compared to Uninfected Controls

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B**ackground:** Over 85% of people living with HIV (PLWH) are infected with cytomegalovirus (CMV), a virus associated with ageing co-morbidities. It is therefore important to differentiate the immune changes arising from CMV versus HIV. CMV is part of the immune risk phenotype (IRP), which is more prevalent in PLWH and develops at a younger age. The IRP predicts increased 5-year all-cause mortality in the elderly. CMV is a major contributor to memory T cell expansion in aging contributing to chronic inflammatory mediated age-related diseases. We therefore undertook a study to clarify the CMV contribution to “inflamm-aging” by determining the differences in frequency and function of effector memory T cell subsets in those infected with CMV from normal age-matched controls.

Methods: Healthy elderly individuals (ages 60-90 years) were studied. They were excluded if they had active or chronic infections, malignancy, diabetes and cardiovascular disease. All 88 asymptomatic individuals recruited had CMV serologic screening and T-cell phenotyping. Of the participants, 66 were CMV-positive and 22 were CMV-negative. Group comparisons (t-test) and linear regression analyses for immune markers of aging were carried out.

Results: Those with CMV had decreased CD4:CD8 T ratios within T cell subsets CD45RA and CD103 ($p<0.0001$), and an increase in the CD45RO T cell subset ($p<0.0001$). CMV seropositivity was associated with increases in TEMRA cells in the CD8 T cell subset ($p<0.001$). Furthermore, increased activated CD4 and CD8 TEMRA cells in CMV seropositive individuals (CD38+ HLA-DR+) ($p<0.05$, $p<0.0001$) were noted.

Conclusions: Statistically significant expansions of activated TEMRA cells were found in healthy seropositive elderly individuals when compared to age-matched seronegative controls. This subset likely contributes to the dysregulated ageing immune profile noted in CMV/HIV seropositive individuals. The mechanisms by which CMV driven immunosenescence contributes to the induction and acceleration of ageing co-morbidities in PLWH remain to be elucidated.

Clinical Sciences: Co-infections (including HCV, HBV, HPV, TB)
Sciences cliniques : Coinfections (y compris VHC, VHB, papillomavirus, tuberculose)

CSP3.03

Relevance of CMV and EBV Co-Infection to Chronic Inflammation in HIV Elite Controllers

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B**ackground:** Elite controllers (EC) are people living with HIV (PLWH) who maintain plasma HIV viral load below 50 copies/mL without antiretroviral therapy. However, EC have increased risk of developing non-AIDS comorbidities due to persistent inflammation. We previously reported that Cytomegalovirus (CMV) co-infection was associated with elevated epithelial gut damage, microbial translocation, and inflammation in ART-treated PLWH and HIV-uninfected controls. Here, we evaluated the link between CMV or Epstein Barr virus (EBV) seropositivity, microbial translocation, and inflammation among EC.

Methods: Study samples were collected from 37 EC and 26 HIV-uninfected controls. We categorized EC participants regarding their expression of protective HLA alleles (B*27, B*57, B*58, n=16). We measured CD4 and CD8 T-cell counts, anti-CMV IgG and anti-EBV IgG titers, markers of epithelial gut damage I-FABP, markers of microbial translocation bacterial lipopolysaccharide (LPS), sCD14 and fungal B-D-Glucan (BDG), as well as markers of inflammation total IgG, IgM, IgA, IL-1b, and IL-6.

Results: EC participants with protective HLA alleles had higher CD4 T-cell count compared to those without protective alleles (p=0.03). Plasma levels of microbial translocation and inflammation markers were similar among EC with and without protective HLA alleles. CMV/EBV seropositive and seronegative EC presented with similar age, male/female ratio, and CD4 T-cell counts. In contrast, CMV seropositive EC had elevated CD8 T-cell counts (p=0.002), I-FABP (p=0.01), LPS (p=0.02), sCD14 (p=0.04), BDG (p=0.02), IL-1b (p=0.001), and IL-6 (p<0.001) compared to CMV seronegative EC. Moreover, anti-CMV IgG titers also correlated with plasma levels of all those markers. Conversely, anti-EBV IgG titers and total IgG, IgM, IgA were not associated with these markers.

Conclusion: Markers of epithelial gut damage, microbial translocation, and inflammation were higher in CMV seropositive EC, irrespective of protective HLA alleles. Therefore, co-infection with CMV but not EBV emerges as an important contributor to chronic inflammation in HIV elite controllers.

Clinical Sciences: Co-infections (including HCV, HBV, HPV, TB)
Sciences cliniques : Coinfections (y compris VHC, VHB, papillomavirus, tuberculose)

CSP3.04

Differences in Surveillance for HCC in HIV-Infected Patients with and Without HCV/HBV Coinfection: Insights from the LIVEHIV Cohort

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B**ackground:** Hepatocellular carcinoma (HCC) is a deadly complication of compensated advanced chronic liver disease (cACLD) and hepatitis B. HCC surveillance is recommended with ultrasound and alpha-fetoprotein in HIV-infected patients with cACLD or hepatitis B coinfection. We aimed to assess adherence rate to HCC surveillance in patients enrolled into the real-life LiVEr disease in HIV (LIVEHIV) cohort.

Methods: We included patients followed for >12 months and eligible for HCC surveillance: cACLD defined as liver stiffness measurement (LSM) ≥10kPa in HIV mono-infection and HIV/HCV co-infection; or HIV/HBV co-infection regardless of LSM. Adherence to surveillance was defined as at least yearly examination for ultrasound and twice-yearly determination for alpha-fetoprotein.

Results: 154 patients were included (mean age 52, 77% males, 22% HIV mono-infected with cACLD, 37% HIV/HCV co-infected with cACLD, 41% HIV/HBV co-infected). HCC surveillance is shown in the Table. Adherence rate by ultrasound was similar among groups. Conversely, adherence rate by alpha-fetoprotein was lower in HIV mono-infection (p=0.005). Lack of patient compliance was more frequent in HIV/HCV and HIV/HBV co-infection (p=0.03), due to alcohol/drug abuse, psychiatric conditions and long distances to reach the hospital. In HIV/HCV co-infection, surveillance for HCC was discontinued mostly following reduction in LSM after HCV antiviral treatment (p<0.001). Undermonitoring by physician was more frequent in HIV mono-infection and HIV/HBV co-infection (p<0.001). During a median follow-up of 15 months, incidence of HCC was 1.3%.

Conclusion: Adherence to HCC screening is suboptimal in HIV-infected patients. Efforts should be focused in improving physician awareness and facilitate access to care for disadvantaged patients.

Surveillance for HCC in HIV-infected patients according to HBV and HCV co-infection status

	HIV mono-infection with cACLD (n=34)	HIV/HCV co-infection with cACLD (n=57)	HIV/HBV co-infection (n=63)
Adherence to HCC surveillance by imaging n (%)	13 (38)	24 (42)	28 (44)
Adherence to HCC surveillance by alpha-fetoprotein n (%)	10 (29)*	34 (59)	33 (52)
Reasons for lack of adherence to HCC surveillance n (%)	n=21	n=33	n=35
Lack of patient compliance	1 (5)*	9 (27)	12 (34)
Undermonitoring by physician	13 (62)	6 (18)*	22 (63)
Reduction of LSM during follow-up	7 (33)	14 (42)	0*
Transfer	0	3 (9)	1 (3)
Death	0	2 (6)	1 (3)

Clinical Sciences: Complications of Antiretroviral Therapy
Sciences cliniques : Complications des traitements antirétroviraux

CSP4.01

Dolutegravir-containing ART Regimens are Not Independently Associated with Weight Changes among British Columbians Living with HIV

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B**ackground:** Dolutegravir-based regimens have been associated with weight gain. We assessed the effects of ART regimens on weight change among adults living with HIV participating in the BC Centre for Excellence in HIV/AIDS Drug Treatment Program (DTP).

Methods: DTP and Clinical Status Report Form (CSRF) data were analyzed for DTP participants aged ≥18 years whose healthcare providers had submitted ≥2 CSRFs, ≥12 months apart, between 06-2014 and 09-2019. We analyzed weight changes, ART regimens, clinical and demographic factors. Participants with outliers thought to be due to recording errors were excluded. Multivariable linear regression was used to evaluate factors associated with weight change.

Results: 1,611 participants were included with median 3 CSRFs, median age 50.4 years, 1,277 (79.3%) males. 187 (11.6%) participants were receiving dolutegravir when the first CSRF was received (baseline). The median weight change was 0.00 kg/year (Q1-Q3: -1.21 to 1.48).

Compared to other "third drugs", participants receiving dolutegravir at baseline gained the most weight (0.38 kg/year; Q1-Q3: -1.10 to 2.46). In the multivariable model (see Table), hepatitis C seropositivity (-0.41 kg/year; 95% CI: -0.73, -0.09), age (-0.16 kg/year per 10-year increment; 95% CI: -0.3, -0.03), and baseline CD4 counts (-0.09 kg/year per 100 cells/µL increment; 95% CI: -0.15, -0.04) were independently associated with weight change. Neither baseline ART regimen nor switching to dolutegravir were independently associated with weight change.

Conclusions: In our analysis, the relationship between weight gain and dolutegravir-containing ART regimens appear to be explained by negative hepatitis C serostatus, younger age, and lower CD4 cell counts.

	Univariable Model				Explanatory Multivariable Model			
	Slope	95% CI		p-values	Slope	95% CI		p-values
Gender								
Male [ref]	0.00							
Female	-0.05	-0.44	0.34	0.9652				
Transgender	-0.10	-1.58	1.38					
Hepatitis C Seropositive								
No [ref]	0.00				0.00			
Yes	-0.33	-0.64	-0.01	0.0777	-0.41	-0.73	-0.09	**0.0294**
Unknown	1.01	-1.35	3.38		0.90	-1.45	3.25	
Class of 3rd Drug when the First CSRF was Received								
PI [ref]	0.00							
NNRTI	-0.32	-0.72	0.07					
DTG-INSTI	0.49	-0.02	1.01	0.0938				
Other than DTG-INSTI	-0.01	-0.58	0.56					
Other/>=1 3rd drug	-0.27	-0.82	0.27					
Not on ARV	0.07	-1.00	1.13					
3rd Drug Switch Status between First and Last CSRF								
No switch [ref]	0.00							
to PI	-0.77	-1.74	0.20					
to DTG	0.09	-0.41	0.59	0.3580				
to Other than DTG-INSTI	-0.28	-1.22	0.66					
to Other/NNRTI	-0.93	-2.05	0.19					
Treatment Interruption	-0.08	-0.49	0.34					
Chronic Obstructive Lung Disease								
No or unknown [ref]	0.00			0.1184				
Yes	-0.43	-0.98	0.11					
VL when the First CSRF was Received (log10 copies/mL)								
<200 copies/mL [ref]	0.00							
>=200 copies/mL	0.75	0.30	1.20	**0.0053**				
Unknown	0.10	-1.37	1.58					
Age when the First CSRF was Received (10 years)	-0.15	-0.29	-0.02	**0.0262**	-0.16	-0.30	-0.03	**0.0191**
CD4 when the First CSRF was Received (100 cells/mm3)	-0.08	-0.13	-0.03	**0.0038**	-0.09	-0.15	-0.04	**0.0007**
Duration of ART Use (years)	-0.03	-0.05	-0.01	**0.0078**				

Abbreviations
CSRF: Clinical Status Report Form
PI: Protease Inhibitor
NNRTI: Non-nucleoside Reverse Transcriptase Inhibitors
DTG: Dolutegravir
INSTI: Integrase Strand Transfer Inhibitor
ARV: Antiretroviral

Clinical Sciences: HIV and Aging and Comorbidities (including CVD, Osteoporosis, Neurocognitive Effects)
Sciences cliniques : Le VIH, le vieillissement et les comorbidités

CSP5.01

Relationship Between Hypertension and Incidence of Diabetes Mellitus Among People Living with HIV in British Columbia Between 2001-2013

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B**ackground:** People living with HIV (PLHIV) have complex medical and social histories, which increases their risk of chronic disease. Hypertension and Diabetes Mellitus (DM) are two of the most prevalent comorbidities contributing to increased mortality and morbidity worldwide. Although evidence suggests that hypertension is a risk factor for DM, there is limited evidence of this association among PLHIV. This study aims to explore the relationship between hypertension and incidence of DM among PLHIV in British Columbia (BC) between 2001-2013.

Methods: We used data from the Comparative Outcomes and Service Utilization Trends (COAST) study, a population-based cohort including longitudinal clinical data linked with administrative health data in BC. Our sample included all known PLHIV who were ARV naïve at COAST baseline, had ≥5 years of follow-up to baseline, and ≥1 year post baseline. Cases of hypertension and DM were identified using BC Ministry of Health's published case definitions applied to hospitalization, physician billing and drug dispensation databases. Incident DM was identified using a 5-year run-in period. To quantify the relationship between hypertension and DM, we used a Poisson regression model adjusted for key confounders.

Results: Among the 2,792 PLHIV included in our study, 129 PLHIV had incident cases of DM. In this group, the median age at DM diagnosis was 47 years and 51% lived in the two lowest neighbourhood income quintiles. PLHIV with a history of hypertension had more than twice the incidence rate of DM when compared to PLHIV who never experienced hypertension prior to their DM diagnosis (adjusted rate ratio 2.14, 95% confidence interval: 1.38, 3.31).

Conclusion: After adjustment for confounding, hypertension was associated with incident DM among PLHIV in BC. Further research is needed to examine the mechanisms through which these two conditions may be associated, along with sensitivity analyses assessing the potential impacts of unmeasured confounding.

Clinical Sciences: HIV and Aging and Comorbidities (including CVD, Osteoporosis, Neurocognitive Effects)
Sciences cliniques : Le VIH, le vieillissement et les comorbidités

CSP5.02

"I have more bad days but the good days are coming" - Pain Experienced Among People Living with HIV Accessing Physiotherapy in a Day Health Program

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B**ackground:** Pain experienced among people living with HIV (PLWH) can be associated with disability, decreased retention in HIV care, and poorer quality of life.

Objectives: To describe the nature and extent of pain among PLWH and its relation to seeking physiotherapy.

Methods: We conducted a descriptive mixed methods study involving qualitative (semi-structured interviews) and quantitative (chart review) approaches. We interviewed PLWH who accessed physiotherapy to explore reasons for seeking physiotherapy and goals for treatment. We extracted data from participants' charts including pain (location, type), Brief Pain Inventory (BPI) scores, participant-identified goals, and the primary focus of physiotherapy intervention. We analyzed data using medians and content analysis for categorical and text data, respectively.

Results: Fifteen PLWH (men:8;53%) participated in the study. Participants had a median of 7 concurrent health conditions; 11 (73%) reported chronic joint or muscle pain and four (27%) peripheral neuropathy. Reasons for seeking physiotherapy commonly related to mobility (n=8;53%); or pain relief (n=4;27%). Two (13%) participants identified no pain at the time of assessment. Among the 11 participants with BPI scores, the median average pain score and median combined pain intensity score at initial assessment was 5/10 (10="pain as bad as you can imagine"). Four (36%) participants met criteria from BPI for severe pain and six (54%) for moderate pain. Pain was reported at a median of 2 locations, most commonly low back (53%); hip (40%); and, knee (33%). After initial assessment, pain reduction was the most common participant-identified goal (60%) followed by improving strength (47%) and mobility (33%). Pain management was the second most common primary focus of physiotherapy intervention (20%) behind exercise (67%).

Conclusion: Physiotherapy for PLWH commonly focused on pain management with approximately a quarter of participants seeking physiotherapy to manage sometimes severe pain. Physiotherapy has a role in pain management for PLWH.

Clinical Sciences: HIV and Aging and Comorbidities (including CVD, Osteoporosis, Neurocognitive Effects)
Sciences cliniques : Le VIH, le vieillissement et les comorbidités

CSP5.03

Microbial Translocation of Fungal β-D-Glucan is Associated with Cardiovascular Risk in People Living with HIV

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B**ackground:** Despite antiretroviral therapy (ART), people living with HIV (PLWH) have increased risk of inflammatory comorbidities. Gut damage and translocation of bacterial lipopolysaccharide (LPS) and fungal β-D-Glucan (BDG) drive inflammation in ART-treated PLWH. Herein, we investigated whether markers of gut damage and bacterial and fungal translocation are associated with cardiovascular risk in asymptomatic ART-treated PLWH.

Methods: As part of the Canadian HIV and Aging Cohort (CHAC), we analyzed plasma from 147 participants > 40 y.o., 95 ART-treated PLWH with viral load <50 copies/ml, and 52 uninfected controls. Participants were free of clinical cardiovascular disease at baseline and underwent a cardiac computed tomography. Total coronary plaque volume (TPV) and low-attenuation coronary plaque volume (LAPV) were measured. Plasma levels of REG3α, I-FABP and LPS were measured by ELISA. Plasma BDG levels were analyzed using the Fungitell® assay.

Results: In all participants, TPV and LAPV correlated with gut damage markers REG3α (r=0.2, p=0.03 for both) and I-FABP (r=0.2, p=0.001 for both). BDG but not LPS levels correlated with TPV and LAPV (r=0.2, p=0.04 for both). In ART-treated PLWH, I-FABP but not REG3α levels correlated with TPV (r=0.23, p=0.03) and LAPV (r=0.27, p=0.01). Once more, BDG but not LPS levels correlated with TPV (r=0.25, p=0.01) and LAPV (r=0.26, p=0.010).

Conclusion: Gut damage markers and translocation of fungal product BDG, but not bacterial LPS, were associated with the burden of coronary atherosclerosis in ART-treated PLWH. More research is needed to appraise causality of the association; however, translocation of fungal products represents a potential therapeutic target to prevent cardiovascular disease in ART-treated PLWH.

Clinical Sciences: HIV and Aging and Comorbidities (including CVD, Osteoporosis, Neurocognitive Effects)
Sciences cliniques : Le VIH, le vieillissement et les comorbidités

CSP5.04

Cardiopulmonary Fitness Changes across a Three-Phased Community-Based Exercise Intervention Study among Adults Living with HIV

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Objective: Community-based exercise (CBE) can help manage health-related challenges associated with HIV and multimorbidity. Our aim was to examine the change in cardiopulmonary fitness among people living with HIV (PLWH) engaged in a CBE intervention.

Methods: We conducted a 22-month interrupted time series study with PLWH recruited from the community. We measured cardiopulmonary fitness (VO2peak) bimonthly across three phases: 1) Baseline Monitoring (8 months); 2) CBE Intervention-participants exercised 3 times/week, with weekly coaching (6 months) and 3) Follow-Up-participants continued with thrice weekly exercise independently (8 months). We used segmented regression (adjusted for baseline age and sex) to assess the change in trend (slope) between phases.

Results: Of the 108 participants who initiated the study, 80(74%) started and 67/80(84%) completed the intervention; and 52/67(77%) completed the study. The majority were males (90%), median age of 51 years (interquartile range(IQR):45,60), and median of 4 concurrent health conditions (IQR:2,7). Baseline mean (sd) VO2peak was 24.1(7.96)ml/kg/min for males (n=88) and 16.7(4.1)ml/kg/min for females (n=10). Median number of fitness sessions attended was 18/25(72%). During Phase 1, there was a small increase in VO2peak (0.12ml/kg/min/month; 95%CI:-0.04,0.28), followed by a larger increase in Phase 2 (0.21ml/kg/min/month; 95%CI:0.00,0.41) and a small decline over Phase 3 (-0.12ml/kg/min/month; 95%CI: -0.52,0.27). The rate of change in VO2peak in Phase 2 was not significantly different from Phase 1 (p=0.195) or Phase 3 (p=0.056). The overall increase in VO2peak during the intervention (Phase 2) was 1.24ml/kg/min (males) and 1.25ml/kg/min (females), with considerable variation of VO2peak within individuals over time.

Conclusion: Little to no change in VO2peak occurred across the three phases. This may be attributed to difficulty eliciting peak VO2, or because the intervention dose was not high enough to affect a change. While a common outcome measure of cardiopulmonary fitness, other outcomes may better capture the impact of CBE in this population.

Clinical Sciences: HIV and Aging and Comorbidities (including CVD, Osteoporosis, Neurocognitive Effects)
Sciences cliniques : Le VIH, le vieillissement et les comorbidités

CSP5.05

The Feasibility and Impact of a Yoga Intervention on Cognitive and Physical Function Among People Living with HIV: a Pilot Randomized Controlled Trial

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Background and Objectives: People living with HIV (PLWH) have elevated rates of cognitive and physical impairments. Yoga is an effective strategy for improving cognition in healthy older adults. However, no randomized trials have evaluated the impact of yoga on cognitive and physical function among PLWH. Our primary aim was to assess the feasibility of a 12-week yoga intervention among PLWH. Secondary objectives included evaluating change in cognitive performance, self-reported cognition, physical function, medication adherence, health-related quality of life (HRQoL), and mood among yoga versus control participants.

Methods: We recruited PLWH aged ≥35 from community and health organizations. Participants were randomly assigned to yoga or control. Yoga participants performed supervised 60-minute Hatha yoga 3 times weekly for 12 weeks. We advised control participants to maintain their regular physical activity during the study. Feasibility outcomes [recruitment, attrition, attendance (a priori criterion=70% attendance)] were recorded, and a post-participation questionnaire measured participant satisfaction. Assessments at baseline and 12 weeks included demographics, the Brief Cognitive Ability Measure (B-CAM), Communicating Cognitive Concerns Questionnaire (C3Q), Community Balance and Mobility Scale, 10-metre walk test, Rapid Assessment of Physical Activity, Accelerometry, Simplified Medication Adherence Questionnaire, Medical Outcomes Survey-HIV (MOS-HIV), and Hospital Anxiety and Depression Scale (HADS). We analyzed Likert post-intervention questionnaire responses descriptively and open-ended responses using inductive thematic analysis. Secondary outcomes were analyzed using univariate and repeated-measures ANCOVA and Wilcoxon Signed-Rank tests.

Results: Twenty-two participants were recruited for the study. Two participants (9%) withdrew from the yoga group. Mean yoga class attendance was 82% with 100% satisfaction. Intention-to-treat analyses (yoga n=11, control n=11) showed no within- or between-group differences in physical function and cognition (B-CAM and C3Q). Self-reported cognition improved over time on the MOS-HIV cognitive sub-scale *(p=.047*) among yoga participants only.

Conclusions: This pilot study provides preliminary evidence of feasibility and benefits of yoga for PLWH.

Clinical Sciences: HIV and Aging and Comorbidities (including CVD, Osteoporosis, Neurocognitive Effects)
Sciences cliniques : Le VIH, le vieillissement et les comorbidités

CSP5.06

Epicardial Fat CT Attenuation in the HIV Population and Its Association to Coronary Atherosclerosis - Results from the Canadian HIV and Aging Cohort Study

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I**ntroduction:** HIV patients have a higher risk of coronary artery disease (CAD). Chronic inflammation mediated by adipose tissue may increase this risk. We measured the computed tomography (CT) attenuation of epicardial fat in HIV+ and HIV- individuals and assessed its association with coronary plaque burden. Fat attenuation may provide information about fat quality among HIV-infected patients.

Methods: This is a cross sectional study, nested in the Canadian HIV and Aging Cohort Study. Consecutive participants with low to intermediate cardiovascular risk were invited to undergo cardiac CT. Assessment of volume and CT attenuation of epicardial fat, volume of total atherosclerotic plaque, and low-attenuation plaque (a marker of plaque vulnerability) were performed. Comparison of epicardial fat attenuation and volume between HIV+ and HIV- groups was assessed using T-Test. Associations between epicardial fat attenuation, coronary plaque volume and low attenuation plaque volume, were assessed using zero-inflated Poisson regression.

Results: A total of 265 participants underwent cardiac CT. 181 were HIV+ and 84 were HIV-. HIV+ patients had higher epicardial fat volume and a lower epicardial fat attenuation (both indexed to body mass index) than HIV- patients (p= 0.019 and p = 0.001). Exposure to smoking and statin use was associated to a lower epicardial fat attenuation (smoking exposure, β = -0.14, p=0.02, statin use, β =-0.15, p=0.01). In multivariate analysis, epicardial fat attenuation was not significantly associated with total plaque volume (OR=1.00, p= 0.37, OR=1.03, p=0.99) and with low attenuation plaque volume (OR=1.02, p=0.46, OR=1.00, p= 0.96).

Conclusion: CT attenuation of epicardial fat is significantly lower for HIV+ versus HIV- participants, with lower attenuation being associated with traditional cardiovascular risk factors. More research is needed to see if HIV-specific factors correlate with epicardial fat quality.

Clinical Sciences: HIV in Key Populations and Global Health Issues: Clinical Aspects
Sciences cliniques : Le VIH dans les populations clés et les enjeux de santé mondiale : aspects cliniques

CSP6.01

Assessing Antiretroviral Therapy Interruptions at Release from Provincial Correctional Centres to the Community in British Columbia (BC)

Caitlin Olatunbosun[1], Brandent Lam[2], Junine Toy[3], Linda Akagi[1], Jack da Silva[1], Michelle Lu[3], Wendy Zhang[3], Hayden Kremer[3], Paul Sereda[3], Silvia Guillemi[3], Rolando Barrios[3]

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B**ackground:** Incarceration has been observed to negatively impact adherence to antiretroviral therapy (ART), affecting the care for highly marginalized people with HIV. ART in BC is centrally distributed on behalf of the BC Centre for Excellence in HIV/AIDS by several pharmacies including ART for patients in provincial correctional centres (PCC) through the Production Distribution Centre pharmacy (PDC). The purpose of this study is to assess ART interruptions on release from PCC in BC.

Methods: This retrospective cohort used the BC Centre for Excellence in HIV/AIDS Drug Treatment Program database and included patients ≥19 years old, HIV+, with ≥1 ART prescription fill from PDC between January 1, 2012-December 31, 2016. The primary outcomes were ART refill gaps at incarceration release, HIV viral load (VL) monitoring, and VL<50copies/mL after release. The analysis used descriptive statistics and logistic regression.

Results: There were 366 patients who received ART in PCC, and a total of 952 incarcerations. There were 1-2 incarcerations for 65.9% of patients, and 3-6 incarcerations for 27.6% of patients. Patients were mostly male (80.1%), between 30-54 years old (85.0%), and had a history of injection drug use (83.6%). Prior to first incarcerations, 64.8% had a CD4 ≥200 cells/uL, and 45.9% had a VL <50 copies/mL.

On release, there was a median gap in fills of 0 days (IQR 0-15 days). Within 3 months after release, 561 (58.9%) had VL monitoring and 405 (42.5%) had VL <50 copies/mL. Within 6 months after release, 674 (70.8%) had VL monitoring and 510 (53.4%) had VL <50 copies/mL. Multivariate logistic regression found having fewer incarcerations was associated with VL monitoring, and longer incarcerations were associated with VL<50 copies/mL.

Conclusions: Patients in PCC are vulnerable, often having detectable VL at baseline and on release despite available ART supply. Further qualitative data will help identify potential interventions.

Clinical Sciences: HIV in Key Populations and Global Health Issues: Clinical Aspects
Sciences cliniques : Le VIH dans les populations clés et les enjeux de santé mondiale : aspects cliniques

CSP6.02

External Quality Assessment for Point-of-Care HIV Viral Load Testing: Development and Results of a Pilot Proficiency Testing Panel

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B**ackground:** The GeneXpert® assay for HIV viral load (VL) has increased in use at point-of-care (POC) testing sites internationally, resulting in demand for external quality assessment (EQA). QASI®, the international program for Quality Assessment and Standardization of Indicators relevant to HIV/AIDS recently expanded its services to include EQA specifically for this test.

Objective: 1) Develop a VL proficiency testing (PT) material that simulates clinical samples (non-infectious), is stable over time under various conditions, and is compatible with development of EQA programs in resource-limited settings. 2) Pilot a 3-specimen PT panel for POC instruments with collaborating countries in Africa and South America.

Methods: A new PT material consisting of Tris-EDTA buffer spiked with heat inactivated HIV cell culture supernatant was evaluated with the GeneXpert VL assay. The stability of the new material was compared to existing VL PT material (dried tube specimens, DTS) at different temperatures. VL stability of the new PT material was further evaluated over time and under heat-stress. Panels consisting of two positive and one negative sample were distributed to 81 POC sites in 7 countries. Results were submitted to a secure QASI-VL website for group analysis.

Results: The new PT material performed better than DTS at higher temperatures and maintained a stable VL over time and under heat-stress. In the QASI-VL Pilot session, 63% of participating POC sites reported results for the pilot panel, with 82% correctly reporting results for all three samples.

Conclusion: A fit-for-purpose PT material which more accurately simulates a typical clinical sample, was successfully developed and utilized by participants in the QASI-VL pilot. This is the first HIV VL PT panel developed specifically for POC instruments. VL testing is critical for patient management, and POC technology offers an innovative approach to empower communities (domestically and internationally) with a unique alternative for monitoring HIV.

Clinical Sciences: HIV in Key Populations and Global Health Issues: Clinical Aspects
Sciences cliniques : Le VIH dans les populations clés et les enjeux de santé mondiale : aspects cliniques

CSP6.03

HIV Treatment Outcomes, Barriers, and Facilitators Among Refugees in British Columbia (BC)

Caitlin Olatunbosun[1], Selenne Dorus[2], Erin Ready[1], Stacey Tkachuk[3], Rob Gair[4], Sarah Stone[5], Junine Toy[6]

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B**ackground:** Refugees have been identified by the BC Centre for Disease Control as an underserved population and target for reducing health inequalities. Refugees experience higher rates of HIV than the Canadian-born population and face multiple barriers to care. The purpose of this study is to describe the refugee population engaged in HIV care in BC and their clinical outcomes.

Methods: This retrospective study reviewed charts of refugees for 1 year following their first dispensing of anti-retroviral therapy (ART) in BC. Interim Federal Health billing codes from the centralized BC Centre for Excellence in HIV/AIDS' pharmacy were used to identify refugees and their HIV-care providers. HIV+ patients aged ≥19 years whose first ART dispensing occurred between 01-January-2012 and 01-January-2018 were included. Data were collected from Positive Health Services (Surrey), Oak Tree Clinic (Vancouver), and St. Paul's Hospital HIV clinics (Vancouver) using REDCap and analyzed descriptively.

Results: There were 48 refugees (58.3% male, median age 34.5 years) from over 25 countries. For 18 refugees (37.5%), HIV was diagnosed upon entry to Canada. At time of first ART dispensing, 9 (18.8%) had advanced HIV (CD4<200cells/mm^3); 1 (2.1%) had a viral load of >100,000copies/mL. Nearly half (n=22; 45.8%) were continuing ART from outside Canada and virally suppressed. Viral suppression within 1-year of initiating ART in BC was achieved for all patients; one (2.1%) experienced viral rebound. Potential barriers to care included a language barrier (n=28; 58.3%), history of violence (n=18; 37.5%), stigma (n=13; 27.1%), and unstable housing (n=9; 18.8%). 32 patients (66.7%) had ≥1 facilitator documented, including social workers (n=28; 58.3%), immigration settlement workers/lawyers (n=19; 39.6%), outreach workers (n=18; 37.5%), and specialized refugee clinics (n=20; 20.8%).

Conclusions: Refugees connected with care achieve clinical targets despite multiple barriers. Clinics should have a system for identifying and monitoring refugees to ensure supports are in place.

Clinical Sciences: HIV in Key Populations and Global Health Issues: Clinical Aspects
Sciences cliniques : Le VIH dans les populations clés et les enjeux de santé mondiale : aspects cliniques

CSP6.04

External Quality Assessment for Point-of-Care HIV Diagnosis: Lessons Learned from Africa

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B**ackground:** In countries burdened with a high incidence of pediatric HIV there is a notable disparity in the treatment cascade for infants. In response, networks of point-of-care (POC) devices for early-infant diagnosis (EID) were established at the community level throughout certain African countries. These devices increase accessibility to diagnostic testing and linkage-to-care for HIV-exposed/diagnosed infants. To date, QASI-EID is the only international external quality assessment (EQA) program offering proficiency testing (PT) specifically for EID on POC devices.

Objective: After the successful administration of 6 QASI-EID PT sessions to participants at 331 POC sites in 8 African countries, we sought to review the accomplishments, challenges and lessons learned.

Methods: QASI-EID operates through in-country Coordinators who are responsible for distribution of panels and submission of results. Bi-annually, POC sites receive a 3-sample panel (2 positive, one negative). In each PT session, a thorough analysis of participant results, non-conformances and circumstances that prevent POC sites from participating is compiled. We evaluated the responses received from over 900 submissions in 6 PT sessions and identified the main issues affecting EID at POC sites.

Results: On average, result return rate is 70%. Of those, over 94% are proficient for the EID test. Of the 30% who were not able to participate the primary reasons cited are lack of communication, cartridge stock-out, instrument malfunction, and absence of trained personnel.

Conclusion: POC technology has contributed to a reduction in HIV-related infant mortality in Africa. This same technology is applied for adult diagnostics and viral load monitoring at the community level, thereby empowering communities, domestically and internationally, to combat the HIV crisis locally. EQA is important to provide oversight, training and support through corrective action to ensure accurate reliable results from POC sites and facilitate long-term success and sustainability of POC networks for HIV patient care and management.

Clinical Sciences: HIV in Women and in Pregnancy
Sciences cliniques : Le VIH chez les femmes et pendant la grossesse

CSP7.01

Variation of CD4 count in Pregnant Women Living with HIV

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B**ackground:** While the $CD4^+$ T lymphocyte count can be affected by pregnancy, there are significant variations between countries on recommendations for CD4 monitoring among pregnant women living with HIV. The objective of this study was to describe changes in CD4 during pregnancy, and risk factors for decreasing CD4 counts during pregnancy (below 200 cells/mm^3) among women living with HIV (wHIV).

Methods: Analyses of 2005-2019 data from 2 existing cohorts of pregnant wHIV from British Columbia and Quebec. In both cohorts, CD4 levels in pregnancy were monitored at each trimester and at delivery as per Canadian guidelines.

Results: 586 women had at least two CD4 counts during pregnancy, 63 (10.7%) with CD4<200/mm^3 at the first pregnancy visit and 16 (2.7%) whose CD4 dropped to below 200/mm^3 during pregnancy. There is a significant difference ($p<0.01$) between the median first CD4 count of women maintaining a CD4 above 200 (544 95% confidence interval [392-720]) and women with a CD4 count dropping below 200 during pregnancy (277 95% CI [228-339]). With each 100 increase at the first CD4 count, the risk of a woman's CD4 level dropping below 200 during pregnancy decreases by 0.29 [0.16-0.54] ($p<0.01$). There was no significant association with age, parity, Hepatitis B or C coinfection or timing of antiretroviral initiation.

Conclusion: CD4 count dropping below 200/mm^3 is uncommon in pregnancy. Risk factors for declining CD4 despite effective ART need to be further identified to decrease the surveillance of CD4 count of pregnant wHIV.

Clinical Sciences: HIV in Women and in Pregnancy
Sciences cliniques : Le VIH chez les femmes et pendant la grossesse

CSP7.02

Potential Interaction Between Dolutegravir and Folate Transporters in First Trimester Human Trophoblast Cell Lines

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Dolutegravir (DTG) is recommended by the World Health Organization as part of first/second-line antiretroviral therapy regimens for adults living with HIV due to its high efficacy, high barrier to resistance and low cost. However, the Tsepamo study from Botswana reported an increased risk for neural tube defects (NTDs) in infants from mothers taking DTG during conception. Folates are critical for fetal development and folate deficiency is associated with an increased risk of NTDs. Placental folate transport is mediated by three major transport systems, folate receptor alpha (FRα), reduced folate carrier (RFC) and proton-coupled folate transporter (PCFT).It is unclear whether DTG can interact with folate transporters/receptor in placenta cells, and impair folate delivery to the human fetus potentially leading to NTDs. The objective of this study was to investigate the effect of DTG on expression and activity of folate transporters/receptor in human placenta cell lines. We treated first-trimester human trophoblast cell lines, HTR-8/SVneo and JAR, with clinically relevant concentrations of DTG (500-4000ng/ml) for 1-24h and analyzed mRNA, protein expression, and functional activity of FRα, RFC and PCFT by quantitative real-time PCR, western blot and transport assays. In HTR-8/SVneo cells, DTG exposure significantly decreased mRNA and protein expression of RFC and PCFT by 30-40% ($p<0.05$) while the uptake (1min) of [^{3}H]-methotrexate (reflective of RFC function) and [^{3}H]-folic acid (reflective of PCFT function) was decreased by 40-45% ($p<0.01$) compared to vehicle (DMSO) control. In JAR cells, RFC mRNA expression was significantly decreased by 40% ($p<0.05$) following DTG treatment while the uptake (1min) of [^{3}H]-MTX and [^{3}H]-folic acid was reduced by 30-35% ($p<0.01$)compared to vehicle (DMSO) control. Together, we provide novel evidence that RFC and PCFT functional expression is decreased by DTG treatment in first-trimester human placental cell lines, suggesting that DTG could potentially impair effective placental folate delivery to the fetus.

Clinical Sciences: HIV in Women and in Pregnancy
Sciences cliniques : Le VIH chez les femmes et pendant la grossesse

CSP7.03

Assessing Gaps in Comprehensive HIV Care Across a Typology of Care for Women Living with HIV in Canada

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I**ntroduction:** Women living with HIV in Canada experience barriers to comprehensive HIV care. We examined gaps in HIV, reproductive, and gynaecological care across a typology of HIV care delivery.

Methods: We analysed baseline survey data from 1,442 women living with HIV (cis and trans inclusive, ≥16 years) enrolled in the Canadian HIV Women's Sexual and Reproductive Health Cohort Study (CHIWOS). Quality-of-care indicators included: Pap test, Pap test discussions, mammograms, reproductive discussions, antiretroviral therapy use, adherence, HIV viral load, and viral load discussions. We defined comprehensive care with three indicators: Pap test, viral load, and reproductive discussion (age <50) or mammogram (age ≥50). We assessed gaps across a typology of care, characterised by clinic and physician. Multivariable logistic regression analyses measured associations between care types and each quality-of-care indicator.

Results: Women currently accessing HIV care and included in the analysis (n=1164), had a median age of 44 (interquartile range: 36-51), and identified as Indigenous (20.3%), African/Caribbean/Black (29.2%), or White (42.6%). Overall, 54.6% of women experienced at least one gap in comprehensive care, most commonly reproductive discussions (60.1%), followed by mammogram (37.1%), Pap test (27.1%), and detectable viral load (15.6%). Women accessed care from three types of care: 1) physicians in HIV clinics (71.6%); 2) medical specialists in non-HIV clinics (17.6%); and 3) family physicians in non-HIV clinics (10.8%); with 55.5%, 63.9%, and 50.8% gaps in comprehensive care, respectively. Relative to type 1 care, women accessing type 3 care had nearly double the adjusted odds of not being on ART (aOR 1.99, 95% CI: 1.12-3.53), while women accessing type 2 care had 51% higher odds of not having discussed the importance of Pap tests (AOR 1.51; 95%CI 1.01-2.26).

Discussion: Women continue to experience gaps in care, irrespective of care type, indicating the need to evaluate and strengthen women centred models of care.

Clinical Sciences: HIV in Women and in Pregnancy
Sciences cliniques : Le VIH chez les femmes et pendant la grossesse

CSP7.04

Impact of In-utero Exposure to Protease Inhibitor-Based Antiretroviral Drug Regimens on Developmental Milestones in Mice

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I**ntroduction:** Antiretroviral (ARV) therapy in pregnancy has dramatically reduced rates of HIV vertical transmission. Consequently, there is now a growing number of children who are born to mothers living with HIV, but are themselves not infected. Studies suggest that children exposed in-utero to ARVs may experience developmental delays compared to their peers. We investigated the effects of in-utero ARV exposure on perinatal neurodevelopment in a mouse model, through assessment of developmental milestones. Developmental milestone tests (parallel to reflex testing in human infants) are reflective of brain maturity and are useful in predicting later behavioral outcomes. We hypothesized that ARV treatment in pregnancy alters the in-utero environment for the developing fetal brain leading to altered developmental milestone outcomes in pups.

Methods: Pregnant dams were treated throughout pregnancy with boosted-atazanavir combined with either abacavir/lamivudine (ATV/r/ABC/3TC), or tenofovir/emtricitabine (ATV/r/TDF/FTC), or water as a control. Pups were assessed on a battery of tests for primitive reflexes including righting, negative-geotaxis, cliff-aversion, rooting, ear-twitch, auditory-reflex, forelimb-grasp and cat-landing, and for behaviors in the neonatal open field, and olfactory test.

Results: In-utero exposure to either ARV regimen significantly delayed development of negative geotaxis and cliff-aversion by 2 days compared to controls. Significant delays in development of the ear-twitch and auditory reflex were observed in the ATV/r/TDF/FTC-exposed group. Exposure to ATV/r/ABC/3TC was also associated with a delay in olfactory response.

Conclusions: We show here that in-utero ARV exposure delays the development of certain primitive reflexes, suggesting that ARVs could be disrupting the normal progress/maturation of the underlying neurocircuits. Our findings encourage further investigation for underlying mechanisms.

Clinical Sciences: HIV in Women and in Pregnancy
Sciences cliniques : Le VIH chez les femmes et pendant la grossesse

CSP7.05

Maternal and Cord Plasma Bioactive Eicosanoid Profiles Differ Between Pregnant Women Living with HIV on Protease Inhibitor Based-ART and HIV-Negative Pregnant Women

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B**ackground:** Adverse birth outcomes are more likely in pregnant women with HIV (PWHIV), through mechanisms not fully understood. Eicosanoids play important roles in the maintenance of pregnancy and fetal growth and development--data are lacking in the context of pregnancy, HIV, and antiretroviral therapy (ART). We examined bioactive eicosanoids (cell-signaling molecules derived from polyunsaturated fatty acids) in maternal and cord plasma from a Canadian cohort of PWHIV and HIV-negative (HIV-) pregnant women.

Methods: 76 maternal gestational week 33-38 samples (39WHIV, 37HIV-) and 55 cord samples (31WHIV, 24HIV-) were included. All PWHIV received protease inhibitor (PI)-based ART. 139 eicosanoids were measured using liquid chromatography-mass spectrometry. Eicosanoid differences between groups were assessed using Mann-Whitney corrected for multiple comparisons using false discovery rate=0.05. Orthogonal partial least squares-discriminant analysis (OPLS-DA) was used to differentiate between groups. Correlations between maternal and cord eicosanoids were examined by Spearman r.

Findings: 53 eicosanoids were detected in maternal and 58 in cord plasma. Cord and maternal eicosanoid profiles differed, with only 3 correlating between compartments among HIV- women and none among PWHIV. Compared to the HIV- group, PWHIV had higher levels of circulating arachidonic acid (AA), eicosapentaenoic acid (EPA), and docosahexaenoic acid (DHA), and elevated levels of lipoxygenase pathway metabolites including several hydroxyeicosatetraenoic acids (HETEs), which have been associated with inflammatory and vasoconstrictive properties. In cord plasma, only 3 eicosanoids differed significantly between groups. All were vasodilating and pro-angiogenic dihydroxyeicosatrienoic acids (DHETs) (CYP/epoxygenase/soluble epoxide hydrolase metabolites of AA), and were lower in PWHIV. OPLS-DA analysis showed group separation by eicosanoids with maternal and cord specimens.

Conclusion: Bioactive eicosanoid-profiles differ in maternal and cord plasma, and are altered in PWHIV. Elevated maternal levels of inflammatory lipoxygenase metabolites and lower cord DHETs in the context of HIV and PI exposure may be indicators of, or contributors to, poor placenta function.

Clinical Sciences: HIV in Women and in Pregnancy
Sciences cliniques : Le VIH chez les femmes et pendant la grossesse

CSP7.06

Patterns of Changing Reproductive Intentions Among Women Living with HIV in Canada

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B**ackground:** With an undetectable viral load and appropriate healthcare, women living with HIV can conceive with effectively no sexual and perinatal HIV transmission risk, if they choose. Understanding how reproductive intentions change over time is key to delivering women-centred HIV care.

Methods: Using longitudinal survey data from 1,422 women (cis- and trans-inclusive) enrolled in the Canadian HIV Women's Sexual and Reproductive Health Cohort Study (2013-2018), we measured pregnancy intentions among women of reproductive age (16-49) across baseline, 18-month, and 36-month visits. At each visit, women were asked, "Do you intend to become pregnant in the future?", categorized as Yes, No, or Unsure. Women who did not complete all three survey visits were excluded.

Results: Among the 403 women included, the median age at baseline was 34 years [IQR: 29-38]. Pregnancy intentions at baseline (Yes: 30.5%, No: 44.4%, Unsure: 25.1%), 18-months (Yes: 30.5%, No: 54.6%, Unsure: 14.9%), and 36-months (Yes: 25.1% No: 62.0%, Unsure: 12.9%) varied. Yet, less than half (44.7%) of women had discussed their reproductive goals with a healthcare provider since their HIV diagnosis. Between baseline and 18-months, 30.8% changed reproductive intentions, with nearly half of those being changes from 'Unsure' to 'No' (49.5%). Between 18-months and 36-months, 30.8% changed reproductive intentions. Over half of the changes were from 'Unsure' to 'No' (56.7%). Pregnancy intention at the previous visit was associated with pregnancy between 18 and 36 months (aOR 2.2, 95%CI 1.0-4.7), but the association was not statistically significant between baseline and 18-months (aOR 1.6, 95%CI 0.7-3.5).

Conclusions: Women living with HIV have diverse and dynamic pregnancy intentions. Overall, almost a third of women changed their intentions within 18-months. This finding highlights the importance of healthcare providers asking women living with HIV about their reproductive intentions, at least annually, and providing the appropriate counselling, services, and support.

Clinical Sciences: HIV in Women and in Pregnancy
Sciences cliniques : Le VIH chez les femmes et pendant la grossesse

CSP7.07

Age at Menopause in Women Living with HIV (WLWH): a Systematic Review

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Objective: We conducted a systematic review to summarize the conflicting literature on the association between HIV and age at menopause.

Methods: A search of Ovid Medline, Embase and Web of Science identified 893 articles that were screened for relevance. Prospective and cross-sectional studies assessing age at menopause, early menopause (age <45y) or premature menopause (age <40y) among WLWH, using the World Health Organization definition of ≥12 months of amenorrhea were included. Eight articles met the inclusion criteria.

Results: Of 8 studies included, 7 reported on age at menopause. The reported age at menopause among WLWH ranged from 46-50y, compared to 47-51.2y among HIV-negative controls (3 studies) or a reference population (5 studies). Five studies found a difference in age at menopause between WLWH versus controls, while the other 3 found no difference. Six studies reported prevalence of early or premature menopause among WLWH with a prevalence ranging from 14.6-27.9% for early menopause and 2.3-35% for premature menopause, compared to 5% and 1%, respectively, in the general population.

Conclusions: In this systematic review, we found that age of menopause for WLWH may be slightly lower than in the general population. This finding may relate to the fact that a majority of studies reported a higher proportion of WLWH experiencing premature or early menopause versus controls. However, the majority of studies had no HIV-negative control group, and all studies relied on self-reported menopause without biochemical confirmation. It is possible that these studies under-estimated age at menopause among WLWH because of the increased prevalence of prolonged amenorrhea among WLWH which may have, in some cases, been misidentified as menopause. Our findings highlight the need for further investigation with studies including HIV-negative control groups and biochemical confirmation of menopause to better understand any increased risk conferred to WLWH by a potentially earlier menopause transition.

Clinical Sciences: HIV Prevention: Clinical aspects
Sciences cliniques : Prévention du VIH : aspects cliniques

CSP8.01

An Innovative Training Program to Increase the Competencies of British Columbia's (BC) Nurse Practitioners (NPs) in HIV Prevention

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B**ackground:** In 2018, the BC Centre for Excellence in HIV/AIDS (BC-CfE), in collaboration with the BC College of Nursing Professionals, launched a training program to upgrade the standards on the management of HIV pre- and post-exposure prophylaxis (PrEP and PEP) for NPs. The BC-CfE NP Treatment for HIV Prevention training program instills core competencies related to assessing HIV risk, prescribing, and monitoring treatment for people at risk of acquiring HIV infection.

Methods: The main learning component of the program is a comprehensive online course along with a knowledge pre-assessment, access to related guidelines, and prescribing/monitoring forms. Prescribing standards are met after successful completion of an online multiple-choice evaluation. Post-training PrEP prescribing and follow-up was assessed using data from the BC-CfE Drug Treatment Program (cohort of people accessing publicly-funded antiretrovirals), from 1-November-2018 to 30-November-2019. Variables described include provincial health authority, number of individuals enrolled by NPs and currently active (PrEP prescription filled in previous 6-months/not discontinued).

Results: Twenty-two of 35 NP applicants completed the competency evaluation, of which 95% achieved the prescribing qualification. These NPs have successfully enrolled 263 unique individuals on PrEP, with 89% of these individuals defined as active. In total, they followed 481 individuals by the end of the study period (248 initiated on PrEP by a physician and 233 initiated by NPs). NPs prescribers that completed the training program are located in 4 of 6 provincial health authorities, however the majority of NPs practice in Vancouver Coastal Health Authority (n=11; 52%).

Conclusion: This novel training program for NPs has increased access to HIV prevention services across the province. Although physicians are still the main prescribers of PrEP, approximately 10% of individuals receiving PrEP in the last year were under the care of NPs. This modality provides increased access to HIV prevention to underserved populations in BC.

Clinical Sciences: HIV Prevention: Clinical aspects
Sciences cliniques : Prévention du VIH : aspects cliniques

CSP8.02

Longer Term Safety of F/TAF and F/TDF for HIV PREP: DISCOVER Trial Week 96 Results

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In DISCOVER, a multinational, double-blind, randomized controlled trial, F/TAF demonstrated noninferior compared to F/TDF efficacy for HIV prevention and improved bone mineral density (BMD) and renal safety biomarkers at week (W) 48. We now report renal and lipid parameters and weight changes in participants on F/TAF vs F/TDF through W96. A substudy evaluated BMD including in younger participants (age <25 yrs) who are accruing bone mass. We also examined glomerular function, proteinuria, and biomarkers of proximal tubular injury (PTI; β2M/Cr, RBP/Cr) in participants ≥50 yrs of age and those with moderate renal impairment (eGFR 60–<90 mL/min).

Among 5387 participants, unlike those on F/TDF (n=2693), F/TAF users had significantly increased BMD, with the magnitude of between-group differences increasing between W48 to W96. Participants <25 yrs had greater declines in BMD on F/TDF with a greater magnitude of difference between groups than those ≥25 yrs. Overall, F/TAF users had increases in eGFR and declines in UPCR and PTI biomarkers. Older participants on F/TDF had a greater magnitude of decline in eGFR and a greater increase in UPCR and PTI markers compared to younger F/TDF users. Similarly, those with eGFR 60–<90 mL/min had greater statistically significant changes in PTI markers, if on TDF, compared with those with eGFR ≥90 mL/min. Those on F/TAF had stable lipids through W96; those on F/TDF had decreases in lipids at W48 and W96 as well as a smaller weight increase through W96.

Overall, those on F/TAF had increased BMD compared to declines in those on F/TDF, with more pronounced differences in younger participants. Older participants on F/TDF and those with impaired renal function had more adverse impact on renal biomarkers. Lipid and weight changes were consistent with the known lipid-lowering and weight suppressive effects of TDF, respectively.

Clinical Sciences: HIV Prevention: Clinical aspects
Sciences cliniques : Prévention du VIH : aspects cliniques

CSP8.03

Cohort PROTEGES, a Combined Prevention Approach Including PrEP in Montreal: Participants' Characteristics According to Prior PrEP Use

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B**ackground:** Although progress has been made towards UNAIDS' goal of 90-90-90, too many new HIV infections still occur. One strategy to reach this goal is to extend PrEP access. We initiated a community-based cohort (PROTEGES) to offer comprehensive HIV-STI prevention including PrEP delivery to gay, bisexual, and cisgender or trans men who have sex with men (gbMSM).

Methods: We recruited 350 gbMSM. HIV-STI testing and counselling was performed every three months, and PrEP need was evaluated and prescribed. Data on sociodemographic, economic, behavioral and clinical factors are collected. Multinomial logistic regression was performed to describe characteristics associated to having ever used PrEP before the study.

Results: Participants (data reported N=290) were aged from 19 to 66 years (M=35; SD=10.6). Three-fourths had never used PrEP (nPrEP) before enrolling in the study (74%); the quarter had used it in continuous (cPrEP; 13%) or on demand (dPrEP; 13%). Compared to nPrEP participants, dPrEP participants were more likely to have used MDMA (aOR: 8.7; 95%CI 1.05 – 71.84) or GHB during sex in the past 3 months (aOR: 9.1; 95%CI 1.36 – 61.42) and to have ever used PEP (aOR: 5.5; 95%CI 1.81 – 16.42); cPrEP participants were more likely to be single (aOR: 5.8; 95%CI 1.53 – 21.69) and to not have had an HIV-unknown partner in the past 3 months (aOR: 6.7; 95%CI 1.97 – 22.54). In bivariate analysis, nPrEP and dPrEP participants had the same proportion of sexual partners (53% had more than six), whereas cPrEP participants were significantly more likely to have had more than six sexual partners in the past 3 months (79%; p=0.021).

Conclusions: Continuous PrEP seems to suit a profile of gbMSM who are single and have more sexual partners. On demand PrEP seems to suit gbMSM that take occasional risk (e.g. in context of drug use).

Clinical Sciences: HIV Prevention: Clinical aspects
Sciences cliniques : Prévention du VIH : aspects cliniques

CSP8.04

Mental Health and Substance Use Screening Practices among Clients Accessing HIV Testing and Other Sexual Health Services: A Scoping Review

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B**ackground:** Clients attending HIV and sexually transmitted infection (STI) testing clinics experience disproportionately high rates of mental health and/or substance use (MHSU) related issues. Syndemic theory explains this pattern, positing that multiple MHSU conditions interact, driving increased HIV/STI prevalence in the populations these clinics serve. Consequently, several HIV/STI clinics around the world have begun to screen for MHSU-related conditions in order to refer clients to appropriate MHSU care. These practices have not previously been synthesized; therefore, we conducted a scoping review to describe current screening practices and provide recommendations for future research and HIV/STI clinic practices.

Methods: We used subject headings and keywords to search relevant biomedical research databases and Google (grey literature). Eligible articles described specific MHSU screening tools administered in an HIV/STI clinic in any geography (international), from 1996 to 2019.

Results: Preliminary results include 12 reports (2001-2018) from 16 clinics located in Canada (2/16), the USA (9/16), the UK (4/16) and the Netherlands (1/16). Nearly all clinics were public HIV/STI clinics (16/16) in urban settings (15/16), with clients predominantly coming from equity-seeking populations, including women who have experienced intimate partner violence (IPV) (4/16), men who have sex with men (5/16), Black/racialized communities (8/16), and clients of low socioeconomic status (4/16).

Most MHSU screening tools were self-administered by clients (14/16); the remainder were clinician-administered (2/16). Conditions included: depression (6/16), anxiety (4/16), substance use issues (12/16), IPV (5/16), childhood sexual abuse (3/16). 6 clinics offered MHSU services to clients based on screening results, including in-house (6/6) or external (2/6) referrals to: counselling; psychiatry; physician services; specialized support groups; social services; pre-exposure prophylaxis; or personalized feedback on their questionnaires.

Conclusion: These results suggest a range of MHSU screening practices used by HIV/STI testing clinics globally. Additional work is needed to evaluate the effectiveness and cost-effectiveness of these practices.

Clinical Sciences: Mental Health Issues and HIV Positive Persons
Sciences cliniques : Problèmes de santé mentale et personnes séropositives au VIH

CSP9.01

Depression, Dissatisfaction with Sleep and Cognitive Difficulties Interfere with Work Productivity in the Positive Brain Health Now (BHN) Study

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B**ackground:** As people with HIV live longer, the capacity to remain productive at work takes on a greater importance. The purpose of this study was to identify physical, emotional and cognitive symptoms that impair productivity.

Methods: The data came from the 4 visits over 27 months of 856 people enrolled in the BHN study. Stanford Presenteeism Scale was used to measure work productivity (0-100%, higher is better). Changes over time were identified using Group Based Trajectory Analysis (GBTA). Data from Baseline visit was used to train a model to identify variables that best discriminated among groups of people with different levels of work productivity. Ordinary least-squares regression and a form of machine learning, regression tree analysis, were used.

Results: 417 participants[MH1] (mean age: 51; 86% men) worked for pay ≥ 15 hours a week. Overall, productivity at baseline was 77%, with variation explained by fatigue and poor sleep. Over time, the working cohort[MH2] formed 6 distinct groups: 5.5% at very low stable productivity (mean: 44%); 13.8% fluctuating (mean at baseline[MH3] : 64%); 27.0% with increasing productivity (mean at baseline: 71.0%); 7.9% declining (mean at baseline: 83%); 33.4% stable (mean: 87%); and 6.7% stable high (mean: 97%). The declining middle group differed from the stable middle group on dissatisfaction with sleep and self-reported cognitive difficulties at baseline. Regression tree modeling revealed that the first variable separating the sample on productivity was an indicator of depressed mood. For good productivity, decision-making capacity and satisfaction with sleep were needed. Among those with poor productivity, several unique profiles were observed based on different emotional and cognitive symptoms.

Discussion: It is much more straightforward to predict good productivity than poor productivity. Attention to sleep, mood and to the cognitive difficulties that people are reporting is important to help maintain work productivity.

Clinical Sciences: Mental Health Issues and HIV Positive Persons
Sciences cliniques : Problèmes de santé mentale et personnes séropositives au VIH

CSP9.02

A Combination of Anxiety, Depression and Associated Symptoms Explains Function Better Than Mood-specific Measures in the Brain Health Now (BHN) Cohort

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B**ackground:** Depression and anxiety tend to co-occur with somatic and cognitive symptoms in HIV interfering with everyday function.

Objective: We aimed to test whether combining symptoms of anxiety and depression, with somatic and cognitive complaints, explained functional outcomes to a greater extent than symptom-specific measures of these same constructs.

Methods: The data came from the inaugural visit of the BHN cohort study. Items were selected from well known symptom-specific measures reflecting the distress construct. Items of anxiety, depression, well-being, stress, engagement, energy and sleep quality were combined using Rasch analysis to create a distress latent. Functional outcomes were self-reported cognitive difficulties, work productivity, interference with life roles, general health perception, and quality of life (QOL). Correlation analysis was used to estimate the strength of the association between the new distress latent, the symptom-specific measures, and indicators of function.

Results: 13 items from all symptom-specific domains fit the Rasch model supporting the presence of a distress construct. The items covered the full range of the construct (-3 to +4 SD). The distress latent showed a stronger association with functional outcomes (cognition: 0.64; roles: 0.60; work productivity: 0.67; health perception: 0.55; QOL: 0.66) than did symptom-specific measures.

Discussion: This approach showed that symptoms of anxiety, depression and somatic and cognitive complaints, when combined into one latent construct, explained function better than the separate measures. This suggests that an HIV-specific distress measure would be a more parsimonious approach to this important construct than multiple measures of single constructs.

Correlation Table

	Cognitive difficulties	Life roles interference	Work Productivity	Quality of Life	General Health Perception
HADS Anxiety and Depression	**0.62** (0.58-0.66)	**0.57** (0.52-0.61)	**0.63** (0.58-0.68)	**0.58** (0.53-0.62)	**0.51** (0.46-0.56)
HADS Anxiety	**0.58** (0.53-0.62)	**0.50** (0.45-0.55)	**0.56** (0.50-0.62)	**0.48** (0.42-0.53)	**0.42** (0.36-0.48)
HADS Depression	**0.55** (0.50-0.59)	**0.52** (0.47-0.57)	**0.58** (0.52-0.63)	**0.58** (0.53-0.62)	**0.51** (0.45-0.56)
MHI	**0.55** (0.51-0.60)	**0.57** (0.51-0.61)	**0.64** (0.59-0.69)	**0.61** (0.57-0.65)	**0.48** (0.41-0.53)
Distress Latent	**0.64** (0.60-0.68)	**0.60** (0.56-0.65)	**0.67** (0.62-0.71)	**0.66** (0.63-0.70)	**0.55** (0.51-0.60)
HADS: Hospital Anxiety and Depression Scale MHI: Mental Health Index					
We have a color heatmap correlation that we were not able to upload here. The color heatmap allows for reader to see that the distress latent correlation with function outcomes are important.					

Clinical Sciences: Other
Sciences cliniques : Autres

CSP10.01

Evaluation of Streamlined HIV Pharmacy Services in a Hospital Based Ambulatory Pharmacy in British Columbia (BC)

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B**ackground:** In BC, St. Paul's Ambulatory Pharmacy (SPH-Rx) provides centralized antiretroviral therapy (ART) distribution and pharmaceutical care to HIV patients on behalf of the BC Centre for Excellence in HIV/AIDS. Historically, ART refills for patients required an appointment at SPH-Rx to receive comprehensive clinical pharmacy review prior to dispensing. With improvements in ART, more patients are increasingly stable while others need increased support to remain engaged in care. In 2014, SPH-Rx re-allocated services to patients of higher need by offering stable patients ART refill by phone without pharmacist appointment (No Appointment Needed Program, NAN) but with clinical review maintained. The purpose of this study is to evaluate patient satisfaction in NAN.

Methods: A patient survey was developed to assess patient satisfaction among NAN patients (approximately 2000 patients). The survey was piloted and validated with peers and patients prior to administration. Between May 24 and July 31, 2019, 1000 surveys were distributed to NAN patients at medication pick-up.

Results: A total of 173 surveys were completed: 162 (93.4%) were male, the median age was 60.5 years, the median years since diagnosis was 21, the median years on ART was 18.

Respondents found it easy to refill with NAN (98.3%) and more convenient than a pharmacy appointment (91.9%). 79.2% of patients were very satisfied and 18.5% were satisfied with NAN services. No issues were identified regarding pharmacist accessibility, maintaining privacy, or quality of care. Most respondents indicated that adherence to ART, bloodwork, and medical appointments were the same or better since starting NAN. Most respondents (88%) who were asked to book pharmacy appointments while in NAN (for ART changes/issues) found the appointments to be helpful.

Conclusions: The NAN program is convenient to refill ART for stable patients and has high patient satisfaction rates. Clinical outcomes are to be evaluated.

Clinical Sciences: Other
Sciences cliniques : Autres

CSP10.02

Closing the Gap! Implementing Physiotherapy in an Interdisciplinary HIV Community-Based Care Setting - A Pilot Evaluation

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Objective: To pilot the evaluation of a novel physiotherapy service in a day health program (DHP) for people living with HIV (PLWH).

Methods: We conducted a retrospective chart review to i) pilot our data collection tool and ii) examine the process of physiotherapy implementation among PLWH. We developed and pilot tested a chart extraction form to capture: the number, proportion, and characteristics of PLWH who were referred to and accessed physiotherapy, length of time accessed physiotherapy, reasons for referral, assessments and interventions, engagement in exercise program and use of patient-reported outcomes (PROs). Two reviewers extracted data from electronic health records (EHRs), documenting the time and process of data collection. We conducted a descriptive analysis of categorical (frequencies; percent), ratio (median, interquartile range (IQR)) and textual (content analysis) data.

Results: Fifteen PLWH (men: 8/15(53%); median age of 57 years; living with a median of seven concurrent health conditions; undetectable viral load: 13/15(87%)) participated in the study. Data extraction took approximately 30 minutes to 2 hours per participant. Data collection forms and data availability in charts varied across participants, dependent on a participant's phase of intake. The median length of time participants engaged in physiotherapy care was 5 months (IQR: 2,12), attending a median of four sessions (IQR: 3,14). Among the nine participants with data reporting reasons for referral to physiotherapy, 5(33%) included pain management; 4(27%) included increase mobility/endurance; and 3(13%) was to improve balance. Physiotherapy interventions included: physiotherapy-led (n=6;40%) and home-based (n=4;27%) exercise; pain management (n=3;20%); and manual therapy (n=2;13%). Six (40%) participants engaged in a physiotherapist-led exercise program in the day health program. PROs commonly administered in the physiotherapy assessment included the Brief Pain Inventory (n=12;80%) and HIV Disability Questionnaire (n=11;73%).

Conclusion: Results from this pilot study will inform a future large-scale evaluation of the physiotherapy service for PLWH.

Clinical Sciences: Other
Sciences cliniques : Autres

CSP10.03

'It Shows We Care About Those Issues': an HIV Patients' and Care Providers' Qualitative Needs Assessment for a Smart Patient Portal (Opal)

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B**ackground:** Opal (opalmedapps.com) is a 'patient portal' including a smartphone application currently used in oncology (McGill University Health Centre (MUHC), Montreal) giving patients access to their appointments, diagnoses, lab results, treatment and care plans, and clinical notes, as well as other services. Opal will be adapted and implemented in HIV clinical care. Although Opal achieved high satisfaction rates among its current oncology users, it must be adapted to HIV healthcare to meet patients' and providers' needs.

Objective: To understand HIV patients' providers' needs for adapting Opal to HIV healthcare

Methods: Following a qualitative co-design methodology, we conducted 3 focus group discussions (FGD) with a total of 28 HIV care providers and 3 FGD with a total of 28 HIV patients followed at the MUHC. Based on qualitative description, we inductively coded FGD transcriptions to identify stakeholders' needs for the adaptation of Opal.

Results: Participants expressed needs for: 1) *simple patient-oriented information* focused on goals, especially in clinical notes and treatment plans, that can be easily understood by stakeholders across disciplines and institutions (e.g., immigration, community-based organizations, medical specialties) when it comes to patients' living, socioeconomic instability, addiction, discrimination, disclosure and confidentiality concerns, immigration, or sexual and reproductive health issues; 2) *adaptable and user-friendly settings* for key functions (e.g., appointment and prescription-renewal reminders, intra-hospital navigation, explanation/interpretation of lab results); and 3) *improved/maintained communication on experience of care and treatment*, by administering patient-reported outcome and experience measures through Opal.

Conclusion: Our preliminary results highlight the importance of involving stakeholders affected by the development of an HIV-specific patient portal. They reveal participants' expectations that Opal will improve healthcare for HIV patients with a great diversity of living circumstances and comorbidities. It is important for participants, that Opal promotes multidisciplinary and patient/provider communication, and patient engagement.

Clinical Sciences: Other
Sciences cliniques : Autres

CSP10.04

Thinking Outside the Box: Evaluating a Virtual Classroom Model to Deliver HIV Primary Care Education to Physicians and Nurse Practitioners Across Saskatchewan

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Objective To evaluate the implementation of the HIV Virtual Classroom (VC), a novel education model created in 2018 to increase the capacity of primary care providers to test, treat, and manage HIV in Saskatchewan.

Approach The VC uses an online platform to deliver live accredited continuing medical education to physicians and nurse practitioners seeking best practices for delivering HIV primary care. Facilitated by local infectious disease care specialists and HIV experienced physicians, topics include: 1) HIV Diagnosis & First Visit, 2) HIV Treatment Start on Naïve Patients, 3) Managing Treatment /Long Term HIV Care, and 4) Special Populations. After attending the four 2-hour presentations, graduates are encouraged to become approved anti-retroviral (ARV) prescribers.

Four sessions occurred between May 2018 and October 2019 with a total of 32 participants located across the province. A post-evaluation survey was developed to determine whether participants increased their knowledge of HIV primary care. It was distributed by email at the end of each cohort to all participants. The data were analyzed using descriptive techniques.

Results A total of 23 surveys (72%) were completed. Of those surveyed, 100% indicated the VC enhanced their knowledge of HIV primary care and they will use the education in their clinical practice. 22/23 strongly agreed or agreed to learning when to order an HIV test and how to assess readiness to start ARV medication. Participants self-reported that as a result of attending the VC they will increase HIV testing and initiating ARV medication treatment. 8 of the 32 (25%) graduates became ARV prescribers in Saskatchewan.

Conclusion Findings suggest that VC is an effective model for educating primary care providers and enrolling new ARV prescribers in Saskatchewan. Based on the positive response, 8 additional cohorts will occur, and the VC model will be adapted to create a Hep C Virtual Classroom.

Clinical Sciences: Other
Sciences cliniques : Autres

CSP10.05

Disability Experiences and Resilience Strategies of South Asian Women Living with HIV in Southern Ontario

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Purpose: In Ontario, there is a steady rise in HIV incidence among South Asian women. However, disability experienced by this population has received little attention. The purpose of this qualitative study was to understand the disability experience of South Asian women living with HIV in Southern Ontario, Canada.

Method: We used an interpretive phenomenological study design to explore the lived experience and meaning of disability experienced by South Asian women living with HIV. We recruited self-identified English-speaking South Asian immigrant women, aged 18 years and older through the Alliance for South Asian AIDS Prevention in Toronto. We conducted in-depth face to face interviews and used body mapping and photo-elicitation techniques to explore experiences with disability. Interviews were transcribed verbatim and a thematic analysis approach was utilized to understand the disability experiences.

Findings: Eight women volunteered for this study with six agreeing to be interviewed on a second occasion. The mean age was 47.1 years (s.d=5.8), and mean length of time since HIV diagnosis was 15.1 years (s.d=6.7). Analysis resulted in four major themes: “experiencing disability”, “building resilience”, “experiencing discrimination” and “accessing healthcare”. The women described several health challenges due to the side effects of anti-retroviral medications, compounded by challenges associated with immigration, HIV stigma, and discrimination. The complex intersection of illness, gender, ethnicity, and discrimination affected their overall disability experience. Despite these challenges, the women manifested resilience by re-constructing their identities, specifically by exhibiting perseverance in the midst of their health challenges, isolation, and patriarchal culture.

Conclusion: This study draws attention to the multi-layered issues faced by marginalized South-Asian women living with HIV, considering how their illness experience is shaped by a broader socio-political context. It also speaks to the agency of the women to persevere despite the many personal and social challenges that they face.

Clinical Sciences: Pharmacology, Pharmacokinetics and Pharmacoeconomics
Sciences cliniques : Pharmacologie, pharmacocinétique et pharmacoéconomie

CSP11.01

Association between Untimed Plasma Atazanavir Levels and Renal- or Gallstones

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B**ackground:** In British Columbia, ARVs are supplied through the BC Centre for Excellence in HIV/AIDS (BC-CfE) Drug Treatment Program (DTP). ARV-related toxicities are reported to the BC-CfE Pharmacovigilance Initiative. Atazanavir exposure has been associated with increased risk of renal- and gallstones, though the relationship between plasma atazanavir levels and stone formation is uncertain. We therefore examined whether "untimed" atazanavir drug levels (UDL) were associated with reported renal- or gallstones in atazanavir-treated patients.

Methods: Consenting DTP participants with physician-reported renal- or gallstones were identified from pharmacovigilance records between 1-Jan-2009 and 4-Jan-2017. Atazanavir-treated participants without (controls) and with (cases) reported renal- or gallstones were matched 2:1 on age, sex, cumulative atazanavir exposure, dose, ritonavir boosting and NRTI backbone. Atazanavir dosing time relative to sample collection was unknown ("untimed"). Plasma atazanavir levels from three archived samples per participant were determined using HPLC-MS/MS. Maximum atazanavir levels between matched cases and controls were compared using The Friedman Test.

Results: Atazanavir concentrations were measured in 104 controls and 52 cases (43 renal and 10 gallstones, with one participant experiencing both). The median cumulative atazanavir exposure was 77 (Q1-Q3: 51-108) and 70 (Q1-Q3: 42-104) months for case and controls, respectively. Atazanavir concentrations varied across the three samples measured for each participant (mean CV = 32.1% and 42.8%); however, no significant differences in maximum atazanavir measurements were observed between cases (median 1791 ng/mL; Q1-Q3: 1303-2852 ng/mL) and controls (median 1671 ng/mL; Q1-Q3: 843-2847 ng/mL) (p=0.99). No differences in atazanavir concentrations were observed in sub analyses stratified by NRTI backbone, or ritonavir boosting.

Conclusions: No association was observed between untimed atazanavir plasma levels and reported renal- or gallstones in this small sample of atazanavir-treated patients. Due to UDL testing limitations, untimed atazanavir plasma level monitoring may not be suitable for assessing risk of atazanavir-associated renal- or gallstones.

Clinical Sciences: Resistance
Sciences cliniques : Résistance

CSP12.01

Efficacy of Integrase Inhibitor and Protease Inhibitor-based Three Drug Regimens in the Presence of the M184V/I Mutation: a Review of the Literature

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B**ackground:** The M184V/I mutation is commonly selected by lamivudine (3TC) and emtricitabine (FTC) and can confer hypersusceptibility to zidovudine, stavudine and tenofovir. In practice, 3TC/FTC may be maintained in a regimen despite the presence of M184V/I (e.g. tolerability, convenience/pill burden, residual partial virologic activity and hypersusceptibility).

Objective: To summarize the efficacy (virologic suppression/failure) of 3-drug regimens including a boosted protease inhibitor (bPI) or integrase inhibitor (INSTI) + one active nucleoside reverse transcriptase inhibitor (NRTI) + 3TC/FTC in individuals with the M184V/I mutation.

Methods: Literature search was conducted using Pubmed, EMBASE, Google Scholar and recent conference abstracts (to September 2019). INSTIs included dolutegravir (DTG), bictegravir (BIC) and elvitegravir (EVG).

Results: A total of 11 studies were identified (4 prospective and 7 retrospective) in treatment experienced patients; 6 had virologic suppression at baseline. There was considerable variation in terms of study design, sample size, follow-up duration, background therapy, coexisting mutations and virologic suppression at baseline. In addition to historical genotyping, proviral DNA resistance testing was used to detect M184V/I in 5 studies. Median follow-up ranged from 24 to 96 weeks. Studies included bPI (4), DTG (6), EVG (3), and BIC (2). When reported, rates of virologic suppression (with 184V/I) for bPIs ranged from 53-71%, DTG and EVG 100% and BIC 96-100%; virologic failure was quite low with the INSTIs (0-3%) and higher with the PIs (2-19%).

Conclusion: There is preliminary evidence to support the use of 3-drug regimens containing 3TC/FTC + 1 active NRTI + bPI or an INSTI in treatment-experienced persons who have the M184V mutation. Although caution is warranted with this approach, use of 3-drug regimens preferably with a high barrier INSTI (DTG or BIC) or bPI can be considered as a switch option, particularly in suppressed patients, along with close monitoring for adherence and virologic failure.

Clinical Sciences: Resistance
Sciences cliniques : Résistance

CSP12.02

Sustained Viral Suppression Among Participants with Pre-existing M184V/I Who Switched to Bictegravir/Emtricitabine/Tenofovir Alafenamide

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Pre-existing resistance can affect antiretroviral therapy efficacy in people living with HIV. One of the most common treatment-emergent resistance substitutions is M184V/I. This substitution can be transmitted, archived in the viral reservoir, and reactivated, even when genotyping shows wild-type virus. Studies 1844, 1878, 4030, 4449, and 1474 demonstrated the safety and efficacy of switching stably suppressed HIV-1-infected individuals to bictegravir/emtricitabine/tenofovir alafenamide (B/F/TAF). In this pooled analysis, we investigated the prevalence of pre-existing M184V/I and impact on virologic outcomes.

Participants enrolled were aged ≥18 years (studies 1844, 1878, and 4030), ≥65 years (study 4449), or 6 to <18 years (study 1474). Pre-existing drug resistance was assessed by historical genotypes and/or retrospective proviral DNA genotyping (GenoSure Archive® assay, Monogram Biosciences). Virologic outcomes were based on last available on-treatment HIV-1 RNA, where early discontinuation with HIV-1 RNA <50 copies/mL was considered suppressed.

Altogether, 1545 participants switched to B/F/TAF and were treated for 24 to 144 weeks. Cumulative baseline genotypic data from historical and/or proviral genotypes were available for 88% (1356/1545). Pre-existing M184V/I was detected in 9.7% (132/1356) of participants: by proviral genotyping only (83%, 109/132), historical genotype only (9%, 12/132), or both (8%, 11/132). At baseline, participants with pre-existing M184V/I were 15–78 years old. At the time of analysis (≥24 weeks of B/F/TAF treatment), 98% (129/132) of participants with pre-existing M184V/I were suppressed compared to 99% (1528/1545) of the overall B/F/TAF study population. No B/F/TAF-treated participant developed new drug resistance.

Pre-existing M184V/I was detected in nearly 10% of suppressed participants' baseline genotypes, the majority of which was previously undocumented. High rates of virologic suppression in participants who switched to B/F/TAF, and the absence of treatment-emergent resistance, indicate B/F/TAF may be an effective and durable treatment for suppressed patients with archived M184V/I.

Clinical Sciences: STDs (Chlamydia, gonorrhea, syphilis)
Sciences cliniques : ITS (Chlamydia, gonorrhée, syphilis)

CSP13.01

Analyzing New STI Diagnosis Trends Among Patients on Prep: Incidence, Risk and Demographic Data

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I**ntroduction:** Previous studies on PrEP have not demonstrated risk compensation with regards to condom use when patients start PrEP, but have shown significant rates of STIs amongst PrEP patients. In addition, recent evidence shows routine STI screening for patients on PrEP occurs less than 50% of the time compared to guideline recommendations, and is often guided by patient self-report.

Methods: Data from a retrospective chart review of 325 patients followed at a PrEP clinic in Hamilton, Ontario was used to compare baseline risk, demographic data, behaviour, HIRI-MSM risk score and STI history against new acquisition of STIs. This study analyzed patients retained for a minimum of three months to complete the necessary routine STI screening.

Results: We found no significant relationship between baseline HIRI and new diagnosis of STI during treatment (r=0.175). There was also no relationship between age or self-reported PrEP adherence on likelihood of new STI diagnoses (r=-0.019, r=-0.03). Individuals with previous STI diagnosis' had a slightly higher average HIRI score (16.9) than those without (14.4) (p=0.01). Overall, there were 88 new STI diagnoses among 42 (20.5%) patients, and all were diagnosed during routine follow-up. The most common site of infection was rectal (48.1%), followed by pharyngeal (24.7%) and urethral (18.1%). The primary organisms identified were Chlamydia trachomatis (46.7%), Neisseria gonorrhoeae (45%), and infectious syphilis (9%).

Conclusions: There is no correlation between HIRI score and new STI diagnosis in our clinical cohort. Approximately half of STI diagnoses were rectal, but many new urethral and oral infections were also identified in routine follow up, and most were asymptomatic. This reinforces the importance of thoroughly screening all PrEP patients, regardless of intake risk score, demographic data or patient report.

Clinical Sciences: STDs (Chlamydia, gonorrhea, syphilis)
Sciences cliniques : ITS (Chlamydia, gonorrhée, syphilis)

CSP13.02

The Dual Daily HIV and Syphilis Pre-Exposure Prophylaxis (DuDHS) Trial: Characteristics of Men who have Sex with Men Interested in Combined HIV and Syphilis PrEP

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B**ackground:** Both syphilis and HIV disproportionately impact men who have sex with men (MSM). With the proven efficacy of HIV pre-exposure prophylaxis (PrEP), and emerging evidence for syphilis PrEP, a pilot clinical trial was developed to assess the feasibility of dual daily syphilis and HIV PrEP among MSM in Vancouver.

Methods: The Dual Daily HIV and Syphilis PrEP (DuDHS) trial is a randomized controlled trial to determine the feasibility of combined HIV and syphilis PrEP among MSM. HIV-negative MSM with prior diagnosis of syphilis in the past 36 months were recruited (May 2018 to June 2019) through sexual health clinics. Participants received emtricitabine/tenofovir and were randomized (1:1) to immediate or deferred daily doxycycline (100mg) for 48 week follow-up. Baseline demographics and sexual behaviours are presented here.

Results: Of 52 participants enrolled, 12 (23.0%) were self-referred and 31 (59.6%) were clinician-referred for the study. Median age was 34 years (IQR: 29.0-63.0) and 45.3% were white (n=24). Baseline STI testing diagnosed 4 participants with STIs: 2 (1.9%) with chlamydia, 1 (1.9%) with syphilis, and 1 (1.9%) with both gonorrhea and chlamydia. Participants had a median of 2 (IQR: 0-5) lifetime chlamydia or gonorrhea diagnoses and of the 52 participants, 10 (18.9%) participants reported a lifetime history of $\geq$2 syphilis diagnoses, 25 (47.2%) did not have a main sex partner, and 17 (50.9%) had previously accessed HIV PrEP.

Conclusions: A history of multiple STI diagnoses, HIV PrEP use, and not having a main sex partner were common among DuDHS participants. Understanding the characteristics of MSM interested in combined HIV and syphilis PrEP may help to inform its potential uptake and effectiveness in larger trials.

Clinical Sciences: Substance Use and HIV
Sciences cliniques : Toxicomanies et VIH

CSP14.01

Engagement and Retention of People Living with HIV Who Use Methamphetamine in a Hospital-Based Substance Use Treatment Program: Clinician Perspectives

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B**ackground:** Engagement and retention in substance use treatment is often compromised for people living with HIV (PLHIV), who are involved in problematic methamphetamine use and receiving hospital care.

Setting: A pilot study on the implementation and evaluation of a novel hospital-based substance use treatment program for PLHIV was completed at Casey House, a specialized HIV hospital in Toronto, Ontario. The study utilized a 12-week clinical intervention comprised of Community Reinforcement Approach (CRA) and Recreation Therapy (RT) modules. Group participants (n=12) were Casey House clients and had a confirmed moderate to severe substance use disorder (using the DSM Structured Clinical Interview); 11 participants were assessed to have a severe stimulant use disorder specific to methamphetamine. Participants attended a weekly 1.5-hour CRA group and a 1-hour RT session for the duration of the intervention.

Methods: From June-September 2019, the five clinicians (family practice physician, psychiatrist, recreation therapist, social workers), who facilitated the program engaged in 13 weekly audio recorded post-group clinical debriefs. Thematic analysis of debrief data, reveals important clinician observations and lessons learned regarding recruitment and retention of HIV positive methamphetamine users in treatment.

Results: Of the 12 participants, three had to discontinue as a result of acute psychosis and three others discontinued as a result of a lack of readiness. Retention was further problematized via the compounding effect of structural barriers such as poverty, stigmatizing healthcare services, and gaps in requisite staff training and skill sets to manage problematic methamphetamine use.

Conclusion: CRA and RT are a novel approach to substance use treatment, however there is a need for inclusion of methamphetamine-sensitive/directed approaches to support engagement and retention in treatment programs. We propose an innovative combination of a CRA-RT group with one-to-one clinical sessions, a psychosis clinic, strategic data collection, and training/supervision to scale-up programming to address problematic methamphetamine use.

Epidemiology and Public Health: Data and methodological science: use of administrative data, new tools and other novel data sources in HIV surveillance, prevention and control programs

Épidémiologie et santé publique : Science des données : Utilisation des données administratives, nouveaux outils de mesure et autres sources originales de données dans les programmes de surveillance, de prévention et de contrôle du VIH

EPHP1.01

The Canadian Network on Hepatitis C (CanHepC) Virtual Cascade of Care Cohort (VCCC) Feasibility Study – SK Component

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B**ackground:** Hepatitis C virus is associated with considerable morbidity, mortality and health-related costs. Modeled estimates of HCV prevalence shows a 3-fold higher prevalence among Indigenous populations compared with non-Indigenous Canadians. Saskatchewan's provincial data reports high HIV co-infection rates with injection drug use as the primary risk factor. Treatment scale-up presents a promising avenue to reduce prevalence among people who inject drugs (PWID) but requires improved diagnosis and linkage to care.

Methods: This is a multi-centre observational prospective cohort feasibility study with the SK sites located in both rural and urban communities. It combines in-person data collection at baseline with virtual prospective follow-up through health administrative databases. The peer-designed and -led SK component includes a qualitative inquiry to understand the nuances involved in the barriers and enablers to care and dried blood spot collection for HCV RNA detection and optional testing for HIV, syphilis and HBV.

Results: Periodic linkages to health administrative data are expected to inform on multiple outcomes including HCV and HIV testing and diagnosis, physician visits, hospitalizations, treatment access and interruptions, liver-related and other comorbidities and cause of death over the next five years. Baseline data collection will provide information on barriers and facilitators to care not available in health administrative databases and enable preliminary detection of HCV, HIV and other diseases outside a clinical setting.

Conclusion: The feasibility study will serve to collate preliminary data, provide an Indigenous-specific lens to the research and guide the planning and implementation of a recently CIHR-funded investigation with expansion throughout Canada. It will also provide unique insights into SK-specific health system utilization and augment SK's data mapping capabilities. Recommendations will be made regarding the need for tailored services and policies within national HCV and HIV strategies to better meet the needs of PWID and especially Indigenous people with drug use experience.

Epidemiology and Public Health: Data and methodological science: use of administrative data, new tools and other novel data sources in HIV surveillance, prevention and control programs

Épidémiologie et santé publique : Science des données : Utilisation des données administratives, nouveaux outils de mesure et autres sources originales de données dans les programmes de surveillance, de prévention et de contrôle du VIH

EPHP1.02

Calibrating HIV Clustering to Your Site: the Time Interval Problem of Real Time Monitoring for Public Health

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Clustering known cases of HIV based on the sequence similarity has been used to infer variation among sub-populations in transmission rates, and to prioritize sub-populations for HIV prevention efforts in near “real time”. Although it is not common practice to optimize clustering criteria (such as the genetic distance threshold) to each setting, we have found that one’s ability to forecast cluster growth is sensitive to these criteria; this ability can be measured by the difference in information (generalized AIC) between a predictive model and a null model that assumes no variation among individuals. Case recency (defined by the time since HIV diagnosis or sample collection) is a significant predictor of cluster growth. However, incorporating this quantity into predictive models requires us to select the unit of time (e.g., years, months). We describe an information-based method to calibrate the time scale of HIV clustering. Using anonymized HIV-1B pol sequences collected from 803 individuals in northern Alberta, we generated sets of clusters based on the components of a Tamura-Nei (TN93) distance-based network, with connections representing a pairwise distance under a given threshold. Using 693 cases collected before 2013, we trained a log-linked Poisson model to predict connection likelihood as a function of time lag between sequence collection dates. This training was done using 51 different cutoffs (0 to 0.04) to define connections, and 37 different time units (5 to 365 days) to quantify case recency, with predictions validated using the 110 “new” cases from 2013. The difference in model information was maximized at a distance threshold of 0.0104, where the optimal time unit was 65 days. This framework can be used as a point of comparison to select methods, parameters and models based on their simulated use and improve our usage of these tools to direct public health response.

Epidemiology and Public Health: Data and methodological science: use of administrative data, new tools and other novel data sources in HIV surveillance, prevention and control programs

Épidémiologie et santé publique : Science des données : Utilisation des données administratives, nouveaux outils de mesure et autres sources originales de données dans les programmes de surveillance, de prévention et de contrôle du VIH

EPHP1.03

The Incidence of Anal Squamous Cell Carcinoma in a Cohort of HIV-positive and HIV-negative Individuals in British Columbia, Canada (1990-2015)

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I**ntroduction:** Anal squamous cell carcinoma (ASCC) is an HPV-associated malignancy that disproportionately impacts people living with HIV and men who have sex with men (MSM). However, population-based incidence rate (IR) estimations that draw on precise laboratory data and MSM statuses are scarce.

Methods: The Integrated Data and Evaluative Analytics (IDEAs) Cohort includes ~1.7 million individuals who have tested or been case-reported for HIV and other infectious diseases in British Columbia (BC). We created a sub-cohort of HIV-negative and HIV-positive individuals aged ≥16 years with ≥6 months of follow-up time. ASCC diagnoses were ascertained from the BC Cancer Registry (1990-2015). Follow-up began at first HIV detection (HIV-positive stratum), date of 16th birthday, or 01/01/1990, whichever occurred last. Follow-up ended at first ASCC diagnosis, HIV diagnosis (HIV-negative stratum), death, or 31/12/2015, whichever occurred first. We assessed crude IRs of ASCC stratified by sex, HIV status, and imputed MSM status.

Results: From 1990-2015, there were 425 incident ASCC cases (HIV-positive: n=48 MSM, n=20 male non-MSM, n=1 female; HIV-negative: n=30 MSM, n=99 male non-MSM, n=227 female). Among 1,279,903 HIV-negative individuals (6% MSM, 34% male non-MSM, 59% female), ASCC IRs per 100,000 person-years were 1.81 (95% confidence interval [95%CI]: 1.27-2.59) for MSM, 1.04 (95%CI: 0.85-1.27) for male non-MSM, and 1.45 (95%CI: 1.27-1.65) for females. Among 11,972 HIV-positive individuals (45% MSM, 34% male non-MSM, 21% female), ASCC IRs per 100,000 person-years were 74.94 (56.47-99.44) for MSM, 47.23 (30.47-73.21), for male non-MSM, and 3.79 (0.53-26.91) for females. Among HIV-positive MSM, crude ASCC IRs per 100,000 person-years increased over time: 1990-1999: IR=55.05 (95%CI: 20.66-146.68); 2000-2009: IR=73.74 (95%CI: 48.11-111.99); 2010-2015: IR=82.14 (95%CI: 54.09-124.75.

Conclusions: ASCC incidence was highest among HIV-positive MSM in BC, with rates in this population increasing over time. These results highlight the need for formalized anal cancer screening programs among people living with HIV in Canada.

Epidemiology and Public Health: Data and methodological science: use of administrative data, new tools and other novel data sources in HIV surveillance, prevention and control programs

Épidémiologie et santé publique : Science des données : Utilisation des données administratives, nouveaux outils de mesure et autres sources originales de données dans les programmes de surveillance, de prévention et de contrôle du VIH

EPHP1.04

Future and Existing Trials Have Information to Identify Frailty

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B**ackground:** HIV is associated with accelerated aging which is hypothesized an early onset of frailty. Fried's Frailty criteria includes exhaustion, physical activity, slowness, weakness, and unintentional weight loss. Of these, gait speed and grip strength are performance-based tests. However, it is unlikely that these tests are administered in busy clinical practices. Some studies used self-report proxy items to replace the performance-based tests, which many of the proposed items are included in health-related quality of life (HRQL) measures. If frailty is identified using existing and future clinical trials, the rich data could be revisited to contribute evidence toward the association of frailty and HIV.

Objective: The objective was to estimate the extent to which HRQL measures used in HIV clinical trials contain frailty items.

Methods: A systematic review of PubMed database was undertaken to identify clinical trials in HIV. Studies that used HRQL measures that covered ≥3/5 frailty criteria were included.

Results: 55 of the identified 323 papers were clinical trials (46 completed/9 protocols), published between 1992 and 2018. Of the completed trials (protocols), 26 (3) tested pharmaceuticals and 29 (6) were of other interventions. The completed studies yielded data on 25,005 participants (mean age from 33 to 55.4 years), 5,698 women and 19,023 men. The majority of the studies were conducted in the USA or Europe. Of the 46 completed studies, 29 used a HIV-HRQL measure, 16 used a generic measure, and 1 remained unclear. Overall, 46 completed clinical trials used a measure that could provide information on ≥3/5 frailty criteria potentially providing data from 16,870 people (+ 698 from future trials). In addition, many studies measure BMI and BMI< 21 kg/m^2 is used to approximate unintentional weight loss.

Conclusion: There is a wealth of existing data that could be tapped to conduct an in-depth study of frailty in HIV.

Epidemiology and Public Health: Data and methodological science: use of administrative data, new tools and other novel data sources in HIV surveillance, prevention and control programs

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EPHP1.05

A Cohort-based Study of Models of Primary Care Among Marginalized People Who Use Drugs in Ottawa, Canada

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Introduction: People who use drugs (PWUD) experience significant comorbidity and premature mortality and thus would benefit from receiving care in teams, such as medical home models. Most PWUD report having unmet health needs with high associated rates of emergency department visits and hospital admissions for mental health and substance use diagnoses, soft tissue infections, pneumonia, and other issues. Our objective was to describe use of team-based care among PWUD in Ottawa, particularly attachment to a medical home.

Methods: We conducted this study in Ontario, a province that has several models of primary care. The Participatory Research in Ottawa: Understanding Drugs (PROUD) Study used street-based peer recruitment and a snowball sampling approach to recruit and enroll participants between March and December 2013, with a focus on socially and economically marginalized PWUD. Participants completed a peer- or medical student-administered survey with questions about socio-demographic information, substance use, environmental-structural factors, and health and social services use. The data for consenting participants were linked to provincial-level health administrative databases held at IC/ES. Based on the 2 years prior to survey completion, patients were assigned to primary care models, which were categorized as interdisciplinary team-based medical homes, non-team-based medical homes, and excluded from medical home. We used multinomial logistic regression to determine factors associated with receipt of team-based care.

Results: Only 162/663 (24.4%) of the participants had team-based care, which was associated with high school level of education (adjusted odds ratio (AOR) 2.18 [95% confidence interval (CI) 1.13 to 4.20]), receiving disability benefits (AOR 2.47 [95% CI 1.22 to 5.02]), comorbid HIV (AOR 2.88 [1.28 to 6.52]), and inversely associated with recent overdose (AOR 0.49 [95% CI 0.25 to 0.94]).

Conclusions: Few of the people who use drugs surveyed were receiving primary care in team-based, integrated models explicitly designed for people with comprehensive needs.

Epidemiology and Public Health: Data and methodological science: use of administrative data, new tools and other novel data sources in HIV surveillance, prevention and control programs
Épidémiologie et santé publique : Science des données : Utilisation des données administratives, nouveaux outils de mesure et autres sources originales de données dans les programmes de surveillance, de prévention et de contrôle du VIH

EPHP1.06

The Inter-Test Interval Between Nominal HIV-Negative and HIV-Positive Tests in Ontario, 2009 to 2018: Differences Across Populations

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B**ackground:** The time interval between the most recent nominal HIV-negative and HIV-positive test provides insight into differential testing frequencies in different populations and may be useful in informing HIV testing initiatives.

Methods: The last negative HIV test was linked to all first-time nominal HIV-positive test between 2009 and 2018 in Ontario at the Public Health Ontario Laboratory, the testing laboratory for nearly all HIV diagnostic tests in Ontario. We calculated median inter-test intervals (ITI), defined as the time between the most recent nominal HIV-negative and HIV-positive test, including by sex, age and priority population.

Results: There were 5,842 first-time nominal HIV-positive diagnostic test results, among them, 2,062 (35.3%) had a linked previous HIV-negative test result. More than a quarter (28.9%, n=596) had their HIV-positive result within 1 year of their most recent HIV-negative test. The median ITI was 2.15 years. The median ITI was longer for females (2.51 years [females] vs. 2.08 years [males]) and for older age groups (50+: 3.69 years vs. 20-29 years: 1.34 years). Gay, bisexual and other men who have sex with men had the shortest ITI (1.76 years), followed by people who use injection drugs (2.23 years), Indigenous people (2.27 years), women (2.51 years) and African, Caribbean, and Black people (2.95 years).

Discussion: While not all testing could be linked, with approximately 3-9% of HIV tests per year administered non-nominally over this time period, only one-third of individuals with a nominal HIV diagnosis in Ontario were linked to a previous HIV-negative test result and only one-third of these individuals had been tested in the year previous to a positive diagnosis. Disparities in testing frequency were noted by sex, age and priority population. This analysis provides important information to support targeted post-test counseling and testing strategies to populations who may benefit from more frequent testing.

Epidemiology and Public Health: Data and methodological science: use of administrative data, new tools and other novel data sources in HIV surveillance, prevention and control programs

Épidémiologie et santé publique : Science des données : Utilisation des données administratives, nouveaux outils de mesure et autres sources originales de données dans les programmes de surveillance, de prévention et de contrôle du VIH

EPHP1.07

Examining HIV transmission clusters among newly-diagnosed asylum seekers in Montreal, Quebec

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B**ackground:** Migrants represent an increasing proportion of people living with HIV in Canada. In 2017, 51% of new HIV diagnoses in Montreal were among asylum seekers (AS). We aimed to identify and characterize HIV transmission clusters among newly-diagnosed AS (ndAS) and between ndAS and people living with HIV in Quebec.

Methods: Retrospective chart reviews of ndAS linked to HIV care between June 1, 2017 and December 31, 2018 at the McGill University Health Centre and the Jewish General Hospital were performed to obtain baseline genotypes. Phylogenetic trees were reconstructed using Neighbor-joining and Maximum Likelihood analysis. Clustering of linked viral sequences was based on strong bootstrap support (>98%) and short genetic distances (0.01–0.05 substitutions/site) or posterior probabilities. Cohort sequences were combined with sequences from the Quebec HIV Genotyping Program to create population-level phylogenetic trees. Clusters were characterized by sex, WHO region, HIV risk population and subtype, and estimated recency.

Results: Sequences were obtained from 105 ndSA; 13/105 (12%) were clustered. Nine (9/105; 9%) individuals belonged to four clusters showing no crossover with genotyped Quebec sequences. Three were male-female clusters (each with one male and female): one Americas subtype-B and two African clusters (subtype-G and subtype-CRF02_AG). All were known heterosexual couples. The fourth represented an Americas subtype-B cluster with two males and one female (none were known partners). The remaining four (4/105; 4%) individuals clustered with sequences from Quebec: two male-female clusters (both subtype-B from the Americas) and two male-male clusters (one Americas subtype-B, one African subtype-B).

Conclusions: Our study shows that HIV clustering is occurring among ndAS and at a population level. Based on clinical criteria (CD4 counts and viral loads) and dates of arrival, it was not possible to determine timing or location of transmission. Our findings highlight the potential role of phylogenetic monitoring as part of routine HIV surveillance.

Epidemiology and Public Health: Data and methodological science: use of administrative data, new tools and other novel data sources in HIV surveillance, prevention and control programs

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EPHP1.08

Cascades of Care for Preventing Vertical HIV Transmission

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B**ackground:** The cascade of care is a tool that estimates the degree of successful engagement in HIV care. While access to combination antiretroviral treatment (cART) has contributed to substantial reductions in vertical transmissions in Canada, missed opportunities for prevention remain. This study investigated cascade of care indicators for mother-infant pairs in the Canadian Perinatal HIV Surveillance Program (CPHSP).

Methods: The CPHSP collects data on vertical transmission in Canada. The analysis was restricted to live infants born in Canada from 2008-2018 to women living with HIV (WLWH). Measures of success included maternal diagnosis before second trimester, initiation of antiretroviral therapy (ART) before third trimester, undetectable viral load (VL) prior to delivery, appropriate infant prophylaxis (at least four weeks of ARV), finalizing of infant HIV status (two or more HIV tests at two weeks of age or later), and linkage to care within one year if infected.

Results: 2651 mother-infant pairs were included. Of all women, 2107 (79.5%) were diagnosed before second trimester, 2092 (78.9%) started ART before third trimester, and 2115 (79.8%) achieved undetectable VL before delivery. Women whose risk category was injection drug use had the lowest engagement in care, with 336 (65.4%) diagnosed before second trimester, 343 (66.7%) initiating ART before third trimester, and 326 (63.4%) achieving undetectable VL. Alberta, Saskatchewan, and Manitoba experienced the lowest proportions achieving the three maternal cascade of care indicators. Among all infants, 2420 (91.3%) received appropriate prophylaxis and 2242 (84.6%) underwent HIV testing. Among infected infants (*n*=37), 34 (91.9%) were linked to care. Alberta, Saskatchewan, and Manitoba accounted for 14 (37.8%) of all infected infants.

Interpretation: Gaps in care remain a significant concern for certain populations of pregnant WLWH and their infants in Canada. As Canada strives to improve HIV care, these findings may inform targeted health strategies to reduce vertical transmissions.

Epidemiology and Public Health: Data and methodological science: use of administrative data, new tools and other novel data sources in HIV surveillance, prevention and control programs

Épidémiologie et santé publique : Science des données : Utilisation des données administratives, nouveaux outils de mesure et autres sources originales de données dans les programmes de surveillance, de prévention et de contrôle du VIH

EPHP1.09

Evaluating Patient-reported Outcome Measures (PROMs) for HIV Care: a Systematic Review Using the COSMIN Tool

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B**ackground:** Patient-reported outcomes measures (PROMs) are increasingly used in HIV in the areas of care and research particularly to assess the effectiveness of newer antiretroviral therapies. Accurate measurements using PROMs is based on these measures having excellent psychometric properties. The “COnsensus-based Standards for the selection of health Measurement Instruments” (COSMIN) steering committee developed a checklist to evaluate psychometric properties of PROMs. The purpose of this study is: 1) to systematically review HIV-specific PROMs and evaluate psychometric properties using the COSMIN criteria, and 2) to provide evidence as to whether studies adhered to standardized reporting guidelines.

Methods: A systematic search was conducted in PubMed, Ovid Medline, CINAHL, EMBASE and the Cochrane Library between 2000 and 2019 and identified studies that reported on the quality of PROMs in HIV and were published in English. Two reviewers independently read the abstract and identified relevant full-text articles. We evaluated the quality of the PROMs reported in the studies using COSMIN checklist. Relevant data was extracted from the studies related to constructs measured, number of domains, psychometric information and other characteristics. The methodological quality of each study is currently been evaluated for risk of bias on 4-point ordinal scale (excellent, good, fair, or poor) and also on COSMIN checklist for each of 9 measurement properties.

Results: A total of 36 studies that matched inclusion criteria and were extracted for this review. Twenty-one PROMs were reported in the included studies of which 14 were HIV specific. The psychometric evaluation of these measures is ongoing, and findings will be presented at the conference.

Conclusions: This review will present the psychometric properties of PROMs using a standardized COSMIN checklist to determine the usefulness of PROMs available for people living with HIV.

Epidemiology and Public Health: Data and methodological science: use of administrative data, new tools and other novel data sources in HIV surveillance, prevention and control programs

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EPHP1.10

Context is Everything: a Recommendation for Selecting Case Definitions when Using Linked Administrative Health Data in HIV Research

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B**ackground:** Despite not being collected for research purposes, administrative data are increasingly being used in epidemiology. In British Columbia (BC), the Comparative Outcomes And Service Utilization Trends (COAST) and STOP HIV/AIDS studies are based on linkages between HIV-related clinical data and provincial administrative datasets. In such studies, we define health outcomes using 'case definitions': e.g., a depression definition may require one hospitalization (ICD-9: 296/311, ICD-10: F32/F33) or two outpatient (ICD-9: 296/311/'50B') codes within one year. The objective of this abstract is to promote discussion regarding the use of administrative data in HIV research.

Methods: Given the expanding use of administrative data, our centre created an 'Administrative Data Working Group.' This group is tasked with equipping researchers with the knowledge to rigorously analyze such data. To date, we have focused our discussions on the selection of case definitions.

Results: We put forth the following recommendation: when available, researchers should use case definitions that are tailored to their jurisdiction; we use definitions from the BC Ministry of Health (BC-MoH). Unlike definitions based on combinations of codes from other settings, the BC-MoH's definitions consider factors that, if ignored, introduce misclassification bias. For example, known differences in the detail of outpatient (limited to three-digits) and hospitalization (four- or five-digits) ICD codes in BC are incorporated. Inaccuracies in coding are also considered: e.g., the BC-MoH's definitions often require two outpatient codes to appear within a single year. Lastly, BC-specific codes, such as the '50B' code for 'anxiety/depression,' are included; omission of '50B' results in substantial under-ascertainment.

Conclusion: Context is everything: the BC-MoH's definitions incorporate information that is critical to the validity of administrative data-derived measures in our jurisdiction. While published validation studies from other settings may present highly sensitive and specific definitions, we have found their direct applicability to the BC context to be limited.

Epidemiology and Public Health: Data and methodological science: use of administrative data, new tools and other novel data sources in HIV surveillance, prevention and control programs

Épidémiologie et santé publique : Science des données : Utilisation des données administratives, nouveaux outils de mesure et autres sources originales de données dans les programmes de surveillance, de prévention et de contrôle du VIH

EPHP1.11

Validating the Use of Viral Load Results to Identify Individuals with Prior Evidence of HIV, Ontario, 2018

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B**ackground:** New HIV diagnoses are based on diagnostic test results in Ontario. However, anonymous testing, newcomers to the province, and incomplete surveillance information may overestimate total case counts, limiting our understanding of trends in HIV from local transmission. Our objective was to develop and validate a viral load (VL)-based algorithm to identify individuals with prior evidence of HIV.

Methods: Newly diagnosed cases were linked to VL data (1996-2018) from Public Health Ontario. Persons with a VL test >30 days before diagnostic testing (evidence of prior awareness of HIV), and persons with VL <200 copies/mL within 30 days of diagnosis (evidence of likely being on treatment) were then excluded from the analysis. For validation, we assessed case history information from the integrated Public Health Information System (iPHIS) for 30 randomly selected cases included or excluded based on VL results from 2018.

Results: There were 1003 new HIV diagnoses in 2018, an increase of 9.5% from 2017. After exclusion of cases with prior evidence of HIV, there were 738 new diagnoses in Ontario in 2018, an increase of 6.2% from 2017. A total of 28 cases were able to be linked to iPHIS, but information on previous HIV diagnosis status was missing for 14/28 (50%) of cases. Of the 14 cases with information on previous diagnosis, case notes indicated 93% (13/14) were correctly classified as having prior HIV, and one case was incorrectly included as a new case despite indication of previous diagnosis.

Conclusions: Inclusion of linked VL results identified 26% of new HIV diagnoses as having prior evidence of HIV in 2018. iPHIS data was not available for the majority of cases, but where available, concurred with exclusions applied by the algorithm. Utilization of VL results improves assessment of provincial trends in new HIV diagnoses likely related to local transmission.

Epidemiology and Public Health: Data and methodological science: use of administrative data, new tools and other novel data sources in HIV surveillance, prevention and control programs

Épidémiologie et santé publique : Science des données : Utilisation des données administratives, nouveaux outils de mesure et autres sources originales de données dans les programmes de surveillance, de prévention et de contrôle du VIH

EPHP1.12

Trends in HIV Pre-exposure Prophylaxis (PrEP) Use in Canada, 2014–2018

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I**ntroduction:** Pre-exposure Prophylaxis (PrEP) is a highly effective strategy to reduce the risk of sexual transmission of HIV. In February 2016, Health Canada approved tenofovir disoproxil fumarate / emtricitabine (TDF/FTC) for use as PrEP and, in July 2017, lower cost generic versions became available. Monitoring PrEP uptake in Canada is important to inform HIV prevention programs.

Method: Annual estimates of persons using PrEP in Canada were generated for 2014-2018 from a prescription database from IQVIA (data not available for Alberta, British Columbia and the Territories). An algorithm was used to distinguish users of TDF/FTC for PrEP from those using TDF/FTC for HIV or Hepatitis B treatment or post-exposure prophylaxis. We provide the estimated number of people using PrEP in 8 Canadian provinces by sex, age group, prescriber specialty and payment type.

Results: In 2018, an estimated 9,865 people were on PrEP; a 22-fold increase from 2014, when the corresponding number was 439. Over the five-year period, prescriptions paid by private insurance increased (23 times) greater than by public insurance (17 times). In 2018, males accounted for 97.4% of all PrEP users and the majority of all PrEP users (63.4%) were aged 25–45 years. In 2018, 73.6% of PrEP prescriptions were prescribed by primary care providers, followed by infectious disease specialists (11.9%). Two thirds of prescriptions were paid by private insurance (68.4%).

Conclusion: PrEP use in Canada has increased since 2014, demonstrating increased awareness and uptake of its use for preventing HIV transmission. Since new HIV infections continue to occur in Canada, the use of PrEP in adult men and women at high risk should be considered in combination with safer sex practices to reduce the risk of sexually acquired HIV infection.

Epidemiology and Public Health: Data and methodological science: use of administrative data, new tools and other novel data sources in HIV surveillance, prevention and control programs

Épidémiologie et santé publique : Science des données : Utilisation des données administratives, nouveaux outils de mesure et autres sources originales de données dans les programmes de surveillance, de prévention et de contrôle du VIH

EPHP1.13

Virologic Outcome Measures in HIV Clinical Trials: a Methodological Study

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I**ntroduction:** Viral load is an important outcome in HIV research and clinical practice as it determines if treatments are successful or not. The threshold for virologic failure or success varies across clinical trials, impacting results and comparability. The objectives of this methodological study were to determine how often different thresholds are used and the factors associated with different thresholds in HIV clinical trials.

Methods: We searched for randomized control trials (RCTs) in three databases: Pubmed, EMBASE, The Cochrane Central Register of Controlled Trials. We included all RCTs conducted in people with HIV, published in the past ten years (2009-2019), with at least one virological outcome and full-text available through the McMaster Health Sciences Library. We extracted bibliometric information including income levels of the countries where studies were conducted, sources of funding, types of intervention, numbers of sites, virological outcomes and thresholds. We used logistic regression to determine the factors associated with a low threshold ≤ 50 copies/ml.

Results: Our search retrieved 5847 articles, of which only 187 were eligible. Overall, the majority (140/74.9%) reported a primary virologic outcome. About half (91/48.7%) were conducted in high income countries, and the majority (156/83.4%) were pharmacological interventions. Ninety-six (96/61.1%) of the studies with virologic thresholds used a threshold of ≤ 50 copies/ml. In univariate analyses, trials with pharmaceutical interventions (OR 4.91;95% CI 1.89-12.72;p=0.001), studies with more sites (OR 1.01;95% CI 1.00-1.02;p=0.025) and studies from high income countries (OR 3.07;95% CI 1.55-6.07;p=0.001) were more likely to use a low threshold. In multivariable analyses, only high-income country studies remained associated with lower thresholds (OR 2.85;95% CI 1.10 -7.36;p=0.031).

Conclusion: Viral load thresholds are inconsistent across HIV RCTs, with differences explained in part by country income level. To advance HIV research, the development and implementation of formal guidance for appropriate thresholds in HIV RCTs is warranted.

Epidemiology and Public Health: Economic Evaluation of Public Health Policies, Programs or Interventions
Épidémiologie et santé publique : Évaluation économique des politiques, des programmes ou des interventions en santé publique

EPHP2.01

Bringing Language Specific Communities to Toronto to Zero —There is a Need for a NEW Campaign (Digital Intervention) for GB&MSM Latino Men (e.g., PrEP, U=U), GUYS LIKE YOU 2020?

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B**ackground:** *Toronto to Zero*, the new 2020's decade's goal is to reduce HIV infections among individuals at higher risk. For the most part, campaigns in Toronto have been delivered in English, and maybe some limited parts are translated into another language (e.g., www.hivstigma.com, The Sex You Want). For large populations such as the gbMSM Latin community in Toronto, the lack of Spanish culturally specific-new sexual health information campaigns, hampering Toronto's goal.

Experience: In 2009, Toronto's Spanish-speaking printed-paper campaign GLY took by surprise the field of HIV prevention. The visual innovating photo-novella story, in a sexual health knowledge attractive format, educated a whole generation. The project was a huge success in bathhouses, bars and ASO's. Reports, academic articles, and videos were published at that time.

The Issue: In 2009 Internet was in an early development stage, iPhones were not widespread, GRINDR was only recently born, and social media was in pampers. Therefore, GLY was a paper-printed based effort that barely employed any social media we currently use nowadays. Moreover, the HIV field was about to go onto the new last knowledge revolution (PreP, U=U, sexual apps, home tests). There is an urgent need to educate completely new generations of individuals at higher risk of HIV. At the same time, sexually active Latin people who have never heard about the new health HIV technologies, need to learn it to catch up.

Action Needed: Sexual health information in a language that is different from the intended target populations is more difficult to comprehend. Moreover, evidence-based knowledge has proved that immigrants learn in a deeper, more meaningful way, in their mother tongue, which they are culturally more receptive to. There is evidence behind GLY, (ecological-paperless) using online and social media (digital interventions) tools (e.g., Instagram/ Twitter), to effectively intervene in Latin gbMSM individuals' behaviours.

Epidemiology and Public Health: Epidemiology and Surveillance of HIV Co-infections
Épidémiologie et santé publique : Épidémiologie et surveillance des coinfections au VIH

EPHP3.01

A Cross-sectional Study of Prolonged Disengagement from Clinic Among People with HCV Receiving Care in a Low Threshold, Multidisciplinary Clinic

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B**ackground:** Disengagement from care can affect Hepatitis C (HCV) treatment outcomes. We assessed the extent and determinants of disengagement among HCV patients receiving care at The Ottawa Hospital Viral Hepatitis Program (TOHVHP).

Methods: We linked clinical data of adult patients, categorized as ever or never disengaged from clinic (no TOH-VHP encounters over 18 months), receiving care between 1 April 2002 and 1 October 2015 to provincial health administrative databases and calculated primary care use in the year after disengagement. We used adjusted Cox proportional hazards models to analyze variables associated with disengagement.

Results: Those disengaged were younger at presentation (46.6 years (SD 11.1 years) vs 51.9 years (SD 11.0 years), p<0.001) and had lower comorbidity. After multivariable adjustment, we observed lower hazards of disengagement among those with higher compared to lower fibrosis scores (F3:hazard ratio (HR) 0.21; 95% confidence interval (CI) 0.08-0.57 and F4: HR 0.32; 95%CI 0.19-0.55), and those treated compared to never treated (HR=0.71; 95%CI 0.58-0.88 for those who ever received DAA and HR=0.66; 95%CI 0.55-0.80 for those who received IFN but not DAA). There was no association with mental health or substance use disorders. In the year after disengagement, 74.3% (n=488), 37.1% (n=244), and 17.7% (n=116) had at least one family physician visit, emergency department visit, and hospitalization, respectively. More than two-thirds (68.0%; n=447) ultimately re-engaged with TOHVHP.

Conclusion: In the first year after disengagement patients had high rates of primary and acute care use. Better integration of HCV specialty and primary care could improve overall care.

Epidemiology and Public Health: Epidemiology and Surveillance of HIV Co-infections
Épidémiologie et santé publique : Épidémiologie et surveillance des coinfections au VIH

EPHP3.02

Incident Hepatitis C Virus Infection Among Gay, Bisexual, and Other Men Who Have Sex with Men in Metro Vancouver: a Prospective Biobehavioural Cohort Study

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B**ackground:** Sexual transmission of hepatitis C virus (HCV) has been documented internationally among gay, bisexual, and other men who have sex with men (gbMSM). Given the paucity of relevant Canadian evidence, we sought to identify predictors of incident HCV infection within a prospective biobehavioural cohort of gbMSM in Metro Vancouver.

Methods: Sexually active gbMSM aged ≥16 years were recruited from 02/2012-02/2015 using respondent-driven sampling and completed study visits every 6 months until 08/2019. At each visit, participants completed computer-assisted self-interviews on recent behaviours (six months prior to survey) and provided venous blood samples for HIV and HCV serology. We used multivariable logistic regression and generalized estimating equations to identify factors associated with incident HCV infection.

Results: Of 774 participants recruited, 2.0% (15/551) of HIV-negative and 28.3% (50/223) of gbMSM living with HIV were HCV-positive at enrollment. Of 542 HCV-negative participants with a median follow-up of 3.50 years, we observed 8 incident HCV cases (incidence rate=0.43/100 person-years, 95%CI:0.21-0.86). Three quarters of incident infections (n=6/8) were among participants living with HIV (RR=5.60, 95%CI:1.13-27.77), which was not selected for the multivariable model; neither HIV-negative participant who acquired HCV had recently used PrEP. In the final multivariable model, incident HCV was associated with a higher number of recent male sexual partners (adjusted RR=1.007, 95%CI:1.002-1.012), higher likelihood of recent crystal methamphetamine use (adjusted RR=7.88, 95%CI:1.81-34.26), and lower likelihood of recent condomless anal sex (adjusted RR=0.14, 95%CI:0.02-0.80). Incident HCV was not associated with recent injection drug use (25% among incident-HCV cases versus 9.9% among those remaining HCV-negative; RR=2.82, 95%CI:0.57-13.94;); among six incident cases living with HIV, three had lifetime histories of injection drug use.

Conclusions: HCV incidence among gbMSM was relatively low, with most cases among gbMSM living with HIV. Future research should delineate sexual and substance use predictors (e.g. sharing equipment) associated with incident HCV.

Epidemiology and Public Health: Epidemiology and Surveillance of HIV Co-infections
Épidémiologie et santé publique : Épidémiologie et surveillance des coinfections au VIH

EPHP3.03

Preliminary Findings from Per-SVR, a Longitudinal Cohort of Hepatitis C Patients Who Achieved Sustained Virologic Response

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I**ntroduction:** As of 2018, 17,441 of the 60,000-80,000 individuals in British Columbia (BC) living with Hepatitis C virus (HCV) have been treated with direct-acting antiviral (DAA) therapy. This gap represents an important barrier to optimizing the Treatment as Prevention framework to control the epidemic. Per-SVR is a prospective clinical cohort study of treated HCV patients established to assess clinical outcomes and patterns of health care utilization among individuals who achieve sustained virologic response (SVR) following DAA therapy.

Methods: Adults over the age of 19 living in BC who have achieved SVR following DAA-based HCV therapy are invited to participate in per-SVR. Participants complete 10 study visits over four years involving interviewer-administered questionnaires and blood and urine samples. Participant recruitment began in June 2017, and preliminary descriptive results are described up to December 2018.

Results: As of December 2018, 220 participants have been enrolled. The majority of the cohort is male (69%), with a median age of 53 years (24, 87), 35% are ≥ 65 years. 16% are living with HIV and a history of smoking and injection drug use is common (48% and 57%, respectively). Approximately 25% demonstrate a history of significant substance use disorder symptoms and 2% report having difficulty accessing treatment programs. Over 52% ever experienced homelessness and 63% have ever experienced physical abuse. The most common genotypes are 1A (47%) and 3A (31%). HCV re-infection rates are below 2%. 80% receive the 12-week length of DAA therapy. The most common treatment type is Sofosbuvir/Velpatasvir (54%).

Conclusions: This longitudinal clinical cohort is ideally situated to monitor and evaluate the provincial roll-out of DAA therapy and assess therapeutic outcomes, including HCV reinfection. This cohort will provide unique insights into the impact of modern therapy on health care engagement and harm reduction services, informing strategies for public health policy.

Epidemiology and Public Health: Epidemiology and Surveillance of HIV Co-infections
Épidémiologie et santé publique : Épidémiologie et surveillance des coinfections au VIH

EPHP3.04

Predicting the Presence of Clinically Significant Depressive Symptoms in the HIV-Hepatitis C Co-infected Population in Canada using Supervised Machine Learning

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B**ackground:** Depression is highly prevalent in the HIV-Hepatitis C (HCV) co-infected population. Even before a formal diagnosis, depressive symptoms can negatively impact outcomes. Due to competing health concerns, screening may not occur. We aimed to predict the presence of clinically significant depressive symptoms in the co-infected population using patient data with supervised machine learning.

Methods: We used sociodemographic, behavioural, and clinical predictors from the Canadian Co-infection Cohort (CCC), a multicentre prospective cohort and its associated sub-study on Food Security (FSS). The Center for Epidemiologic Studies Depression Scale-10 (CES-D-10) was administered in the FSS; scores >=10 indicate risk for major depression with clinically significant depressive symptoms. We developed two Random Forest classification algorithms to predict CES-D-10 class at each visit with 70% of the data using:I) all candidate predictors (x=137); and II) routinely available predictors (x=45). We evaluated the algorithms in the remaining 30% of the data using area under the curve (AUC), sensitivity and specificity, and identified important predictors.

Results: We included 1939 FSS visits from 718 participants; 53% reported clinically significant depressive symptoms at baseline. Algorithm I performed better than II (Table 1). Age, employment, education, revenue source, BMI, HIV clinical stage, and the anxiety/depression dimension (EQ-5D-3L) were important predictors.

Conclusion: The classification algorithms yielded modest prediction accuracy and revealed important predictors for clinically significant depressive symptoms. However, prediction exhibited substantial misclassification despite machine learning using a rich set of variables. Therefore, routine screening using available tools remains warranted in the co-infected population rather than relying on prediction.

Table 1: Baseline participant characteristics (n=718) and evaluation metrics for the Random Forest Classification Algorithms I and II

Baseline Characteristics	**Participants (n = 718) n (%) or median (IQR)**	
Age	49 (43, 54)	
CES-D-10 score	10 (5, 15)	
CES-D-10 class: >=10	383 (53)	
Gender - Male	522 (73)	
Race/Ethnicity - White	542 (76)	
Education - High school and higher	566 (79)	
Employment - Not working	525 (73)	
Revenue source - Welfare	331 (46)	
BMI category - Normal weight (18.5-25 kg/m^2)	311 (43)	
HIV clinical stage - A1 (asymptomatic)	248 (34)	
Health related quality of life (using EQ-5D-3L instrument): Anxiety/depression dimension		
Not anxious or depressed	350 (48)	
Moderately anxious or depressed	304 (42)	
Extremely anxious or depressed	60 (8)	
	Random Forest Classification Algorithms	
Evaluation metrics	**Algorithm I (x=137)**	**Algorithm II (x=45)**
AUC (95% CI)	0.84 (0.80-0.87)	0.73 (0.69-0.77)
Sensitivity (95% CI)	0.74 (0.69-0.79)	0.64 (0.59-0.69)
Specificity (95% CI)	0.78 (0.73-0.83)	0.71 (0.66-0.76)

Epidemiology and Public Health: Epidemiology and Surveillance of HIV Co-infections
Épidémiologie et santé publique : Épidémiologie et surveillance des coinfections au VIH

EPHP3.05

Multiplexed Technologies for Sexually Transmitted Infections: A Systematic Review of Global Evidence on Feasibility, Seropositivity and Impact Outcomes

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I**ntroduction:** Laboratory-based screening of viral and bacterial sexually transmitted infections (STIs) entails multiple clinic visits that precipitates loss to follow-up of screened populations. Multiplexed technologies for STIs (point-of-care (POC) biomarker-based devices and molecular platforms), offer a potential to screen for many STIs in a short turnaround time, often in a single visit and one day thereby preventing losses to follow-up. However, evidence of their feasibility, seropositivity, and impact outcomes has not yet been synthesized. We conducted a systematic review of these technologies to fill this knowledge gap.

Methods: For the period 2009-2019, two independent reviewers searched Pubmed and Embase, retrieved 3911 citations and abstracted data from a final subset of 44 relevant studies.

Results: Of 44 studies reviewed, 12 (27.3%) evaluated POC devices and 32 (72.7%) molecular platforms, in diverse at-risk populations (STI clinic attendees, pregnant women, immigrants, injection drug users) and reported outcomes (feasibility (n=11), seropositivity (n=41), preference (n=5), uptake (n=1), impact (n=3)).

Regarding feasibility, a majority (86.1%-93.0%) of screened participants completed and preferred (60.2%-97.2%) multiplexed technologies (vs. conventional). Test uptake improved by 99.4% (Hepatitis C), 99.6% (*Trichomonas vaginalis)*, 78.6% (Hepatitis B) and 42.0% (HIV) across studies.

Depending on populations screened, varying seropositivity proportions were documented: HIV (1.8%-29.9%), Hepatitis B (1.1%-23.9%), Hepatitis C (0.5%-42.2%), *Chlamydia trachomatis* (2.8%-30.2%), *Neisseria gonorrhoeae* (0.0%-30.3%), *Mycoplasma genitalium* (0.0%-12.0%) and *Trichomonas vaginalis* (0.0%-32.7%).

Regarding impact, many (70.0%-100.0%) screened participants were linked to care, with time-to-test results of 14 minutes (biomarker devices) to 300 minutes (platforms).

Conclusions: Both multiplexed technologies (POC biomarker devices and molecular platforms) were found to be feasible, preferred by participants, impacted detection and treatment of many bacterial and viral STIs, with same-day results and rapid linkages. With a rapid turnaround time, both technologies offer a huge potential to screen/treat affected populations to reduce the risk of their onward STI transmission worldwide.

Epidemiology and Public Health: Epidemiology and Surveillance of HIV Co-infections
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EPHP3.06

The Validation of a Novel Deprivation Index for Co-infected Individuals with Non-attendance of a Second Visit

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B**ackground:** Engagement in care is critical to achieve good health outcomes for HIV and HCV. Deprivation can impact access and retention in healthcare. We previously developed a 9-item individual-level deprivation index for HIV-HCV co-infected participants of the Canadian Co-infection Cohort (CCC). The aim of this study was to examine the association between deprivation at baseline and non-attendance of a second study visit, a proxy for disengagement from care.

Methods: The CCC is a cohort of co-infected Canadians following more than 2000 participants. We compared the association between participants' baseline scores versus each of the variables that compose the score with non-attendance at a second visit using univariable and multivariable logistic regression. Analyses were done in a Bayesian framework.

Results: Of 1537 eligible participants, 457 (30%) didn't attend a second visit. Results of the regression are presented in the table below. A one-unit increase in the index was associated with a 17%(95% credible interval,2%, 34%) odds of not attending a second visit. Some covariates that make up the index (e.g. unemployment) were associated with the outcome in univariable analyses, but estimates were less precise in the multivariable analysis (Table). Including all covariates in a multivariable regression reduced the precision of individual estimates as variables were highly correlated.

Conclusion: We found that our deprivation index was associated with disengagement from care. Given the highly-correlated nature of the covariates captured by the index, our score has advantages for studying the impact of deprivation on access to care and health outcomes in coinfected Canadians.

Table: Univariable and multivariable regressions. The point estimates are the mean of the posterior summary and the 95% credible interval of the exponentiated odds ratios.

Variables	Univariable analyses	Multivariable analysis
Index score (per unit)	1.17 [1.02, 1.34]	NA
Education > high school	0.87 [0.68, 1.11]	0.83 [0.62, 1.11]
Incarceration history	0.89 [0.71, 1.13]	0.83 [0.63, 1.10]
Injection drug use ever	0.87 [0.66, 1.17]	0.87 [0.62, 1.24]
Injection drug use in the last 6 month	1.08 [0.86, 1.35]	1.12 [0.88, 1.44]
Non-GBMSM	1.28 [0.98, 1.69]	1.51 [1.11, 2.05]
Unemployed	1.22 [0.92, 1.63]	1.35 [0.98, 1.86]
Income less than 1500 a month	0.91 [0.70, 1.18]	0.84 [0.62, 1.14]
Psychiatric hospitalization	0.96 [0.74, 1.23]	0.98 [0.75, 1.27]
Indigenous	0.95 [0.73, 1.22]	0.96 [0.74, 1.25]

Epidemiology and Public Health: Epidemiology and Surveillance of HIV Co-infections
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EPHP3.07

Perinatal and Obstetrical Outcomes in HIV Mono-Infection and HIV/Hepatitis C Co-Infection

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B**ackground:** HIV and Hepatitis C both carry independently attributable perinatal and obstetrical risk. Both Hepatitis C and HIV infection have been associated with adverse obstetrical outcomes including preterm delivery. Perinatal outcomes in women living with HIV and those co-infected with hepatitis C were compared in a Canadian cohort including patient demographics, treatment and virological status as they relate to obstetrical and neonatal outcomes.

Methods: Data was collected from the BC provincial perinatal HIV surveillance database. Clinical, demographic, and behavioural data are abstracted from clinical charts and entered annually into this surveillance database. Outcomes were compared in women living HIV with and those co-infected with hepatitis C, defined as hepatitis C antibody reactivity.

Results: A total of 485 WLWH were included, of these 197 had a history of hepatitis C infection. There was a statistically significant increase in preterm birth (RR = 4.2) and stillbirth (RR=3.57) rates among women who were Hepatitis C antibody positive. There was a significant difference in ARV use, adherence and subsequently viral load at delivery between both groups.

Conclusions: Canadian women who have HIV and a history of HCV infection, had an increased risk of preterm birth and stillbirth compared to women with HIV alone. This is likely in part due to differences in HIV disease, social determinants of health and cART adherence. However, more research is needed to further qualify this relationship, and understand the role of social determinants of health versus active Hepatitis C infection in the etiology of adverse obstetrical outcomes.

		Maternal HepC Ab status		
	Total	**Negative/NR**	**Positive/Reactive**	**P-value**
	No. 485	No. 288	No. 197	
Age				
Mean (SD)	31.0 (±5.6)	31.5 (±5.8)	30.3 (±5.1)	0.023
Preterm delivery				
<37 weeks	110 (22.68%)	37 (12.85%)	73 (37.06%)	< 0.0001
≥37 weeks	369 (76.08%)	249 (86.46%)	120 (60.91%)	
Live birth				
Stillbirth	7 (1.44%)	2 (0.69%)	5 (2.54%)	0.13
Live birth	477 (98.35%)	285 (98.96%)	192 (97.46%)	
Neonatal death	1 (0.21%)	1 (0.35%)	0 (0.00%)	
CD4 nadir				
Mean (SD)	522.9 (±270.7)	578.0 (±273.1)	440.8 (±245.8)	< 0.0001
HIV pVL near delivery - suppressed vs not				
Not sup-pressed	97 (20.0%)	36 (12.5%)	61 (31.0%)	< 0.0001
Suppressed	357 (73.6%)	239 (83.0%)	118 (59.9%)	

Epidemiology and Public Health: Epidemiology and Surveillance of HIV Co-infections
Épidémiologie et santé publique : Épidémiologie et surveillance des coinfections au VIH

EPHP3.08

HIV Screening and Co-infection Among Persons Diagnosed with Active Tuberculosis in British Columbia, 2009-2018

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B**ackground:** HIV infection is a notable risk factor for the acquisition and progression of latent tuberculosis (TB) infection to active TB disease. National guidelines have set a target that HIV status be known for >90% of active TB cases. Using surveillance and laboratory data, we estimated the proportion of active TB cases with known HIV status and those co-infected with TB/HIV in British Columbia (BC).

Methods: All active TB cases reported in BC from 2009-2018 were included. Co-infection with HIV was identified using HIV/AIDS surveillance data (all cases reported in BC, including previous diagnoses), while those with a negative HIV test result were obtained from laboratory data (representing >95% of all HIV screening tests in BC). Known HIV status included TB cases that were identified as an HIV/AIDS case or had a negative HIV test result in BC. Of those with known HIV status, we determined the proportion that were HIV-positive.

Results: From 2009-2018, the proportion of active TB cases with known HIV status generally increased. During this period, <5% of TB cases with known HIV status were co-infected with HIV.

Conclusion: Linking surveillance and laboratory systems can help us understand adherence to national guidelines. Here, we assessed HIV screening and TB/HIV co-infection trends over a 10-year period among active TB cases in BC. The proportion with known HIV status increased over the period. Strategies to increase HIV testing among people diagnosed with TB are needed to better understand the impact of this syndemic in Canada.

Table 1. Active Tuberculosis (TB) Cases in British Columbia by Known HIV Status, 2009-2018

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Active TB Cases	314	250	279	299	281	305	288	255	307	300
Known HIV Status (%)	202 (64.3)	173 (69.2)	198 (71.0)	221 (73.9)	222 (79.0)	251 (82.3)	240 (83.3)	225 (88.2)	266 (86.6)	254 (84.7)
HIV-positive (%)	5 (2.5)	3 (1.7)	8 (4.0)	7 (3.2)	9 (4.1)	7 (2.8)	11 (4.6)	7 (3.1)	4 (1.5)	6 (2.4)

Epidemiology and Public Health: Evaluations of Public Health Policies, Programs or Interventions
Épidémiologie et santé publique : Évaluation des programmes, des politiques et des interventions en santé publique

EPHP4.01

Mandalas - "Coloring Connections" - An Art Therapy Group and Mental Health HIV +/- Individuals in Toronto: Social Disconnection a Common Tale in the HIV Prevention Program, CSSP

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B**ackground:** Social disconnection is a recurrent and common trait among immigrants in Canada, particularly those who are gender diverse, gender non-conforming and non-heterosexual oriented, body-conforming, HIV+, HIV at risk, and any individual who is intersected by multiple layers of oppression. Social isolation is suffered by a person who struggles to find grounds of empathy with other individuals given their multiple, and deeper layers of marginalization, they have encountered in their life-journey. A drawing mandala art drop-in group was created as an intervention for CSSP's community individuals (n=15 started in the first session). The group was held on a bi-weekly basis, proper evaluation tools were employed.

Methods: Community-based evaluation tools were employed for recruiting a closed group for a total of 8 sessions from March to June 2019. The procedure included an interview, a pre test/post tests were conducted to participants using the following scales (n=7 completed the process): Social demographic questionnaire; GAD-7 (General Anxiety Disorder-7) scale; Patient Health Questionnaire (PHQ-9) for Depressive Disorders; and a Social Support Questionnaire adapted from *Chicos Net* (CSSP's intervention).

Results: Preliminary results showed an important increasing social integration, on the way of reducing social disconnection. The Mandala Group linked community individuals who usually would have not been connected. Although HIV disclosure was not a prerequisite, some individuals felt safe enough for disclosing their serostatus. At CSSP, immigration status, sexual orientation, gender identity status, and other often marginalizing factors are commonplace. All participants signed a confidentiality agreement.

Conclusion: Preliminary data analysis shows promising results, along with positive narratives of integration, HIV/sexual health knowledge increased, and reducing stigma. Finally, social disconnection emerges as a key social determinant among immigrants, and non-conforming (body, sexual orientation, gender, HIV status, legal status, etc.) individuals. Next steps will include further support for facilitating gathering evidence of the program's efficacy and effectiveness.

Epidemiology and Public Health: Evaluations of Public Health Policies, Programs or Interventions
Épidémiologie et santé publique : Évaluation des programmes, des politiques et des interventions en santé publique

EPHP4.02

Trans Latinas Ontario (TLO): 4 Years of Empowering HIV+/at risk Transwomen at the HIV Prevention Program of the Centre for the Spanish-Speaking Peoples (CSSP)

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B**ackground:** The Trans community has recently gained media/social recognition as never before. Several trans-women requested counselling services (@ CSSP) to overcome several extreme social barriers: Transphobia, HIV stigma, rejection, marginalization, migration-related issues and lack of mental health access. Clients needed help; therefore, a first-of-its-kind-in Canada drop-in program was urgently developed. Trans Latinas Ontario was born (2015-2019, n=40), and was delivered in the format of a psychoeducational/support group.

Methods: 4 focus groups and written surveyed narratives (n= 20), from different participants were gathered, as well as post sessions' evaluation forms (% 8/X session, X/75 sessions = 600). Data analysis was conducted by the CSSP's Clinical Counsellor and an Educator conducted a themed analysis. Narratives were coded into major 4 themes showing the group's health and social impact. A final 2019's meeting was conducted (n=15) for a formal evaluation.

Results: 4 themes emerged: 1) EMPOWERMENT: Psychoeducational/support groups are an invaluable source of empowerment - many participants had never met any other trans person before; for many, TLO became a family- 2) SOCIAL INCLUSION & HEALTH: TLO helped individuals to reduce social isolation and to gain access to mental and sexual health services 3) EMPLOYMENT INTEGRATION: A number of participants (n=8) gained working experience and had become formally employees or community leaders, increasing wellness among their peers. 4) RESILIENCE: TLO evolved in 2017 into TLRB (Trans Latinas Rompiendo Barreras) a partnership-led program among CSSP, University of Toronto, GloMHI, WHIWHCHC, and GTA's ASOs.

Conclusion: There is currently a lack of programming and services for racialized transwomen and gender diverse HIV+/- at-risk individuals, who also face other determinants of health as migration and lack of employment. This gap needs to be addressed in order to improve mental and sexual health access and the continuum of care needed to achieve equitable societal inclusion.

Epidemiology and Public Health: Evaluations of Public Health Policies, Programs or Interventions
Épidémiologie et santé publique : Évaluation des programmes, des politiques et des interventions en santé publique

EPHP4.03

Can't Pass it On: Evaluation of a Pan-Canadian U=U Awareness Campaign

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B**ackground:** There is now scientific consensus that a person on effective treatment does not transmit HIV to sexual partners. However, the knowledge that "undetectable equals untransmittable" (U=U) is still not widely known among the communities most affected by HIV in Canada. CATIE launched a Canadian adaptation of the British "Can't Pass It On" campaign in 2019 to address this knowledge gap, and assessed its impact with pre- and post-campaign surveys.

Methods: Over the summer of 2019, CATIE conducted a pan-Canadian online survey targeting people living with HIV, their service providers, and HIV-negative people among key affected populations. Respondents were asked if they had heard that a person on effective HIV treatment can't pass it on to a sexual partner, whether this claim was true, and how confident they were in its accuracy.

The Canadian "Can't Pass It On" campaign was delivered from September to December 2019. A post-campaign survey in January 2020 will assess its impact on awareness, belief and confidence.

Results: 179 respondents in Canada completed the pre-campaign survey. 76.4% of respondents had heard that a person living with HIV on effective treatment can't pass it on through sex, 56.4% agreed that this claim was true, and 46.1% described themselves as "very confident" about its accuracy. HIV-positive respondents and service provider respondents were more likely than other respondents to have heard of, to agree with, and to be confident in U=U.

The post-campaign survey in January 2020 will assess campaign recognition and measure differences in awareness and belief, including differences between subgroups.

Conclusion: A pan-Canadian awareness campaign aimed to bridge the U=U knowledge gap among people living with HIV, their service providers, and the populations most affected by HIV in Canada. Pre- and post-campaign surveys measure the impact of this campaign on levels of awareness, belief and confidence.

Epidemiology and Public Health: Evaluations of Public Health Policies, Programs or Interventions
Épidémiologie et santé publique : Évaluation des programmes, des politiques et des interventions en santé publique

EPHP4.04

"Fib-4 First" Risk-stratification Model in a NAFLD Assessment Pathway for HIV Mono-infected Patients

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B**ackground:** NAFLD and associated liver fibrosis in people living with HIV (PLWH) impacts on morbidity and economic resources. The simple biomarker Fibrosis-4 (FIB-4) reliably excludes fibrosis and is more feasible than transient elastography (TE), which is not largely accessible. We aimed to: i) estimate the proportion of TE examinations spared using a FIB-4 first strategy to triage PLWH for NAFLD assessment; ii) determine predictors of discordance (false negativity) between TE and FIB-4 in low-risk fibrosis category.

Methods: We included 1607 HIV mono-infected patients from three prospective cohorts in Montreal, Palermo and Modena. Low and high-risk fibrosis categories were identified using a FIB-4 threshold of 1.3. NAFLD was defined as controlled attenuation parameter ≥248dB/m; significant liver fibrosis and cirrhosis were defined as TE ≥7.1 and ≥13kPa, respectively.

Results: Prevalence of NAFLD and liver fibrosis was 37% and 15%, respectively. By FIB-4, 585 (36%) patients were in high-risk fibrosis category: according to TE examination, 212 (36%) had NAFLD and 127 (22%) had liver fibrosis (of whom 44 had cirrhosis). 1022(64%) patients were in low-risk category by FIB-4: among them, 108(11%) had liver fibrosis at TE examination. In multivariate logistic regression, BMI >25 kg/m^2 and low HDL cholesterol were associated with discordance between TE and FIB-4 in low-risk category.

Conclusions: A model of care based on a "FIB-4 first" strategy could save more than 50% of TE examinations, optimizing resource in HIV clinics. Patients stratified as low-risk by FIB-4 should be still considered for referral for TE when overweight or with low HDL.

Cofactors associated with discordance between TE and FIB-4 in patients classified at low-risk fibrosis by FIB-4.

	aOR	95% CIs	p value
Male sex	1.13	0.66-1.82	0.733
Nadir CD4 < 200 cell/uL	1.21	0.77-1.89	0.411
Undetectable HIV viral load	1.27	0.69-2.32	0.430
Duration of HIV infection	1.01	0.98-1.03	0.605
Diabetes	0.77	0.46-1.28	0.320
BMI >25kg/m2	3.82	2.40-6.07	0.000
Low HDL choles-terol	1.80	1.15-2.83	0.010

Epidemiology and Public Health: Evaluations of Public Health Policies, Programs or Interventions
Épidémiologie et santé publique : Évaluation des programmes, des politiques et des interventions en santé publique

EPHP4.05

Trends in Knowledge of HIV Status and Efficiency of Testing Programs in Sub-Saharan Africa (2000-2018): a Modeling Study of Survey and HIV Testing Program Data

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B**ackground:** Knowledge of HIV status (KOS) can be an important bottleneck in national epidemic responses. To end the AIDS epidemic, UNAIDS set the target of 90% diagnosis coverage by 2020. As we reach this date, this study aims to comprehensively assess trends in KOS, diagnosis gaps, and efficiency of HIV testing services (HTS) in sub-Saharan Africa (SSA).

Methods: We used the UNAIDS-supported Shiny90 mathematical model to synthesize 177 population-based surveys (N=2.6 millions) and HTS program data (N=196 country-years) in 44 countries in SSA. We then examined trends in KOS, median time from HIV infection to diagnosis (accounting for the competing risk of HIV-death), and HTS positivity and "true" proportion of new diagnosis (adjusting for repeat testing of already known positive).

Findings: KOS steadily increased from low levels in early 2000s to 80% (95% credible intervals [95%CrI]: 78-81%) in 2018. Concomitant with these gains, the median time to diagnosis (or death) decreased from 11 to 3 years. Men had lower KOS (74% in 2018) than women (84% in 2018) and 15-24 years old were also the least likely to know their status (58% in 2018). In absolute numbers, however, the largest group of undiagnosed individuals are men aged ≥25 years, with 2 million left undiagnosed. As KOS increased, HTS positivity decreased from 10% to 3% and the proportion of new diagnoses among all positive tests dropped from 91% to 44% over the study period.

Interpretation: The last two decades witnessed remarkable increases in KOS in SSA. However, reaching 90% diagnosis coverage is challenging and our results shed light on stark gender and age gaps in KOS. In a context of declining positivity and yield of "true" new diagnoses, testing programs needs to be further optimized and should focus on priority populations most at risk of onward transmission.

Epidemiology and Public Health: Evaluations of Public Health Policies, Programs or Interventions
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EPHP4.06

Impact of Screening Criteria for Tenofovir Alafenamide Eligibility in the BC Centre for Excellence in HIV/AIDS (BC-CfE) Drug Treatment Program (DTP)

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B**ackground:** When tenofovir alafenamide (TAF) became available, the BC-CfE DTP implemented clinical criteria to reserve TAF for persons with medical need, while achieving cost-savings from generic antiretrovirals. TAF eligibility was assessed during the routine BC-CfE prescription approval process. We evaluated TAF prescription requests, and the impact of criteria on TAF usage.

Methods: Prescription data were abstracted from BC-CfE TAF requests received between 1-March-2017 and 30-May-2018. Eligibility criteria included: ≥1 qualifying medical issue precluding tenofovir DF (TDF) use, either renal (eGFR ≥30 to 59 mL/min; severe hypophosphatemia) or bone (T-score ≤ -2.5 or fragility fracture), and ≥1 qualifying reason to not use abacavir (HLA-B*5701 positive; abacavir resistance or intolerance; hepatitis B coinfection).

Results: Of 324 TAF requests, 281 (87%) were approved, of which 163 (58%) met and 88 (31%) partially met TAF criteria (see table). None of the 43 (13%) non-approved requests met TAF criteria. At TAF introduction in March 2017, 3981/7134 (56%) DTP participants were receiving TDF and 2824 (40%) abacavir. In April 2019, most of 7386 DTP participants were receiving either generic TDF (3260, 44%) or abacavir (3291, 45%), and 587 (8%) TAF.

Conclusion: Since March 2017, the BC-CfE has provided TAF to DTP participants who have a medical reason not to be treated with less costly generic alternatives. During the first 15 months, 87% of TAF requests were approved. Eligibility criteria have moderated TAF usage in BC. After 25 months of TAF availability, 89% of DTP participants were receiving generic TDF or abacavir, while 8% were receiving TAF.

Table 1: Prescriber-provided reasons for TAF requests and TAF approval decisions*

	TAF Approved, met all criteria	TAF Approved, met ab-acavir but not medical criteria	TAF Approved, met medical but not ab-acavir criteria	TAF Approved, no criteria met	TAF Not Approved
N	163	76	12	30	43
Abacavir non-use criteria met	163 (100%)	76 (100%)	0	0	16 (37%)
Renal criteria met	100 (61%)	0	10 (83%)	0	8 (19%)
Bone criteria met	53 (33%)	0	2 (17%)	0	3 (7%)
Renal and bone cri-teria met	10 (6%)	0	0	0	1 (2%)
Other renal reason(s) (eGFR declining, proteinuria, mild-moderate hypophosphatemia)	NA	21 (28%)	NA	3 (10%)	6 (14%)
Other bone reason(s) (low bone density, T-score -1.0 to -2.4)	NA	25 (33%)	NA	1 (3%)	3 (7%)
Other renal + other bone reasons	NA	15 (20%)	NA	1 (3%)	3 (7%)
Other medical rea-son(s)	NA	10 (13%)	NA	21 (70%)	2 (5%)

*Total N=324; data shown are approval category N (column %). TAF: tenofovir alafenamide. Medical criteria: ≥1 renal or bone health- related reason why tenofovir DF is not an option; abacavir non-use criteria: ≥1 reason why abacavir is not an option. NA, not applicable.

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EPHP4.07

Comparing PrEP Accessibility and Users in Mid- and Large-sized Urban Centres

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B**ackground:** Increasing access to pre-exposure HIV prophylaxis (PrEP) has increasingly been heralded as a means of dramatically reducing new HIV infections and playing a significant role in eliminating the epidemic. As such, access and usage of PrEP has been studied in some depth. However, these studies have all focussed on extremely large urban centres, excluding the experiences of people living in small to mid sized cities; a large population that requires targeting to optimize PrEP availability and utilization.

Methods: We reviewed all current patients in two PrEP clinics (Hamilton and Toronto), comparing the distances travelled to reach each clinic to assess ease of PrEP access, as well as comparing baseline HIRI-MSM scores and age.

Results: Patients receiving care at the Hamilton clinic travelled on average almost twice as far (22.13km) as those in the Toronto clinic (11.19km), a significant difference in accessibility. Patients in Hamilton tended to be older with an average age of 36, compared to an average age of 33 in Toronto. Finally, patients seen in Toronto had slightly higher baseline HIRI-MSM scores than those in Hamilton (17.8 vs 15.3); however, this difference is unlikely to be clinically significant.

Conclusions: These results clearly illustrate that accessing PrEP in small and mid sized Canadian cities is more challenging than in large urban centres. While efforts targeting extremely large cities has resulted in increased PrEP availability, similar efforts in mid and smaller sized cities would significantly increase overall access to PrEP in Ontario, and have thus far been lacking. The baseline differences in age between larger and smaller city populations could also potentially inform advertising campaigns in both locations, increasing their efficacy and thus PrEP usage.

Epidemiology and Public Health: Evaluations of Public Health Policies, Programs or Interventions
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EPHP4.08

An Epidemiological Model for HIV Self-Testing in Canada

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Background and Objectives: HIV self-testing (HIVST) is not available in Canada. This study aimed to develop an epidemiological model of HIVST plus HIVSmart! (a multilingual, connected, digital application platform) compared to conventional HIV testing in Canada to understand the impact of HIVST using the HIVsmart! application on, a) the prevalence of undiagnosed HIV, b) linkage to care, and c) utilization of treatment.

Methods: Using TreeAge Pro 2018 software, we developed a Markov state-transition model comparing HIVST using the HIVSmart! application that facilitates access to linkage compared to conventional HIV testing alone. The model followed a hypothetical cohort through various stages of infection, diagnosis, and treatment. Each cycle of the model represented one year in real-time. Data from HIVSmart! studies and relevant HIVST literature were used to parameterize the model.

Results and Conclusion: The model found that more people became diagnosed, got linked to care, and accessed ART following HIVST than if using conventional testing alone, only when HIVST increased uptake of testing relative to conventional testing. When HIVST did not increase uptake of testing, losses to follow-up after HIVST reduced the number of HIV positive individuals who were linked to care and initiated ART. Incorporation of digital apps such as HIVSmart! will be critical in improving HIV testing uptake, which may help to reduce plateauing incidence in Canada. In order for HIVST to reach its full potential as a testing strategy, linkage to care using digital resources such as HIVSmart! should be in place to ensure linkage to care occurs.

Trend of Interest	**Year**	**HIVST**	**Conventional Testing**
		%	**%**
Prevalence of HIV+ in cohort	1 (Baseline)	0.17	0.17
	5 (End)	0.20	0.20
Proportion of HIV+ linked to care	1 (Baseline)	86	86
	5 (End)	95.99	95.40
Proportion of HIV+ linked to care and on ART	1 (Baseline)	69.66	69.66
	5 (End)	83.59	83.14
Proportion of HIV+ undiagnosed	1 (Baseline)	14	14
	5 (End)	2.99	3.69

Epidemiology and Public Health: Evaluations of Public Health Policies, Programs or Interventions
Épidémiologie et santé publique : Évaluation des programmes, des politiques et des interventions en santé publique

EPHP4.09

Evaluating HIV Rapid/Point of Care Testing Positive Predictive Value among Risk Factor Groups in Ontario, 2011-2018

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B**ackground:** Ontario's HIV Rapid/Point of Care (POC) testing program promotes access to HIV testing for populations at highest risk for HIV (priority populations). While sensitivity and specificity of the POC screening test are >99%, there is an increased likelihood of false reactive results in populations with low prevalence of HIV. In 2014, Ontario's Point of Care (POC) testing program was refined to specifically target priority populations at higher risk of HIV transmission. We aim to describe changes in POC positive predictive value (PPV) by risk categories to assess impacts from focused testing.

Methods: Public Health Ontario data was used to assess annual volumes, positivity rates, PPV of reactive POCs to confirmatory serology from 2011-2014 to 2015-2018 by risk categories captured on POC test requisitions.

Results: POC test volumes declined from 2015 to 2018, and overall POC positivity increased from 2014 (0.51%) to 2018 (0.71%). From 2011-2014 to 2015-2018, PPV remained similar for MSM IDU (100% to 100%) and MSM (95.2% to 95.6%), and increased in those from endemic countries (87.8% to 95.1%), IDU (80.7% to 82.3%), high-risk heterosexual sex (76.0% to 78.9%), and low-risk heterosexual sex (46.7% to 65.7%).

Conclusions: As expected, focusing on priority populations increased overall positivity rates from 2015 to 2018. While PPV remained high in high prevalence populations, there was an increase amongst those 'low-risk heterosexual sex' suggesting potential differences amongst those with the same risk factor pre-2015. The range of PPV results (from 100% in MSM-IDU to 65.7% in low-risk heterosexual) suggests that consideration of risk factors may be helpful when counselling clients on results of POC screening. Additionally, as new HIV testing modalities (e.g. home testing) emerge, these results also have important implications for messaging around the interpretation of test results and likelihood of false reactive results in different risk groups.

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EPHP4.10

Vertical Transmission in Canada: Canadian Perinatal HIV Surveillance Program

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Objectives: To describe demographics of mother-infant pairs (MIP), antiretroviral (ART) treatment during pregnancy, and vertical transmission (VT) rates in the Canadian perinatal HIV surveillance cohort of births to HIV+ mothers in 2018 and evaluate trends over the last 10 years.

Methods: 23 Canadian pediatric and HIV centres report maternal and infant data yearly. VT rates are based on the "perinatally identified cohort" defined as MIP delivered in Canada and identified within 3 months after birth. Data collected include maternal characteristics, pregnancy ART and infant outcome.

Results: Among the 259 infants born to mothers with HIV in 2018, 36% were born in Ontario, 17% in Quebec, 16% in Saskatchewan, 15% in Alberta, 10% in BC, and 6% in Manitoba. 54% mothers were Black, 23% were Indigenous, and 16% were Caucasian. 65% of mothers acquired HIV heterosexually, 17% through injection drug use, and 2.3% through VT; the numbers and percentages of these characteristics have remained stable over the last 10 years. 95% of women received at least 4 weeks of combination ART (cART) prior to delivery, the percentage having increased over the last decade. Mothers receiving <4 weeks cART included 4/42 (9.5%) in Saskatchewan, 3/40 (7.5%) in Alberta, 1/15 (6.7%) in Manitoba, and 4/90 (4.4%) in Ontario. Receipt of < 4 weeks of cART was associated with maternal ethnicity (Indigenous=13.6%, Black=2.2% and Caucasian =0%) and mode of infection (IDU=8.9%, heterosexual=3.6%); these trends are consistent over time except that Black mothers have previously had the lowest proportions of suboptimal therapy. There were 5 (1.9%) cases of VT in 2018, consistent with an average of 3.3 VT cases per year over the last 10 years (range 0%-2.8%).

Conclusion: Over the past decade cART uptake in pregnancy has been high and VT rate steady at about 3%. However, missed opportunities for prevention in pregnancy continue.

Epidemiology and Public Health: Evaluations of Public Health Policies, Programs or Interventions
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EPHP4.11

Mapping the Impact of Supervised Consumption Services and Overdose Prevention Sites on Crime Rates in Vancouver, BC

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I**ntroduction:** The implementation of supervised consumption services (SCS) has been associated numerous positive outcomes for individuals and communities, including decreases of opioid overdoses, HIV transmission, discarded syringes, public disorder, and public injecting, without any observed increases in the number of crimes in the neighborhood (Wood et al, 2004, Wood et al., 2006). Unfortunately, those opposed to SCS often overlook or disregard the well-documented, evidence-based positive impacts of this service.

Methods: This geographic analysis involved mapping the past 17 years of drug-related crimes which occurred in Downtown and Downtown Eastside Vancouver, as well as the locations of 9 SCS and Overdose Prevention Sites (OPS) currently operating in Vancouver. The number of crimes which occurred within 200m of SCS/OPS was calculated, and compared to the number of crimes which occurred in the same area prior to the opening of SCS/OPS. The analysis was repeated for areas of 250m, 300m, and 400m surrounding SCS/OPS.

Results: This data reveals that the proportion of all crimes within the Downtown/Downtown Eastside of Vancouver which occurred near SCS/OPS locations did not significantly increase following the opening of SCS/OPS in late 2016. These findings support the 2006 study which observed that there was no significant change in rates of crime following the opening of the Insite SCS (Wood et al).

Conclusion: This finding challenges the misconception that SCS and OPS leads to increased rates of crime within neighborhoods. Successfully communicating these results could help reduce the barriers of public, internalized, and structural stigma which can make SCS and OPS inaccessible as a harm reduction strategy. This data can be used as a tool to inform opponents of SCS and foster the creation of communities where people who use drugs feel safe and respected in accessing services which reduce harm and prevent opioid overdoses as well as HIV transmission.

Epidemiology and Public Health: Evaluations of Public Health Policies, Programs or Interventions
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EPHP4.12

Gender Differences in HIV Diagnoses in BC

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B**ackground:** BC HIV Testing Guidelines recommend providers routinely offer HIV tests for 18-70 year olds and every year for higher burden populations. We examined HIV transmission risks, infection stage at diagnosis and HIV testing patterns prior to diagnosis.

Methods: New HIV diagnoses in BC identifying as a man or woman (2010-2019) were analyzed (N=2,366) (Table 1). Frequencies and logistic regressions predicting infection stage and last negative test by gender, exposure, born/lived in an HIV-endemic country, sex trade work (STW), pre-/post release of testing guidelines (2014) and age were calculated.

Results: MSM, PWID and reporting HIV+ contacts were less likely to have an advanced stage (CD4+<200) HIV infection, more likely to test the previous year, and less likely to have no previous negative tests/last one >5 years ago (Table 2). Advanced diagnoses were related to pre-guideline release. Those from endemic countries were more likely to have an advanced stage diagnosis, less likely to test the previous year and more likely to have no previous negative tests/last test was >5 years. Those reporting STW were less likely to have no previous tests/last test was >5 years. Women were less likely to have no previous tests/last test was >5 years but excluding transmission risk in the model reversed the effect's direction (not shown), meaning that generally women more likely to have no previous tests/last one was >5 years ago.

Conclusions: The findings suggest programs and testing guidelines aimed toward higher burden populations have increased frequency of testing and improved earlier HIV diagnoses.

Table 1. Demographics of Newly Diagnosed HIV Cases, 2010-2019

		Women n (%)	**Men n (%)**
		359 (15)	2006 (85)
Stage of Infection*	Known Stage	307 (86)	1732 (86)
	Acute	53 (17)	467 (27
	Advanced	75 (24)	369 (21)
	Other Stage Known Stage	179 (58)	896 (52)
	Unknown Stage	52 (14)	274 (14)
	Last negative HIV test <= 1 year	60 (17)	527 (26)
	Last negative HIV test > 1 year but < 5 years	84 (23)	457 (23)
	Diagnosed on first HIV test	132 (37)	738 (37)
	Men who have Sex with Men (MSM)	--	2360 (68)
	People Who Inject Drugs (PWID)	90 (25)	163 (8)
	Heterosexual	229 (64)	337 (17)
	Other/Unknown	40 (11)	146 (7)
Born/resided in Endemic Country	Yes	45 (13)	74 (4)
	No	296 (82)	1825 (91)
	Unknown	18 (5)	107 (5)
Street Trade Work	Yes	35 (10)	47 (2)
	No	306 (85)	1852 (92)
	Unknown	18 (5)	107 (5)
		96 (27)	374 (19)
		247 (69)	1537 (77)
		16 (4)	95 (5)
		Women M (SD)	**Men M(SD)**
Age		39 (12)	40 (13)
*Note: Percentages of Acute, Advanced and Other Stage Known based on total in Known Stage			

Table 2. Logistic models predictions Stage of Infection, Testing in the Last Year, No Previous Negative/Last Test > 5 years

Outcome	Predictors		aORs	CIs
Advance Stage of Infection (CD4+<200)	Gender (ref=Men)	Women	0.6	0.4, 1.1
	Exposure (ref=Heterosexual)	MSM	0.2***	0.1, 0.2
		PWID	0.3*	0.2, 0.5
		Other+	0.9*	0.3, 2.2
	Contact HIV+ (ref=No)	Yes	0.4***	0.3, 0.6
	Street Trade Work (ref=No)	Yes	1.3	0.6, 3.1
	Endemic Country (ref=No)	Yes	4.4***	1.9, 10.1
	Testing guidelines release (ref= '<2014')	>=2014	0.6**	0.4, 0.8
	Age		1.1***	1.1, 1.1
Tested in the Last Year (or not)	Gender (ref=Men)	Women	1.1	0.7, 1.6
	Exposure (ref=Heterosexual)	MSM	3.4***	2.4, 4.8
		PWID	3.0***	2.0, 4.4
		Other+	0.6	0.3, 1.5
	Contact HIV+ (ref=No)	Yes	1.4**	1.1, 1.8
	Street Trade Work (ref=No)	Yes	1.1	0.7, 1.9
	Endemic Country (ref=No)	Yes	0.4**	0.2, 0.7
	Testing guidelines release (ref= '<2014')	Yes	1.0	0.8, 1.3
	Age		1.0***	1.0, 1.0
No Previous Negative Test/ Last Negative > 5 years	Gender (ref=Men)	Women	0.7*	0.5, 1.0
	Exposure (ref=Heterosexual)	MSM	0.3***	0.2, 0.3
		PWID	0.3***	0.2, 0.4
		Other+	0.8**	0.5, 1.4
	Contact HIV+ (ref=No)	Yes	0.7**	0.6, 0.9
	Street Trade Work (ref=No)	Yes	0.4***	0.2, 0.7
	Endemic Country (ref=No)	Yes	2.2**	1.4, 3.5
	Testing guidelines release (ref= '<2014')	Yes	1.1	0.9, 1.3
	Age		1.0***	1.0, 1.0
'+ Includes Other, No Identified Risk and Un-known; *p<.05; **, p<.01, ***p<.001				

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EPHP5.01

Health Seeking Behavior Among Women Living with HIV/AIDS in Karnataka, India

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B**ackground:** There is penury of studies on the women living with HIV/AIDS (WLHA) about their health-seeking behaviour. Hence, there is a need to understand their health problems and health-seeking behaviour so that necessary policy changes can be made in order to facilitate their health-seeking behaviour.

Data and methods: The study was a cross-sectional quantitative survey of 633 married WLHA in the age group 15 to 29 years from Bagalkot district, Karnataka, India. The study employed stratified random sampling design and using a structured questionnaire.

Results: Among the health problems experienced STI was the main concern as 33% of respondents experienced any STI during the past three month's period. Among those experienced STI, only about 57% sought treatment for the STI they had in the past 3 months. While health-seeking behavior is more or less same by age group and by literacy level, however, those from rural areas were more likely to seek treatment than their urban counter-parts. As far as the place of treatment is concerned, a large majority visit government hospital for the STI treat-ment (84%). The other main health facilities from where the respondents sought treatment was Government PHCs (17%), Private hospital/clinic (11%) and Government dispensary (10%). Very few women attend other facilities such as Govt CHC/rural hospital (5%) and Govt VCTC/ICTC and NGO/Trust hospital (3% each). About 3% of women experienced an STI in the past three months also sought treatment of private home remedies.

Conclusions: No difference found by background variables suggests that the knowledge of STI. Efforts may be required to develop strategies to include enhancing the capacity of the concerned service providers so that not only quality of care can be improved and thereby higher utilisation of the services by the women living with HIV/AIDS.

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EPHP5.02

HIV Viral Load Suppression and Linked Transmission Amongst Male and Female Sex Workers in the Nairobi Sex Worker Outreach Programme (SWOP)

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Background. Antiretroviral therapy (ART) improves health outcomes in individuals living with HIV, and also prevents HIV transmission by suppressing viral load (VL). The impact of ART on HIV incidence and transmission in key populations such as sex workers (SWs) is currently unclear. Here we present VL suppression and transmission networks inferred from phylogenetic data from male and female sex workers (MSW, FSW) accessing the Sex Worker Outreach Program (SWOP) in Nairobi, Kenya.

Methods. Blood was collected from HIV+ MSW (n=68) and FSW (n=424) accessing SWOP from 2016-18. Sociodemographic, sexual behavior, and antiretroviral use variables were captured via questionnaire. HIV VL was measured using the Abbott RealTime HIV-1 assay. HIV drug resistance genotyping was used for subsequent phylogenetic cluster analyses using patristic distance between sequences measured on phylogenetic trees. Data were analyzed using non-parametric statistical tests and logistic regression in SPSS v25.

Results. Participants were ≤35 years of age (55.3%) and in sex work for ≤4 years (51.0%). HIV VL was detected in 16.2% of MSW and 15.8% of FSW (p = 0.9). FSW with a detectable VL tended to be younger (32 vs 35 years, p=0.071). Compared to VL-detectable FSWs, a higher proportion of FSW with suppressed VL reported always using a condom with casual (70.9% vs. 57.8%; p = 0.08) and regular clients (31.1% vs. 25.9%; p = 0.58). In a subset analysis, over one-third (35.8%) of HIV sequences were part of a transmission network inferred by phylogenetic analysis, suggesting overlapping sexual/social networks among M/FSW.

Conclusion. A high proportion of M/FSW showed evidence of HIV VL suppression. As ART expands in key populations, initiatives to effectively promote adherence may also be critical. Expanded phylogenetic analysis will help understand HIV transmission dynamics between and within key populations in Nairobi, Kenya.

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EPHP5.03

Phylogenetic Analysis of Next Generation Sequence Data to Examine the Impact of Conflict in Eastern Ukraine on the Dynamics of Sex Work and the HIV/HCV Epidemic

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B**ackground:** Ukraine has high rates of HIV and Hepatitis C (HCV), with the epidemic concentrated in the eastern part of the country where conflict is at its worst. The *Dynamics* study evaluates the consequences of conflict in Eastern Ukraine and its affect on HIV/HCV rates among female sex workers (FSW) and their clients.

Methods: Dried blood spots (DBS) were collected on Whatman 903 cards from 560 FSW and 369 of their clients. FSW were in sex work for ≥ 3 months and age ≥ 14, clients were age ≥ 18. Serology was done using the Avioq HIV-1 Microelisa system and the HCV Ortho Clinical Diagnostics kit. Next Generation Sequencing (NGS) on HIV *pol* and HCV *NS5B* was conducted followed by phylogenetic analysis using TimeTree: maximum likelihood phylodynamic analysis. Time since HIV infection was inferred using an online tool described available at https://hiv.biozentrum.unibas.ch/ETI/.

Results: The overall HIV prevalence was 2.7%; 2.9% among FSW and 2.4% among clients, all subtype 1A. The overall HCV prevalence was 6.1%; 5.9% among FSW and 6.5% among clients. Three major subtypes were detected; 3a (58%), 1b (38%) and 1a (4%) with 3a predominately found among FSW and 1b found among clients. Phylogenetic analysis shows little clustering of HIV but heavy clustering of HCV with transmission mainly occurring among FSWs or clients separately, with little transmission seen between the two. The inferred time of HIV infection graph suggests that the majority of infections occurred shortly before or after the onset of conflict.

Conclusion: The HIV/HCV prevalence is higher in the FSW and client population compared to the general population of 0.9% and 3.1% respectively, highlighting the importance of these groups for targeted prevention programs. Timing of infection suggests conflict itself as well as other factors prior to conflict may have played a role in the epidemic.

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EPHP5.04

Standardized Mortality Ratio among Street-Connected Youth with a High Burden of HIV in an Urban Setting in Sub-Saharan Africa

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B**ackground:** A recent publication described a high number of deaths among street connected youth (SCY) in an urban setting in Sub-Saharan Africa (SSA), mostly from HIV and violence. The SCY population is known to have a high burden of HIV. The goal of this study is to calculate mortality rates and standardized mortality ratios (SMRs) to estimate excess mortality among SCY compared to the general population of young people in Kenya between 2010 and 2015.

Methods: Deaths among SCY age <30 in an urban setting in Kenya between 2010 and 2015 were collected via standardized reporting forms. Population data on SCY were obtained via a 2016 Point-in-Time count and used to estimate the 2013 SCY population size. Mortality and population data on Kenyan youth were obtained via World Population Prospects. Using indirect standardization, we calculated standardized mortality ratios (SMR) and 95% Confidence Intervals (CI) via the exact two-sided Poisson test.

Results: Between 2010 and 2015, there were 69 deaths among SCY ages 0 to 30, and estimated SCY population in 2013 was 1247.5 (crude mortality rate: 55.3 per 1000). The SMR among street-connected females ages 0-19 and 20-29 were 2.79 (95% CI 1.44-4.88) and 7.55 (95% CI 3.77-13.51), respectively. The SMR among street-connected males ages 0-19 and 20-29 were 0.71 (95% CI 0.32-1.35) and 5.48 (95% CI 3.86-7.55), respectively.

Conclusions: Despite limited numbers, data suggest there may be an elevated burden of mortality among SCY in an urban setting in SSA. Future investigations of mortality among SCY in SSA are warranted

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EPHP5.05

Awareness and Uptake of HIV Pre-exposure Prophylaxis Among Gay and Other Men Who Have Sex with Men in Ontario

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Gay, bisexual and other men who have sex with men (GBMSM) account for the majority of HIV infections in Canada. Pre-exposure prophylaxis (PrEP), the use of antiretroviral medications, specifically tenofovir/emtricitabine, has been shown to reduce the risk of HIV infection by over 90%. Since Health Canada approval in 2016, the number of GBMSM taking PrEP has grown steadily but remains low. The purpose of this analysis was to explore PrEP awareness, acceptability, and uptake in different sociodemographic groups of GBMSM living in different regions of Ontario. Data were collected using an anonymous online survey from June 2018 to March 2019. A total of 1560 HIV negative GBMSM completed the survey. The mean age was 37.3 years (SD = 14.7). Most participants had sex with only or mostly men (95%), most had completed postsecondary schooling (79.8 %) and one third had an annual income ≥$80,000. Overall, only 10% reported currently taking PrEP. PrEP use was highest among men 31-50 years of age (17%) and lowest among those aged 18-30 (7%) and over 60 (3%). Notably, 12.5% of respondents and 15% or those aged 18-30 indicated they would like to use PrEP but either didn't know where to get it or couldn't afford it. PrEP uptake was highest in Toronto (21%) and Ottawa (13%) and lowest in northern (4%) and eastern (3%) Ontario. PrEP awareness remains low most notably in the north and south with 59% and 56% respectively indicating they had never heard of PrEP or knew very little about it. Over half of respondents indicated concerns over cost (63%), potential side effects (59%) and increasing STI's (59%). Overall, PrEP use is highest among urban middle aged GBMSM. Difficulties accessing PrEP is an issue for younger GBMSM, while lack of awareness remains as high as 60% in many parts of Ontario.

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EPHP5.06

The Cango Lyec Project - Healing The Elephant: Is Hepatitis B The New HIV Among Post-Conflict Affected Populations In Mid-Northern Uganda?

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B**ackground:** Hepatitis B (HBV) poses significant economic burden in post-conflict Northern Uganda resulting from years of life lost to liver disease. We estimated prevalence of chronic HBV infection and related vulnerabilities to inform and focus future interventions.

Methods: A population-based cross-sectional survey involving adults 13-49 years old was collected 2011-2012. Baseline samples were tested for HBV surface antigen (HBsAg), HBV e-antigen (HBeAg), antibodies to HBV surface antigen (HBsAb), antibodies to HBV e-antigen (HBeAb), and antibodies to HBV core antigen (HBcAb). All HBsAg positive samples were tested for IgM antibodies to HBV B core antigen (HBc-IgM) and where available, >6-month follow-up sample was tested for HBeAg+ and HBV DNA. Data were analyzed using STATA 15 software. Logistic regression accounted for variance due to complex two-stage sampling that included stratification, unequal selection probabilities and clustering within a community. Odds ratios measured effect of chronic HBV in analyses of potential risk factors associated with chronic HBV infection.

Results: Testing was conducted on 2,421 samples with almost half (45.7%) still susceptible to HBV infection. HBsAg seropositivity was 11.9% (10.9-13.0), chronic HBV was 11.6% (10.4-12.8), acquired immunity resulting from vaccination was 10.9%, and prior natural infection was 31.5%. Prevalence of chronic HBV among HIV-positive people was 11.1%. Odds of chronic HBV was significantly higher among men (aOR=1.64, 95%CI: 1.01-2.67), those with a history of abduction (aOR=1.46, 95%CI: 1.06-2.02) and women with £2 pregnancies (aOR=1.76, 95%CI: 1.01-3.08). Other independent predictors were age and education.

Conclusion: Chronic HBV infection in adults is highly endemic in the districts of Gulu, Amuru and Nwoya. Effective strategies to focus interventions of HBV prevention among the susceptible and treatment of those chronically infected are urgently needed. Specific attention is required for males, people under the age of 35 years, never been to school, or with a history of ever been abducted.

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EPHP5.07

Pregnancy Intention and Prevalence According to HIV Status Among Female Sex Workers in Mali and Benin

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B**ackground:** Women living in Sub-Saharan Africa have the world's highest rates of new HIV infections and unintended pregnancies. These two risks are magnified among female sex workers (FSWs), where HIV prevalence is 12 times higher than in the general population. Yet, no information is available concerning FSWs' pregnancy intentions, which could help prevent HIV mother-to-child transmission (MTCT) and unintended pregnancies. We investigated whether pregnancy intention and pregnancy prevalence varied according to FSWs' HIV status.

Methods: We analysed baseline data from two prospective observational cohort studies. In Bamako, Mali 302 FSWs were recruited (November 2017-February 2018) and 330 in Cotonou, Benin (March 2017-June 2017). We assessed pregnancy frequencies according to HIV status and compared those using chi-square. Age and country-adjusted odds ratios were estimated using logistic regression.

Results: Mean age was 26 years (N=302) in Mali and 35 years old (N=326) in Benin. HIV prevalence was 20.2% in Mali and 24.8% in Benin, whereas 24.8% and 28.2% had the intention of becoming pregnant during the next six months with no difference according to HIV status. In Benin only, the proportion of FSWs reporting having been pregnant prior to entering sex work was higher (97.6%, 80/82) among FSWLHIV compared to other FSWs (88.9%, 217/244) with no significant difference when adjusted for age (p-value=0.3005). The occurrence of pregnancies since engagement in sex work was reported less often (FSWLHIV=30.1% and others=31.5%) with no significant difference between the two groups (p-value=0.3494). FSWLHIV reported more frequently to have wanted a pregnancy in the last 6 months (25.7% vs. 15.5% among other FSWs, aOR = 2.48, 95%CI:[1.5, 4.0]).

Conclusion: With FSWLHIV being more likely to desire children during sex work practice, while less than half of them currently receive ART, a specific attention should be given to support them in that decision in order to prevent MTCT.

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EPHP5.08

Sociodemographic Characteristics of HIV Positive Gay and Other Men who Have Sex with Men in Ontario

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Today, with highly effective and simple antiretroviral regimens, HIV care is about more than viral suppression. But how much do we know about the physical, mental and sexual health of individuals living with HIV? Given that gay, bisexual and other men who have sex with men (GBMSM) account for more than half of those living with HIV in Canada, we sought to answer these questions focusing on this population. Data were analyzed from an online survey of GBMSM in Ontario from June 2018 to March 2019. There were a total of 1960 respondents, 8.6% of whom (n: 146) reported living with HIV. For HIV+ respondents, the mean age was 50.1 years (SD = 12.5). The majority (77.4%) lived in urban settings, particularly Toronto (26.6%), Ottawa (17.1%) and central Ontario (16.4%). Just over half (56.6%) have been living with HIV for more than 10 years, 98% were on antiretroviral therapy and 95% reported an undetectable viral load. While the proportion of HIV+ GBMSM who rated their health as average, good or excellent was not different compared to the total population (83% vs 87%), chronic health conditions were more common among those with HIV, particularly Hepatitis B and Hepatitis C (5x), cirrhosis (3x), and high cholesterol and heart disease (2.5x). The prevalence of depression and anxiety were notably lower among those with HIV compared to the total population (16% vs 23% and 20% vs 29%). While alcohol and marijuana use did not differ, HIV+ respondents were more likely to use recreational drugs (27% vs 15%), particularly methamphetamine (5x), ketamine (3x) and GHB (2.5x). Of considerable concern, HIV+ GBMSM were more likely to report a history of physical abuse (41% vs 35%), being forced to have sex (32% vs 20%) and childhood sexual abuse (20% vs 16%) compared to the total population.

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EPHP5.09

Predicting Mortality in a Cohort of HIV-positive People Who Use Illicit Drugs Using the VACS Index

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Objectives: The Veterans Aging Cohort Study (VACS) index combines commonly collected clinical biomarkers to create a measure of HIV disease severity. This index is a validated predictor of all-cause mortality and treatment response, yet we are unaware of any studies that have applied this measure to evaluate HIV disease progression among HIV-seropositive people who use illicit drugs (PWUD).

Methods: We analyzed data from a prospective cohort of HIV-positive PWUD in Vancouver, Canada, linked to a source of comprehensive clinical data between May 1996 and November 2017. Multivariable Cox regression models with time-updated covariates were used to analyze the association between the VACS index and all-cause mortality. Harrell's C-statistic was used to compare the test discrimination of the VACS index compared to the traditional Restricted Index (i.e., age, CD4 cell count, HIV-1 RNA plasma viral load).

Results: Among 948 participants, the VACS index at baseline was positively associated with all-cause mortality over follow-up (P<0.001). In the multivariable analysis, the VACS index was significantly associated with an increased risk of all-cause mortality (Adjusted Hazard Ratio [AHR] = 1.03, 95% confidence interval [CI]: 1.02–1.04,P<0.001). The VACS index provided a better discriminatory measure of all-cause mortality than the Restricted Index over the entire study period (C statistic: 0.60 vs. 0.56).

Discussion: Compared to the Restricted Index, the VACS index provided a more discriminative prediction of all-cause mortality over the 20-year study period. Applying the VACS index to PWUD may have important implications for clinical care and research, as well as investigating the immune and inflammatory responses associated with prevalent exposures among HIV-positive PWUD, such as specific types of substance use and substance use treatment.

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Épidémiologie et santé publique : Le VIH dans les populations vulnérables et les enjeux de santé mondiale : aspects épidémiologiques et de santé publique

EPHP5.10

Do Men Who Have Sex with Men in Sub-Saharan Africa Have Lower Knowledge of HIV Status Than the National Average for All Men? A Meta-analysis of Estimates in 22 Countries

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B**ackground:** Knowledge of HIV status among those living with HIV (KOS) is a necessary precursor to treatment and subsequent viral suppression. Due to historical and ongoing stigma and a challenging legal environment, men who have sex with men (MSM) in Africa may face additional barriers to accessing and using HIV testing services. We aim to measure the relative gap in KOS between MSM and the national average for men living with HIV.

Methods: Self-reported estimates of KOS and lifetime HIV testing among MSM were retrieved from our recent systematic review. KOS among all men (15+ years) were estimated using the UNAIDS-supported Shiny90 model that synthesizes population-based surveys and HIV testing program data. We matched each empirical MSM estimate with the national one for all men by year and estimated the ratio of the two. We then pooled these ratios (PR) of KOS and ever testing using random effects models.

Results: Our previous systematic review identified self-reported estimates of KOS and ever testing among MSM in 23 and 52 studies, respectively, from 22 African countries (2004-2017). KOS was twice as low among MSM compared to all men (PR=0.45; 95% confidence interval [95%CI]: 0.37–0.54; 35 estimates). This general pattern held for all sub-regions and was more pronounced in Eastern Africa (PR=0.34; 95%CI: 0.26–0.45; N=13). Despite lower KOS, ever testing among MSM overall was higher than for all men (PR=1.84, 95%CI: 1.67–2.03; N=78).

Conclusions: Although self-reported estimates of KOS are known to be affected by non-disclosure, our results suggest that MSM could have lower KOS than men in sub-Saharan Africa – despite higher proportions reporting having ever been tested. Lower KOS could be explained by higher HIV incidence among MSM resulting from unmet prevention needs. These prevention needs should be addressed to close this gap.

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EPHP5.11

Accès Aux Soins et Services de Santé des PVVIH Issues de L'immigration, Sans Assurance Maladie. Une Revue Narrative Systematique

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Contexte : Lors de l'Assemblée générale des nations unis du 8 juin 2016 sur le VIH\SIDA, les pays se sont engagés à atteindre les objectifs 90–90–90 de l'ONUSIDA d'ici 2020 et mettre fin à l'épidémie du VIH d'ici 2030. Nous sommes à l'horizon 2020 et dans certains territoires dont le Québec, des personnes éprouvent encore des difficultés complexes d'accès aux soins et au traitement antirétroviral (TARV) à cause de leur statut d'immigration ou de l'absence de statut.

Objectif : Documenter et analyser à travers la littérature les éléments de stratégies qui ont été mobilisés pour mettre en place une couverture universelle du VIH dans d'autres pays.

Méthode : Nous avons conduit une revue narrative de manière systématique. 71 articles sur un total de 1470 articles identifiés lors de notre recherche initiale dans les bases de données Pubmed, Medline, Embase, Google scholar, CINHAL, Scopus, Popline, Socialogical abstract, ont été retenues pour l'analyse.

Résultats : Dans certains pays de l'OCDE, les PVVIH issues de l'immigration sans assurance santé ont accès aux TARV, mais il existe toujours un grand fossé entre le droit (ce qui est prévu par la loi) et la pratique. D'autres pays ont étendu leur CSU à des groupes spécifiques comme, les immigrants qui ont un statut légal de résidence, les demandeurs d'asile et les réfugiés. Dans les pays à faible revenu, seul un renforcement des systèmes de santé et des stratégies durables de financement du secteur informel aux soins de santé permettraient une couverture sanitaire universelle du VIH/SIDA.

Conclusion : L'accès gratuit au TARV pour les personnes sans assurance ou avec des statuts d'immigration complexes, varie en fonction du contexte propre de chaque pays, du financement et de la politique de recouvrement des coûts des systèmes de santé.

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EPHP5.12

HIV 90-90-90 Targets and the Care Continuum: Findings from the Tracks Survey Among People Who Inject Drugs in Canada, Phase 4 (2017-2019)

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B**ackground:** People who inject drugs (PWID) represent a key risk group in Canada's HIV epidemic. To ensure that prevention and control efforts are targeted appropriately, it is important to understand the HIV care continuum for this key population. The objective of this analysis is to describe the HIV 90-90-90 targets and care continuum and associated characteristics among PWID using 2017-2019 national bio-behavioural surveillance data.

Methods: From 2017-2019, the Tracks survey of PWID was conducted in 14 sentinel sites in Canada. Participants completed an interviewer-administered questionnaire, and provided a biological sample that was tested for HIV and hepatitis C. Five HIV care continuum indicators derived from self-reported measures were described for participants who were HIV seropositive: awareness of HIV-positive status, engagement in care, on ART treatment, adherence to ART, and undetectable viral load. Associations between potential correlates and each indicator were explored using bivariate analyses.

Results: Among the participants (n=2,383), 2,162 provided a biological sample. Overall 10.3% were HIV seropositive among whom 82.9% were aware of their HIV-positive status (1st 90). Of those, 92.6% were linked to care; 87.7% were on ART treatment (2nd 90); and 42.5% reported no missed doses in the past month. Among participants on treatment, 62.8% reported an undetectable viral load (3rd 90). Sufficient numbers for three indicators were available for further analyses. Preliminary results found significant bivariate associations for: Indigenous status (OR: 0.39; 95%CI: 0.17-0.80) and living in stable housing (OR: 2.73; 95%CI: 1.25-5.97) with awareness of HIV-positive status; experienced childhood abuse (OR: 0.10; 95%CI: 0.01-0.65) with ART adherence; and living in stable housing (OR: 3.07; 95%CI: 1.14-8.25) with being on ART treatment.

Conclusions: This national bio-behavioural surveillance data serves as a baseline from which to measure future progress towards meeting domestic and international targets for key populations and inform public health interventions.

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EPHP6.01

Community-based HIV Point-of-Care Testing During an HIV Outbreak in Nova Scotia

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Background and Aims: New HIV diagnoses doubled among people who use substance in Halifax, Nova Scotia. An environmental scan on Atlantic Canadian injection drug use identified a lack of appropriate health services and access to those services as a gap in care, in particular HIV testing. Individuals have difficulty completing blood work due to difficult venous access, as well as limited practical access to usual clinical settings. Therefore, community health service models that pragmatically improve diagnosis, decrease infection transmission, and rapidly engage people in care are needed. We assess the framework development of community-based HIV point-of-care test (POCT) implementation, in an HIV outbreak context, with the goal of decreasing new HIV infections.

Methods: Focus groups with people who use substance were held to determine barriers to HIV care. A multi-stakeholder team (infectious diseases physicians, public health officers, peers, harm reduction organization directors, laboratory managers, and health researchers) was formed to prospectively evaluate the implementation and development of a community-based HIV POCT framework. Rapid fingerstick HIV tests were implemented at a local harm reduction site. Barriers, facilitators, and implementation strategies were recorded.

Results: Major POCT implementation themes included increased HIV/PrEP awareness, simplified diagnostic algorithms, improved patient engagement, and HIV care capacity building in community. Of 85 administered HIV fingerstick tests, 2 persons living with HIV were identified. 1 individual was unaware of their HIV status and 1 was previously diagnosed but disengaged from HIV care. Both individuals were rapidly linked to care.

Conclusions: Community-embedded care for persons living with HIV among people who use substance is important, particularly meeting them in the community for meaningful and sustained engagement. These preliminary data provided groundwork for scale-up of HIV POCT implementation and evaluation efforts, and highlight the need for a cross-disciplinary approach and lived experience voices for successful implementation.

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EPHP6.02

CODE BLUE! CODE BLUE! Spanish-speaking gbMSM Individuals in Canada and HIV, a Language Ethno-specific Population Need, in a Canadian HIV to Zero Strategy —ESTAMOS AQUI!

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Emerging Population Issue: On second data analysis in a comparison proportion[al] study of reported HIV cases (all ages) by sexual exposure within race/ethnicity—Canada, 2017 (Haddad, Li, Totten, & McGuire, 2017), in the category of gay, bisexual and MSM (not including heterosexual infection), or PWID (people who injects drugs), Latin American individuals are forth in the number of infections when compared to White individuals with 49.9%, with over 50% of the total number of infections. The second group is comprised of a 21.2% of infections belonging to an “Other Ethnicity” group. The third group corresponded to the “Black ethnicity” with a 12.2%. Being the Latino group the fourth one of the cited report with a 12.0%. Finally, the Indigenous group is in fifth place with a 4.7%.

Critical Analysis: Most of the ethnicity categories grouped in this report, corresponded to a racial logic commonly used in Canadian health studies. However, this abstract considers that Latin American individuals shall not only be grouped under a racial category, but also, categorized as a language-specific culture: “Spanish”, making it the biggest group affected by HIV in a language other than the official languages, even when compared to Indigenous populations in Canada (%).

Results and Next Steps: There is currently a lack of HIV policies, programming, and services for Spanish-speaking Latino gbMSM in Canada. In comparison to the distressing statistical population’s needs (when compared to other ethno-racial groups). This gap needs to be addressed in order to intervene with the evidence-based/ program science factors associated with HIV social/cultural behavioural risks (e.g., lack of sexual health information —PrEP/U=U) that contributes to the high numbers of HIV infections and stigma, homophobia/transphobia prevalent in this ethnic group.

Haddad, N., Li, J. S., Totten, S., & McGuire, M. (2017). *HIV in Canada—Surveillance Report, 2017*. Retrieved from Ottawa, Canada: https://www.canada.ca/content/dam/phac-aspc/documents/services/reports-publications/canada-communicable-disease-report-ccdr/monthly-issue/2018-44/issue-12-december-6-2018/ccdrv44i12a03-eng.pdf

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EPHP6.03

Prevalence of Hepatitis B Amongst Individuals Receiving HIV Pre-exposure Prophylaxis in British Columbia

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B**ackground:** Pre-exposure prophylaxis (PrEP) is a safe and effective medication used to limit HIV transmission. Use of tenofovir/emtricitabine provides therapy for hepatitis B, and assessment of HBV status is recommended at PrEP start. We undertook to characterize baseline HBV status in individuals receiving PrEP.

Methods: Individuals enrolled in the BC PrEP program from 1-Jan-2018 to 30-Jun-2019 who had baseline HBV screening were included. Baseline prevalent HBV infection was determined by evidence of HBV surface antigen (HBsAg) positive status performed within 6 months prior to and up to 3 months after PrEP initiation or by physician report. Comparisons for those with and without hepatitis B infection were made using Wilcoxon rank sum test or Fisher's exact test.

Results: Overall 4397 individuals enrolled for PrEP during the study period, of whom 1706 (39%) had baseline HBsAg screening data available. Laboratory confirmed baseline HBV prevalence was 22/1706 (1.29%). Including physician report, baseline HBV prevalence for the entire PrEP cohort was 43/4397 (0.98%). Median age for those with HBV infection was 39 years vs. 32 for those without HBV (p=0.076). Those with HBV had a lower proportion with an HIV incidence risk index for men who have sex with men score >25 than those without HBV (6.98% vs. 16.63%, p=0.097). HBV infected participants were less likely to have enrolled for PrEP based on prior rectal bacterial sexually transmitted infection or infectious syphilis indication (6.98% vs. 20.97%, p=0.022). Only 63% with HBV had baseline determination of viral load status.

Conclusion: HBV infection was seen in approximately 1% of PrEP users in BC. A significant proportion did not undergo appropriate baseline evaluation of HBV parameters. Further provider education regarding HBV monitoring and evaluation in the context of PrEP is required.

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EPHP6.04

Reasons for Declining PrEP Referrals among Gay, Bisexual and Other Men Who Have Sex With Men (gbMSM) at PRIMP study Implementation Sites in Toronto

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B**ackground:** PRIMP is an ongoing CIHR-funded implementation science study in which sexual/public health clinic staff routinely recommend PrEP to gbMSM meeting evidence-based criteria. We assessed the proportion of gbMSM declining PrEP referrals, and the reasons behind declining.

Methods: We reviewed PrEP assessment forms routinely used to assess PrEP eligibility among gbMSM clients of Toronto PrEP referral sites between 01/12/2018-30/11/2019. For gbMSM who declined PrEP referrals despite meeting criteria (syphilis, rectal gonorrhea/chlamydia, recurrent PEP use, HIRI-MSM score ≥25) and were not HIV-positive or already on PrEP, staff could select from four potential reasons or respond "other" and provide a written explanation. We coded qualitative responses and summarized results using descriptive statistics. If multiple reasons were given, the most important reason was recorded according to a hierarchy of reasons we developed post-hoc.

Results: Of 653 eligible clients from six Toronto PrEP referral sites who were offered a PrEP referral, 331 (50%) declined. Aside from those clients already referred elsewhere for PrEP (11.5%), reasons for declining included: not feeling at risk for HIV (31.1%), not being interested in PrEP (16.6%), PrEP medication costs (13.5%), needing time to consider/learn about PrEP (5.9%), concerns regarding potential side effects (5.1%), lack of provincial health coverage (3.9%), being a visitor to or emigrating from Canada (1.8%), desire to defer the decision until the HIV "window period" ended (1.1%), entering a monogamous relationship (1.1%), previously stopping PrEP for an unknown reason (0.9%), previously experiencing side effects on PrEP (0.6%), electing to use condoms instead (0.6%), inability to attend PrEP appointments due to distance (0.6%) or time (0.2%), other (1.0%) and not specified (4.3%).

Conclusion: PrEP uptake among Toronto gbMSM at elevated HIV risk could be increased by over 50% by providing universal access and care, and improving awareness and health literacy of HIV prevention strategies.

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EPHP6.05

Operational Diversity Among Clinics in the PRIMP Study on Scaling Up PrEP Implementation for gbMSM in British Columbia and Ontario

Thomas Dashwood[7], Karla Fisher[1], Saira Mohammed[2], Nathan Lachowsky[3], Troy Grennan[4], David Hall[5], Mark Hull[2], Darrell Tan[6, 7, 8], on behalf of the PRIMP Study Team

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B**ackground:** PRIMP is an ongoing CIHR-funded study of PrEP implementation for gay, bisexual and other men who have sex with men (gbMSM) at high HIV risk. As part of our process evaluation, we surveyed participating sites regarding processes for assessing eligibility for, referring to and/or delivering PrEP.

Methods: Participating sites that make PrEP referrals (recommend PrEP to gbMSM meeting guideline-recommended eligibility criteria) provide PrEP services, or both, completed surveys regarding human resources, client volumes, and PrEP referral criteria for the period 06/2019-11/2019. Responses were analyzed using descriptive statistics and the Wilcoxon rank-sum test.

Results: Six BC and ten ON sites included sexual health (44%), PrEP specialty (19%), infectious diseases (19%), primary care (6%) and public health (13%) clinics/units. Among Ontario sites, 30% only did referrals, 50% only did delivery, and 20% did both; among BC sites, 17% only did referrals while 83% also delivered PrEP. PrEP was delivered by physicians (42%), registered nurses or nurse practitioners (NP) (17%), or both (42%). The median (IQR) number of PrEP client visits per year was 875 (600,1079); volumes did not differ between physician-only and physician/nurse-run sites (p=0.60). Site leaders reported infectious diseases (44%), family/community medicine (31%), nursing with STI certification (6%), nurse practitioner (6%), or other (13%) training. Criteria for determining PrEP eligibility varied by site (Table). The most common eligibility assessors were nursing (60%), patient self-assessment (20%), counsellor (10%), or physician (10%).

Conclusion: There is considerable diversity in PrEP delivery models across BC and ON. Efforts to standardize practices may be warranted.

Criterion	N (%) sites in BC	N (%) sites in ON
Reported or diagnosed with syphilis within past 12 months	5 (100)	5 (100)
Reported or diagnosed with rectal gonorrhea or chlamydia within past 12 months	5 (100)	5 (100)
Multiple uses of post-exposure prophylaxis (PEP)	5 (100)	4 (80)
HIV positive partner with unsuppressed viral load	5 (100)	4 (80)
High Incidence Risk Index for Men who have sex with Men (HIRI-MSM) score ≥ 25	5 (100)	5 (100)
HIRI-MSM score ≥ 10	5 (100)	3 (60)
First episode of PEP use	1 (20)	3 (60)
Reported or diagnosed with pharyngeal gonorrhea or chlamydia within past 12 months	0 (0)	2 (40)
Reported or diagnosed with urethral gonorrhea or chlamydia within past 12 months	0 (0)	2 (40)

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EPHP6.06

Changing Demographic and HIV Risk Behaviors of Clients of Female Sex Workers in Karnataka, India

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B**ackground:** In a concentrated HIV epidemic, expansion of HIV transmission contributed by the number of Female Sex Workers (FSWs) with whom a client has sex. Though there are plenty of studies on female sex workers and sexual minorities to understand their changing HIV risk behaviors in a high prevalence state of Karnataka, we have not come across a comprehensive similar study from clients' perspective. Therefore, this study assesses the changes in risk behaviors of clients of FSWs in Karnataka state.

Methods: Data from two rounds of cross-sectional, integrated behavioral and biological assessments surveys conducted among client during 2006-11as part of Avahan program were used. Bivariate analyses were used to describe changes in risk behaviors over time.

Results: While the mean age of clients remained same over time, percent ever married increased from 63% to 72%, those engaged in non-agricultural labor increased from 13% to 28%) and that a very large proportion travels much often than previously (21% to 45% travelled at least 3 places in the past one year). Across the two rounds there was a perceptible shift seen in sexual behaviors with almost 31% increase in the number of sexual encounters with different FSWs in the last month, mainly due to increase in the number of occasional FSWs. Despite an increased sexual partner, significant increase in condom use at last sex with occasional or regular FSWs was noticed between two rounds (occasional from 64% to 87%, $p<0.001$ and regular from 58% to 77%, $p<0.001$ respectively).

Conclusions: This study underscores the need for comprehensive and regular clients' surveys to provide critical insights into the sexual behavior to design interventions for a sustainable control & monitoring of high-risk behaviors.

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EPHP6.07

Addressing and Responding to Needs of People Living with HIV in the Montreal Region Without Healthcare Coverage

Patrick Keeler

AIDS Community Care Montreal, Montreal, QC

According to the Institut national de santé publique du Québec (INSPQ), 698 people were newly diagnosed with HIV in Montreal in 2017. Of this group, 237 individuals – about one third of the group – did not have a RAMQ number or access to health coverage. Without access to health coverage, it is extremely difficult for these individuals to pay for their doctor visits, blood tests, medication, and other essential health services.

AIDS Community Care Montreal's (ACCM) "Access Program" is designed to respond to the needs of people living with HIV in the Montreal region who do not have access to health coverage. This new program is a four-pronged holistic network of support for those in need connecting them with clinical care, medication, community support, and legal aid to help them obtain sustained healthcare coverage; all free of charge.

This innovative project begins with accessing the population and assessing their individual needs, and supporting them throughout the program to ensure they gain access to the healthcare system and legal support. A second pillar of the project is to build and strengthen a network of care and HIV physicians, building off of existing community-based support programs, and connecting the participants with these resources. The project's expected outcomes are that 100% of the participants will have access to care and treatment during the project and 60% are taking the correct steps to obtain a RAMQ number by November 2021.

Implementing this program – the first of its kind in the province – is directly in line with the objectives of the *Fast Track Cities* initiative being run by "Montreal sans sida" and will help develop new strategies to address the healthcare needs of the community. The patient pathway and methodology of the project will be available for presentation at CAHR.

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EPHP6.08

Prevalence of Syndemic Health Conditions Among Gay and Other Men Who Have Sex with Men in Ontario

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Syndemics occur when multiple, mutually reinforcing health problems interact to bring about worse health outcomes. Syndemics as they relate to HIV infection have been well documented among gay, bisexual and other men who have sex with men (GBMSM), and have identified depression, heavy alcohol use, recreational drug use, and childhood sexual abuse with an increased likelihood of acquiring HIV. In view of this, we sought to determine the prevalence of these conditions among different sociodemographic groups of GBMSM in different regions of Ontario, and among PrEP users and PrEP non-users. Data were collected from an anonymous online survey of GBMSM with 1960 respondents. The mean age was 38.1 years (SD = 15.2). Just over half (58%) lived in an urban setting, and the vast majority (83%) identified as being of British/European ethnicity. The prevalence of depression and anxiety was very high at 24% and 29%. Depression was most prevalent in the Niagara region and in the North (29%) and lowest in Toronto (15%). Marijuana use was highest in the North and northern Central Ontario (17%) and lowest in Ottawa and Central Ontario (9%). Problem alcohol use and recreational drug use were twice as high in Toronto (9% and 26% respectively) compared to all other parts of Ontario (4.6% and 12%). Comparing Toronto to the rest of the province, cocaine (17% vs 7%), MDMA (15% vs 4.5%) and GHB (6% vs 2%) were the most common. Problem alcohol use and recreational drug use were also higher in PrEP users compared to non-users (8% vs 4%, and 31% vs 11%). A full 35% of respondents reported a history of physical abuse, and 16% reported a history of childhood sexual abuse. Given GBMSM account for more than half of all HIV infections in Canada, understanding the prevalence of these syndemic factors is critical.

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EPHP6.09

Using the Theoretical Domains Framework to identify barriers and facilitators for PrEP implementation in Colombia - The PrEP-Col Study

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B**ackground:** Colombia has not rolled-out HIV Pre-Exposure Prophylaxis (PrEP) despite the availability of generic Tenofovir/Emtricitrabine since 2011. We conducted a situational analysis of barriers and facilitators for PrEP implementation in HIV-care providers across the country.

Methods: We used the Theoretical Domains Framework (TDF) to develop a 40-item questionnaire directed to HIV-care providers. The questions included nine of the TDF domains: *Knowledge, skills, social/professional role, beliefs about capabilities, beliefs about consequences, intentions, goals, patients' perspectives, and social influences.* This survey was administered online to all providers of the Colombian Network of HIV Clinics (VIH-COL) between August to December 2019.

Results: Of the 380 providers invited, 170 started the questionnaire, and 140 completed at least 80%. The scales' reliability ranged from 0.63 (social influence) to 0.93 (beliefs about capabilities). Overall, 8% were not interested in PrEP; 10%, 37%, and 45% were in the pre-contemplation, contemplation, and preparation stage, respectively. Half of the participants felt they had average or above-average knowledge on PrEP, 91% needed more training and 78% reported no prior PrEP training. Nearly 88% thought that PrEP is compatible with their work, and 72% felt that people at risk of HIV would like to take PrEP. Only 35% thought PrEP will be endorsed by LGTBQ community organizations, 79% felt that providing PrEP would prolong clinic time, 87% do not anticipate financial incentives for providing PrEP, and 31% PrEP would not lead to recognition from colleagues. Importantly, 67% of participants perceived that they had no control over the decision to initiate PrEP.

Conclusions: In this survey, Colombian HIV-care providers felt capable of and willing to provide PrEP. Barriers for PrEP implementation include lack of financial and social recognition, low control for PrEP initiation, and limited community support. Efforts to increase adoption/implementation of PrEP in Colombia would need to address these barriers.

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EPHP6.10

Predictors of Intention to Provide PrEP in Health-care Workers in HIV Clinics in Colombia: Application of the Theoretical Domain Framework - The PrEP Col Study

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I**ntroduction:** PrEP implementation in Colombia will require knowledgeable providers who are willing to prescribe this effective HIV prevention strategy. We sought to explore the predictors of intention to provide PrEP among health care workers in HIV clinics in Colombia and assess barriers and facilitators using the theoretical domain framework (TDF).

Methods: We conducted a cross-sectional survey from August 2019 to December 2019 among 328 providers in 18 cities in Colombia. ANOVA analysis was used to compare different domains of TDF (*knowledge, skills, beliefs about capacity, beliefs about consequences, motivations, social influence, perceptions about the need for PrEP in populations at risk)*, by the initial stages in the Transtheoretical model: pre-contemplation, contemplation, and preparation/action.

Results: The participation rate was 36%, with 115 providing complete data for analysis; 42% were physicians. From all respondents, 45% were in the preparation/action stage, 37% in the contemplation stage and 10% were in the pre-contemplation stage; 8% were not aware of PrEP. Physicians were more likely to be in the preparation stage when compared to non-physicians (66% vs. 25.9% [p=0.001]). Knowledge, skills, beliefs about consequences, beliefs about capacity, motivations, and social norms were related to the stage of change. Notably, knowledge of PrEP guidelines and beliefs about capacities was higher in those in the preparation stage. Beliefs about consequences, social norms, and motivation were more favorable in those at the preparation/contemplation stage than in those at the pre-contemplation stage.

Conclusions: Overall, Colombian providers working at HIV clinics have high levels of intention to provide PrEP. Providers in the pre-contemplation stage need more motivation and training, while providers in the contemplation stage need to increase self-efficacy to move forward to the preparation change. These findings will be triangulated with information from health care managers and other key stakeholders to guide the implementation efforts for PrEP in Colombia.

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EPHP6.11

Informing the Path Towards HIV Elimination in Montreal Among Men Who Have Sex with Men Through HIV Combination Prevention: a Mathematical Modelling Approach

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B**ackground:** With renewed impetus to end the AIDS epidemic, Montreal became the first UNAIDS Fast-track city in Canada, pledging to have zero new HIV infections. To reach this ambitious objective, scaling-up combination HIV prevention —targeting different risk factors along the transmission pathways— is required. The purpose of this study is to develop a mathematical model of HIV transmission that can be used to assess the effectiveness of different prevention combinations toward achieving elimination.

Methods: We reviewed three large surveys to characterize temporal trends in population-level demographics and sexual behaviours: Argus I and II (time-location sampling; 2005-07, n=1957; and 2008-09, n=1,873), and Engage (respondent-driven sampling; 2017, n=1,179). These were complemented by searches of the literature. This information was used to parameterize and inform the development of an agent-based model of HIV transmission dynamics. The model considers demographical processes, sexual behaviours, HIV transmission dynamics and disease progression, and intervention strategies including condom use, HIV testing, pre- and post-exposure prophylaxis, and antiretroviral treatment.

Results: Close to 3/5 of men identified as versatile, 1/5 as receptive, and 1/5 as insertive. From 2005, there were no notable changes in the number of anal sex partners reported over the past 6-months. HIV testing rates increased with time and, on average, participants were tested 1.3 times per year in 2017. HIV prevalence was 13% in 2005, 14% in 2008-09, and 14% in 2017. Self-reported awareness of HIV status increased from 77% in 2005, to 87% in 2008-09, and 97% in 2017. Preliminary calibrations suggest that our model can reproduce these key characteristics of the epidemic in Montreal.

Conclusion: Future work includes calibrating the model to detailed epidemiological and HIV surveillance data. Once calibrated, we will conduct an in-depth appraisal of the epidemic, conduct sensitivity analyses, and assess the ability of different prevention packages to achieve HIV elimination.

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EPHP6.12

Characteristics of the HIV Cascade of Care and Unsuppressed Viral Load Among HIV Positive gbMSM Across Three Canadian Cities

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B**ackground:** We estimated the HIV health service indicators among samples of gay, bisexual and other men who have sex with men(gbMSM) recruited in Vancouver, Toronto and Montreal.

Methods: Sexually active gbMSM, aged ≥16 years, were recruited through respondent-driven sampling (RDS) from February 2017 to July 2019. Participants completed a Computer-Assisted Self-Interview and tests for HIV and other STBBIs. We conducted bivariate analyses comparing RDS-adjusted proportions across cities and multivariable logistic regression analysis to examine factors associated with having an unsuppressed viral load (VL) (≥200 copies/Ml), with data pooled from all three cities.

Results: We recruited a total of 1179 participants in Montreal, 517 in Toronto and 753 in Vancouver. HIV prevalence was 14.2% (95% CI:11.1-17.2); 22.1% (95% CI:12.4-31.8) and 20.4% (95% CI:14.5- 26.3), respectively ($p<0.001$). Of HIV negative/unknown serostatus 70.4% participants in Montreal reported having tested for HIV in the previous year, compared to 67.5% in Toronto and 69.4% in Vancouver ($p=0.010$). Of participants with confirmed HIV infection, 3.3% were previously undiagnosed in Montreal, compared to 3.2% % in Toronto and 0.2% in Vancouver($p<0.001$). In Montreal, 94.3% of HIV positive individuals were receiving ART and 10.6% had an unsuppressed VL; in Toronto 96.2% were receiving ART and 4.0% were unsuppresed and in Vancouver 92.7% were receiving ART and 2.6% were unsuppressed ($p=0.002$ and 0.009, respectively). In our multivariable model, unsuppressed VL was associated with younger age, higher HADS scores on the anxiety subscale, low-risk AUDIT-C scores, income ≥$60,000, not having a family doctor, and never being diagnosed with an STI ($p<0.05$, for all).

Conclusion: Generally, gbMSM in Montreal, Toronto and Vancouver are highly engaged in HIV testing and treatment and the magnitude of differences across cities was very small. Unsuppressed VL was very uncommon but was associated with younger age, symptoms of anxiety and some health service indicators.

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EPHP6.13

Trajectories of PrEP Use in Gay, Bisexual and Other Men Who Have Sex with Men (gbMSM) According to the Eligibility Criteria in France

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Context: PrEP, available and free of charge in France, is gaining popularity among gbMSM, but is still underused in this at-risk population.

Objective: To compare men who are eligible for PrEP (whether they use PrEP or not), to those who do not meet the eligibility criteria and do not take PrEP.

Methods: Data was collected through an online questionnaire completed by 10,857 French respondents (Net Gay Barometer, 2018). 7346 seronegative gbMSM having answered the question on PrEP were classified according to their eligibility for PrEP, using the criteria used in France. Four groups were created: not eligible without PrEP use (NENP: 69.5%); eligible without PrEP use (ENP: 23.6%); not eligible with PrEP use (NEP: 1.1%); eligible with PrEP use (EP: 5.8%). Multivariate polynomial logistic regression was used.

Results: Compared to NENP, EP and ENP men have similar characteristics in terms of biomatching and at-risk behaviors. ENP have more risky sexual practices with occasional partners (RCa=5.53) and get tested more frequently for HIV (RCa=2.38). EP have a more advantageous socio-demographic profile and a greater affiliation with the GBTQ+ community (RCa=1.68). Low risk practices (RCa=0.53) and reducing the number of partners (RCa=0.51) are less used by EP as risk reduction strategies. They are also more likely to declare 15 or more partners (RCa=2.33) or an STI (RCa=2.10) in the last twelve months.

Conclusion: The proportion of gbMSM eligible for PrEP that do not use it is high. In the context where PrEP is free in France, efforts must be made to recommend it to these men, particularly when they come in for HIV testing (detection and referral). PrEP use appears to be associated with more abundant and diverse sexuality and a higher prevalence of STIs. PrEP follow-up facilitates early detection and prompt treatment of STIs, when treatment is available.

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EPHP6.14

Real-world Eligibility for HIV Pre-exposure Prophylaxis Among People Who Inject Drugs

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CHUM, Montreal, QC

Recent studies have highlighted the efficacy of and willingness to use pre-exposure prophylaxis (PrEP) to prevent HIV infection among people who inject drugs (PWID), however knowledge of real-world applicability is limited. We aimed to quantify the real-world eligibility for HIV-PrEP among HIV-negative PWID in Montreal, Canada (n=718). Eligibility was calculated according to US Centers for Disease Control and Prevention (CDC) guidelines and compared to risk of HIV acquisition according to the Assessing Risk for HIV (ARCH-PWID) risk screening tool. Over one-third of participants (37%) were eligible for HIV PrEP, with 1/3 of these eligible due to sexual risk alone. Half of participants were considered high risk of HIV acquisition according to ARCH-PWID, but there was poor agreement between the two measures. Although a large proportion of PWID were eligible for HIV-PrEP, better tools that are context- and location-informed are needed to identify PWID at higher risk of HIV acquisition.

Table 4: Cross-tabulation of CDC eligibility and ARCH-IDU high risk status for HIV PrEP among HIV-negative male participants in a cohort of people who inject drugs

	Eligible according to CDC guidelines		
	Yes (%)	No (%)	Total (%)
High risk according to ARCH-IDU			
Yes	189 (71.9)	177 (38.9)	366 (51)
No	74 (28.1)	278 (61.1)	352 (49)
Total*	263 (36.6%)	455 (63.4%)	718
Kappa: 0.31 (95% CI: 0.24–0.37); Overall agreement: 65.0%; Percent positive agreement: 60.1%; Percent negative agreement: 68.9%; CDC: US Centers for Disease Control and Prevention; ARCH-IDU: Assessing Risk for Contracting HIV; * Row percentage for total according to ARCH-IDU score			

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EPHP6.15

HIV Pre-exposure Prophylaxis (PrEP) Adoption in Primary Care: An Online Survey of Ontario Physicians

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B**ackground:** Within Ontario, prescription of pre-exposure prophylaxis for HIV (PrEP) is done primarily in urban centres. In order to sustainably scale up the use of PrEP for HIV prevention and reach rural communities, a transition to management through primary care is needed. The aim of this study is to assess primary care physicians' awareness of PrEP, adoption of PrEP, barriers to use, and desired resources to support the transition to family practice administration.

Methods: An anonymous, online survey was distributed via email and newsletters to family physicians in the greater Hamilton and Niagara area of Ontario from February to December 2019. Main outcome measures included 1) self-reported awareness and knowledge of PrEP and associated care, 2) current prescription of PrEP, 3) barriers, and 4) desired resources.

Results: Of the 40 total responses, 36 physicians (90%) reported being aware of PrEP for HIV prevention, with 11 (27.5%) previously prescribing PrEP for patients. 15 respondents (37.5%) were unaware of the Canadian PrEP and nPEP guidelines, while 25 (62.5%) were aware, and 10 (25%) had reviewed them. Key knowledge gaps included HIV risk assessment (n=23, 57.5%), side effect monitoring (n=19, 48.7%) and managing pharyngeal (n=25, 62.5%) and rectal (n=23, 57.5%) sexually transmitted infections. The most commonly identified barriers to PrEP prescription included lack of education (n=28, 73.7%), managing patient adherence (n=23, 60.5%), and costs/insurance coverage (n=21, 55.3%). The most desired resources were e-consult availability (n=23, 60.5%) and short "at-a-glance" guides for PrEP (n=29, 76.3%) and STI management (n=28, 73.7%).

Conclusions: While most responders were aware of PrEP, the majority of providers had not prescribed PrEP for their patients. Major gaps highlighted in this study included risk assessment, STI management and adherence. Education around HIV, PrEP, and patient monitoring will be vital in the transition of HIV prevention to primary care.

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EPHP8.01

Partner Notification for Bacterial STIs among Gay, Bisexual and Other Men Who Have Sex with Men (GBM) in Vancouver, Toronto and Montreal: Results from the Engage Study

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I**ntroduction:** Partner notification is an effective means of finding and treating people with STIs; it constitutes an essential element of prevention/control programs. We describe partner notification practices and explore factors associated with patient-based optimal partner notification (OPN).

Methods: Baseline data (02-2017 to 08-2019) from the Engage study were used. Sexually active GBM ≥16 years were recruited via respondent-driven sampling (RDS) in Montreal (M), Toronto (T) and Vancouver (V). Partner notification experiences among participants having at least one bacterial STI diagnosis (chlamydia, gonorrhea, syphilis or lymphogranuloma-venereum) in the past 6 months were described. OPN was defined as "having contacted yourself most/all sexual partners you had within the 2 months prior to being told you had an STI". Bivariate and multivariable logistic regression analyses identified potential correlates of OPN. All analyses were RDS-adjusted.

Results: Among 2449 participants, 364 (M:11.5%, T:8.5%, V:13.0%) reported a bacterial STI in the past 6 months. Among these, M:80.0%, T:85.0%, V:89.2% (p=0.03) were encouraged by a healthcare provider to engage in partner notification and M:36.3%, T:56.3%, V:57.9% (p=0.008) were offered by healthcare/public health staff to notify their partners (23/175 provided contact information for partners). OPN was M:61.7%, T:62.1%, V:53.4% (p=0.17). Factors significantly associated with OPN in a pooled-city analysis are presented in Table 1.

Conclusion: OPN for bacterial STIs was reported by 50 to 60 % of GBM across the three cities. Encouragement from health professionals to undertake partner notification appears important. GBM not having a main sexual partner may need additional support.

Table 1: Factors associated with patient-based optimal partner notification[1] among GBM in the greater Montreal, Toronto and Vancouver areas who reported a diagnosis of a bacterial STI in the past 6 months and did not provide any contact information for a healthcare provider-based partner notification (n=341[2])

	Univariable Unadjusted OR (95% CI)	**Multivariable[3] Adjusted OR (95% CI)**
	1.00 (0.98- 1.02)	1.01 (0.98- 1.03
Age (continuous)	1.00 (0.98- 1.02)	1.01 (0.98- 1.03)
Has a main partner for the past 6 months[4]	2.84 (1.77 - 4.62)	**2.23 (1.34- 3.74)**
Number of sexual partners in the past 6 months (continuous)	0.99 (0.98- 1.00)	0.99 (0.98 - 1.00)
Encouraged by a healthcare provider for him to notify his partners	3.03 (1.70- 5.51)	**2.81 (1.48- 5.45)**

OR, odds ratio. 95% CI, 95% confidence interval. Statistically significant results from the multivariable model are in bold. Factors exhibiting similar relationships in each city and associated with OPN at p<0.2 are presented.

[1] Optimal partner notification was defined as "having notified yourself most or all of your sexual partners you had within the 2 months before you were told they had an STI."

[2] 23 out of 364 GBM who gave contact information to healthcare/public health staff for them to notify partners were excluded from this analysis

[3] The final model was adjusted for city

[4] Among the participant who reported having a main partner during the past 6 months, 78% had more than 1 partner during this period.

Other variables that were considered: sociodemographic characteristics (born or moved in Canada, education, income), sexual behavioural characteristics in the past 6 months (engaged in group sex, attended a bathhouse, engaged in chemsex), biological and psychosocial characteristics (self-reported HIV status, nature of STI diagnosis in the past 6 months (chlamydia, gonococcal infection or syphilis) , symptoms of depression, symptoms of anxiety, problematic alcohol use) and other characteristics (sexual altruism scale, collective self-esteem scale, experience of ever been notified by a sexual partner).

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EPHP8.02

Towards Disability-informed HIV Screening in the United States: a Cross-sectional Study Examining the Relationship Between Disability and HIV Testing Using NHANES Data

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I**ntroduction:** HIV testing is an important entry-point for linkage to care; however, HIV screening is not well studied among people living with disabilities (PLWD) in the US. The aim of this study was to examine the association between disabilities and HIV testing and whether access differs by type of disability.

Methods: Using a cross-sectional, nationally representative sample of 18-60-year-olds from two cycles of the National Health and Nutrition Examination Survey (2013-2016), a survey-weighted multivariable logistic regression was conducted to measure the association between disabilities and HIV testing. Backward elimination was used to adjust for confounding. Primary and secondary analyses were conducted using complete case data, and a sensitivity analysis using multiple imputation was conducted to address missingness.

Results: Out of 3090 people included in this study, 738 reported disabilities and 1564 reported ever accessing HIV testing. Individuals who accessed HIV testing were more likely to report severe depression symptoms (63.4%) and see a mental health professional in the past year (66.2%). The adjusted odds of accessing HIV testing among PLWD did not differ significantly from individuals without disabilities (aOR=1.24, 95% CI: 0.85, 1.80). Sensitivity analysis found similar results (aOR =1.14 95% CI: 0.83, 1.57). Secondary analyses found that individuals reporting difficulty seeing were 51% less likely to have ever accessed HIV testing than those without difficulty seeing (aOR=0.49, 95% CI: 0.25, 0.94), while those reporting difficulty concentrating were 43% more likely to have ever accessed HIV testing (aOR=1.43, 95% CI: 1.02, 1.96).

Discussion: These findings suggest that access to HIV testing among PLWD depends on the type of disability. Individuals with difficulty concentrating may be more likely to be linked to mental health services and thus may be more likely to access HIV testing, while individuals with difficulty seeing may require greater assistance and face barriers to accessing HIV testing.

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EPHP8.03

Public Health Reporting of HIV Diagnoses: Evaluating Missed Opportunities for HIV Pre-exposure Prophylaxis in Vancouver, BC

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B**ackground:** Reporting of laboratory confirmed HIV diagnoses to Public Health is mandatory in British Columbia. Reporting of cases occurs immediately upon diagnosis. Review of new diagnoses may identify cases where use of HIV Pre-exposure prophylaxis (PrEP) may have been appropriate. We undertook a review of all reported HIV cases in the Vancouver Coastal Health region to determine missed opportunities for PrEP.

Methods: All HIV diagnoses reported to Vancouver Coastal Health (VCH) Communicable Disease Control for the calendar year of 2018 were reviewed, evaluating HIV surveillance reports completed at time of diagnosis, and associated data within the shared VCH community electronic medical record. Information regarding potential HIV risk group, evidence of recent negative HIV test and engagement in VCH sexual health and primary care clinics offering PrEP, was extracted. Individuals with recent negative HIV test and evidence of engagement in care were classified as missed opportunities for PrEP.

Results: Overall 74 individuals had a new HIV diagnosis during this time period in VCH. Of these only n=21 (28%) had documented prior negative HIV test within the preceding 12 months in keeping with recent HIV infection. Amongst these individuals, 90% reported MSM risk for HIV and 10% reported injection drug use. Prior PrEP use was identified in n=2 (9.5%), n=3 (14%) had been offered PrEP but declined, and n=10 (47.6%) had had contact with a sexual health clinic or primary care clinic without offer of PrEP being recorded.

Conclusions: Amongst new HIV diagnoses in Vancouver in 2018, only a minority of cases had documented negative HIV status within the preceding 12 months. However, amongst these individuals, a significant proportion could be identified as a missed opportunity for PrEP. Public Health surveillance of HIV cases should incorporate routine assessment of prior PrEP opportunities, and can help to inform success of local PrEP programs.

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EPHP8.04

Who is Prescribing PrEP? A Characterization of Ontario Clinicians Prescribing HIV Pre-Exposure Prophylaxis

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B**ackground:** For HIV pre-exposure prophylaxis (PrEP) to have maximal population impact, widespread access to prescribers is needed. Our objective was to characterize clinicians prescribing PrEP across Ontario to inform future efforts to expand access.

Methods: We obtained data from IQVIA, a pharmaceutical informatics company whose drug dispensation databases reflect two thirds of prescriptions in Ontario, to characterize clinicians writing at least one PrEP prescription that was filled between 03/2018-02/2019 in the province. PrEP prescriptions were identified using an algorithm that inferred whether TDF/FTC prescriptions were for PrEP, hepatitis B therapy, post-exposure prophylaxis or antiretroviral therapy. Descriptive statistics and chi-square, Fisher exact and ANOVA tests were performed as appropriate.

Results: Among 709 prescribers with data available, the most common specialties were primary care (family medicine or general practice, 85.8%), followed by infectious diseases (5.6%), residents (3.7%); internal medicine (1.6%), and other disciplines (3.4%). Prescribers were 41.2% female and 0.7% French-first-language, and the median (interquartile range) year of medical school graduation was 2003 (1991, 2011). PrEP was prescribed 88% of the time in offices/clinics, 11.7% in hospitals and 0.3% in other locations. Prescribers were heavily concentrated in the downtown (30.5%) and non-downtown (24.3%) regions of Toronto, with 10.4% in Ottawa and 34.8% in other parts of the province. Compared to prescribers from other parts of the province, those in Toronto/Ottawa were more likely to be female versus male (68.4% vs 53.7%, $p<0.001$) and have a later year of graduation (2001 vs 1998, $p=0.0012$). Prescriber specialty and office type did not differ by region.

Conclusions: The majority of clinicians prescribing PrEP were primary care providers in Toronto and Ottawa. Prescribers in these cities were more commonly female and more recent graduates. Next steps include incorporating data on prescription frequency and comparisons with HIV diagnosis data to identify opportunities for targeted PrEP education.

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EPHP8.05

Attitudinal Factors Associated with Condom Use Among Heterosexual African Caribbean Black (ACB) Men in Ontario

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I**ntroduction:** Attitudes towards condom use may play a role in its actual use and ultimately in the reduction HIV of prevalence. We studied the relationship between condom use attitudes versus condom use itself, with a goal of building capacity for ACB men to meaningfully engage in HIV prevention initiatives. An intersectionality lens enabled us portray how an array of factors beyond attitudes inter-connect to inform condom use among Black men.

Methods: 808 participants were recruited from four cities in Ontario via a combination community-based peer recruitment and venue-based approaches, including London (n=145), Ottawa (n=205), Toronto (n=325) and Windsor (n=133). We used multinomial logistic regression analysis to model the effects of condom use attitudes on condom use action while controlling for the effects of socio-demographic factors within the same analysis. Condom use was scaled on frequency of use where 1=never, 2=sometimes, 3= most times, 4=always. Condom use attitudes were a measured on a validated 10-items 5-points Likert scale. Individual items were entered into the model as categorical variables.

Results: 584 out of 808 reported Condom use, including never used condom 39.3%(n=88), sometimes 27.2%(n=61), most times 16.5%(n=37) and always 17%(n=38). Men who affirmed that using condom makes sex un-enjoyable were less likely to use condom sometimes (OR=0.586, P=0.003) or always (OR=0.374, P=0.003) during intercourse with a casual partner. Being born in Canada (OR=0.206, P=0.004) and being married (OR=0.024, P=0.000) significantly reduced condom use, while age (OR=1.063, P=0.035) and education (P=1.312, P=0.018) were associated with increased use.

Conclusion and Recommendations: Worrying about sexual enjoyment appears to be a key factor reducing condom use among Black men in Ontario. We recommend policies to stimulate both public enlightenment on proper use of condoms along with improvement of condom quality to satisfy the dual goal of sexual enjoyment and protection against HIV transmission.

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EPHP8.06

HIV Services Access Among Men who have Sex with Men (MSM) in the Region of Waterloo: Insights from the OutLook Study

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B**ackground:** HIV prevention services in Canada are heavily focused on targeting gay, bisexual, transgender, and other men who have sex with men (GBT-MSM), who are disproportionately infected by HIV/AIDS. AIDS service organizations (ASOs) provide support services to at-risk populations and people living with HIV/AIDS. However, it is not clear which factors predict GBT-MSM's awareness and access to ASOs in small Canadian-urban centres.

Methods: The OutLook study (n=526) explored the health and well-being of LGBTQ communities in Waterloo, Ontario. This analysis identified the socio-demographic, health-related, and psychosocial factors that predict awareness and access to the local ASO (ACCKWA) among GBT-MSM (n=269). The Andersen – Gelberg Behavioural Model of Health Services Use for Vulnerable Populations was used to the conceptual framework. Chunk wise regression modeling was used to identify multivariate associations to predict factors that influence awareness and access to ACCKWA.

Results: Most participants were 16-24 years old, identified as gay and cisgender, and white-identified. Based on the multivariate associations, one predisposing (age [OR=2.59; 95%CI=1.50, 3.51]); three enabling (experienced harassment or violence [OR=4.05; 95%CI=1.76, 9.33], community belongingness [OR=1.59, 95% CI=1.01, 2.48], and family social support [OR=1.34; 95%CI=1.06, 1.70]); and one need factors (STI diagnosis [OR=5.36; 95%CI=1.59, 18.12]), were significantly associated with the awareness of ACCKWA at $p<0.05$. Additionally, three enabling factors (taken HIV test [OR=0.03; 95% CI=0.00,0.38], experienced harassment or violence [OR=3.09; 95%CI=1.34, 7.10], community belongingness [OR=1.46; 95%CI=1.00, 2.12]); and one need factor (HIV status [OR=7.36; 95%CI=1.72, 31.45]), were significantly associated with the access of ACCKWA at $p<0.05$ in the final model.

Conclusion: These results illustrate the importance of social support and community belongingness as predictors to the awareness and access to ASOs among GBT-MSM. Research is required to deepen the understanding of barriers and facilitators to ASOs, and subsequently, develop accessible HIV-preventative services for GBT-MSM across Canada.

Epidemiology and Public Health: HIV Prevention: Public Health Aspects
Épidémiologie et santé publique : Prévention du VIH : aspects de santé publique

EPHP8.07

Is Dating App/Website Use Associated with Sexual Behaviours at Risk for STBBI Transmission? Results from Engage-Montréal

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B**ackground:** Previous studies of the association between dating app/website use and at-risk sexual behaviour have shown mixed results. We assessed this association among gay and bisexual men (GBM) in Montréal.

Methods: Baseline data collected (02/2017-06/2018) from the Engage-Montréal study were used. Sexually-active GBM ≥16 years were recruited via respondent-driven sampling (RDS). Covariates included biopsychosocial factors identified through literature review to be associated with dating app/website use and/or condomless anal intercourse (CAI). Variables were retained based on expert knowledge and statistical significance ($p<0.10$). A multivariate quasibinomial logistic regression model assessed the association between frequency of dating app/website use (no use, low use: <once/day, high: ≥once/day) and ≥1 episode of CAI, over the past six months (P6M). Analyses are RDS-adjusted.

Results: 1179 GBM (median age:34; IQR:27,49) completed the study questionnaire; 26.2%, 39.4% and 34.4% reported no, low and high use, respectively. 64.7% of study participants reported at least one episode of CAI in the P6M. Controlling for sociodemographic, HIV status, PrEP use, sexual partnering, substance use and other psychosocial factors, only high app/web-use was associated with increased odds of CAI compared to non-users; aOR: 1.90 (1.22, 2.97) (Table 1).

Conclusion: One-third of GBM in Montréal reported daily use of dating apps/websites during the P6M; this level of use was independently associated with CAI. Low app/web-use was not associated with CAI in the P6M; this effect gradient may explain the mixed results observed previously. The results are limited by potential reverse causality, which may be addressed in a longitudinal study.

Table 1: Correlates of condomless anal intercourse in the P6M in relation to dating app/website use among GBM of the Greater Montréal area – Results from Engage-Montréal (n = 1179).

Variable		**Univariate OR (95% CI)**	**Multivariate OR (95% CI)**
	No Use	*Comparator Group*	*Comparator Group*
App Use, P6M			
	Low	2.42 (1.83, 3.19)	1.26 (0.87, 1.82)
	High	4.28 (3.11, 5.89)	1.90 (1.22, 2.97)
Age		0.97 (0.96, 0.98)	0.99 (0.98, 1.00)
HIV Status & PrEP Use	HIV-negative	*Comparator Group*	*Comparator Group*
	HIV-negative, on PrEP P6M	23.1 (6.57, 81.2)	10.2 (2.76, 37.5)
	HIV-positive	0.98 (0.70, 1.38)	1.06 (0.67, 1.67)
Education, High School or more		3.98 (2.63, 6.02)	5.22 (2.78, 9.82)
Income ≥ $30k/year		1.37 (1.09, 1.74)	1.16 (0.87, 1.56)
Having a regular partner		1.58 (1.24, 1.99)	2.66 (1.83, 3.86)
Being in an open relationship		1.78 (1.30, 2.44)	0.59 (0.31, 0.76)
Number of sexual partners, P6M		1.07 (1.04, 1.09)	1.02 (1.00, 1.05)
Engaging in group sex (1), P6M		2.05 (1.46, 2.90)	2.08 (1.26, 3.44)
Problematic alcohol use (2), P6M or P3M		1.31 (1.01, 1.70)	0.63 (0.45, 0.88)
Problematic substance use (3), P6M or P3M		2.28 (1.78, 2.91)	1.91 (1.39, 2.63)
Symptoms of anxiety and/or depression (4)		0.77 (0.60, 0.99)	0.87 (0.64, 1.19)
Sexual compulsivity (5)		1.50 (1.11, 2.01)	1.25 (0.97, 1.60)
Fewer perceived barriers to condom use (6)		0.97 (0.95, 0.98)	0.96 (0.95, 0.98)
Transactional sex (7), P6M		1.55 (0.93, 2.59)	0.78 (0.38, 1.63)

Notes: P6M: past 6 months, PrEP: Pre-Exposure Prophylaxis for HIV; P3M: past 3 months; 1: group sex defined as four or more partners at the same time; 2: based on ASSIST V3.0 (WHO, validated by Humeniuk et al., 2008) scale, score of 11 or higher for alcohol; 3: based on ASSIST (WHO, validated by Humeniuk et al., 2008) scale, score of 4 or higher for any of amphetamines, cannabis, cocaine, hallucinogens, inhalants, opioids or sedatives; 4: past week; as defined by the Hospital Anxiety and Depression scale (score of 11 or greater) (HAD; Zigmond & Snaith, 1983); 5: Sexual Compulsivity Scale (continuous) (Kalichman & Rompa, 2001); 6: as defined by the Condom Barriers Scale (Doyle, Calsyn, & Ball, 2009), higher scores indicate fewer perceived barriers to condom use; 7: defined as being on either side of the exchange of sex for money, drugs, or services, at least once in the P6M.

Epidemiology and Public Health: HIV Prevention: Public Health Aspects
Épidémiologie et santé publique : Prévention du VIH : aspects de santé publique

EPHP8.08

National HIV Testing

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B**ackground:** Since 2014, there has been a 25.5% increase in the number of new HIV infections in Canada. In order to address these rising rates, the Canadian AIDS Society (CAS) formed a steering committee of provincial community HIV organizations in 2017 to organize a national HIV Testing Day. There have so far been two events, held on June 27th of 2018 and 2019.

Methods: CAS collaborated with participating organizations and health authorities to organize testing events across the country, and worked with bioLytical Laboratories to distribute INSTI® HIV-1/HIV-2 Rapid Antibody Tests. All attendees of the testing events received pre- and post-test counselling, and were linked to care and support when appropriate. Organizations were asked to collect relevant data from their event(s), which were compiled and analysed by CAS.

Findings: For the 2018 event, there were 69 testing sites across the country and 835 people were tested in total. 50% of the tests completed used point-of-care testing (POCT), and there was one positive HIV diagnosis. The 2019 event grew to 109 testing sites. Preliminary data shows that 770 people were confirmed to have been tested, with an estimated total of 1,500. Three positive diagnoses have been reported so far: one Hepatitis B, one Hepatitis C, and one gonorrhea. 27% of participants had never been tested before, and 32% had not been tested within the past year. The biggest exposure category of participants was people who use drugs (47%), and 40% of participants identified as Indigenous.

Discussion and Conclusion: This initiative has been successful in testing hard-to-reach populations, and there was a strong uptake of POCT. Collecting consistent data from all testing sites, specifically regarding positive test results, has been a challenge. Due to its success, this initiative will be expanding to a national HIV Testing Week in 2020.

Epidemiology and Public Health: HIV Prevention: Public Health Aspects
Épidémiologie et santé publique : Prévention du VIH : aspects de santé publique

EPHP8.09

PrEP Provides More Than Simply HIV Risk Reduction

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HIV pre-exposure prophylaxis (PrEP) was first approved in Canada in 2016. Since then, the number of gay and other men who have sex with men taking PrEP has grown steadily. While there are sound clinical data on the efficacy of PrEP, how PrEP is used as well as its risks and benefits in the real world remain largely undescribed. To answer some of these questions, we conducted a cross-sectional study including 113 men attending the PrEP clinic at the Ottawa Hospital. Mean age was 39.9 years (SD = 10.0). All participants identified as men and most had sex with only men (92.0%) or mostly men (6.2%). The vast majority had completed postsecondary schooling (86.7%) and 52% had an annual income of ≥$80,000. Essentially all men (98%) took PrEP daily and 74% indicated they rarely if ever forgot to take their pills. Most men disclosed their use of PrEP to both regular and causal sexual partners (87% and 83% respectively). Comparing before to after initiating PrEP, there was no significant change in sexual activity among participants including number of partners or sexual positions. Condom use, however, decreased by half or more. Most striking was the decrease in sexual anxiety. A full 50% of participants reported feeling stressed frequently or always during sex, and 60% felt stressed frequently or always after sex. After initiating PrEP, only 1.7% reported feeling stressed frequently or always during sex, and no one reported feeling stressed frequently or always after sex. Recreational drug use in the past three months was fairly high, with cocaine (19.5%), MDMA (16.8%) and GHB (15.9%) being the most common. Our results indicate men taking PrEP tend to be educated and affluent. While taking PrEP did not lead to changes in sexual activity, condom use did decrease as did sexual anxiety.

Epidemiology and Public Health: HIV Prevention: Public Health Aspects
Épidémiologie et santé publique : Prévention du VIH : aspects de santé publique

EPHP8.10

Répondre de manière concertée à l'épidémie de VIH chez les HARSAH à Montréal : l'intersectorialité au coeur des actions

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Contexte : Les hommes ayant des relations sexuelles avec des hommes (HARSAH) représentent plus de la moitié des nouveaux diagnostics de VIH à Montréal chaque année. Pour répondre à l'épidémie, la Direction régionale de santé publique (DRSP) de Montréal est impliquée à différents niveaux : financement d'interventions communautaires, distribution de matériel de prévention, participation à des projets de recherche, etc. Depuis 2015, la DRSP anime une table de concertation regroupant les organismes communautaires en prévention du VIH auprès des HARSAH. Ce "comité HARSAH" fut élargi en 2017, considérant la prémisse que l'action intersectorielle est nécessaire à rejoindre des populations marginalisées et à améliorer l'offre de services (CCNDS, 2012). Le comité réunit actuellement les milieux communautaires, cliniques et scientifiques.

Fonctionnement : En 2015, le comité HARSAH fut créé, découlant de la volonté d'organismes d'avoir un espace de discussion centré sur les réalités de communautés HARSAH. Aujourd'hui, le comité rassemble une vingtaine de membres représentant 17 organisations. La concertation a permis d'établir des objectifs et priorités communes, révisées annuellement. Le comité sert aussi d'espace d'échange de pratiques, de formation et de transfert de connaissances.

Au niveau opérationnel, le comité chapeaute des groupes de travail autour d'enjeux spécifiques :

- Chemsex,
- Dépistage,
- PrEP,
- HARSAH trans,
- HARSAH racisés.

Chaque groupe produit des livrables divers (campagnes, formations, création de services, etc.).

Conclusion : A Montréal, les services de prévention offerts aux HARSAH sont multiples. Cependant, des effets de silo sont constatés depuis de nombreuses années, freinant l'élaboration d'une réponse coordonnée face à l'épidémie. Le comité HARSAH constitue un espace privilégié pour aborder des préoccupations et enjeux communs et a permis la création d'outils, programmes et services en prévention du VIH. Cette démarche nécessite l'implication renforcée de la DRSP, conforme à ses missions de planification d'interventions avec les communautés et de réduction des inégalités sociales de santé.

Epidemiology and Public Health: HIV Prevention: Public Health Aspects
Épidémiologie et santé publique : Prévention du VIH : aspects de santé publique

EPHP8.11

Two Decades Experience of Prophylaxis After Sexual Exposure to HIV (PEP)

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B**ackground:** Post-exposure Prophylaxis (PEP) has been offered at Clinique médicale l'Actuel since 2000. Development and improvements in antiretroviral treatments have changed PEP guidelines. We aim to compare characteristics and adherence to treatment of the cohort from 2000 to 2019.

Methods: This observational retrospective study of the cohort includes men who have sex with men (MSM), ages ≥18, who consulted for PEP from January 2000 to June 2019. We defined two groups: 1 (October 2000 to December 2009) and 2 (January 2010 to June 2019). Socio-demographics, behavioural risks and treatment characteristics were compared. Completed follow-up (FU) was considered if the patient came back for consulting at week 4. Analyses were performed by using SPSS23.

Results: Among 5578 consultations for PEP, 1050 (19%) were in group 1 and 4528 (81%) in group 2. For the majority it was a first episode (64%) and the delay between exposure and consultation was within 72 hours (99%). Patients in group 2 had unprotected sex more often (57% vs. 46%, $p<0.01$) and a risk assessment classified as high (75% vs. 65%, $p<0.01$), superior than those in group 1.

Conclusion: We observed a high adherence to ARV-PEP in our cohort, but more recent ARV-PEP regimens had less adverse reaction and increased the adherence to treatment. Patients in the group 2 had risk behaviours higher than those in the group 1; as such, continued risk reduction counseling is essential to minimize potential harms associated with behaviors. The support of combined prevention measures remains key to ending the epidemic.

Table 1- Characteristics of Study Population

	Group 1 n (%) 1050 (19)	**Group 2 n (%)** 4528 (81)	**Total n (%)** 5578	**p**
Age (mean + standard deviation)	34.4 + 9.3	34.9 + 10.5	34.8 + 10.3	0.04
University degree	455 (57)	2600 (62)	3055 (61)	0.05
Patient intoxicated	446 (50%)	2052 (46)	2498 (47)	0.05
Casual partner Violence/Agression	39 (7)	89 (2)	128 (3)	<0.01
Condomless anal sex	382 (46)	2209 (57)	2591 (55)	<0.01
Source HIV+ (depending on patient)	296 (28)	967 (21)	1263 (23)	<0.01
Patient treated	855 (81)	3819 (84)	4674 (84)	0.02
TDV/LPV regimen (regiment most prescribed)	TDV/LPV (53)	TDV/RAL (43)		<0.01
Adverse reaction to ARV	445 (90)	1539 (57)	1984 (62)	<0.01
Adherence to 4 weeks treatment	593 (90)	2576 (96)	3169 (95)	<0.01

Epidemiology and Public Health: HIV Prevention: Public Health Aspects
Épidémiologie et santé publique : Prévention du VIH : aspects de santé publique

EPHP8.12

The Utility of the Social Ecological Model in Understanding and Reducing the Spread of STBBIs in a Canadian Province: What are We Missing in Nova Scotia?

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B**ackground:** Rates of sexually transmitted and blood borne infections (STBBIs) have been on the rise in Canada over the last two decades. Efforts to prevent or mitigate the increasing burden of STBBIs have been largely unsuccessful. Numerous factors contribute to the rising rates of STBBIs. To achieve the goal of reducing the spread of STBBIs, these contributing factors must be addressed.

Objectives: The goal of this research was to better understand the local factors contributing to the spread of STBBIs in Nova Scotia, Canada, and to explore potential strategies for prevention.

Methods: This was a descriptive qualitative study. A series of semi-structured, one on one, interviews were conducted with senior Nova Scotian public health officials to explore local contributors to the rising rates of STBBIs in the province and needed actions to reduce their spread. The Social Ecological Model was used to help frame the thematic analysis of the data.

Results: Study participants expressed their views on the contributing factors to rising STBBI rates, actions executed by various levels of government to reduce rates, and strategies needed to enhance prevention and increase access to testing. A key strategy discussed included the use of Point Of Care Testing (POCT), which was seen as a useful tool in preventing the spread of certain STBBIs, such as HIV, if associated with patient counselling and other interventions. The latter included comprehensive education on STBBIs, interventions to reduce stigma, enhancement of the current surveillance system, and utilization of the national framework.

Conclusion: Several factors contribute to the rising rates of STBBIs. Multi-level prevention strategies are needed to tackle the rising trend of the infections in Nova Scotia. Enhancing surveillance, utilizing the Pan-Canadian STBBI Framework for Action, and increasing access to POCT were viewed as particularly salient actions required in the Nova Scotia context.

Epidemiology and Public Health: HIV Prevention: Public Health Aspects
Épidémiologie et santé publique : Prévention du VIH : aspects de santé publique

EPHP8.13

Assessing Adherence, Follow-up, and Effectiveness for Patients on HIV Pre-exposure Prophylaxis Outside a Major Urban Centre

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B**ackground:** Tenofovir/emtricitabine has been shown to be effective as pre-exposure prophylaxis (PrEP) for HIV infection. This review elicits the experiences of people accessing PrEP in Ontario outside of a major urban centre.

Methods: Data was collected by retrospective chart review from Hamilton PrEP clinic. We collected data to illustrate the PrEP cascade of referrals and follow-up, as well as renal function, STIs, and HIV seroconversion.

Results: There were 325 patients referred to the PrEP clinic between 2015 and October 2019, and 182 person years of follow-up. Of these 325 referrals, 268 were seen in clinic, and 208 patients were started on PrEP. There was follow-up data for at least 6 months for 36.6% of the original 325 patients. Reasons patients did not start PrEP included not returning to clinic (n=37), being low risk for HIV infection (n=13), drug coverage or cost (n=8), being HIV positive at baseline (n=2), and the time commitment for follow up (n=1). Of the 208 patients started on PrEP, there were 88 total STI diagnoses, with 42 (20.5%) patients receiving an STI diagnosis during routine follow-up. One patient seroconverted while waiting for drug coverage before starting on PrEP.

Conclusions: Referral rates for PrEP have increased considerably over time, but there is a reduction in patients retained at all levels of the PrEP cascade. Diagnosis of an STI during routine follow-up is relatively common. As shown in multiple other studies, PrEP is safe and effective for prevention of HIV infection. Access to medication remains a significant issue for patients, and for one patient, delays in drug coverage resulted in seroconversion.

Epidemiology and Public Health: Interdisciplinary Epidemiology (Biological, Behavioural and Social) of HIV infection, including structural, social and individual determinants

Épidémiologie et santé publique : Épidémiologie interdisciplinaire (biologique, comportementale et sociale) de l'infection au VIH et déterminants structurels, sociaux et individuels

EPHP9.01

Chemsex and Symptoms of Anxiety and Depression Among Gay, Bisexual, and Other Men Who Have Sex with Men (GBM) in Montréal: Results from the ENGAGE Study

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B**ackground:** GBM are at higher risk of anxiety and/or depression symptoms compared to the general population. Chemsex is defined as the use of gamma-Hydroxybutyric acid, methamphetamine, cocaine, ecstasy and ketamine during sex. Little is known regarding the association between chemsex and anxiety and depression symptoms, and if this relation is moderated by HIV status.

Methods: Montréal baseline data from the Engage study were used. Sexually active GBM ≥ 16 years old were recruited via respondent-driven sampling (RDS). Presence of anxiety and depression symptoms were defined using a score of ≥ 8 on either the anxiety- or depression-subscale of the Hospital Anxiety and Depression Scale. Using two logistic multivariate models, we assessed the association of chemsex (main predictor) with symptoms of anxiety and depression (two outcomes). Statistical interaction between self-reported HIV status and chemsex participation were tested in each multivariate model adjusting for potential confounders. Adjusted odds ratios (aOR) and 95% confidence intervals (95%CI) are reported; analyses were RDS-adjusted.

Results: Effect modification by self-reported HIV status was statistically significant for anxiety and depression symptoms. Anxiety symptoms were positively associated with HIV-negative GBM engaging in chemsex compared with HIV-negative GBM not engaging in chemsex (aOR=1.65, 95%CI:1.09-2.52); significant confounders included being younger (aOR=1.03, 95%CI:1.02-1.05), education ≤ high school diploma (aOR=1.96, 95%CI:1.33-2.91), alcohol misuse (aOR=1.45, 95%CI:1.08-1.95) and lifetime history of sexual abuse (aOR=3.23, 95%CI:2.31-4.56). Depression symptoms were positively associated with HIV-negative GBM engaging in chemsex compared with HIV-negative GBM not engaging in chemsex (aOR=1.66, 95%CI:1.11-2.46); significant confounders included not identifying as a cis-gendered male (aOR=2.77, 95%CI:1.78-4.28) and lifetime history of sexual abuse (aOR=2.85, 95%CI:2.08-3.91).

Conclusion: Results suggest that engaging in chemsex is linked to anxiety and depression symptoms among HIV-negative GBM but not for GBM living with HIV. Longitudinal research is needed to understand the directionality of identified associations.

Epidemiology and Public Health: Interdisciplinary Epidemiology (Biological, Behavioural and Social) of HIV infection, including structural, social and individual determinants

Épidémiologie et santé publique : Épidémiologie interdisciplinaire (biologique, comportementale et sociale) de l'infection au VIH et déterminants structurels, sociaux et individuels

EPHP9.02

HIV Disclosure, Mental Depression, and Stigma: a Mediation Analysis

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In Ethiopia, there are 671,941 peoples living with HIV. The SDG target is to provide antiretroviral therapy for 90% and beyond of HIV infected people by the year 2020. However, there are significant number of none disclosed HIV infected people that could hinder to meet treatment target.

Many studies focused on the relationships between stigma and HIV disclosure.However, the bivariate relationship of HIV disclosure with mental depression and stigma has been reported in the literature. But, the mediation effect of mental depression on the relationship of stigma with HIV disclosure is not well studied. Therefore, this paper evaluates the relationship among stigma, mental depression and HIV status disclosure.

This study was facility based quantitative cross sectional study. Study populations were adults using first line ART regimen from randomly selected 12 hospitals and 8 health centers in southern region of Ethiopia. It was conducted by using structured questionnaire on June, 2014. Ethical approval was obtained from the regional Health Bureau ethical review Committee. Informed consent was obtained from each patient.

A total of 1,263 patients were interviewed. The Pearson chi-square test showed that urban residence of ART users, formally educated ART users, rich ART users, and married ART users had higher rate of HIV disclosure as compared their matching groups.

Mediation analysis showed that, mental depression appeared to mediate the relationship between stigma and HIV disclosure. Stigma was significantly positively associated with mental depression, mental depression was negatively associated with HIV disclosure and stigma was negatively associated with HIV disclosure.

The mediation effects of mental depression have important implications for HIV disclosure and HIV prevention activities.

Epidemiology and Public Health: Interdisciplinary Epidemiology (Biological, Behavioural and Social) of HIV infection, including structural, social and individual determinants

Épidémiologie et santé publique : Épidémiologie interdisciplinaire (biologique, comportementale et sociale) de l'infection au VIH et déterminants structurels, sociaux et individuels

EPHP9.03

Mechanisms in the Relationship Between Crystal Methamphetamine Use and STI Diagnosis and HIV/STI Risks in Gay, Bisexual, and Other Men Who Have Sex with Men (gbMSM)

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B**ackground:** Crystal methamphetamine (meth) use is associated with increased sexual risk for HIV and other sexually transmitted infections (STI). Beliefs about condoms and about meth use may explain this observation. We tested whether the relationship between crystal meth use and STI/HIV risk was mediated by condom use self-efficacy, perceived condom barriers, and expectancies that substance use allows one to "escape" from anxiety about sex.

Methods: We recruited 2449 GBM, >16 years, in Montreal, Toronto, and Vancouver using respondent-driven sampling. Participants completed computer-assisted questionnaires in French or English and nurse-assisted testing for HIV and STIs. We examined the association between meth use and insertive condomless anal sex (CAS), receptive CAS, and STI (syphilis, gonnorhea, and chlamydia)/HIV diagnosis within the past six months (P6M), including at study visit. We also evaluated possible mediating and moderating effects of condom use self-efficacy, perceived condom barriers, and escape expectancies.

Results: Of 2449 participants, 21 reported HIV diagnosis in the P6M, 472 were diagnosed with another STI; and 10.9% reported using crystal meth in the P6M. Crystal meth use was associated with engaging in receptive CAS (β=0.798, se=0.147, p<0.001) and HIV diagnosis (β=1.466, se=0.417, p<0.001). Condom use self-efficacy mediated the association between meth use and STI diagnosis (p=.004) as well as both receptive (p=.02) and insertive CAS (p=.024). Perceived condom barriers mediated the association between meth use and insertive (p<.001) and receptive CAS (p<.001). Escape expectancies also had a mediating effect on the association between meth use and insertive (p=.001) and receptive CAS (p=.001).

Conclusion: Condom use self efficacy, perceived condom use barriers, and escape expectancies for substance use add depth to the relationship between meth use and both STI diagnosis and STI/HIV risk. Interventions to promote sexual health among gbMSM should address sexualized substance use for STI prevention.

Epidemiology and Public Health: Interdisciplinary Epidemiology (Biological, Behavioural and Social) of HIV infection, including structural, social and individual determinants

Épidémiologie et santé publique : Épidémiologie interdisciplinaire (biologique, comportementale et sociale) de l'infection au VIH et déterminants structurels, sociaux et individuels

EPHP9.04

Tobacco Smoking and Complete Immune Response (VL+/CD4+) in the Canadian HIV+ Observational Cohort Collaboration (CANOC)

Alison McClean[1], Taylor McLinden[1], Jason Trigg[1], Paul Sereda[1], Monica Ye[1], Nic Bacani[1], Niloufar Aran[1], Réjean Thomas[2], Alexander Wong[3], Abigail Kroch[4, 5], Marina B. Klein[6, 7], Zabrina Brumme[1], Mark Hull[1], Curtis Cooper[8], Kate Salters[1, 9], Robert S. Hogg[1, 9]

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I**ntroduction:** People living with HIV have a higher prevalence of tobacco smoking when compared to the general population. Tobacco smoking increases HIV+ persons' susceptibility to infections, pulmonary disease, cardio-vascular disease, cancer, and progression to AIDS. Moreover, smoking tobacco has also been associated with an increased risk of death in HIV+ smokers compared to HIV+ non-smokers. This study assessed the impact of ever-smoking tobacco on complete immune response (VL+/CD4+).

Methods: Using data from the CANOC study, participants with any tobacco smoking status measure were included. Immune response was categorized as complete (VL+/CD4+) if participants achieved viral suppression under 50 copies/mL (VL+) with an increase of 100 cells/mm^3 from first CD4 cell count (CD4+) within 6 months of initiating antiretroviral therapy. Univariable and multivariable logistic regression models were used to examine the relationship between ever-tobacco smoking and achieving complete immune response. Sex at birth, province of enrollment, year of entry into cohort, antiretroviral therapy regimen, neighbourhood level material deprivation, and baseline age, CD4 cell count, and viral load were pre-specified as confounders.

Results: From 10 972 CANOC participants, 3564 were excluded due to unknown smoking status. Among 7408 included individuals, 69.8% (5170/7408) reported 'ever smoking' with 48.6% (2514/5170) of those who ever smoked achieving complete immune response. Ever-tobacco smoking was associated with being 13% less likely to achieve complete viral response when compared to never smoking (OR 0.87, 95%CI 0.79-0.97). However, the deleterious relationship between tobacco smoking and complete immune response was not maintained after confounder adjustment (OR 0.94, 95%CI 0.85-1.04).

Conclusion: Within this cohort, classifying individuals as ever versus never tobacco smokers did not demonstrate a negative relationship between tobacco smoking and complete immune response. Future analysis may require more granularity with regards to exposure measure (e.g. actively smoking, pack per day history).

Epidemiology and Public Health: Other
Épidémiologie et santé publique : Autres

EPHP10.01

Task-shifting in HIV Testing Services

Amanda Giacomazzo, Laurel Challacombe, Laurie Edmiston
CATIE, Toronto, ON

Background: An estimated 14% of HIV-positive Canadians are unaware of their status and unable to benefit from HIV care and treatment. One way to increase access to testing is through task-shifting, which involves the distribution of tasks from trained health providers to lay providers (e.g., peers, outreach workers) with training in specified tasks. This review outlines findings on the accuracy, acceptability, satisfaction with and the uptake of HIV testing by lay providers.

Methods: CATIE conducted a literature review to build on an existing international literature review conducted to inform the development of World Health Organization guidelines on the use of task-shifting by lay providers for HIV testing. Additional searches were limited to research literature published between January 2015 and March 2019 and focused on countries with health systems similar to Canada.

Results: International guidelines and recommendations support the use of task-shifting in HIV testing. Research indicates that: 1) the quality of the tests performed by lay providers are comparable to tests performed by trained healthcare professionals; 2) people are accepting of and satisfied with testing received from lay providers; and 3) there is high uptake of testing delivered by lay providers.

Discussion: The use of lay providers in HIV testing varies across Canada. Health Canada has recently approved the expanded use of the INSTI HIV test, the only rapid point-of-care (POC) HIV test used in Canada. Although the regulatory approval is an important first step, provincial and territorial policies that allow for the use of POC testing will also be necessary, as will funding for POC tests. The use of lay providers to increase access to testing should be considered to reach populations that are underserved (e.g., those that do not make regular visits to clinical settings). Training, quality control and regulations need to be considered when establishing programs.

Epidemiology and Public Health: Other
Épidémiologie et santé publique : Autres

EPHP10.02

Programmatic Approaches for Successful Linkage to HIV Care

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CATIE, Toronto, ON

Background: Following a positive HIV test, a client needs to be linked to an HIV clinician for guidance on care and treatment. Immediate referral to HIV care following an HIV-positive diagnosis is recommended. Early linkage to care can optimize individual (e.g., improved health) and public health (e.g., reduced transmission) outcomes. Various programming approaches exist to enhance linkage to care.

Methods: CATIE conducted a literature review to summarize research information on linkage to care after an initial HIV diagnosis. Searches were limited to research literature published between January 2015 and July 2018 and focused on countries with health systems similar to Canada. Research prior to 2015 was largely captured in a 2017 systematic review or included if it was a review or guideline. Articles related to case management, patient navigation and programs where linkage to care was part of a longer-term program were excluded.

Results: Available research indicates strong evidence to support the effectiveness of short-term strengths-based case management provided by a professional case manager, for successful linkage to care. There is moderate evidence to support the effectiveness of counsellors or linkage to care coordinators for successful linkage to care. Evidence did not support the use of financial incentives. Elements identified for optimal linkage to care included: immediate referral; use of strength-based case management; use of peer support or case managers; intensive outreach for those who do not engage in care and support for disclosure.

Discussion: There are strong examples of successful linkage to care programs following an initial HIV diagnosis. Organizations looking to develop linkage to care programs for people following a positive HIV diagnosis should consider linking people to care immediately after diagnosis. Successful approaches can include the use of active referrals and strength-based case management, as well as the use of coordinators or counsellors.

Epidemiology and Public Health: Other
Épidémiologie et santé publique : Autres

EPHP10.03

Practical Cognitive Rehabilitation Strategies to Tackle Cognitive Concerns in People with HIV

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I**ntroduction:** Better self-perceived cognition is considered as an important component of successful aging. Cognitive concerns raised by people with HIV can have repercussions in their everyday functioning. Simple and practical cognitive strategies are required to address these concerns. The purpose of this study was to link the most voiced cognitive difficulties in HIV with evidence-based cognitive rehabilitation strategies.

Methods: Communicating Cognitive Concerns Questionnaire (C3Q) was used to tap into cognitive difficulties which are commonly reported by people with HIV. Evidence-based cognitive rehabilitation strategies were identified from good quality systematic reviews/meta-analyses, where possible, in various clinical populations including HIV. For the concerns where evidence for any strategies was inconclusive, expert opinions from rehabilitation clinicians were sought. Seven clinicians from across Canada were approached to nominate strategies which could possibly benefit specific concerns.

Results: At least one cognitive strategy was matched with each of the 18 items of C3Q. For example, external memory aids and visual imagery were recommended for those with memory difficulties. Specific strategies can be chosen based on the individual goals, abilities, preferences and the nature of the task to be performed.

Conclusion: Use of cognitive rehabilitation strategies has a role in the self-management of cognitive difficulties in HIV. With increased vulnerability to cognitive impairment in people aging with HIV, this work has important implications.

Epidemiology and Public Health: Other
Épidémiologie et santé publique : Autres

EPHP10.04

Citizens' and Stakeholders' Perspectives on Enhancing Comprehensive Care for People Living with HIV in Canada

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B**ackground:** People living with HIV are living longer with health-related disability associated with aging, including complex conditions. However, health systems in Canada have not adapted to meet these comprehensive care needs. Our goal was to spark action to address this challenge by convening deliberations across Canada with people living with and affected by HIV, and with policymakers, stakeholders and researchers who can champion needed changes.

Methods: In collaboration with an interdisciplinary steering committee (including PLWH) we convened three citizen panels (one in Manitoba, Ontario and Newfoundland with a total of 31 participants) and a national stakeholder dialogue with 21 participants. The panels were informed by a plain-language citizen brief that outlined data and evidence about the challenge/problem, elements of an approach for addressing it (which outlined the need for strengthened health and social systems that are underpinned by processes that enable rapid-learning and improvement) and implementation considerations, and the national dialogue was informed by a more detailed version of the same brief that included a thematic analysis of the findings from the panels.

Findings: Panelists proposed several areas where HIV care could be strengthened, including support for prevention, more widely available testing (and options for testing), better access to social supports, increased public education to address stigma, and access to more timely data to support needed system changes. Participants in the stakeholder dialogue also emphasized the need to address the lack of coordination across care pathways to enable person-centred care, and the need for mechanisms and resources to support coordinated learning and improvement learning across provinces, territories and Indigenous communities.

Conclusion: Our deliberative processes have determined policy priorities for enhancing person-centred care for people living with HIV, which will inform implementation of an HIV-focused learning collaborative to operationalize rapid learning and improvement processes to strengthen health and social systems.

Epidemiology and Public Health: Other
Épidémiologie et santé publique : Autres

EPHP10.05

Caesarean Sections Among Women Living with HIV: a Population-Based Retrospective Cohort Study

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B**ackground:** In Canada, women of childbearing age are among the fastest growing demographic of persons living with HIV. Continuous treatment with combination antiretroviral therapy (cART) enables women living with HIV (WLWH) to become pregnant without mother-to-child transmission and they are increasingly planning to become pregnant. Since 2014, guidelines no longer recommend routine elective Caesarean section for women who are virally suppressed and receiving cART, however, little is known about their current maternity care service use. Our objective was to describe and assess the maternity care service use for WLWH in Ontario, Canada.

Methods: Our research is co-led and co-designed with women with lived experience. We conducted a retrospective population-level cohort study using linked health administrative databases at ICES. Participants were WLWH aged 12-50 years old who gave birth in Ontario, Canada, between 2006/07 and 2017/18. We assessed their intrapartum characteristics and used multivariable logistic regression to determine an association between HIV status and Caesarean section birth, controlling for sociodemographic and clinical variables.

Results: Since 2014, WLWH were significantly more likely to have a Caesarean section than other women (39.9% vs. 29.0%, p<0.001). The overall proportion of Caesarean sections among WLWH remained stable over the study period, but the proportion of primary Caesarean sections decreased between 2006-10 and 2014-18 (28.5%-19.3%), while the proportion of repeat Caesarean sections increased (13.1%-20.5%, p=0.013), after adjusting for relevant demographic and clinical variables.

Conclusions: Since 2014, proportions of primary Caesarean sections have decreased among WLWH and are now comparable to the general population while proportions of repeat Caesarean sections have significantly increased among WLWH over time. Given improved screening and prenatal control of viral load, HIV-related indications for Caesarean sections are decreasing and providers are following the guidelines for first time mothers. Currently, no guidelines exist about the care of WLWH with a previous Caesarean section.

Epidemiology and Public Health: Other
Épidémiologie et santé publique : Autres

EPHP10.06

Characteristics of Individuals with Significant Depressive Symptoms among People Living with HIV in British Columbia

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B**ackground:** Clinical depression has been associated with worse health outcomes, HIV progression, and increased mortality among people living with HIV (PLWH). Using the validated 10-item Center for Epidemiologic Studies Depression Scale (CES-D 10), we identified prevalence and characteristics of baseline depressive symptoms in a cohort of PLWH in British Columbia (BC).

Methods: Between January 2016 and September 2018, we used purposive sampling to enrol PLWH aged ≥19 who reside in BC (n=644) in the STOP HIV/AIDS Program Evaluation (SHAPE) study. Participants completed a HIV-related health questionnaire including the CES-D 10, in-person or over-the-phone with peer research associates, or self-administered the survey online. A score of ten or higher indicates the presence of significant depressive symptoms. We conducted bivariate analyses between key characteristics and CES-D 10 scores ≥10. Multivariable logistic regression modelled whether key characteristics were associated with depressive symptoms.

Results: Of 644 participants who completed the baseline survey, 627 participants completed all items and were included in this analysis. Of these, 134 (21.4%) were female, 130 (20.7%) reported injection drug use in the past year, 371 (59.2%) identified as MSM, and 310 (49.4%) participants had a CES-D score ≥10. The final multivariable model including age ≥60 (vs.<40; aOR=0.48, 95%CI:0.26-0.88), residence in Interior Health Authority (vs. Vancouver Coastal; aOR=2.43, 95%CI:1.21-4.86), personal gross income (vs.<$15k; $15k to <$30k:aOR=0.49, 95%CI:0.32-0.75; $30k to <$60k:aOR=0.57, 95%CI:0.33-0.96; ≥$60k:aOR=0.50, 95%CI:0.27-0.91), food insufficiency (aOR=1.98, 95%CI:1.25-3.14), ever having a mental health disorder diagnosis (aOR=2.44, 95%CI:1.66-3.57), experiences of lifetime violence (aOR=1.80, 95%CI:1.16-2.80) were associated with a CES-D 10 score ≥10.

Conclusion: Food insufficiency, a mental health disorder diagnosis, experiences of lifetime violence, and residency in Interior Health Authority were positively associated with depressive symptoms. Identifying these factors can help screen for depressive symptoms earlier and strengthens previous research linking depression in PLWH specifically to a population in BC.

Epidemiology and Public Health: Process Advances and Lessons Learned in Complex or Community-based Public Health Research
Épidémiologie et santé publique : Progrès des processus et leçons tirées dans les recherches complexes ou communautaires en santé publique

EPHP11.01

Implementation of Tracks: Survey of Determinants of HIV and Hepatitis C Among Indigenous Peoples in Canada in First Nations Communities in 2019

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B**ackground:** Indigenous peoples continue to be over-represented in Canada's HIV and hepatitis C epidemic. There is limited information on factors associated with higher rates, particularly in First Nations communities. The integrated bio-behavioural surveillance system *Tracks survey among Indigenous Peoples* assesses the burden of HIV, hepatitis C, syphilis, determinants of risk, access to and use of harm reduction, testing, education and treatment services thereby increasing understanding of the underlying determinants of these infections.

Methods: The *Tracks survey among Indigenous Peoples* was piloted in 2017-2018 by two First Nations communities, in collaboration with the Northern Inter-Tribal Health Authority, Indigenous Services Canada and the Public Health Agency of Canada. This unique collaboration was grounded in community involvement, participatory research, community ownership and control of data. An evaluation was conducted focussing on survey acceptability during implementation and feedback was incorporated into this year's implementation.

Results: From September to December 2019, five First Nations Tribal Councils/communities in Alberta and Saskatchewan successfully implemented a *Tracks* survey with support from community leadership, community health authorities and First Nations and federal public health authorities. Early community engagement, mutual respect, open communication and flexibility were key factors to success. With community agreement, aggregate data will contribute to national estimates of HIV and hepatitis C prevalence.

Conclusion: The data from the *Tracks* survey implemented by First Nations communities will increase the knowledge of the burden of HIV, hepatitis C, syphilis and associated determinants in participating communities and guide community public health sexually transmitted and blood-borne infections (STBBI) programs.

Epidemiology and Public Health: Process Advances and Lessons Learned in Complex or Community-based Public Health Research
Épidémiologie et santé publique : Progrès des processus et leçons tirées dans les recherches complexes ou communautaires en santé publique

EPHP11.02

Community-Directed Bacterial Sexually Transmitted Infection (STI) Testing Interventions Among Men Who Have Sex With Men (MSM): An E-Delphi Study in Toronto

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B**ackground:** Clinical guidelines recommend at least annual and up to 3-monthly testing for STIs among MSM. Innovation is needed to improve testing levels and frequency in ways that are acceptable to men.

Objective: To build consensus regarding interventions with the greatest potential for improving local STI testing services among MSM in Toronto.

Methods: We conducted a web-based "e-Delphi" study with a Community Expert Panel recruited via social media (JMIR Res Protoc 2019). Eligible men lived in Toronto, had sex with men and sought/underwent STI testing in the preceding 18 months. Surveys described 6 potential interventions based on literature review and past work identifying patient- and provider-related testing barriers. Men prioritized these in 3 survey rounds (Table 1). Summaries of panel responses from preceding rounds were provided in rounds 2 and 3.

Results: From 09/2019-11/2019, 51 men consented and 43 completed all 3 rounds; 77% were aged ≤40 years; 19% were HIV-positive, 37% HIV-negative on PrEP, and 42% HIV-negative not on PrEP. Prioritizations by round are shown in Table 1. Highest rated interventions were Routine Testing, Client Reminders, and an Online Booking App/Website, citing convenience and being able to leverage technology as contributing factors. Reasons for lesser prioritization of other options included a preference for consulting a doctor and fears of incorrectly self-collecting specimens. Priorities did not differ by HIV status or PrEP use.

Discussion: Men were enthusiastic about STI testing innovations that make testing more efficient and integrated into regular routines, while providing opportunity for guidance by a healthcare provider.

Table 1: Mean responses regarding prioritization of potential STI testing interventions using 7-point Likert scales (1 = definitely not a priority to 7 = definitely a priority) among MSM in Toronto

Intervention	Round 1	Round 2	Round 3
Routine STI testing during healthcare encounters for other reasons	5.2	6.0	6.0
Client reminders via email or texts	5.0	5.9	6.0
Online app for booking STI testing	5.5	6.1	6.0
Express testing at clinics with specimen self-collection	5.5	5.7	5.7
Online-based test ordering providing specimens at a lab	5.4	5.3	5.1
Nurse-led testing in primary care clinics	4.8	5.1	5.0

Epidemiology and Public Health: Process Advances and Lessons Learned in Complex or Community-based Public Health Research
Épidémiologie et santé publique : Progrès des processus et leçons tirées dans les recherches complexes ou communautaires en santé publique

EPHP11.03

(Re)Defining Meaningful Engagement with Community: Lessons from a Study on Racial Disparities in Health Outcomes of MSM Living with HIV in a National HIV Cohort Study

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B**ackground:** Guided by the Social Sciences concept of privilege, our community-informed study explored racial disparities as a potential driver of viral suppression and post-suppression viral rebound among MSM living with HIV within the Canadian HIV National Observational Cohort (CANOC). This abstract provides a community perspective on the challenges, lessons learned, and future considerations for researchers to respectfully engage diverse communities of people living with HIV (PLHIV) in research.

Methods: This abstract employed a positive-people centered framework to highlight three key areas of community-informed research: 1) capacity building, 2) community consultations, and 3) decision-making. We engaged

with PLHIV in research capacity-building and community advisory roles and ally researchers in a collaborative and reflexive process grounded in the GIPA/MEPA/MIWA principles. The process engendered critical, community-informed points of considerations as guidance tools for future researchers.

Lessons Learned: 1) Capacity building: Active engagement by research team mentors can foster environments that encourage deep learning and development for community investigators/researchers. 2) Community consultation: Meaningful consultations with communities should start early during the project development phase. Clear guidelines and processes facilitate respectful and reciprocal engagement with diverse communities such as Indigenous peoples, key population groups and PLHIV, which help engender safer environments and inclusive settings that support the incorporation of diverse perspectives in research. 3) Decision-making: Processes should be open, horizontal, transparent and facilitate bilateral relationship building and learning. Ongoing initiatives to mitigate power imbalances inherent in traditional western, positivist health research is critical to respectful engagement, such that all team members can feel valued.

Conclusion: Capacity building initiatives, collaborative community consultations, and equitable decision-making processes are key to operationalizing GIPA/MEPA/MIWA and respectful ways of conducting community-informed research with diverse PLHIV community members. Failure to implement these principles can further disenfranchise the people and communities the research intends to support and may inadvertently produce preventable harms.

Epidemiology and Public Health: Process Advances and Lessons Learned in Complex or Community-based Public Health Research
Épidémiologie et santé publique : Progrès des processus et leçons tirées dans les recherches complexes ou communautaires en santé publique

EPHP11.04

Engaging Older Adults Living with HIV: Training Peer Research Associates in the Implementation of a Community-Based Research Project; PANACHE Ontario Study

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B**ackground:** As the first generation of people living with HIV (PLWHIV) reaches 60 years of age, gaps in access to relevant care and support have been identified. In a step to explore these gaps, the Preferences and Needs for Aging Care among HIV Elders (PANACHE) ON team engaged and trained Peer Research Associates (PRAs) to facilitate nine Ontario community consultations.

Methods: The 8 PRAs selected were PLWHIV aged 60+ years, who had some previous experience in facilitation or research and reflected community diversity. The 2-day program used a community-based research (CBR) facilitation guide. Day 1 reviewed CBR principles, the role of a PRA, facilitating an engaging community consultation, self-care and reflection for PRAs, seeking consent, and maintaining participant confidentiality. Day 2 was skills-based, with peer-led learning as PRAs role played using the semi-structured interview guide. Pre-training knowledge and skills were ranked on a five-point scale ranging from “I am a novice” to “I am an expert”, while post-training knowledge and skills were ranked on a four-point scale ranging from “not confident at all” to “very confident”.

Results: The trained PRAs successfully completed the community consultations**.** 6 PRAs returned completed evaluation forms**.** Prior to training, all PRAs self- identified as competent and/or proficient in skills and knowledge of facilitating a community consultation. After training, PRAs self-identified as either confident or very confident in their knowledge and skills to facilitate community consultations, specifically in their understanding of the PRA’s responsibility, seeking participant consent and maintaining participant confidentiality.

Conclusion: Training older PLWHIV as PRAs, as part of a CBR project, increased their confidence in the knowledge and skills needed to facilitate a community consultation. The opportunity to practice skills and the exchange of support and feedback was viewed as a favorable component to reinforce knowledge needed.

Epidemiology and Public Health: Process Advances and Lessons Learned in Complex or Community-based Public Health Research
Épidémiologie et santé publique : Progrès des processus et leçons tirées dans les recherches complexes ou communautaires en santé publique

EPHP11.05

Older People Living with HIV as Peer Research Associates: Reflections on the Role and Experiences; PANACHE Ontario

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B**ackground:** Peer capacity building and engagement in community-based research (CBR) embodies GIPA (Greater Involvement of People with HIV/AIDS) and MEPA (Meaningful Involvement of People Living with HIV/AIDS) principles. As part of the PANACHE study, Peer Research Associates (PRAs), reflecting diverse communities and settings, co-facilitated nine community consultations in Ontario.

Methods: Eight Ontario community members, aged 60+ and living with HIV were engaged and trained in community-based focus group facilitation by the PANACHE team. The PRAs' experiences of the role and reflections on the importance of CBR were recorded to inform future training and capacity building.

Results: PRAs were often a resource for one another and an information source for the groups about access to services or current research, including U=U. PRAs reported feeling "privileged to be a part of meaningful work that affects change" [PRA1] and being part of something "bigger than myself" [PRA2]. Finding balance in their focus groups between letting people share their stories, without overtaking the conversation was a common theme reported by the PRAs. "The most challenging part for me was to find a way to allow voices in from those who seemed to defer to those who were the most vocal" [PRA3]. PRAs across all sites echoed the need for more diversity of voices and the need to engage hard to reach communities.

Discussion: Lessons learned from the PRA experience highlight the ongoing challenges of engaging diverse communities of people living with HIV. Although an integral component of the research process, engaging and training PRAs with diverse backgrounds takes time. PRAs suggested that more personalized sessions or the opportunity to do one on one interviews might allow improved skills to access those that may not attend a community consultation. The experiences and reflections of PRAs underline the importance of their ongoing CBR participation.

Social Sciences: Behavioral and Social Intervention and Implementation Research
Sciences sociales : Recherche en intervention et mise en œuvre sociale et comportementale

SSP1.01

Using Text Mining to Evaluate Quality of Free-Text Health Goals in People with HIV: Proof-of-Concept

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I**ntroduction:** HIV is now within the list of chronic diseases. A chronic condition requires day-to-day management by the person affected and goal setting occupies a pivotal place in this process. Good quality goals (i.e. *SMART* goals) lead to better outcomes. Measuring goal quality is an important intermediate step in the goal-outcome continuum. However, unsupervised person-defined goals lack the structure and format of clinically *SMART* goals. To measure goal quality, techniques of text mining would appear to be well suited as these provide a way of organizing free text into pre-defined groupings that can be analyzed to identify patterns in goal-setting quality.

Objective: To display how text mining can facilitate the measurement of person-defined goals.

Methods: Two sources of data were tapped. The first was a set of goals set collaboratively (supervised) during a project on health outcomes post-hospitalization. The second source arose from cognitive interviews conducted with people with HIV piloting a goal-setting exercise for a future trial. Half of the goals were unsupervised and half semi-supervised. The main outcome was the extent to which goals were *SMART* by using specific words and actionable verbs. A measurement framework and an initial lexical (i.e. collection of vocabularies) were developed for the goal evaluation.Using text mining techniques (i.e. tokenizing and *pos*-tagging), the specific components of each goal were extracted and compared to the lexical using regular expression algorithms.

Result: Supervised goals had the most specific words (n/person-goal) whereas unsupervised goals had the fewest (n/person-goal). Supervised goals also had more actionable verbs (n/person-goal) than semi-supervised goals (n/person-goal), and unsupervised goals mainly had neutral verbs.

Conclusion: The process of text mining is ideal for extracting and quantifying specific goal content. With more data, clustering techniques can be applied to shed light on the preoccupations of people with HIV with respect to health outcomes.

Social Sciences: Behavioral and Social Intervention and Implementation Research
Sciences sociales : Recherche en intervention et mise en œuvre sociale et comportementale

SSP1.02

An Affirmative Coping Skills Intervention to Improve Mental and Sexual Health of Sexual and Gender Minority Youth (Youth AFFIRM): Interim Results of an Implementation Study

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B**ackground:** Sexual and gender minority youth (SGMY, aged 14-29 years) face increased risks for HIV, depression, suicide, and other concerns compared to their cisgender, heterosexual peers. Cognitive behavioural therapy (CBT) may help SGMY improve wellbeing and reduce risks. AFFIRM is an 8-session, manualized, CBT-informed group intervention focused on reducing sexual risk behaviours and psychosocial distress among SGMY. AFFIRM is delivered by co-facilitators in a tailored intervention designed to affirm participants' identities and improve coping. AFFIRM is midway through a five-year pragmatic implementation trial in Ontario, Canada.

Methods: SGMY are recruited via community-based agencies and online advertising. Participants (SGMY; 14-29; screened for group suitability) are allocated in a 2:1 fashion to AFFIRM intervention or a waitlisted control in a stepped wedge waitlist crossover design. AFFIRM is hosted by aforementioned agencies. Present results are from assessments at prewait, preintervention, and postintervention for sexual self-efficacy, depression, hope, and coping.

Results: Since study initiation in April 2017, AFFIRM's eight-session model has been offered 25 times at ten sites. Participants (n=110) are 14-29 years old, with a wide range of gender (prevalent identities: gender non-binary: 22.7%; cis man: 17.3%), sexual (gay: 25.5%; queer: 20.0%), and ethnic/racial identities (White: 46.4%; Asian: 22.7%; Black: 17.3%). Mixed ANOVAs found that the intervention group (n=110) improved in sexual health self-efficacy ($F = 7.44$, $p = .007$), depression ($F = 10.98$, $p = .001$), hope (agency: $F = 9.79$, $p = .002$; pathway: $F = 9.95$, $p = .002$), reflective coping ($F = 9.01$, $p = .003$) and other psychosocial outcomes compared to the waitlisted control (n=55).

Conclusion: These interim results show that AFFIRM is a potentially scalable community-based intervention for SGMY to foster coping with identity-based stressors and positive health behaviors related to sex and gender. This presentation will discuss intervention design and outcomes, with considerations for implementation research.

Social Sciences: Behavioral and Social Intervention and Implementation Research
Sciences sociales : Recherche en intervention et mise en œuvre sociale et comportementale

SSP1.03

Interventions visant la réduction de la stigmatisation des personnes vivant avec le VIH – résultats préliminaires d'une synthèse réaliste

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Problématique : Plusieurs interventions ont été développées afin de diminuer la stigmatisation subie par les personnes vivant avec le VIH (PVVIH) lorsqu'elles fréquentent des milieux de soins non spécifiques à l'infection. Toutefois, ces interventions semblent avoir des effets limités, instables, parfois contradictoires. Les liens entre les composantes de ces interventions, leurs contextes d'implantation et les mécanismes par lesquels les effets sont générés ne sont que peu explicités.

Méthode : Une synthèse réaliste de ces interventions est en cours. Cette méthode de recension des écrits met l'accent sur les théories sous-jacentes aux interventions. Elle conduit à la formulation d'une théorie de programme, laquelle permet d'améliorer le processus de développement et d'implantation des interventions.

Résultats : Trois résultats préliminaires émergent du processus. Premièrement, les interventions sont très souvent basées sur des variables comme «l'attitude », «les connaissances» et «la stigmatisation ». Toutefois, ces variables ne sont que rarement définies et articulées d'une façon qui permette la réplication et la mise à l'épreuve empirique des interventions. Deuxièmement, les interventions ciblent des variables qui contribueraient à la stigmatisation plutôt que celles qui pourraient contribuer à la *dé*-stigmatisation. La façon dont les soignants ont été socialisés par rapport au VIH n'est pas prise en compte. Conséquemment, *les soignants ciblés par ces interventions sont ceux qui endossent (et expriment) des «attitudes négatives» envers les PVVIH plutôt que ceux qui endossent des «attitudes positives» mais ne savent pas comment les exprimer adéquatement. Finalement, aucune intervention ne propose une pratique clinique concrète pouvant être adoptée par les soignants et pouvant diminuer la stigmatisation des PVVIH.*

Discussion : Ce projet permettra d'expliquer *comment* élaborer des interventions visant la *dé*-stigmatisation des PVVIH dans les milieux de soins. L'identification et l'opérationnalisation de pratiques cliniques concrètes permettant de diminuer la stigmatisation ainsi que la motivation des soignants à adopter ces pratiques sont des pistes à considérer.

Social Sciences: Communities of People Who Use Drugs and HIV
Sciences sociales : Le VIH et les collectivités d'utilisateurs de drogues

SSP2.01

Long-overdue and Still Deficient: the Correctional Service Canada's Prison Needle Exchange Program

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Despite more than 25 years of evidence demonstrating the effectiveness of needle and syringe programs in reducing the risk of HIV and HCV infection, overdose and other harms to prisoners' health, Correctional Service Canada (CSC) had been steadfast in its refusal to implement this essential health service in prison. A former prisoner and four HIV organizations challenged CSC's failure to provide prisoners with equivalent access to sterile injection equipment as breaching constitutional rights. Eventually, in response, the federal government announced that it would introduce a "Prison Needle Exchange Program" (PNEP) in two federal prisons in June 2018, and begin in January 2019 to extend the program to all federal prisons.

This is an acknowledgement from the federal government that such programs are safe and effective. Yet details of the PNEP reveal serious deficiencies. In particular, security staff are gatekeepers to PNEP participation, and the PNEP violates prisoners' confidentiality at many points without reasonable justification, including the widespread sharing of information regarding prisoners' participation and twice-daily "visual inspections" to verify accountability for the equipment distributed. This is perceived by prisoners as a significant invasion of privacy and deters participation. Prisoners are entitled to equivalence of health care and any restriction must be shown to be necessary by the fact of incarceration.

In order to avoid placing prisoners in circumstances where they will resort to re-using equipment, prisoners should have easy, confidential access to the program. Prisoners (many of whom are from marginalized populations including Indigenous communities), community groups working with prisoners, and correctional officers should also be consulted on the program design and implementation. Litigation is still necessary — and continuing — to ensure that CSC implements the PNEP expeditiously in all federal prisons and in accordance with best practices in public health, so as to respect prisoners' asserted constitutional rights.

Social Sciences: Communities of People Who Use Drugs and HIV
Sciences sociales : Le VIH et les collectivités d'utilisateurs de drogues

SSP2.02

A Time of Vulnerability: People Who Use Substances' Emotional Lives and Substance Use when Unable to Access or Stay in Addiction Treatment

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People who use substances (PWUS) face many health risks, including risks of contracting HIV and HCV. Having access to publicly-funded drug addiction treatment programs (e.g. detoxification programs and opioid agonist treatment (OAT)) helps reduce these risks by reducing the frequency of substance use. Little is known, however, about PWUS' experiences during periods of time when they want to access treatment but face barriers to access or retention. We conducted a study of PWUS' experiences of the barriers and facilitators to addiction treatment programs, and one of our key objectives was to understand PWUS' emotional lives, as well as their substance use, during times when they wanted treatment but were met with barriers. We conducted fifty-five one-on-one semi-structured interviews with PWUS living in the four Atlantic provinces. Participants were recruited through community-based organizations, and interviews were audio-recorded with permission and transcribed or notes taken. Data were coded and analyzed iteratively for themes and sub-themes using a qualitative data management program (Atlas.TI). Our findings indicate that many PWUS are vulnerable during periods of time when they are faced with barriers to treatment (e.g. long wait times) or cannot stay in a program due to program policies/practices (e.g. zero-tolerance for substance use). Many PWUS indicated they experienced poor emotional health including feelings of frustration, anger or shame during these times. These emotions were often tied to continued or increased substance use, and a couple of PWUS indicated that they contracted HIV or HCV during such times. Our research draws attention to PWUS' experiences when they are ready for treatment but unable to access/stay in treatment, and suggests that that some PWUS may be at increased health risks during such times. Targeting these time periods with appropriate services and reducing wait times may be key to reducing risks.

Social Sciences: Communities of People Who Use Drugs and HIV
Sciences sociales : Le VIH et les collectivités d'utilisateurs de drogues

SSP2.03

Perspectives of People Living with HIV Regarding the Feasibility and Desirability of Implementing Supervised Injection Services in a Speciality HIV Hospital

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B**ackground:** Substance use significantly impacts health and healthcare of people living with HIV/AIDS (PLHIV), especially their ability to remain in hospital following admission. Supervised injection services (SIS) reduce overdoses and drug-related harms, but are not often provided within hospitals/outpatient programs. Leading us to question, what are PLHIV's perceptions of hospital-based SIS?

Methods: This mixed-methods study explored feasibility and desirability of implementing SIS at Casey House, a Toronto-based speciality HIV hospital, from the perspective of its in/outpatient clients. We conducted a survey, examining clients' (n=92) demand for, and acceptability of, hospital-based SIS. Following this, we hosted two focus groups (n=14) and one-on-one interviews (n=8) with clients which explored benefits/drawbacks of in-hospital SIS, wherein participants experienced guided tours of a demonstration SIS space and/or presentations of evidence about impacts of SIS. Data were analysed using descriptive statistics and thematic analysis.

Results: Among survey participants, 40.2% (n=37) reported lifetime injection drug use, with 29.7% (n=11) having injected in the past month. Nearly half (48.8%) knew about clients injecting in/near Casey House, while 23.6% witnessed it. Survey participants were more supportive of SIS for inpatients (76.1%) than for outpatients (68.5%); most (74.7%) reported SIS implementation would not impact their level of service use at Casey House, while some predicted coming more often (16.1%) and others less often (9.2%). Most focus group/interview participants, believed SIS would enhance safety by reducing health harms (e.g. overdose), increasing transparency between clients and clinicians about substance use, and helping retain clients in care. Debate arose about who (e.g., in/outpatients vs. non-clients) should have access to hospital-based SIS and how implementation may shift organizational priorities/resources away from services not specific to drug use.

Conclusions: Our data showed widespread support of, and need for, hospital-based SIS among client stakeholders; however, implementation should not occur at the expense of non-drug using clients.

Social Sciences: Communities of People Who Use Drugs and HIV
Sciences sociales : Le VIH et les collectivités d'utilisateurs de drogues

SSP2.04

Supervised Consumption Services Design: a Scoping Review of Stakeholder Opinions

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I**ntroduction:** Supervised consumption services (SCS) reduce HIV risks and overdose for people who use drugs (PWUD). Feasibility studies are often conducted as part of program and implementation development. We conducted a scoping review of SCS feasibility/pre-implementation studies to answer: what is known about stakeholders' preferred SCS design characteristics?

Methods: Using the PRISMA-ScR guidelines, we searched Medline, PsychINFO, Embase, CINAHL and SCOPUS databases for: (a) empirical research, (b) reported in English, (c) focus on SCS, (d) pre-implementation feasibility studies (research conducted prior to implementation of SCS in a given context), (e) examined some element(s) of design (any variable pertaining to SCS operation). Abstracts were reviewed by team members to verify appropriateness; full articles/reports were retrieved; data were extracted and charted by design characteristic.

Results: Of the 1,257 data sources identified and reviewed, 24 articles/reports published between 1999 and 2019, were included. 7 sources focused exclusively on design elements and the remaining 17 discussed design features within the broader context of SCS acceptability. Design elements included: eligibility criteria (e.g., *age restrictions, first-time users, women-only*), site elements (e.g. *hours of operation, layout*), site rules (e.g. *assisted injections, route of administration permitted*), staffing model (e.g. *security, clinical, peers*) and additional services (e.g. *drug checking, HIV/HCV testing*). Stakeholders generally agreed that; eligibility restrictions and site rules should be minimal to establish low-barrier services; permitting youth/first-time users and assisted injections may reduce HIV transmission; providing HIV testing and equipment could reduce health complications for PWUD at risk of HIV. No studies focused exclusively on the perceptions of people living with HIV/AIDS (PLHIV).

Conclusion: Given the public health significance of SCS, establishing best practices for service delivery is critical for increasing access and addressing implementation issues. Future research should include experiences of groups with specific needs, such as PLHIV, as these perspectives may inform important design considerations.

Social Sciences: Critical Social Theory: Advancements (in Understanding the HIV Epidemic)
Sciences sociales : Théorie sociale critique : Progrès dans la compréhension de l'épidémie de VIH

SSP3.01

Providing Healthcare for People Living with HIV Who Use Drugs: Beyond My Scope!

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B**ackground:** People living with HIV who use drugs (PLWHWUD) are hospitalized at higher rates than the general population and report receiving poor care. There is little discussion in the research literature that articulates how "knowledge" of healthcare providers is applied to the delivery of care for this population. **Objective:** Apply structuration theory to examine the perspective and actions of healthcare providers that create and re-create the structures (i.e., rules and practices) a patient is continually responding to or resisting. These factors can positively and negatively influence the hospital admission of PLWHWUD.

Methods: Semi-structured interviews were conducted with healthcare providers on in-patient hospital units in Toronto and Ottawa, Canada. Interviews were audio-recorded and transcribed verbatim. Structuration theory was used to guide thematic analysis.

Results: Twenty-six healthcare providers participated (physicians, nurses, dietician, pharmacists, and social workers). Core to the healthcare providers' practical knowledge, knowledge articulated in acts and not always discursively expressed, are providers' beliefs and professional lived-experience; practical knowledge often informs what healthcare providers believed was an objective understanding of the medical needs and life experience of PLWHWUD and also the implicit rules that enlightened, influenced, and were applied in their practice. Experience, specifically the professional lived-experience of interacting with patients who use substances, was acknowledged as directing their clinical practice and decision making when delivering care to PLWHWUD. At times, this professional lived-experience-informed understanding superseded research findings or evidence within the relevant literature, even when not supported by the literature.

Conclusion: The practical knowledge of healthcare providers often guides delivery of healthcare for PLWHWUD. Engaging in reflexive monitoring (e.g., taking part in a research interview, reading a manuscript) can shift practical knowledge to the discursive level. Analysis of discursive knowledge produces opportunities to influence the actions of healthcare providers, thereby impacting the hospital admission experience of PLWHWUD.

Social Sciences: Engaging (with) Communities in HIV Research
Sciences sociales : Participation des collectivités à la recherche sur le VIH

SSP4.01

Building Community Capacity in Affirmative Cognitive Behavioural Therapy for Sexual and Gender Minority Youth: Effectiveness of AFFIRM Facilitator Training

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B**ackground:** Cognitive behavioural therapy (CBT) interventions are effective in reducing sexual and mental health risk. Tailored affirmative approaches, where facilitators validate participants' lived experiences, can bolster CBT's potential for improving coping and mood, especially for sexual and gender minority youth (SGMY) at risk of HIV and other STBBIs. Community-based HIV organizations in Canada have well-developed SGMY outreach and support programs, but may lack CBT training. An AFFIRM CBT facilitator training, to prepare community workers to deliver an AFFIRM CBT group intervention to SGMY and support implementation fidelity has been designed and evaluated.

Methods: AFFIRM CBT is trained over two days (14 hours) of didactic and simulation-based learning. The Affirmative CBT Facilitator Competence Scale (ACCS) (a = 0.922), a 7-item scale designed to measure confidence to implement Affirmative CBT, was completed by participants immediately before and after the training. Qualitative feedback was also collected with thematic analysis employed.

Results: The AFFIRM CBT training has been offered eight times since April 2017. Training participants (n=58) represented diverse sexual (33% gay, 29% lesbian, 21% bisexual, 13% pansexual, 4% heterosexual); gender (52% female, 40% male, 8% transgender); and ethnoracial (42% Caucasian, 29% Asian, 19% Black, 5% Indigenous, 5% Latinx) identities. Paired sample t-tests showed a significant difference between pre (M=14.92, SD = 4.84) and post training ACCS scores (M=20.58, SD = 4.02); $t(57) = -9.206$, $p < .001$). Two major qualitative themes emerged: strengthened ability to affirm SGMY identities; and increased competence to deliver AFFIRM CBT to SGMY.

Conclusion: AFFIRM CBT Facilitator Training increased the competence of a diverse group of community practitioners to deliver AFFIRM to SGMY. This training model appears well-suited to building competence in CBT for youth programs at community-based HIV organizations. This presentation will discuss the training's curriculum, implementation, and evaluation with considerations for capacity-building in social interventions.

Social Sciences: Engaging (with) Communities in HIV Research
Sciences sociales : Participation des collectivités à la recherche sur le VIH

SSP4.02

Community Engagement in HIV Research: Lessons Learned from Four Studies

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B**ackground:** Community engagement is a hallmark of Canadian HIV research, as people living with and affected by HIV frequently partner with academic and clinician scientists as peers on community-based teams. Community engagement can vary drastically and we lack detailed descriptions of pragmatic peer engagement possibilities in social science. As a person living with HIV and an academic researcher, we consider similarities and differences in community engagement models across four of our studies.

Methods: Study one surveyed and interviewed people aging with HIV to determine direction for psychosocial support to ameliorate cognitive challenges. Study two piloted a participatory group intervention for serodiscordant couples. Study three piloted a peer intervention to ease discharge transition in complex HIV care. Study four compared two group interventions for HIV, aging, and cognition.

Results: Three of the four studies engaged peers prior to funding applications, and amended data collection materials based on community feedback. One study used a participatory approach where participants joined the research team to collaborate on developing an intervention in real time. Two studies had a formal training for peer researchers to collect data, and two studies employed peers to deliver the interventions. All studies involved peers and participants in dissemination. Individual studies varied on the number of peers involved, the nature of peers' employment, and type of community engagement on the project. Participants in these studies identified direct interaction with peers as a facilitating factor to participation. Peers noted issues of power, including the dynamics between peer researcher and participant, as the key challenge on these studies.

Conclusion: Despite some similarities, each study was distinct regarding community engagement. This uniqueness is a strength of community-based research, as its principles can be adapted to specific contexts. This presentation will highlight the variability of community engagement potentialities to consider when designing new scientific endeavours.

Social Sciences: Engaging (with) Communities in HIV Research
Sciences sociales : Participation des collectivités à la recherche sur le VIH

SSP4.03

Intersections Between HIV and Intimate Partner Violence: Trauma-Informed Practices, Challenges, and Training Needs from the Perspective of HIV Community Service Providers

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Introduction. Worldwide, the co-occurrence of HIV and Intimate Partner Violence (IPV) is an important public health issue among women.

Objective. The current study aimed to document intervention practices, challenges, and training needs concerning the intersections between HIV and intimate partner violence among community service providers.

Methods. Two focus groups with 12 HIV and IPV community service providers were conducted. A direct content analysis using the Trauma-Informed Approach was performed.

Results. Results revealed that community service providers need to create a safe, trusting, and mutually collaborative environment in which the intersections between HIV and intimate partner violence trauma are recognized, screened, and discussed with women. These results also highlight the need to consolidate partnerships between HIV and intimate partner violence organizations to provide relevant services that consider traumatic experiences.

Conclusion. Overall, these findings support the urgent need to develop, implement and evaluate targeted community interventions that jointly address HIV and intimate partner violence.

Social Sciences: Engaging (with) Communities in HIV Research
Sciences sociales : Participation des collectivités à la recherche sur le VIH

SSP4.04

Connect, Communicate, and Create: A Peer-led CHIWOS Knowledge Translation and Exchange Project

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B**ackground:** Despite advances in HIV knowledge and care, people living with HIV continue to experience stigma and isolation; this is particularly true for women. Women who participated in the Canadian HIV Women's Sexual and Reproductive Health Cohort study (CHIWOS) expressed that HIV services and resources do not meet their social and emotional needs. We present the development and evaluation of Connect, Communicate and Create (C3), a community based, peer-led knowledge translation and exchange (KTE) activity in Ontario. With C3, we aimed to create a sense of community and share CHIWOS findings with participants.

Methods: CHIWOS peer research associates were invited to submit ideas for a KTE project that would mobilize community-relevant CHIWOS findings for women living with HIV in an engaging, meaningful way. The applicants, called KTE Champions (N=4), were paired with academic mentors to aid with the realization of their project. C3 underwent a process of KTE development, execution, and evaluation that was led by the KTE Champion.

Results: C3 events were attended by 4 to 16 participants (presentation=8, tai chi=4, pottery class=9, spa=16); 12 participants completed the evaluation. The women reported attending C3 events to connect with other women and to learn more about CHIWOS. Most participants somewhat or completely agreed that C3 made them interested in participating in future research, staying in touch with other attendees, and that they learned something new. The most prominent theme was that participants learned they were not alone, and they desired more activities like C3.

Implications: C3 was a peer-led KTE project that took an innovative and educational approach to creating a sense of camaraderie among CHIWOS participants. We were successful in sharing research findings and addressing isolation among participants. Our results suggest that women living with HIV would benefit from similar initiatives and that researchers should consider innovative KTE strategies.

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SSP4.05

Beyond Mending Bridges: Decolonising Research Structures Through Co-creating Respectful and Equitable Indigenous-Settler PLHIV Partnerships

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B**ackground:** The creation of equitable Indigenous-settler HIV research partnerships in research can cause community harm if done in a neo-colonial way. Efforts to bridge differences between Indigenous-settler research approaches are complicated by western neo-colonial practices and research structures. This abstract describes a co-creation of respectful, equitable partnership between Indigenous and settler community researchers after institutional challenges emerged in a national HIV cohort research-setting.

Methods: When the use of neo-colonial processes by settler researchers contradicted GIPA/MIWA/MEPA, two HIV+ community researchers utilized a decolonizing, positive-people centered framework to engage in a culturally-safer, bilateral reflexive knowledge exchange (KE) on Indigenous spiritual and anti-oppressive research principles. The KE process, which took place outside of a western neo-colonial research space, led to a respectful, equitable co-development of community-led recommendations for mainstream researchers.

Lessons Learned: Decolonising research within neo-colonial research structures requires ethical research guidelines be implemented in culturally safer ways. Moreover, Indigenous-settler partnerships require an understanding that Indigenous worldviews are non-static (one's worldview changes from a colonized to a traditional spiritual perspective as one crosses "the half moon"). As communities of people living with HIV are diverse, the co-creation of equitable, decolonizing HIV research should be GIPA/MIWA/MEPA-centered and requires continuous proactive engagement and critical reflexivity for implementation.

Conclusion: Respectful, equitable Indigenous-settler HIV research partnerships require researchers to: 1) recognize that Indigenous Peoples and settlers have different world views, ways of knowing and doing; 2) understand Indigenous Peoples are not a homogeneous group within Canada or internationally due to past and current displacement and genocide of cultures and communities, yet Indigenous solidarity work is vital; 3) not speak for or on behalf of communities and respect all consulted views; 4) understand that research has personal spiritual significance for some community members; and 5) know when to step back and support community in making decisions autonomously.

Social Sciences: Engaging (with) Communities in HIV Research
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SSP4.06

Embodied and Evolving Indigenous HIV Leadership: an Example from GIPA Homefire

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B**ackground:** Indigenous Peoples living with HIV/AIDS (IPHAs) involvement is central to effective responses to HIV and other sexually transmitted and blood borne infections (STBBIs). The GIPA Homefire study began from a place of recognizing the community-identified need to mentor and support new IPHA leaders along with supporting those already carrying heavy burdens as leaders in the Indigenous STBBI movement.

Research Design: The project itself is a unique example of how to "indigenize" the Greater Involvement of People with AIDS (GIPA) principles from the ground up. With extensive IPHA participation, the project unites Indigenous methodologies with literature, Indigenous leadership experience, with creative implementation of community-based research principles. From inception, execution and evaluation to recommendations, the process through which the GIPA Homefire came to be was iterative and constantly evolved alongside exposure to the experience and networks of IPHAs. The breadth of questions that the survey and interview participants engaged were culturally grounded, respected traditional teachings, and suggested that ongoing engagement with IPHAs was integral to strengthening the quality of research. Project members participated in committees focused on grant writing, survey development, ethics, a critically focused literature review, presented at conferences, networked with community partners, and writing and reviewing the scoping review journal submission.

Lessons Learned: IPHA leadership was deliberate, actively shaped the project, and represented the majority on the team. These features shaped the research project in important ways including redefining leadership, helped think through our research protocol, to questioning the knowledge gained through the literature, and restructured our committee work in ways that met the specific and shifting needs of IPHAs.

Conclusions: The team privileged the identities, desires, needs and understandings of IPHAs as the heart of the project. The process of conducting the GIPA Homefire project was reflective of constituting the very conditions for supporting IPHA leadership.

Social Sciences: Engaging (with) Communities in HIV Research
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SSP4.07

Identifying the Value of Peer Support by Bringing Community Based Research To Our Work With Positive Women in Toronto

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The Circle of Care (CofC) Peer Support Team at PWA works with positive women in Toronto, assisting them to meet their daily needs, to pursue health seeking and other beneficial activities. Team members meet women in their homes, in healthcare and other community settings. During team meetings, peers learn from each other the range of supports needed by positive women aging with HIV and the daily complexities they face. Supporting each other empowers these positive women, as peer work provides opportunities to build individual capacities, to learn from each other, while strengthening the community response to HIV.

But, does this help peers in their own daily living and quality of life measures, with their own health and HIV stigma challenges? What community support do peers need as they pursue this work? And, are the women receiving peer support empowered by the experience to stay in HIV care and increase their community engagement? Does their isolation decrease?

To answer these and other questions on the value of peer support, the PWA Peer Team has initiated a community based research (CBR) initiative investigating the value we bring to our HIV community, to learn what impact peer support has on clients and their communities. We start by learning, with scientific and academic support, the basics of CBR, developing research skills enabling the Peer Team to work as peer researchers. Our intention is to outline the process we pursued to answer the research questions posed above.

The CofC Initiative collaborates to provide innovative and practical support services for women living with HIV/AIDS in Toronto, bringing together five AIDS service organizations for program delivery: the AIDS Committee of Toronto (ACT), Black Coalition for AIDS Prevention (Black CAP), Prisoners with HIV/AIDS Support Action Network (PASAN), Toronto People with AIDS Foundation (PWA), and The Teresa Group.

Social Sciences: Engaging (with) Communities in HIV Research
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SSP4.08

Co-designing Care Improvements for Women Living with HIV: a Deliberative Dialogue Workshop in Montréal, Québec

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B**ackground:** Care services have not been sufficiently adapted to meet the comprehensive care needs of women living with HIV. Our objective was to engage patients and providers in co-designing care improvement strategies in Québec.

Methods: We conducted a deliberative dialogue workshop as the final phase of a mixed methods study. Deliberative dialogue is characterised by: i) the critical examination of evidence; ii) the mix of participants; iii) the valuing of experiential knowledge; and, iv) the skilled facilitation of discussions aimed at producing statements of the group's considered views. Participants included eight patients (women living with HIV) and eight HIV care providers (i.e., doctors, nurses, pharmacists). The workshop, involving a synthesis of the evidence, small group deliberations, large panel discussions, and voting on care strategies, took place over one afternoon in April 2019, in Montréal, Québec.

Results: Patients and providers identified four relatively rapid care improvement strategies and three longer-term improvements. The relatively rapid strategies included: 1) delegating medical acts to members of multidisciplinary care teams; 2) engaging HIV community members within care settings and decision-making; 3) creating a women's health information booklet; and 4) increasing HIV education amongst all healthcare providers and increasing women's health care education amongst HIV care providers. The longer-term strategies included: 1) advocating for complete financial coverage of antiretroviral therapy; 2) facilitating access to allied care providers (e.g. physiotherapists and psychologists), and 3) launching a population-wide campaign to increase awareness about Undetectable=Untransmissible (U=U) and other HIV care advances.

Discussion: The deliberation yielded evidence-based, stakeholder-driven recommendations to improve the care of women living with HIV in Québec. Involving patients and providers in discussing research results and co-creating recommendations was a valuable endeavour for engaging those with lived experience in the later stages of the research process and may facilitate the transfer of research into action.

Social Sciences: Engaging (with) Communities in HIV Research
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SSP4.09

The Importance of Seeing Myself and My Story Reflected in Research: a Visioning Health Ii Example of Indigenous Collaborative Research Analysis

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B**ackground:** Visioning Health II (VH II) is a culturally-grounded, arts-informed, participatory community-based research study, in 8 sites across Canada, that seeks to understand the meaning and experience of 'health' for Indigenous women living with HIV. We foreground the meaningful engagement of Indigenous women living with HIV and Indigenous knowledges in all aspects of our work. During qualitative data analysis, the women and Knowledge Carriers of VH II expressed discomfort with thematic analysis and the ways in which it felt incongruent with Indigenous notions of 'story', relations, and Indigenous knowledge production. To address this discomfort, we drew on the work of Hallet et al (2017) to develop our own process of collaborative story analysis.

Methods: Focusing on the importance of 'story' in our work, we engaged all VH II regional team members, i.e., the Community Research Coordinator (an HIV-positive Indigenous woman), Peer Mentors, Knowledge Carriers, local community partners, the local academic, and two members of the national research team, in three consecutive days of culturally-grounded collaborative story analysis in each site. The qualitative data set for each site consisted of transcripts of four research sharing circles of 60 to 120 minutes in length. Analysis took the following form: a) begin in ceremony, led by our local Knowledge Carrier, b) discuss and agree to a collaborative process, c) read each transcript aloud, stopping strategically to discuss what we heard, d) review our work at the end of each day, e) listen for and let the story of each site emerge from the transcripts.

Results: Collaborative story analysis is a process that resonates for Indigenous team members, is congruent with Indigenous ways of knowing and doing, and allows for a more holistic discovery of research stories. Challenges include the need for more time and resources, and a broader understanding of scientific rigour.

Social Sciences: Engaging (with) Communities in HIV Research
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SSP4.10

Niikaniganaw (All My Relations): Building Capacity for Stigma-Free and Culturally-safe Care for Indigenous People Living with HIV in Ottawa-Gatineau

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I**ntroduction:** In 2016, the Canadian Aboriginal AIDS Network (CAAN) hosted a community consultation in which Indigenous people living with HIV (IPHAs) spoke passionately about the negative impact on their lives of racist, discriminatory and culturally-unsafe experiences of health care and associated services in Ottawa-Gatineau. These experiences make IPHAs less likely to access services, including HIV testing, care, treatment, and support, and more likely to have negative health outcomes, including higher rates of HIV-related and all-cause mortality.

Research Design: Responding to this community-identified concern, in 2018, we designed and delivered a CIHR-funded catalyst grant that addressed this intersecting stigma. We brought together researchers, IPHAs, Knowledge Carriers, nursing students and staff members of six community organizations who provide health or related services to IPHAs in four full-day seasonal land-based ceremonies/meetings to break down barriers, build relationships, and build capacity to provide HIV-stigma free and culturally-safe care for IPHAs in Ottawa-Gatineau. Our approach included: 1) meeting on the land; 2) co-leadership by academics and Knowledge Carriers; 3) reading and reflecting on the TRC Summary Report; 4) hearing from IPHAs about their health care and related service experiences; 5) sharing circles to reflect on our collective experiences; 6) cultural teachings and ceremonies.

Results: Evaluations from participants were overwhelmingly positive. Thirteen of fourteen (94%) participants said their capacity to provide culturally-safe care had improved. All participants (100%) suggested that their colleagues participate in our project. Ninety-four percent (94%) of participants said we should continue Niikaniganaw in Ottawa-Gatineau. Two participating organizations made significant changes to the way they deliver services to IPHAs as a direct outcome of our project.

Lessons Learned: Indigenous community- and land-based HIV research, with co-leadership by IPHAs, Knowledge Carriers, and academics, can help build capacity for stigma-free and culturally safe care and ultimately make services safer and more accessible for IPHAs.

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SSP4.11

"They lived with it – what else do you need to hear?" Including People with Lived Experiences in HIV Program Development

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The inclusion of people living with HIV (PLHIV) in power making positions has been something the community has fought for since the early days of the AIDS epidemic. This was a central tenant for a project aimed at exploring the equitable provision of peer delivered services (PDS) in a predominately rural health authority in southern British Columbia (BC). Through a partnership with a regional HIV peer advisory committee (PAC), the project shared decision-making power between traditional health authority leadership and community leadership. The PAC was involved in reviewing all aspects of the project from development, implementation and reviewing the findings.

The project utilized a community-based approach to quality improvement. It consisted of semi-structured interviews and focus groups with PLHIV across a large health region in BC. While most of the interviews were conducted in person, some were conducted over the telephone to increase access. In order to ensure diversity of participants, optional demographic forms were completed by participants. Specific recruitment was conducted for populations which were underrepresented in the project. In addition to PLHIV, HIV service providers were also interviewed, and this data was analyzed separately.

The project demonstrated the diverse needs of PLHIV in the health region. There were diverging opinions on whether the service should be provided by a community-based organization (CBO) or health authority. However, the project found participants in similar geographic areas tend to favour a similar model. As such, the project resulted in the proposal of a mixed model for PDS in the region including a CBO and health authority. It also outlined the need identified by PLHIV to have a coordinator who is clinically trained - such as a Registered Social Worker - to provide emotional support to peer navigators due to the emotional strain experienced by workers in this profession.

Social Sciences: Engaging (with) Communities in HIV Research
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SSP4.12

The Role of Peer Research Associates in Collecting Complete Data in Longitudinal Health Surveys

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B**ackground:** Peer research associate (PRA) involvement in conducting interviews have qualitatively documented increased comfort of participants, minimized social desirability bias, and increased access to hard-to-reach populations. Using a HIV-related health survey, we identified key populations who complete surveys with PRAs, and the extent that participants respond to sensitive health questions when asked by PRAs.

Methods: Between January 2016-September 2018, we used purposive sampling to enrol people living with HIV (PLWH) aged ≥19 in BC to the STOP HIV/AIDS Program Evaluation (SHAPE) study. The survey is administered in-person or over-the-phone by PRAs, or self-administered online, with follow-up surveys 18-months after baseline survey date. We conducted multivariable generalized linear mixed models to determine the likelihood to complete surveys with PRAs, and bivariate analyses between percentage of prefer-not-to-answer (PNA) and interview type. Results were stratified by section, survey, and sensitive questions including drug use and sexual activity.

Results: Of 461 participants who completed follow-up where PNA was an option, 300(65.1%) completed the survey online, 131(28.4%) in-person, 30(6.5%) by phone. The final longitudinal model including MSM (aOR=0.22,95%CI:0.15-0.33), residence outside Vancouver Coastal Health Authority (VCHA) (aOR=2.20,95%CI:1.43-3.38), residence where in-person interviews were offered (aOR=4.01,95%CI:2.63-6.13), personal annual gross income (vs<$15k;$30 to <$60k:aOR=0.40,95%CI=0.24-0.68; ≥$60k:aOR=0.20,95% CI:0.10-0.40), homelessness in the past year (aOR=2.33,95%CI:1.38-3.92), experiences of lifetime violence (aOR=2.39,95%CI:1.48-3.86) were associated with survey completion with PRAs. The majority of interviewees had PNA response rates 0-5% for sensitive questions (with PRA 93.8%, without 91.7%). Participants completing the survey without PRAs had significantly higher PNA response rates >5% on sections about social support and service use (p-value=0.04), accessing HIV-care (p-value=0.002), treatment adherence (p-value=0.009).

Conclusion: Individuals who experienced homelessness in the past year, lifetime violence, and residence outside VCHA were more likely to complete surveys with PRAs. Data collection involving PRAs were associated with fewer PNA and suggests PRAs encourage better survey engagement with participants.

Social Sciences: Gay, Bisexual and other Men who have Sex with Men (MSM)
Sciences sociales : Guais, bisexuels et autres hommes ayant des relations sexuelles avec des hommes (HARSAH)

SSP5.01

What is the Role of Sub-cultural Identification in the Sexual Lives of Gay, Bisexual, and Other Men Who Have Sex with Men?

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B**ackground:** Gay, bisexual, and other men who have sex with men (gbMSM) identify with distinct socio-sexual sub-cultural affiliations that may impact their sexual health and behaviour. We compared sexual encounters and recent behaviour reported by men who affiliated with five subcultures: [1] Geek/Nerd/Gaymer; [2] Bear/Cub/Otter; [3] Daddy/Son; [4] Leather; and [5] Twink.

Methods: Sexually-active gbMSM aged ≥16 years – recruited via respondent-driven sampling from 02/2012-02/2015 – were interviewed every six months to 08/2019. Participants reported sexual and substance use behaviours for their most recent sexual event with up to five most recent sexual partners. Independent factors associated with each sub-culture identification were identified using backward-selected/AIC-optimized multivariable generalized linear mixed effect models to account for multiple event-level, repeated visit, and RDS-recruitment clustering effects.

Results: Collapsing all visit responses, 526 gbMSM reported sub-group affiliations: 36.5% as “geek/nerd/gaymer”; 30.2% as “bear/cub/otter”; 28.7% as “daddy/son”; 16.0% as “leather”; and 12.5% as “twink”. Across 3,402 visits, 10,653 sexual events were reported. Controlling for select demographic factors, “daddy/son” participants were more likely to have attended group sex parties (aOR:1.53,[1.19,1.96]) as were “leather” men (aOR:1.63,[1.24,2.15]). The “daddy/son” sub-culture reported likely to have sex with their partners again (aOR:1.23,[1.08,1.30]), as did the “leather” sub-group (aOR:1.23,[1.06,1.42]). Additionally, “leather” men were more likely to report having used drugs during sexual events (aOR:1.38,[1.11,1.72]) and to have met event-level partners at community venues (vs. online; aOR:1.44,[1.09,1.89]). “Bear/cub/otter” participants were less likely to report receptive condomless anal sex (aOR:0.86,[0.73,1.01]). “Geek/nerd/gaymer” participants reported lower numbers of recent sexual partners (aOR:0.99,[0.98,0.999]) and less likely to meet partners at community venues (vs. online; aOR:0.80,[0.65,0.98]).

Conclusions: “Leather” and “daddy/son” sub-cultural affiliations are associated with behaviours that require different HIV prevention supports, but also correlate with characteristics that make networks amenable to socially-driven interventions (e.g.,ongoing sexual encounters). Tailored and targeted interventions that embrace sub-cultural identities should be leveraged.

Social Sciences: Gay, Bisexual and other Men who have Sex with Men (MSM)
Sciences sociales : Guais, bisexuels et autres hommes ayant des relations sexuelles avec des hommes (HARSAH)

SSP5.02

Psychosocial Predictors of Crystal Methamphetamine Use Among Gay, Bisexual and Other Men Who Have Sex with Men (gbMSM): the Importance of Depression and Cognitive Escape

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B**ackground:** For some gbMSM**,** crystal methamphetamine (CM) use is associated with adverse sexual health outcomes. Psychosocial factors associated with CM use among Canadian gbMSM receive less attention, despite their importance in informing targeted interventions. We examined the association between reported CM use and key psychosocial variables including discrimination, depression, social support and cognitive escape.

Methods: We recruited 2449 sexually active gbMSM in Montreal, Toronto, and Vancouver using respondent-driven sampling from February 2017 to July 2019. Adjusted relative risk (aRR) ratios for CM use in the past 6 months were calculated using self-reported escape motives (i.e., substance use to cognitively "escape" from HIV-related risks), social support, internalized homonegativity, participation in group sex, sexual satisfaction, depressive symptoms, childhood sexual abuse, and heterosexism. City specific and pooled analyses were conducted using generalized estimating equation models controlling for recruitment-related clustering and demographic characteristics. The pooled analysis was stratified by HIV status.

Results: Of the 2449 participants, 12% reported CM use in the past 6 months. Higher escape motives were associated with CM use in Vancouver (aRR=1.07, 95%CI [1.05,1.10]), Toronto (aRR=1.04, 95%CI [1.01,1.07]), and Montreal (aRR=1.04, 95%CI [1.02,1.06]). Participation in group sex was also associated with CM use in Toronto (aRR=1.63, 95%CI [1.01,2.64]) and Montreal (aRR=2.98, 95%CI [2.03,4.37]). Greater depressive symptoms were associated with CM use among Montreal gbMSM only (aRR=1.08, 95%CI [1.03,1.12]). The pooled analysis found associations with group sex, escape motives and depression. However, when stratified by HIV status, depression was associated with CM use *only* among gbMSM living with HIV (aRR=1.03, 95%CI [1.00,1.06]).

Conclusion: These results demonstrate that across cities and HIV status, the desire to cognitively "escape" from personal HIV-related risks remains an important factor in gbMSM's CM use. Moreover, these findings suggest that depression is more associated with the CM use among gbMSM living with HIV compared with HIV-negative gbMSM.

Social Sciences: Gay, Bisexual and other Men who have Sex with Men (MSM)
Sciences sociales : Guais, bisexuels et autres hommes ayant des relations sexuelles avec des hommes (HARSAH)

SSP5.03

Comfort Talking About Sex with Primary Care Providers Predicts Pre-exposure Prophylaxis (PrEP) Use Among Gay, Bisexual, Two-Spirit Men (GB2M) in Ontario, Canada

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B**ackground:** The objective of the current study was to determine if online sexual health-seeking behavior and comfort discussing sex with healthcare providers were associated with PrEP use, controlling for demographic variables, among GB2M in Ontario over a 12-week period.

Methods: A convenience sample of 571 HIV-negative/unknown GB2M, recruited through online venues, list-serves and mobile apps completed a baseline questionnaire and then 12 weekly diary surveys. In each diary, participants reported their interaction with online outreach workers and online health-seeking behavior, sexual activities, and PrEP use. Multivariable logistic regression with a generalized estimating equation (GEE) was used to examine factors associated with PrEP use.

Results: Most participants were <30 years (53%), white (60%), single/never married (62%), Canadian born (70%), educated at the post-secondary level (87%), had annual incomes <$40,000 (54%), and resided in Greater Toronto (63%). Of the 571 participants, 64 (11.2%) reported using PrEP in at least one of 12 diary weeks. GB2M who used PrEP were more likely to be non-Canadian born and have higher education and income.

In multivariable regression analyses, GB2M who were comfortable discussing sexual behavior with other men with their primary care providers were more likely to use PrEP (aOR= 6.66, 95% CI: 1.48-29.93, p=0.013). PrEP use was also associated with having multiple sexual partners in the past week (e.g., ≥4 partners versus 1: aOR=2.38, 95%CI:1.41-4.03). We found no significant association between interaction with online outreach workers or online PrEP information-seeking and PrEP use (aOR=1.54, 95% CI: 0.89-2.66, p=0.119)

Discussion: Our results suggest that PrEP use may be influenced by comfort discussing sexual activity with primary care providers and importantly those with multiple partners are using PrEP. Health care providers need to promote a stigma-free environment for GB2M that promotes open conversation around sexual practices and PrEP use.

Social Sciences: Gay, Bisexual and other Men who have Sex with Men (MSM)
Sciences sociales : Guais, bisexuels et autres hommes ayant des relations sexuelles avec des hommes (HARSAH)

SSP5.04

Substance Use in Syndemic Conditions: Substance Use Stigma and the Mental Health of Sexual Minority Men

Mark Gaspar[1], Zack Marshall[2], Barry D. Adam[3], David Brennan[1], Joseph Cox[2], Nathan Lachowsky[4], Gilles Lambert[5], David Moore[6], Trevor Hart[7, 1], Daniel Grace[1]

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B**ackground:** Gay, bisexual and other men who have sex with men (gbMSM) report higher levels of substance use, substance disorder and worse mental health outcomes (anxiety, depression, suicidality) than their heterosexual counterparts. The reinforcing nature of these phenomena along with HIV is termed a syndemic. Substance use stigma adversely affects the health and mental wellbeing of people who use alcohol, marijuana and illicit drugs. Nonetheless, the role of substance use stigma within gbMSM syndemics has been underexplored.

Methods: We draw on 24 in-depth qualitative interviews with gbMSM living in Toronto, Canada, to examine the relationship between substance use, stigma and mental health. The interviews were analyzed using grounded theory.

Results: Fifteen participants identified as HIV-negative and 9 as living with HIV. Participants expressed contradictory opinions about substance use. They spoke positively about the use of substances to manage anxiety and to have sex confidently and also about substances as harmful to their mental health. Crystal methamphetamine elicited the greatest negative reactions. Most participants expressed substance use stigma. Self-stigmatization was the dominant mechanism by which this occurred. Substance use stigma was more explicit among those who had experienced substance dependence and HIV infection. Substance use stigma was connected to riskier behaviours leading to sexually transmitted infections, HIV and HIV treatment non-adherence. Participants who infrequently used or who had stopped using drugs employed rhetorical tactics to distance themselves from their use.

Conclusion: Despite perceptions of substance use as prevalent and socially accepted among gbMSM, substance use stigma may play an integral role in facilitating gbMSM syndemics by enabling risk behaviours and mental distress. Further analysis of substance use stigma's culturally-specific characteristics is needed. More harm reduction and addiction services, as well as policy changes and advocacy work to address the social and health effects of substance use stigma on gbMSM are required.

Social Sciences: Gay, Bisexual and other Men who have Sex with Men (MSM)
Sciences sociales : Guais, bisexuels et autres hommes ayant des relations sexuelles avec des hommes (HARSAH)

SSP5.05

Barriers and Facilitators to PrEP Use in Barbados Among gbMSM

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I**ntroduction:** HIV continues to have an important public health impact on gay, bisexuals and other men who have sex with men (gbMSM) throughout the world. The advent of pre-exposure chemoprophylaxis (PrEP) against HIV, is now allowing gbMSM to live sexually holistic lives, without the additional burden of compromising their health by contracting HIV. However, PrEP as a tool for social justice is not readily available to all gbMSM, particularly those in the Caribbean. PrEP is only available in Barbados and Bahamas and this study explores barriers and facilitators to PrEP use in Barbados.

Methodology: Cross-sectional study design, using non-probability-convenience sampling techniques was conducted within a LGBTIQ+ community in Barbados. The survey solicited information on knowledge and awareness of PrEP, barriers, facilitators to PrEP use, HIV risk profile - including the HIRI-MSM risk index and HIV stigma. The survey was administered through Survey Monkey between July 21st and September 30th, 2019. Descriptive statistics are used to describe the data.

Results: 188 (171 were born male) persons completed the survey. Three-quarters (141/188) were aware of PrEP, of which 50.0% (70/141) of those aware had used PrEP. Current PrEP uptake was 26.6% (50/188). The HIRI-MSM risk index showed that 76.8% (126/164) of the sample were indicative for PrEP (cut-off value of >=10). Based on multiple responses, PrEP facilitators included felt confidentiality (36.4%), non-judgemental service (29.6%) and easy access to PrEP (25.00%). Main PrEP barriers included felt stigma (22.54%), side effects (21.43%), being unaware of the free PrEP program (53.54%), perceived cost (57.14%) and accessibility (12.65%).

Conclusion: Stigma around PrEP use limits its uptake. This indicates a need to address this in PrEP promotion for gbMSM and healthcare professionals. Further emphasis should be placed on expanding the PrEP program outside a centralized location, making it more accessible throughout the island nation.

Social Sciences: Gay, Bisexual and other Men who have Sex with Men (MSM)
Sciences sociales : Guais, bisexuels et autres hommes ayant des relations sexuelles avec des hommes (HARSAH)

SSP5.06

Double Minority: Childhood Maltreatment and Psychological Distress among Immigrant Gay, Bisexual and Other Men who have Sex with Men in Toronto

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1. Ryerson University, Toronto, ON, 2. University of Windsor, Windsor, ON, 3. University of Toronto, Toronto, ON, 4. Ontario HIV Treatment Network, Toronto, ON

B**ackground:** Minority stress theory posits gay, bisexual and other men who have sex with men (GBM) report higher depression and anxiety due to heightened stressors that they experience because of sexual minority status. The healthy immigrant effect suggests that immigrants generally report better health than native born. However, research is limited on “double minority” (sexual minority and immigrant minority) men.

Methods: We fit a structural mediation model of the association between childhood maltreatment and adult depression and social anxiety among 470 GBM living in Toronto. We estimated indirect paths from immigration status [native born vs. recent (<5 years), mid-length (5-10 years) and long-length of time in Canada (10+ year)] to childhood maltreatment (abuse and childhood heterosexist discrimination) and to depression and social anxiety (phobia and interaction anxiety) mediated by adaptive (problem solving coping and emotion reappraisal) and maladaptive (avoidance coping and emotion suppression) thoughts. Significance of the indirect paths was tested with 10,000 bootstrap draws.

Results: The model fit the data well [comparative fit index=.91, Tucker-Lewis fit index=.90, root mean square error approximation=.06, standardized root mean square residuals=.05]. The model demonstrated direct effect of childhood maltreatment on maladaptive (β=.63; $p<0.001$) and fewer adaptive (β=-.17; $p<0.001$) thoughts, and from maladaptive (β=.77 and β=.71; $p<0.001$) and fewer adaptive (β= .29 and β=-.27; $p<0.001$) thoughts to greater depression and social anxiety respectively. The estimated indirect path for recent immigrants (ref. native born) was statistically significant but the paths for mid-length and long-length immigrants (ref. native born) were non-significant.

Discussion: Results demonstrate that recent immigrants report poorer mental health compared to native born perhaps because of the settlement challenges recent immigrants face. The results highlight the importance of structural interventions, such as better settlement services as well as individualized psychotherapies to ensure smoother integration and to promote better mental health among double minority populations.

Social Sciences: Impacts of Migration within Canada on Health
Sciences sociales : Effets sanitaires de migrations au Canada

SSP6.01

Re-thinking Current Policy: Challenging Social Structures Surrounding Mandatory HIV Screening During the Canadian Immigration Medical Examination (IME)

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1. University of Calgary, Calgary, AB, 2. University of Alberta, Edmonton, AB, 3. San Patten and Assoc., Halifax, NS

This session will draw on important findings from our pilot study into the experiences of sub-Saharan African (SSA) immigration applicants living with HIV in a western Canadian province. These findings speak to the intersections between current Canadian immigration policy, including mandatory HIV screening during the IME; adequate and appropriate pre- and post-HIV-test counselling, including engagement with the HIV care cascade; HIV-related stigma, including internalized HIV stigma among immigration applicants and enacted stigma in the immigration system; and disparities in HIV care cascade engagement. In our proposed session we will discuss and challenge social structures surrounding mandatory HIV screening during the Canadian IME, and the need to re-think current IME policy. We will highlight the social structures of mandatory HIV screening and the impact these have on people's experiences. It is evident in our study that immigration applicants are vulnerable and have no agency during the IME. Health providers, including those involved in the mandatory HIV screening process must ensure people remain engaged in the HIV care cascade, to mitigate health and social inequities and HIV stigma among immigration applicants. We propose to re-think the role of the IME panel physician in mandatory HIV screening of immigration applicants and linkage to the cascade of care.

Social Sciences: Indigenous Health
Sciences sociales : Santé des Autochtones

SSP7.01

Positive Outlook Workshop: Supporting the Well-Being of Those Working With People Living With HIV

Melissa Egan
Realize, Toronto, ON

Context: With growing case-loads, an increase in opioid-related deaths, and a consistent decrease in funding, frontline workers supporting people living with HIV (PLWHIV) are experiencing burnout (Dugani, 2018). The Positive Outlook workshop was developed to address the ways burnout can be addressed, and prevented among those who work to support PLWHIV.

Methods: Positive Outlook 2019 focused on presenting in Indigenous communities, including northern and rural parts of Canada. The interactive 6-hour workshop covers:

- Listening, team debriefing, non-violent communication
- Triggers, grounding exercises, empathy
- Stress and burnout, grief and loss
- The work of Vikki Reynolds: The Zone of Fabulousness

In pre-and-post evaluations participants indicate their knowledge of listening, team communication, burnout, and self-care.

Results: Positive Outlook has been presented to 395 people in 12 locations, with a focus on rural and remote parts of Canada. The workshop was presented in The Pas/Opaskwayak Cree Nation, Manitoba, and Meadow Lake First Nation, Saskatchewan; in partnership with the Prince Albert Metis Women's Association (our largest event with 44 participants), and in Thunder Bay, ON through partnership with the Ontario Aboriginal HIV/AIDS Strategy. The workshop was also presented in Dartmouth, NS and St. John's, NL. Evaluations showed that participants demonstrated an increase in knowledge related to effective communication, managing burnout, and listening techniques.

Discussion: Frontline workers play a critical role in supporting PLWHIV. *Realize* shifted the focus with Positive Outlook to address the needs of the frontline staff who experience stress, grief, and burnout by providing them with targeted mental health training. Engaging participants in dialogues about the sources of work stress that may lead to burnout and then exploring ways to address those factors, *Realize* created opportunities for frontline workers to increase their knowledge of and strategies to prevent burnout.

Social Sciences: Indigenous Health
Sciences sociales : Santé des Autochtones

SSP7.02

A Scoping Review: Exploring the Health Experiences of Indigenous Trans, Two-Spirit and Gender Diverse Communities

Randy Jackson, Maria-Carolina (Carol) Lopez Ricote

McMaster University, Hamilton, ON

This scoping review addresses the range of existing research on the health and experiences with health services of Indigenous gender diverse, trans, and two-spirit folks. This review has been drafted by the Indigenous Leadership Group, under the Trans PULSE Canada project, that brings expertise in the form of research, practice, and lived experience. Using community-based research and scoping review methodologies, existing knowledge in the literature was collaboratively and systematically searched, selected and synthesized. Four major themes emerged from the preliminary findings. Firstly, the literature highlights critical approaches to understanding traditional Indigenous gender identity and diversity. Secondly, findings yield information on health experiences related to HIV, spirituality and the physical, social, sexual, emotional, and mental health of this community. Thirdly, ongoing experiences of stigma, transphobia, violence, and discrimination to this community are reflected in findings. Lastly, findings point to the experiences with health-related services and explore practice and policy implications. This review is of importance as it aims to expand on the limited knowledge of this topic and guide the development of an Indigenous qualitative study that uses decolonizing methodologies. Findings may also build on research that addresses current issues and experiences specific to the HIV/AIDS response in Canada. In advancing the state of knowledge in Canada, findings may lead to improved health experiences and service delivery in this community.

Social Sciences: Indigenous Health
Sciences sociales : Santé des Autochtones

SSP7.03

Indigenous Masculinity and HIV Wellness: Towards Planning a Research Agenda

Aaron Li, Randy Jackson
McMaster University, Hamilton, ON

B**ackground:** Indigenous peoples in Canada are disproportionately represented in the HIV epidemic in Canada where it is estimated that "[they make] up 12.2% of new HIV infections and 8.9% of those living with HIV in Canada" (PHAC, 2014, p. 1). Of the 6,380 HIV-positive Indigenous people diagnosed at the end of 2011, slightly more than half occurred among Indigenous men. Therefore, it is vital to critically explore the ways an Indigenous masculine identity intersects with experiences of HIV, to bolster the uptake of culture as a protective factor promoting resilient responses.

Aim/Objective: The goal of this study is to plan future research to examine the ways HIV-positive Indigenous men come to learn and practice a positive masculine identity as they respond to the challenges of living with chronic illness. Objectives include: developing a comprehensive understanding of the health impacts of chronic illness for Indigenous men; and developing a culturally informed understanding of Indigenous masculine identity.

Methods: Using an Indigenous-directed process consistent with principles of community-based research (CBR), and driven by decolonizing and Indigenous methodologies, a comprehensive review of the literature focused on Indigenous masculinity and chronic ill health was conducted. Additionally, nine Indigenous men living with HIV were recruited to participant a sharing circle to discuss the significance of Indigenous masculinity in culture, research and services.

Findings: From the literature review and the sharing circle, five core themes emerged. The project examined the interference of colonization on traditional roles and Indigenous masculinity, the ways masculinity and gender identity interact with a culturally grounded approach to health, the different dimensions of health concerns, effective health interventions, and opportunities for future research.

Conclusions: The results from the literature review and the sharing circle will be used to develop a multi-year research operating grant consistent with the objectives of this study.

Social Sciences: Indigenous Health
Sciences sociales : Santé des Autochtones

SSP7.04

Indigenous Masculinity and HIV Disclosure

Aaron Li
McMaster University, Scarborough, ON

Aim/Objective: The goal of this this research project is to explore how self-regulation of a masculine identity is impacted by colonization in the context of HIV disclosure for Indigenous men. Specific objectives under this goal include the following: (1) Understanding Indigenous men's ideas about Indigenous masculinity; (2) understanding how Indigenous men come to understand the impact of colonization on their masculine identity; and (3) understanding how colonization affects Indigenous men's experience of HIV disclosure.

Methods: This project adopts an Indigenous directed process consistent with principles of community-based research (CBR) and driven by decolonizing and Indigenous methodologies. Following a systematic examination of the literature, six Indigenous men living with HIV were interviewed to discuss the significance of Indigenous masculinity in the context of HIV wellness and HIV disclosure. The findings from the literature review and the interviews were coded within NVivo qualitative analysis software to compare emerging themes and gaps within existing research.

Findings: Following a discussion of the different components of Indigenous masculinity, the participants described the hinderances of colonization and stigmatization in disrupting healthy practices and conceptualization of Indigenous masculinity. Throughout the journey of healing, a process of deconstructing western ideals was necessary towards developing a personal sense of Indigenous masculinity which aligned with their Indigenous identity. Upon successful negotiation of the relationship between Indigenous masculinity and HIV status, disclosure was used at various stages of the healing journey to affirm Indigenous masculinity, discover a personal sense of purpose, and to educate others.

Conclusion: The use of disclosure was found to be a vital component towards the development and practice of Indigenous masculinity. The findings of this project will be used to apply for future grants to design a service or intervention which provides Indigenous men living with HIV with a safe and healthy environment to practice Indigenous masculinity.

Social Sciences: Indigenous Health
Sciences sociales : Santé des Autochtones

SSP7.05

The "Weaving Our Wisdoms" Study, a Positive Action Initiative to Support Indigenous People Living with HIV and AIDS: Findings from a Gathering on the Land

Valerie Nicholson[1], Sandy Lambert[1], Chad Dickie[1], Knighton Hillstrom[1], Sherri Pooyak[1], Stephanie Nixon[2], Renee Monchalin[3], Renee Masching[1], Marni Amirault[1], Tracey Prentice[3], Andrea Mellor[1], Madison Wells[1]

1. Canadian Aboriginal AIDS Network, Victoria, BC, 2. University of Toronto, Toronto, ON, 3. University of Victoria, Victoria, BC

B**ackground:** The *Weaving Our Wisdoms (WoW) Study: Using a Land-Based Approach to Optimize Whole-istic Health among Indigenous People Living with HIV* is a community-based research project exploring how connecting with the land can improve the health of Indigenous people living with HIV (IPHAs).

Study Design and Objectives: The WoW team organized a five-day Gathering with the objective to learn and contribute to ideas around wellness on the land for IPHAs. The Gathering engaged through sharing circles and conversational methods to explore the main study themes including the significance of connecting with the land as an approach to wellness, the influence of sex and gender, the role of peer and intercultural support, and the role of HIV Olders (IPHA knowledge holders of HIV history and living well with HIV).

Preliminary Results: Gathering attendees included 15 IPHA participants living in British Columbia and Saskatchewan and the WoW team which included five HIV Olders and eight community and university-based researchers. Our Gathering was rooted in Indigenous ceremony and teachings, beginning with a pipe ceremony, medicine picking, a traditional feast, and connecting with the land and animals. In alignment with the study's methodological principles of relationality and interconnectivity, the WoW team developed a data analysis method that honours the context of the stories, ideas, and conversations recorded at the Gathering. Several key messages were identified that respect the complexity of the living experience of the Gathering participants.

Conclusion: The WoW study is part of an emerging field in health research that holds up Indigenous ways of knowing and doing in living well with HIV, and more broadly, supports health and healing in the Indigenous community. In the words of a WoW participant, "My mind and body healed. Being surrounded by trees, grass, animals, I felt I belonged and healed in this natural state."

Social Sciences: Indigenous Health
Sciences sociales : Santé des Autochtones

SSP7.06

"My heart's full. My spirit's flying": Creating a CHIWOS-PAW Gathering for Indigenous Women Living with HIV in the Coast Salish Territories

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B**ackground:** Indigenous women living with HIV (IWLWH) are overrepresented in the Canadian HIV epidemic. We developed a strengths-based approach to explore how IWLWH support their health by drawing upon Indigenous teachings and healing.

Methods: CHIWOS-PAW focuses on the health priorities of Positive Aboriginal Women (PAW). We invited IWLWH in the Coast Salish Territories to participate in two gatherings developed by IWLWH: 1) Virtual Gathering, to introduce the study team and objectives; 2) 4-day Sharing Circle Gathering, where two Indigenous Peer Research Associates, supported by an Elder, guided IWLWH through a series of land-connecting and arts-based activities, and Sharing Circles. Participatory thematic and visual analysis is underway.

Results: Six IWLWH from Cree, Blackfoot, Navajo, and Coast Salish Nations participated.

IWLWH weaved together their wisdoms to conceptualize and support their health through art on five collective canvases, centred on water teachings. The significance of Indigenous medicines was displayed as Earth Medicines, rooted in the seven colours of teachings. Women's vision for IWLWH's health was conceptualized as a fluid, healing Water Medicine Wheel. A waterfall represented challenges IWLWH faced in accessing healthcare, while canoes in a calm reflection pool represented supports that helped women navigate through their challenges. Bear paw prints traversing a landscape represented how women drew upon their inner strengths and the courage of the bear to transform their healthcare. Using rivers as a symbol for knowledge dissemination, participants wrote messages to healthcare providers.

Emerging themes include the importance of traditional medicines and ceremony to support holistic health; vulnerability IWLWH face when accessing Western healthcare; traditional medicines as protection; and healing through participating in the Gathering.

Next Steps: IWLWH are leading the change they need to see. CHIWOS-PAW will host a closing Gathering in Spring 2020 to validate the study results and move the research forward in a good way.

Social Sciences: Indigenous Health
Sciences sociales : Santé des Autochtones

SSP7.07

Kina Keko Kawasasek (everything is in a circle): Addressing Priorities in Women-centered HIV Care Across the Life Course

Miranda Keewatin, Sebastien Lefebvre, Heather O'Watch, Mikayla Hagel, Carrie Bourassa, CHIWOS Team
University of Saskatchewan, Saskatoon, SK

B**ackground:** Women living with HIV have their own lives, personal journeys, and experiences living with HIV. The purpose of this study is to enable a deeper and more contextualized understanding of women-centred HIV care from women living with HIV in Saskatchewan. This research aims to express the women's personal journey in which will help strengthen the understanding of wellness and women's utilization and experiences of health services.

Methods: Indigenous Methodologies of Storytelling and Research Circles will be used in this mixed qualitative approach along with Body Mapping. Body Mapping is a form of art and narrative therapy used to gain a better understanding of one's self, one's body, and the world one lives in and heightens awareness and appreciation of the various threads and storylines making up their lives.

The project will involve 6 women living with HIV and will complete the research process over 2 days. The women will be asked to trace the image of a Turtle and guided by questions that address traditional teachings that reflect the four elements of life that explore wellness and women's experiences of health services. Through Traditional Storytelling, women living with HIV will share how they think of the term "wellness." Through this, women will share their needs and experiences related to HIV, mental health, sexual health, reproductive health, and other health services they utilize or do not have access to. Through Body Mapping exercise, the women will define their understanding of their own lives, and experiences living with HIV.

Results: Collective Consensual Data Analytic Procedure is an Indigenous grounded data analysis process that will be utilized in this research project in January 2020 in which will identify key themes for each question. The research findings will be disseminated to communities, co-researchers, and healthcare practitioners through workshops, conferences, presentations, and publications.

Social Sciences: Indigenous Health
Sciences sociales : Santé des Autochtones

SSP7.08

Using a Two-Eyed Seeing Approach to Realist Evaluation in a Community-Based Research Project

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Making it Work is an Indigenous Community-Based Research (CBR) project that is looking at what services work well for people living with HIV and/or hepatitis C who may also experience challenges with mental health and/or substance use. Using a Two-Eyed seeing approach, this project is challenging how realist evaluation is being done to help understand *how, why, when, and for whom* certain program models work. Two-Eyed Seeing honours both Indigenous ways of knowing and western knowledge systems as both types of knowledge are used together with equal value placed on both, to strengthen the way we do work and the understanding we gain from research.

Realist Evaluation involves developing, testing, and refining a program theory which identifies the contexts, mechanisms, and outcomes of a program or series of programs. In this project, we are building a Realist Evaluation program theory within the framework of the medicine wheel (our Two-Eyed Seeing approach). This program theory details the spiritual, mental, physical, and emotional experiences that underpin outcomes within community-based programming for Indigenous and non-Indigenous people who access these services.

The *Making it Work* study team is made up of Indigenous and non-Indigenous, community service providers, people with lived experience(s) and community-based researchers in British Columbia and will be working to highlight service delivery in multiple case study communities. The research is being conducted by Indigenous and non-Indigenous team members and done “in a good way” that highlights a strength-based approach to evaluation. We will share key learnings that emerged from this process, and ways in which these approaches complemented each other to develop a stronger process and understanding of service models for people accessing community-based HIV, hepatitis C, mental health and/or substance use services.

Social Sciences: Indigenous Health
Sciences sociales : Santé des Autochtones

SSP7.09

Kotawe (start a fire): Igniting Cultural Responsiveness Through Community-determined Intervention Research

Margaret Kisikaw Piyesis[1], Leona Quewezance[1], Miranda Keewatin[3], Carolyn Pelletier[2], Melanie Kingston[2], Carrie Bourassa[3]

1. All Nations Hope Network, Regina, SK, 2. Morning Star Lodge, Regina, SK, 3. University of Saskatchewan, Saskatoon, SK

B**ackground:** The objective of this research project is to gain a healthier understanding of Indigenous women from Saskatchewan and integrating wisdom from a variety of recently completed research projects focused on diverse aspects of HIV risk and prevention. This research is about intersectionality in Indigenous women's lives and how communities and systems can work together, with women and one another, to deliver better, sustainable and affordable, integrated care.

Methods: Indigenous methodologies of storytelling and research circles were used in this mixed qualitative approach along with culture, language, history, and traditional land-based teachings. This work is grounded in Indigenous knowledge and cultural practices of Treaty Four, where Regina is located. Guided by principles of community-based research and a Two-Eyed Seeing approach, this intervention research focused on participants' experiences of an ongoing, long-term intervention of cultural intervention practices (CIPs) scheduled in relationship to women's seasonal teachings and ceremonies. NVivo software and Collective Consensual Data Analytic Procedure (CCDAP) are used to analyze the data. Our poster presentation will share key themes learned so far in the research and preliminary data analysis from the research circles.

The data is gathered seasonally by asking the women to answer four questions about their health as it pertains to them personally: 1) How do Indigenous women experience cultural intervention practices or CIPs? 2) In what ways, if any, do CIPs influence how women experience physical wellness through fitness/strength, stress level, aches, and pains, etc.? 3) In what ways, if any, do CIPs influence how women experience relationships with themselves and/ or spirit change? 4) What do women do to encourage wellness in their lives after participating in the CIPs?

Results: CCDAP is an Indigenous grounded data analysis process that will be utilized. The preliminary findings from this project will be discussed at CAHR 2020.

Social Sciences: Living with HIV and Health
Sciences sociales : La santé avec le sida

SSP8.01

Vulnerability and Resilience: the Lived Experience of Women Who Receive an HIV Diagnosis During the Resettlement Process

Donna Bulman, Justine Henry
University of New Brunswick, Fredericton, NB

B**ackground:** During times of war and conflict many women are forced into exile and become refugees. Women who receive an HIV diagnosis during the resettlement process experience social isolation, displacement, stigma, shame, and loss of connection to social networks. Receiving an HIV diagnosis may increase the trauma HIV-positive women experience as negotiate access to the health care system and treatment.

Objectives: To describe and explore with HIV positive women refugees and asylum seekers the meaning and lived experience of receiving an HIV positive diagnosis or obtaining care for HIV/AIDS during the resettlement process.

Methodology: This is a qualitative research project using interpretative phenomenology. Methodological principles from interpretative phenomenology as defined by van Manen are used to analysis data and focus on the women's efforts to make sense of the lived experience of being an HIV-positive women refugee or asylum seeker in a new country while navigating a complex health care system in order to seek appropriate treatment for HIV.

Data Collection: Following receiving ethical approval, data was collected in 2018 in the Greater Toronto area. Six semi-structured interviews were conducted with women who had settled in the area within one year of the interview date. Participants were recruited through community-based HIV/AIDS organizations.

Emerging Findings: Participants experienced both vulnerability and resilience juxtaposed upon each other as they adjusted to resettlement. These two experiences often overlapped with each other. According to the particular context sometimes one dominated, sometimes the other.

Conclusion: Additional qualitative research needs to be completed in order to further understand the lived experience of newly diagnosed HIV positive women refugees. This research could have both applied health research and policy implications.

Social Sciences: Living with HIV and Health
Sciences sociales : La santé avec le sida

SSP8.02

Clients Drive the Supplementary Food Program for HIV+ Community

Lawrence Chidzambwa, Ilm Kassam
AIDS Vancouver, Vancouver, BC

B**ackground:** *A*IDS Vancouver is a non-profit organization supporting people living with HIV and AIDS (PLWHA). The Supplementary Grocery Program at AIDS Vancouver distributes 450 bags of high protein, fresh vegetables and fruits, dairy items, and other nutritious foods free every distribution week. The main challenges are cost-effectiveness, maintaining high-quality service, and connecting with clients that are most in need. In the last three years, the program has shifted from a provider-driven to a client-driven. This article discusses the challenges encountered, methodologies used and the results obtained from this exercise.

Methods: A client survey determines the base satisfaction level and identifies areas of improvement for the program. For three years, follow-up consultation sessions take place with clients, volunteers, and staff on methods to address issues raised. Appreciative Inquiry (AI) and Social Constructivism (SC) theories are guidelines for client engagement. AI was selected to encourage participants to use the strengths and resources around them to improve the program and Social Constructivism for its ability to combine individual perspectives in constructing meaning that is acceptable to all participants.

Results: The follow-up consultation sessions have generated 41 proposals and 26 have been implemented by the client dominated Grocery Improvement Forum. Client satisfaction is up; client participation continues to grow. The cost implications are minimal, yet the benefits are significant. Client participation raised the program satisfaction level by 16 percentage points after one year and has maintained the satisfaction level high.

Conclusions: Creating space for client participation and building trust are essential in improving the satisfaction level of the program. Clients have a lot of knowledge about their conditions and provide valuable input in program implementation. Their contribution is mainly on social aspects not technical aspects. These social aspects are essential in improving the client experience and need to be a part of improvement initiatives.

Social Sciences: Living with HIV and Health
Sciences sociales : La santé avec le sida

SSP8.03

Factors Associated with Willingness to Participate in End-of-Life Cure Research: Perspectives from People Living with HIV

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B**ackground:** HIV cure research focuses on persistence of HIV within body reservoirs. Modelled after the Last Gift Study from the University of California San Diego, Canadian HIV Cure Enterprise (CanCURE) members have established a similar protocol for an HIV biobank. However, End-of-Life (EoL) research poses ethical challenges. Our objective is to evaluate determinants of participation and preferences to ensure acceptability and a positive experience for PLHIV and their close or family circle.

Methods: Following principles of patient-oriented research, we discussed EoL HIV cure research with 2 community members. Participants will be PLHIV aged ≥65 years. Inspired by the Last Gift instruments, we designed a mixed-method research methodology based on surveys filled by all participants (n=50), followed by audio-recorded in-depth semi-structured interviews in a subset of participants (n=16). Surveys were reviewed with members of the CanCURE community advisory board (CAB) and forms were modified appropriately.

Results: Participants will decide with recruiters with whom and the context in which they answer surveys and interviews to increase comfort, acceptability, and accessibility. Surveys will elicit: 1) sociodemographic characteristics, 2) quality of life and experience of health, 2) experience of health, 3) willingness to participate in EoL HIV cure research, 4) willingness to donate tissues for HIV biobanking, and 5) willingness to undergo a postmortem research autopsy. Interview schedules examine more thoroughly participants' perspectives, motivation and barriers, perceived risks and benefits, relative to these themes, in association with their understanding of life and mortality, as well as their family's and social circles'. Results will be presented in April 2020.

Conclusion: A better understanding of PLHIV's perspectives, in association to their social context, could then be taken into consideration when designing ethical, respectful, and meaningful patient-centred interventions to approach, include, and interact with participants in the CanCURE HIV Autopsy Biobank and other EoL HIV cure studies.

Social Sciences: Living with HIV and Health
Sciences sociales : La santé avec le sida

SSP8.04

Diet Quality, Cardiovascular Disease Risk Factors and Diabetes Prevalence Among Canadians Living with HIV Engaged in a Study About Health Behaviors

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B**ackground:** Long-term antiretroviral drug use along with normal aging and lifestyle risk factors, such as exceeding saturated-fat intake recommendations, can increase cardiovascular disease (CVD) and diabetes risk among people living with HIV (PLHIV).

Objective: To describe diet quality, CVD risk factors and diabetes prevalence among PLHIV.

Methods: An online randomized control trial is underway across Canada to evaluate the efficacy of web-based interventions to support the adoption of healthy behaviours among PLHIV (CTN288). Adult PLHIV (18+) with sufficient proficiency in French or English and with Internet access are being recruited via clinic referrals and social media. As part of the baseline self-administered online questionnaire, participants complete *Starting The Conversation* an eight-item simplified food frequency instrument used to examine diet quality. Data are collected also regarding health indicators, including blood pressure/cholesterol and diabetes.

Results: To date, 189 eligible PLHIV completed the questionnaire. Preliminary descriptive analyses show that 84.1% were men with a mean age of 47 years. At baseline, within the last seven days, 17.5% of participants ate fast food meals or snacks four or more times, 8.5% ate snack chips/crackers four or more times, 28.0% ate desserts/other sweets four or more times, and 14.3% consumed a lot of margarine/butter. Regarding CVD, 13.2% reported high blood pressure and 28.0% high cholesterol. Also, 21.2% reported taking hypertension medication and 23.3%, cholesterol medication. Regarding diabetes prevalence, 0.5% reported type 1 diabetes; 3.7%, type 2 diabetes; and 7.9% prediabetes. Finally, 22.2% considered their general health to be very good and 43.9% good.

Conclusion: Among this sample of PLHIV engaged in a study related to health behaviors, participants reported a high frequency of fatty-food intake and exposure to CVD risk factors. Adopting healthy behaviours, such as eating a low-fat diet, is a modifiable factor that can impact the emergence and progression of CVD and diabetes.

Social Sciences: Living with HIV and Health
Sciences sociales : La santé avec le sida

SSP8.05

Vieillir avec le VIH : vers un bien-être psychosocial et sanitaire pour les hommes ayant des rapports sexuels avec des hommes en Tunisie

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Introduction : Le vieillissement avec le VIH est un phénomène relativement nouveau qui touche plusieurs pays, entre autres la Tunisie. Ce phénomène est observé aussi bien chez les hommes que chez les femmes. Bien que l'homosexualité reste un sujet tabou, la prévalence des personnes âgées vivant avec le VIH est sous-estimée.

But : Cette présentation vise à présenter les résultats d'une étude ayant pour but de comprendre l'expérience de vieillir avec le VIH des hommes âgés ayant des rapports sexuels avec des hommes en contexte Tunisien. En plus, les facteurs facilitant le bien-être psychosocial et sanitaire de cette population seront présentés.

Méthode : Une étude phénoménologique a été réalisée pour examiner en profondeur le vécu de cette population. Des entrevues semi-dirigées ont été réalisées auprès de sept hommes ayant des rapports sexuels avec des hommes vivant avec le VIH. À partir de la méthode d'analyse de Van Manen, des thèmes ont été dégagés.

Résultats : Six thèmes ont émergé de l'analyse thématique : la peur de l'avenir ; l'incertitude ; la stigmatisation et le rejet de la famille ; la comorbidité : un défi journalier ; la confiance en équipe soignant ; la sexualité et la vie intime.

Discussion et conclusion : Être un homme ayant des rapports sexuels avec un homme et vivant également avec le VIH sont des défis quotidiens. De plus, en Tunisie, cette population est méprisée et considérée comme une minorité sexuelle. Ainsi, ce travail met en évidence l'importance de s'attarder à comprendre le vécu de ces hommes et de considérer leur besoin de support afin de favoriser une meilleure qualité de vie et une meilleure intégration sociale.

Social Sciences: Living with HIV and Health
Sciences sociales : La santé avec le sida

SSP8.06

Vieillir avec le VIH : une méta synthèse

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Introduction : Plusieurs études ont été réalisées sur le VIH et la qualité de vie des personnes vivant avec ce virus. Cependant, très peu d'études se sont intéressées au vieillissement de cette population qui connaît une augmentation de son espérance de vie.

But : Le but de cette présentation est d'exposer les résultats d'une méta synthèse visant l'exploration du vécu de personnes vieillissant avec le VIH.

Méthode : L'approche de Sandalowski et Borosso a été utilisée pour réaliser cette méta synthèse qualitative. À partir des bases de données PubMed, Psychinfo et CINHAL et des mots clés suivants : les personnes âgées, les aînés, le SIDA, le VIH, le virus d'immunodéficience humaine, le syndrome d'immunodéficience acquise. Dix articles ont répondu aux critères de sélection pour l'analyse structurée.

Résultats : Après l'extraction et analyse des résultats de recherche, six thèmes ont émergé : (a) la marginalisation (b) les mécanismes de faire face (c) l'adoption des attitudes positives à l'égard de VIH (d) l'incertitude sur l'avenir (e) l'émancipation et l'activisme.

Discussions et conclusion : Quel que soit le contexte, le sujet âgé a besoin de mobiliser certains mécanismes pour faire face à la maladie et à l'expérience du vieillissement. La peur et l'incertitude doivent être prises en compte par les personnes qui œuvrent auprès de cette population afin de favoriser un meilleur suivi et favoriser une meilleure qualité de vie de cette population.

Social Sciences: Living with HIV and Health
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SSP8.07

A Provincial Overview of Community-Based Organizational Supports for Older Adults Living with HIV in British Columbia

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B**ackground:** The proportion of older adults (≥50 years) living with HIV (OALHIV) is increasing across Canada. This population has distinct health needs (living with more co-morbidities, experiencing physical and mental aspects of aging prematurely) and unique challenges when accessing healthcare and community services, compared to their HIV-negative peers. Due to premature aging, OALHIV do not qualify for many services available to seniors. Stigma prevent some from accessing help from both HIV and non-HIV specific organizations. At the same time, home and community care in BC have been cut in the last decade, limiting services offered to recipients.

Study Design and Objectives: Participating organizations were identified by a Peer Research Associate and through an online scan. Community-based organizations (CBOs) were invited to participate in a survey if their mandate included providing support to people living with HIV. Each CBO was asked to provide a description of the services they provide. Overall, thirty CBOs across BC participated in our survey to describe HIV-related services they provide.

Results: We created a comprehensive inventory of the services to OALHIV offered by CBOs in BC. Our findings indicate that the most offered services were: food assistance, support and outreach services; at the same time, least offered services were: vocational counselling, financial aid, medical/dental services and alternative therapy. CBOs were asked about what barriers OALHIV may experience when accessing services. The following barriers were reported as most prevalent by region: stigma (71% Interior Health), isolation and food insecurity (40% Vancouver Coastal Health), housing (75% Island Health), transportation (43% Interior/Northern Health).

Conclusions: Services most readily available in each region were not necessarily the most frequently used services in that region. OALHIV continue to experience significant structural barriers when accessing health services and help offered through CBOs is not sustainable, especially considering the growing proportion of OALHIV.

Social Sciences: Living with HIV and Health
Sciences sociales : La santé avec le sida

SSP8.08

Shortening the HIV Disability Questionnaire (HDQ) for use in Clinical Practice: A Rasch Analysis

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Objective: The HIV Disability Questionnaire (HDQ) is a 69-item patient-reported outcome (PRO), developed to measure the presence, severity and episodic nature of disability among people living with HIV (PLWH). Our aim was to develop a Short-Form HIV Disability Questionnaire (SF-HDQ) to facilitate use in clinical practice.

Methods: We used Rasch analysis to inform item reduction using an existing dataset of PLWH in Canada (n=941) and Ireland (n=96)(n=1037). The analytic approach evaluated overall model and item-specific fit. Model fit was evaluated with coefficient alpha and Person Separation Indices (PSIs)(≥ 0.70 acceptable); Individual items were evaluated for item threshold ordering, fit residuals, differential item functioning (DIF) and unidimensionality. For item threshold ordering, item characteristic curves and threshold maps were examined. If clinically meaningful, response options of items with disordered thresholds were merged to obtain ordered thresholds. Items with fit residuals >+/-2.5 and statistically significant Bonferroni-adjustment were removed. For DIF, we considered removing items with response patterns that varied according to country, age group, and gender. We defined unidimensionality of subscales as <5% of independent t-tests comparing possible patterns in residuals as significant.

Results: We removed 34 items, resulting in a 35-item SF-HDQ with domain structure: physical (20 items reduced to 10); cognitive (3 items; none removed); mental-emotional (11 items to 5); uncertainty (14 items to 5); difficulties with day-to-day activities (9 items to 5) and challenges to social inclusion (12 items to 7). Overall model fit: Coefficient alphas and PSIs ranged from 0.78(cognitive) and 0.69(day-to-day activities) to 0.85 and 0.79(physical and mental-emotional), respectively. Three items were rescored to achieve ordered thresholds (1 item in physical; 2 items in social). All subscales demonstrated unidimensionality. Seven items with DIF were retained because of their clinical importance.

Conclusion: The 35-item SF-HDQ offers a brief yet comprehensive disability PRO for use in clinical practice with PLWH.

Social Sciences: Living with HIV and Health
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SSP8.09

Accès aux soins dentaires pour les personnes vivant avec le VIH (PVVIH) : Aperçu de la situation au Québec en 2019

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En 2012, la COCQ-SIDA a mené une enquête sur l'accès aux soins dentaires pour les PVVIH. 769 cliniques dentaires avaient été contactées pour évaluer le processus de prise de rendez-vous pour un nouveau patient séropositif au VIH.. Les résultats avaient révélé des cas de discrimination. En 2019, la COCQ-SIDA a décidé de renouveler l'enquête auprès des cliniques dentaires afin d'évaluer si la situation s'était améliorée.

Entre juillet et octobre 2019, plus de 600 cliniques du Québec furent contactées par les enquêteurs (membres, bénévoles ou employés de la COCQ-SIDA). Le même scénario devait être suivi lors de chaque appel: si la clinique confirmait prendre de nouveaux patients, l'enquêteur poursuivait l'appel et mentionnait être séropositif. Le but était de déterminer si le VIH changeait quelque chose à la prise de rendez-vous. Une grille devait être remplie pour chaque clinique contactée qui prenait de nouveaux patients. Au final, 561 grilles furent compilées/analysées.

Comme en 2012, il a été possible d'obtenir un rendez-vous dans une majorité de cliniques. Cependant, les réponses indiquant que la PVVIH serait traitée différemment ont augmenté. Alorsd que les différences de traitement recensées en 2012 (refus de traitement, rendez-vous plus long ou plus cher, rendez-vous uniquement en fin de programme) ont diminué (passant de 14,4% des appels (N=111/769, 2012) à 8,9% (N=50/561, 2019), de nouvelles différences de traitement sont apparues. En tenant compte de celles-ci, les différences de traitement sont passées de 14,4% (N=111/769, 2012) à 31,9% (N=179/561, 2019).

La discrimination des PVVIH existe toujours au sein des cliniques dentaires mais se transforme. Le manque de formation du personnel sur le VIH alimente la discrimination des PVVIH et, conséquemment, leur réticence à consulter. Dans son rapport d'enquête, la COCQ-SIDA formule de nouvelles recommandations, adaptées aux nouveaux résultats, pour améliorer l'accès aux soins dentaires des PVVIH.

Social Sciences: Living with HIV and Health
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SSP8.10

Impact of Health Risks and Protective Factors on Dimensions of Stigma and Overall Health in People Living with HIV: Results from the Ontario HIV Stigma Index

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While the negative effect of stigma on health and well-being is well established, there is less known about the types and dimensions of stigma and their differential impacts on health outcomes of people living with HIV. Understanding these relationships may allow for development of targeted intervention strategies aimed at overcoming HIV stigma and potentially improving overall health and wellbeing of people living with HIV.

Peer research associates recruited 724 people living with HIV from across Ontario (mean age=47.8 years, % male=67%) to complete the HIV Stigma Index – a global survey tool developed by and for people with HIV to measure nuanced changes in different forms of stigma (e.g., internalized stigma, anticipated stigma, and disclosure concerns). Health risks (alcohol and drug misuse, depression, low income, lack of basic needs, and unemployment) and protective factors (social support, self-efficacy, and resiliency) were assessed and risk scores were established for each person.

Rates of internalized stigma were high (approximately 50%) in our sample across priority populations (50%) and were significantly associated with self-ratings of overall health ($p<0.0001$), while anticipated stigma and disclosure concerns were even higher (80-90%) but were not associated with overall health. With each additional health risk, internalized stigma rates increased significantly and in stepwise fashion (31% to 63%, $p<0.0001$) while protective factors had the opposite effect, with the addition of each additional factor seeing a stepwise decrease in internalized stigma (69% to 38%, $p<0.0001$). The same effects were not observed with anticipated stigma or disclosure concerns.

There is a high burden of HIV stigma in people living with HIV in Ontario. Findings suggest focusing in on interventions to increase external support systems and internal resources (self-efficacy and resilience) may reduce internalized forms of HIV stigma, and lead to improvements in health and wellbeing for people living with HIV.

Social Sciences: Living with HIV and Health
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SSP8.11

Desire for Place Attachment in Healthcare Among People Living with HIV: Perspectives of Potential Clients of a Forthcoming Day Health Program in a Specialty HIV Hospital

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B**ackground:** The current Canadian healthcare context prioritizes shorter hospital stays and fewer readmissions. Readmission is typically framed as 'failure' and hospitalization is assumed to fracture individuals' connections with the community. However, these measures may not fully capture care experiences for people living with HIV/AIDS (PLHIV), especially those experiencing medical, psychosocial, and economic complexity.

Methods: As part of a larger study examining collaborative indicator development, we conducted 7 focus group sessions with PLHIV (n=52) who were potential clients of a forthcoming day health program (DHP) at Casey House, a Toronto-based specialty HIV hospital. Sessions examined desires/needs for the DHP. Using a novel place attachment lens, we conducted a thematic analysis focusing on emergent themes of belonging, security, control, and restorative aspects of the emotional bond between person (client) and place (hospital).

Results: Most participants were long-time Casey House clients. Many described fluctuating periods of health and illness. Participants wanted continual connection to hospital, since continuity in care was lacking elsewhere. Many urgently desired admission into the forthcoming DHP and wanted the program to provide assistance with healthcare (e.g., pain management, mental health, addiction) and socio-economic (e.g. housing, food security) concerns. However, they also desired a place that additionally provided: a sense of belonging, community connections (e.g., friendship, love, information sharing), and nurture. Participants sought security (e.g., trusting relationships with clinicians, protection from stigma). Most wanted control over how/when they access services, and saw the DHP as a place of restoration, for encouragement/self-esteem and combating boredom/isolation.

Conclusions: This research shows that shorter hospital stays and fewer readmissions, do not reflect the healthcare desires of PLHIV with complex care needs. Our findings demonstrate that continual attachment to hospital is preferred and may be beneficial, but that most wanted greater control over their care. Our findings have implications for care engagement and retention frameworks.

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SSP8.12

Community Connectedness and Correlates of ART Interruptions Among HIV-Positive gbMSM in Vancouver

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B**ackground:** Interruptions in antiretroviral therapy (ART) are detrimental to the health of HIV-positive individuals and undermine treatment as prevention. LGBT community resilience measured through community connectedness may mitigate the frequency and duration of treatment interruptions (TI). We examined factors associated with TI's among a cohort HIV-positive gay, bisexual and other men who have sex with men (gbMSM) in Vancouver, Canada.

Methods: We recruited gbMSM using respondent-driven sampling from February 2012 to February 2015. Participants completed a computer-assisted self-interview every six-months until August 2019. We linked questionnaire data from HIV-positive participants to the provincial Drug Treatment Program to assess TIs (defined as being >2 months late for an ART refill). We used univariable and multivariable generalized-linear mixed-models to assess factors associated with TIs.

Results: A total of 213 participants had ever received ART and had at least one refill. A total of 53, participants (25%) experienced at least one TI over a median of 8 visits (Q1=3, Q3=11). Multivariable models found that older age, previous history of a TI, time since first ART date, and crack use were associated with experiencing a TI. Community connectedness variables were associated with TIs in univariable analyses but were not selected in our multivariable model.

Conclusion: TI's are still common among gbMSM and multivariable findings suggest marginalized gbMSM with history of TI's should be supported to reduce future TI's. Univariable findings encourage the effect of community resilience on TI's among gbMSM, though future research is needed to examine both community and individual resilience on TI's.

Table 1: Univariable and Multivariable Generalized Linear Mixed Model for Treatment Interruptions among gbMSM in Vancouver, Canada

	Treatment Interruptions (Ever=101 vs Never=1406)					
	Univariable			Multivariable		
Categorical Variables	**RR**	**95% CI**		**aRR**	**95% CI**	
Sexual Orientation						
Gay	Ref			Ref.		
Bisexual	2.06	0.99	4.28	1.89	0.95	3.79
Other	**2.27**	**1.07**	**4.80**	2.00	0.98	4.06
Ethnicity						
White	Ref					
Asian	0.69	0.22	2.10			
Aboriginal	1.83	0.90	3.71			
Latin American	0.38	0.05	3.05			
Other	1.27	0.26	6.17			
Gay Meetings						
Not in the past six months	Ref					
Less than once per month	0.90	0.47	1.70			
About once per month	0.57	0.22	1.46			
More than once per month	**0.35**	**0.12**	**0.98**			
Gay Chat Lines						
Not in the past six months	Ref					
Less than once per month	**2.64**	**1.52**	**4.59**			
About once per month	1.42	0.54	3.74			
More than once per month	2.11	0.82	5.43			
Gay Smart Apps						
Not in the past six months	Ref					
Less than once per month	**1.86**	**1.06**	**3.26**			
About once per month	1.42	0.54	3.74			
More than once per month	1.12	0.63	2.00			
Escort Work						
No	Ref					
Yes	**1.93**	**1.04**	**3.59**			
Crack Co-caine Use (Previous Six Months)						
No	Ref			Ref.		
Yes	**2.28**	**1.32**	**3.96**	**2.13**	**1.25**	**3.62**
Third Drug in Treatment Regimen						
1-NNRTI	Ref					

2-Protease Inhibitor	1.86	0.94	3.67	1.10	0.56	2.16
3-Integrase Inhibitor	1.53	0.70	3.32	1.17	0.55	2.48
4-Other or >1 drug [1]	1.72	0.82	3.61	2.57	1.20	5.50
Viral load in previous six-month period [2]						
<200	Ref			Ref.		
200+	**5.24**	**2.82**	**9.75**	**3.97**	**2.14**	**7.39**
Continuous Variables						
Age (per year)	**0.96**	**0.94**	**0.99**	**0.96**	**0.93**	**0.99**
Previous TI	**1.19**	**1.11**	**1.28**	**1.22**	**1.13**	**1.32**
Time since first ART date (Year)	**0.96**	**0.93**	**1.00**	**0.94**	**0.90**	**0.98**

[1] *Includes any non-standard regimen of 3 drugs, regimens with only 2 drugs, or regimens with 4 drugs or more*

[2] *Measurement taken closest to, and no more than 60 days before, estimated treatment interruption even date if there was one associated with visit, otherwise interview date*

Social Sciences: Living with HIV and Health
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SSP8.13

A Sip of C.A.R.E. for Marginalized East and Southeast Asian Communities in Toronto

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B**ackground:** Minority groups, newcoming immigrants, and international students are disproportionately affected by HIV but also face unique challenges which include language barriers, lack of social support, and cultural stigma. To reach people living with HIV/AIDS (PHAs) who slipped through the cracks of healthcare, we implemented a community program that recruited marginalized East and Southeast Asian PHAs who did not meet targets of adherence and viral suppression, and coached them based on our confidence, achieving 90/90/90, reaching out and engagement (C.A.R.E) model.

Methods: GBi men and Trans women were trained as health coaches for basic coaching skills and competencies. Coaches supported the recruited PHAs in identifying barriers to reaching optimal health, such as addiction, mental health or family problems. They engaged PHAs in a one-on-one, informal social setting, and slowly encouraged the participants and others back into the circle of care. After each meeting, coaches and participants evaluated and described their sessions based on goals, personal/health, interpersonal/relationship and social/community related issues.

Results: We trained 5 PHAs who spoke diverse Asian languages to be health coaches, and who consequently supported 12 PHAs by meeting them twice a month for 6 months after the training. Overall, 80% of participants reported great satisfaction and positive impacts that happened to them. Participants were more focused on goals that achieved their desired health outcome, reported less isolation, and were able to access health services. However, some participants and coaches took longer time to build rapport and trust.

Conclusion: The pilot project has proved to be successful in bringing accurate and accessible HIV and health information to marginalized service users and encouraging them to seek health and other services. Currently, we are in the process to scaling up this project (We C.A.R.E.), which will address the sustainability of long-term coaching.

SSP8.14

The Desire to Leave a Financial Legacy – Life Insurance and People Living with HIV in Canada

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Realize, Toronto, ON

B**ackground:** Historically people living with HIV (PLWHIV) were not eligible for life insurance in Canada. Then, in 2016, Manulife became the first Canadian company to accept applications from PLWHIV. In late 2016, Sun Life followed suit and also started accepting applications. Subsequent to that, Canada Protection Plan also started offering limited life insurance options to some PLWHIV. Until relatively recently, therefore, there were no life insurance options for PLWHIV and in fact, being HIV positive was an immediate disqualification when it came to purchasing life insurance.

Process: In March 2018, *Realize* held a Think Tank on **"Life Insurance and People living with HIV".** The goals for the Think Tank were to:

1. Foster dialogue between insurance providers, community agencies and PLWHIV on issues related to life insurance.
2. Identify insurance issues and opportunities impacting PLWHIV.
3. Identify current practices and possible future strategies to address these issues.

Following the Think Tank, a policy and outreach strategy was developed and implemented to engage insurance industry leaders on issues affecting equitable access to life insurance coverage by PLWHIV.

In September 2019, *Realize* held the first ever National Dialogue between the HIV Community- Based Health Organizations (CBHO) Sector and the Insurance Sector.

Discussion: Today, with advancements in treatment, still only a few insurers are offering life insurance options to PLWHIV in Canada. These options have not been widely publicized, are little understood and many questions remain as to who qualifies and how the insurance companies calculate risk when it comes to PLWHIV.

Conclusion: *Realize* continues to roll out its 'Policy and Outreach Strategy' to meet with Insurance Industry Leaders to discuss the most up to date medical advances with respect to HIV treatment and to share the concerns of the community who see life insurance as part of the bigger picture around enjoying optimal health and well-being.

Social Sciences: Models of Care and Improving Access
Sciences sociales : Modèles de soins et meilleur accès

SSP9.01

Community Pharmacist-facilitated HIV PrEP and Hepatitis C Treatment in Ontario

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1. Western University, London, ON, 2. Specialty Rx Solutions, London, ON

B**ackground:** The benefit of widely scaling both HIV PrEP and hepatitis C virus (HCV) treatment has been demonstrated to be effective in countries with community approaches to engaging patients and providers. Ontario continues to lag behind, with the majority of HIV PrEP and HCV treatment being prescribed by specialists. A previously presented US study demonstrated the feasibly of a pharmacist-run PrEP clinic; and recently, Alberta has allowed pharmacist prescribing of HCV treatment. However, to date, no study has examined the feasibility of these models in Ontario.

Methods: A community pharmacist saw individuals for intake and ordered laboratory investigations under medical directives; reviewed before prescribing. As pharmacists are able to administer hepatitis A and B, as well as HPV vaccination as a part of their scope, this was done independently. Importantly, the pharmacist managed all aspects of reimbursement and provided comprehensive drug-drug interaction reports to the prescriber.

Results: Referrals were received from family physicians, specialists, and public health units; as well as self-referral. Over a one year period, the pharmacist has completed 17 HIV PrEP and 12 HCV intakes and work-ups. At present, 11 individuals are stably on PrEP. Of the 16 individuals who were seen for HCV, 2 were referred to specialist care for HCC or decompensated cirrhosis, with pharmacist case management. One patient was determined to have compensated cirrhosis, and all others were non-cirrhotic. To date, 7 individuals have completed or nearly completed treatment, with 2 treatment starts pending.

Conclusion: Improving access to HIV PrEP and HCV treatment will decrease transmission in high-risk populations; however patient access to providers with low-barrier, self-referral programs is lacking. Our model which includes self-referral, the ability to accommodate walk-ins, and leveraging the expertise of a pharmacist, has demonstrated the feasibility of a pharmacist-led model of care for smaller urban settings in Ontario.

Social Sciences: Models of Care and Improving Access
Sciences sociales : Modèles de soins et meilleur accès

SSP9.02

Reducing Barriers Through Atlantic Canada's First Overdose Prevention Site (OPS)

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We recently opened the doors to Atlantic Canada's first OPS. Our site is peer led that employs former or current substance users. We received funds to conduct 6 Peer Led POCT events through the OPS while linking the participants to care through our integrated model of housing an OPS in a low barrier OAT clinic. After each testing event we will hold a focus group and prepare to create a peer led concept paper about POCT & HCV Elimination.

The purpose of this initiative is to provide access to education screening and linkage to care in an accessible manner for people who use substances (PWUS). By having peer led events we hope to reduce the structural, social and self-directed stigma that comes with substance use while increasing the capacity amongst the peers to feel comfortable performing POCT. While this project is focused primarily on HCV, by showing proof of concept we hope that the skills learned will be transferrable to perform HIV POCT.

Our grant has recently just been approved for this project but our local harm reduction services are not new to POCT events. Our local needle exchange which is an arm's length organization has performed over 100 POCT in 2019 with the help of our local infectious disease's specialist. Having the full support of our local ID doctor has allowed us to feel comfortable with performing these tests while still maintaining the standard of care of point-of-care-tests.

We must get as many tests in the hands of community-based organizations that are serving the priority populations that are at risk of HCV & HIV. We need to start to reduce the barriers for people that may be living in active substance use and treat them regardless of their current arrangements understanding their risk of contracting HCV & HIV.

Social Sciences: Models of Care and Improving Access
Sciences sociales : Modèles de soins et meilleur accès

SSP9.03

Keeping Secrets or Disclosing Health Information?: Accounting for Women's Concerns about HIV Disclosure in Maternity Care

Allyson Ion
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B**ackground:** Many women living with HIV prefer to minimize who knows their HIV status because of fear of rejection and HIV-related discrimination. In healthcare settings, however, a woman's HIV status facilitates a referral to specialist maternity care and determines what clinical procedures will be provided during the perinatal period. This qualitative study explored the tension between HIV as a "secret" to be kept and HIV as "personal health information" that is vital to delivering effective care.

Methods: An institutional ethnographic inquiry was conducted within a regional hospital in Ontario. Four women living with HIV and 12 maternity care providers were interviewed between March 2016 and April 2018. Interviews were analyzed to trace and map the connections between women's concerns about HIV disclosure, healthcare providers' activities that responded to women's concerns, and the regulatory texts and legislative frameworks that organized disclosure-related activities in this setting.

Results: Many women choose to keep their HIV status a secret to mitigate rejection and negative experiences. In maternity care contexts, many women prefer to keep knowledge of their HIV status contained within their immediate circle of care. Healthcare providers respond to women's concerns by charting details prenatally to ensure care continuity during and following childbirth, disguising medication administered during childbirth, and assigning women to a private room postpartum. This inquiry revealed that maternity care practices related to HIV disclosure are not only organized by privacy legislation but are also connected to historical hospital infection control protocols and lingering fear and lack of knowledge about HIV.

Conclusions: This study reveals a number of measures that healthcare providers can implement to mitigate women's concerns about HIV disclosure and draws attention to the limitations of privacy legislation, which permits the sharing of personal health information including HIV status, and maternity care protocols that maintain outdated views about HIV.

Social Sciences: Models of Care and Improving Access
Sciences sociales : Modèles de soins et meilleur accès

SSP9.04

Meeting People Where They're At; Helping Them to Get Where They Want to Go: a Case Study of Harm Reduction Nursing Care and Cross-agency Collaboration

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This presentation demonstrates what nursing care looks like at a supervised consumption service, through a single case study of an individual and their HIV care pathway. It describes the process of building relationship, developing a plan around their goals, and the many small steps taken on the path to a referral and admission to an HIV/ASO respite, Casey House.

The sanctioned Moss Park Overdose Prevention Site opened in July 2018. Now a Consumption and Treatment Service, the site is a space where people can use drugs safely with supports. While the goals of the site are to provide harm reduction services and overdose prevention/response, there are corollary benefits, including access to healthcare from which people who use drugs (PWUD) are often excluded. At CTS, our service users are disproportionately affected by the social, structural, and systemic drivers of HIV.

The subject of this study is an Indigenous woman in her mid-30's, with a history of federal incarceration, who uses injection drugs, has known her HIV+ status for six years, and, at the time of engaging in care at the Moss Park CTS, was not connected to any healthcare services. This abstract describes the six-month process of building a trusting relationship, collaboratively determining plans, and her eventual admission to Casey House, where she was able to have many of her health and social service needs addressed by a specialized HIV care team.

This case highlights the ways in which healthcare providers can meet people where they are at, and, matching their pace, work toward their goals; it builds on other research emphasizing the importance of trust in healthcare outcomes and is a novel contribution in consideration of its setting. This presentation encourages critique of how the healthcare system understands referral pathways, and the facilitators and barriers to care faced by PWUD.

Social Sciences: Models of Care and Improving Access
Sciences sociales : Modèles de soins et meilleur accès

SSP9.05

Multi-sector Collaborative Strategies to Advance Linkage to Care for People Living with HIV Without Health Coverage in Greater Toronto Area, Ontario, Canada

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B**ackground:** In recent years, health and AIDS service organizations in Greater Toronto Area has seen increased numbers of precariously/non-insured people with HIV from newcomers and racialized communities, including many international students and migrant workers. The Committee of Accessible AIDS treatment (CAAT) conducted a community-based research to engage target populations and stakeholders in identifying strategies to address health access barriers. Working with the Gay Men health planning forum and International Students workgroup hosted by the Ontario HIV Treatment Network (OHTN), we utilized various community based participatory research (CBPR) processes to engage multi-sector partners to collaborate in developing initiatives to advance linkage to care.

Method: Guided by GIPA/MIPA principles, meaningful community engagement and integrative knowledge translation, we established the Blue Door clinic with memberships from health, HIV, research and legal service organizations to develop a drop-in clinic for non-insured PHAs. We conducted two focus groups with 20 non-insured PHAs to assess their needs and preferred model of care delivery.

Result: Based on focus group findings and resources availability, we developed a biweekly drop-in clinic for PHAs with precarious or no health coverage. Started with only in-kind contribution from partner agencies, the Blue Door Clinic is staffed with core team of intake case managers, peer navigators, pharmacist, nurses and physicians to provide full HIV primary health assessment, laboratory testing, treatment initiation, case management and referrals to long term stable primary health care. We will present service and evaluation data from our first six months of services to share lessons learnt in advancing access to these precariously insured PHA populations.

Conclusion: CBPR process has been a successful driving force to engage and promote cross sector collaborative strategies to advance access for marginalized PHAs. Long term service evaluation data will provide further evidence base to inform policies to advance universal health care and treatment access.

Social Sciences: Models of Care and Improving Access
Sciences sociales : Modèles de soins et meilleur accès

SSP9.07

Prélib: Evaluating a Newly Launched Canadian Provider of Innovative Internet-Based Services for Self-directed HIV and STI Screening

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B**ackground:** Technology-enabled STI screening paradigms are promising for addressing barriers to testing uptake, yet few such services exist. Prélib, a new clinic in downtown Montréal, aims to provide accessible, convenient, and judgement-free screening by innovatively combining internet-based risk assessment with on-site self-sampling. Being one of the first of its kind, Prélib offers a unique opportunity to evaluate the uptake, feasibility, and acceptability of this model.

Methods: Prélib offers *Chlamydia trachomatis*(CT), *Neisseria gonorrhoeae*(NG), syphilis, hepatitis B(HBV), hepatitis C(HCV), and HIV screening to people age ³15 years according to local guidelines. Uptake, feasibility and acceptability were assessed based on rates of completing online profile, questionnaire, payment and appointment scheduling, and on-site self-sampling steps and HIV/STI prevalence. Sign-in and sampling are self-directed with video instruction, except blood draws performed by a nurse. Results and follow-up instructions (except positive syphilis, HBV, HCV, and HIV results) are communicated securely online. Observational data span from December 1, 2018 (launch) to October 11, 2019. Outcomes and client characteristics were summarized using descriptive statistics.

Results: Prélib registered 1317 profiles, 69.0% of whom attended ³1 appointment (Table 1). Completion rates for each step were >75% (lowest was observed for payment/scheduling). Among 909 appointment attendees, median age was 29.0 [IQR= 24.0-36.0] and median number of partners in the past 2 months was 2.0 [IQR: 1.0-3.0]. Two hundred and two attendees (22.2%) were men who have sex with men, 671 (73.8%) reported condomless anal or vaginal sex, and 213 (23.4%) reported first-time screening. STI prevalence was 6.6%, driven by NG and CT (Table 2). Extragenital NG and CT were most prevalent. There was one HBV infection and no HIV infections.

Conclusions: Prélib demonstrated feasibility and acceptability following launch, based on high screening completion rates and STI prevalence comparable to local clinical practice, and reached many high-risk and first-time testers.

Social Sciences: Models of Care and Improving Access
Sciences sociales : Modèles de soins et meilleur accès

SSP9.08

Implementing Physiotherapy in an HIV Community-Based Care Setting: a Qualitative Study of Perspectives from People Living with HIV and Health Care Providers

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B**ackground:** People living with HIV (PLWH) are living longer with the potential combination of physical, mental, and social health challenges associated with HIV, multimorbidity, and aging, known as disability. In 2017, a new interdisciplinary day health program (DHP) in Toronto, Canada was implemented offering physiotherapy to PLWH and complex health issues.

Objectives: To understand the strengths, challenges, and perceived impact of implementing physiotherapy into a DHP on health outcomes from the perspective of PLWH and health care providers working in HIV care.

Methods: We conducted a descriptive qualitative study using face-to-face semi-structured interviews. We recruited PLWH who had accessed physiotherapy in the DHP and health care providers working in HIV care. Data were analyzed using conventional content analysis.

Results: We interviewed fifteen PLWH and five health care providers. The majority of PLWH identified as men (8/15), with a median age of 57 years, and reported living with a median of seven comorbidities in addition to HIV. Strengths to implementing physiotherapy in the DHP included: co-location of the physiotherapist within the health care team; a tailored approach to physiotherapy care within the context of HIV, fulfilling a need for rehabilitation in the HIV community; and improved access to rehabilitation interventions. Challenges to implementing physiotherapy in the DHP included: a perceived mismatch of expectations between the health care provider and patient, inconsistent patient attendance at clinic visits, and managing complex and diverse patient needs. The perceived impact on health outcomes of implementing physiotherapy in the DHP included: improved physical performance and function, benefits to psychosocial health, and improved coordination of comprehensive care.

Conclusions: Results provide in-depth perspectives on the implementation of physiotherapy into a DHP geared towards PLWH and complex health issues. This model of care provides a foundation of understanding for integrating physiotherapy in other HIV community-based care settings.

Social Sciences: Other
Sciences sociales : Autres

SSP10.01

Empowerment in Women Living with HIV Who Participate in Support Groups: a Qualitative Metasynthesis

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I**ntroduction:** . Currently, only a limited number of group-based interventions promoting empowerment in HIV-positive women (WLWH) have been evaluated. Although many support groups for WLWH appear beneficial to alleviate HIV-related challenges, few have documented their results.

Objective: . The present qualitative metasynthesis aims to characterize empowerment processes, from the perspective of WLWH who have participated in support groups to improve their quality of life with HIV.

Methods. We conducted a qualitative metasynthesis of 13 peer-reviewed articles, published between 1998 and 2019, exploring empowerment and its underlying concepts (community participation, self-esteem, self-efficacy, awareness, etc.).

Results. Three main empowerment processes were identified across studies: building (a) a sense of self, (b) a sense of the other –and; (c) engagement in one's life.

Conclusion. The results of this metasynthesis can inspire future interventions to help women better understand their journey with HIV, develop their empowerment, and exercise better control over their lives.

Social Sciences: Other
Sciences sociales : Autres

SSP10.02

Treatment Needs, Aspirations, and Polypharmacy: a Positive Perspective Among Persons Living with HIV in Canada

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Objectives: Ensuring optimal quality of life among PLWHIV requires, in part, reducing the impact of HIV on their daily lives as they age. We assessed HIV-related attitudes, behaviours, experiences, and treatment satisfaction among PLWHIV in Canada.

Methods: A survey was administered in Canada during May-June 2019 to 120 PLWHIV aged 21-72 on antiretroviral treatment (ART). Data were collected on polypharmacy and attitudes towards ART. Descriptive analyses were performed; statistical significance was set at $p < 0.05$.

Results: Of participants, 78% were white, 72% male, 53% MSM, 20% aged ≥50 years; 30% reported ≥1 non-HIV co-morbidity while 57% reported polypharmacy. While 58% were satisfied or very satisfied with their current treatment, 48% worried about the long-term impact of HIV medication and 58% were open to switching to regimens with fewer medicines if they remained virally suppressed. Individuals with polypharmacy had a higher probability of reporting concerns about potential long-term adverse impact of ART (65% vs.42%, p=0.015) and a lower probability of reporting treatment satisfaction (49% vs. 71%, p= 0.013) as well as optimal self-rated overall health (35% vs. 67%, p<0.001). In total, 75% of PLWHIV had ever switched their medications; of these, top reasons for switching included: to reduce side effects (47%), drug-drug interactions (36%), and to reduce the actual number of pills they took (33%). Besides viral suppression/clinical efficacy of ART, the most important considerations to PLWHIV at the time of the study were minimizing: side effects (46%), long-term impact of ART (46%), and number of HIV medicines (40%).

Conclusions: Polypharmacy was reported frequently and was significantly associated with poorer self-rated health and treatment satisfaction. Close to 3 in 5 participants were open to switching to regimens with fewer medicines. Healthcare providers should carefully consider patients' wishes, concomitant medications, and overall quality of life when starting or switching treatments.

Social Sciences: Programming and Policy
Sciences sociales : Programmation et politiques

SSP11.01

HIV and Physical Activity - Actively Working Together to Make a Change

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Context: Canadian guidelines suggest that adults should participate in 150 minutes of moderate to vigorous intensity weekly physical activity. However, despite the known benefits of exercise, less than 20% of Canadians are reaching this level. People living with HIV (PLWHIV) participate in physical activity at even lower rates. *Realize* undertook a multi-pronged approach to change programming and policy at the organizational level in order to increase physical activity for PLWHIV.

Process: In March 2019, *Realize* held a Think Tank, inviting members of the exercise/physical activity community, and the HIV sector, including PLWHIV. The day involved facilitated discussions of barriers, enablers, and problem-solving leading to ideas for increasing physical activity for PLWHIV, and potential collaboration between sectors. Following the Think Tank, *Realize* developed a *Guide to Increasing Physical Activity* as well as policy briefs on: increasing physical activity for people living with HIV at HIV organizations and gyms, and increasing physical activity for women living with HIV. We are also collaborating with community-based HIV organizations (CBHOs) to tailor ideas that work for them, and their target populations, while we continue to reach out to physical activity organizations to improve access to their services for PLWHIV.

Discussion: In CBHOs, programming and policy change requires capacity-building, relationship-building, and creative thinking. While CBHOs indicate that they are interested in providing tools for physical activity to their clients, time, human resources, and/or know-how are often lacking. In the physical activity sector, the tools and knowledge are available, but connecting with the HIV and for-profit physical activity sector remains a challenge. Participation at the Think Tank from the physical activity sector was limited and for those who attended, their knowledge of HIV was minimal. Continued relationship building with this sector needs to be explored to determine the optimal next steps for program and policy change.

Social Sciences: Programming and Policy
Sciences sociales : Programmation et politiques

SSP11.02

The CanCURE Post-mortem HIV Tissue Biobank: Working Together Towards an HIV Cure

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B**ackground:** Long-lived HIV reservoirs in diverse anatomical sites constitute the major challenge to HIV eradication. However, it is not feasible to obtain tissue from such reservoirs in live participants due to associated risks. Therefore, investigators from the Canadian HIV Cure Enterprise (CanCURE) aim to establish a post-mortem tissue biobank for a detailed mapping and characterization of reservoirs within anatomical sites, with a focus on CD4 T cells and macrophage infection.

Methods: CanCURE investigators partnered with an autopsy pathologist and biobanking platform manager from the Research Institute of the McGill University Health Centre (MUHC) to develop a protocol to conduct rapid autopsies and to store tissues in a secure biobank. The protocol and informed consent documents were reviewed by a member of the CanCURE Community Advisory Board and approved by the MUHC Research Ethics Board.

Results: PLWH with suppressed viral load on antiretroviral therapy, able to provide informed consent and who pass away at either the Royal Victoria Hospital (Glen Site) or Maison d'Hérelle, a community house for PLWH in Montreal, are eligible to undergo rapid autopsy. Within 6 hours of death, the body would be transferred to the MUHC Pathology suite. Surgical incisions would be made to take biopsies from the spleen, liver, lungs, lymph nodes, heart, aorta, gut, bone marrow and ovaries or testes/urethra and brain. Afterwards, incisions would be re-sewn, and the body would be sent to the facility of the person's wish for burial/cremation. Applications will include immunophenotyping by flow cytometry and immunohistochemistry as well as characterization of HIV reservoirs (quantifications by qPCR or DNA/RNA scope and HIV genotyping).

Conclusion: An HIV tissue biobank will enable investigators to localize HIV reservoirs within body compartments, at individual and inter-individual levels. This biobank will facilitate study of deep tissue reservoirs of clinical relevance, having implications for cure strategies.

Social Sciences: Programming and Policy
Sciences sociales : Programmation et politiques

SSP11.03

Project PEER: Uncovering the Impact of GIPA/MEPA and the Wise Practices of Informal and Formal Supports

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Background. In recent years, the number of People Living with HIV working in various ways in HIV-related services and research has significantly increased due to successful integration of the Greater Involvement and Meaningful Engagement of People living with HIV (GIPA/MEPA) principles. Due to GIPA/MEPA being guiding principles, it is unclear how People Living with HIV Engaged in Employment Roles (PEERs) should be appropriately supported. Supports for PEERs, both in scope and efficacy, remain under-studied in HIV research. Project PEER aims to identify available formal and informal support practices for PEERs, including access to supports, successful methods, highlight gaps and difficulties in support delivery, and the role GIPA/MEPA plays in supporting PEERs.

Although PEERs have seen greater inclusion since the introduction of GIPA/MEPA, PEERs remain underutilized and under supported as employees in the HIV sector. By studying the current state of supports for PEERs, recommendations can be made to further the impact of GIPA/MEPA in the workplace.

Methodology/Methods. Two separate surveys were created for the purpose of the study, one for PEERs and the other for Executive Directors of HIV-allied organizations. The surveys were available in both English and French. Both surveys were developed by adhering to the Community-Based Participatory Action Research guiding principles. The Project PEER interdisciplinary research team regularly consulted with people living with HIV and community members who work in HIV-allied organizations to create the survey.

Results/Findings. We will present preliminary data results from the study, which surveyed Executive Directors and PEER respondents at Canadian HIV-allied organizations to discover their insights into support services for PEERs. Practice and policy implications will be considered alongside results of the survey. This presentation builds on last year's pilot project of the same name.

Social Sciences: Programming and Policy
Sciences sociales : Programmation et politiques

SSP11.04

Challenges to Accessing Drug Addiction Treatment: the Perspectives of People Who Use Substances Living in Atlantic Canada

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Many people who use substances (PWUS) seek access to publicly-funded drug addiction treatment programs (e.g. detoxification programs, opioid agonist therapy). Treatment may reduce the frequency of drug use, including injection drug use, which helps to reduce risks of HIV/HCV transmission. Relatively little is known, however, about PWUS' experiences of accessing treatment in the context of Atlantic Canada. Our study explored PWUS' experiences not only of treatment access, but also of experiences after treatment. We conducted fifty-five (55) one-on-one qualitative interviews with people who use substances (PWUS) living in Atlantic Canada. With PWUS' permission, interviews were audiotaped and transcribed, or notes taken. Data were coded and analyzed for themes and sub-themes. Key findings point to numerous challenges to obtaining treatment. Challenges exist at three points in time: when trying to get into an existing treatment program, when in a program (e.g., challenges to retention), and when leaving a program. In many instances these challenges are because of practices and policies of treatment programs that do not 'fit' with the socioeconomic reality of PWUS' lives (e.g., some programs require PWUS to call for intake yet some PWUS do not have access to a phone). Some PWUS reported that they need support after treatment, but there are few supports and services available to them. Several PWUS also indicated that not getting into treatment or not receiving the treatment/support they feel they need, impacted their substance use. Our research highlights the need to understand PWUS' perspectives of what does not work for them in terms of addiction treatment, and to modify programs accordingly. Having appropriate practices and policies within treatment programs is critical to supporting PWUS and reducing the transmission of HIV and HCV.

Social Sciences: Programming and Policy
Sciences sociales : Programmation et politiques

SSP11.05

GetCheckedOnline Ontario?: Exploring Digital STI Testing in a Context of Political-economic Complexity

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B**ackground:** GetCheckedOnline (GCO) is an internet-based sexually transmitted and blood-borne infections (STBBI) testing program available in select regions in British Columbia (BC). GCO has been shown acceptable to a range of patient populations and scalable to different jurisdictions within BC. We are investigating the potential implementation of online STBBI testing in Ontario, focusing on meeting the testing needs of gay, bi, queer, and other men who have sex with men.

Methods: We used institutional ethnography (IE) to investigate how provincial context could shape the introduction of GCO, or a similar online testing model, into Ontario. Data were collected between 06/2019-12/2019. Sources to date included participant interviews (n=20), observations (e.g., community forums on testing), and an analysis of documents pertinent to STBBI testing in Ontario (e.g., Ontario Health Protection and Promotion Act). Participants had expertise in STBBI testing and sexual health services (e.g., public health physicians, nurses, program managers). Data were coded and analyzed iteratively using IE work process mapping.

Results: Local legislation and political factors were salient when exploring online testing in a new provincial context. The Laboratory & Specimen Collection Centre Licensing Act was identified as the main piece of legislation limiting the opportunity for online STBBI testing in Ontario. Participants also discussed how changes in provincial political leadership and the current political-economic landscape of austerity shape health service innovation and expansion. Participants anticipated that if “evidence” of “best practice” together with health economics analyses indicate GCO’s potential cost savings, a “business case” strategy could be leveraged to gain the support of decision makers.

Conclusion: Leadership, legislation, and logics of austerity direct the activities of health service developers and the gathering of “evidence” deemed valuable by decision makers. Our analysis reveals the everyday actualities of health service innovation and expansion in the context of political-economic complexity.

Social Sciences: Programming and Policy
Sciences sociales : Programmation et politiques

SSP11.06

Mitigating the Risky Business of HIV Disclosure Decision-Making in Workplaces

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B**ackground:** People living with HIV are often faced with making complex decisions about whether or not to disclose their HIV status to employers or work colleagues. These study results were drawn from a qualitative evaluation of an online workplace disclosure decision support tool for people living with HIV.

Methods: Participants were recruited through national and local networks of people living with HIV and service providers working in the sector. Using a "think aloud" approach and semi-structured questions, participants were interviewed as they navigated through pages of a decision guide that covered topics surrounding individual and workplace characteristics influencing workplace disclosure. Interviews were audio-recorded and transcribed verbatim. Content analysis identified themes related to experiences of workplace disclosure decision-making.

Results: Fourteen people participated in the interviews; 9 people (56% male) who were living with HIV (mean time since diagnosis was 19 years; range 3-34); and 5 service providers (80% female) who indicated they were not living with HIV. Participants' experiences highlighted the ongoing risks of workplace disclosure of HIV status. Primary concerns focused on 1) confidentiality and protection of privacy; 2) respectful treatment by employers and colleagues; and 3) maintaining employment. Participants shared perspectives about ways to combat risks associated with intentional or unintentional workplace disclosure which included themes of: 1) making intentional decisions whether or not to disclose, when and to whom; 2) taking assertive action to make workplaces aware of requirements for confidentiality; 3) having a caring social circle that is not overly protective; and 4) having strong and enforced legislation and policies that mitigate disclosure risks and build respectful workplaces.

Conclusion: Stigma, discrimination, and lack of education about HIV continue to make disclosure a high stakes decision in many workplaces. Public and workplace education, along with enhanced and enforced legislation and policies that protect workers are required.

Social Sciences: Responding to the Opioid Crisis
Sciences sociales : Réaction à la crise des opioïdes

SSP12.01

Implementing Injectable Opioid Agonist Treatment in an Integrated Health Care Setting: Managing Impacts on the Client Community

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Issue: Injectable opioid agonist therapy (iOAT) is a tool in the continuum of care for individuals with opioid use disorder that involves providing prescription grade opioids to replace illicit street drugs. In 2019, the Dr. Peter Centre (DPC) integrated an iOAT pilot project within a broad range of health care services for people living with HIV and other health and social challenges (including mental illness, disability, trauma, poverty, food insecurity, and lack of stable housing).

Description: The DPC has been evaluating the implementation and effectiveness of iOAT when operationalized in an integrated health care model, including assessing impacts on drug-related harms (e.g. overdose), HIV treatment adherence, health outcomes, and social determinants of health (including housing and income). There are particular considerations for incorporating iOAT into a multi-use health care organization, including how the implementation of iOAT impacts the client community in an integrated health care setting.

Lessons Learned: Aimed towards harm reduction service providers, this presentation will share findings on the impacts of iOAT on therapeutic environments with integrated services. It will discuss key lessons in implementing the service in such environments, such as strategies for communicating about the new service to clients, managing the impact on clients who are not on iOAT, and ensuring a welcoming space for all clients.

Recommendations: iOAT is a crucial strategy for reducing the risk of overdose and HIV transmission for people who use drugs by providing a safe supply, and thus remains an important public health strategy in the context of an urgent overdose epidemic. By sharing perspectives from the planning and implementation stages of iOAT, this presentation aims to encourage the scale-up of this promising safe supply service in integrated care settings across Canada.

Social Sciences: Social, Structural and Systemic Drivers of HIV
Sciences sociales : Moteurs sociaux, structurels et systémiques du VIH

SSP13.01

Loneliness, Social Support, and Sexual Health Behaviours Among Gay, Bisexual, and Other Men who Have Sex with Men (GBM)

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B**ackground:** GBM experience increased loneliness. Given that sexual behaviour is used to alleviate the emotional discomfort of loneliness, the goal of this study was to understand how loneliness relates to social supports and sexual health behaviours, including HIV prevention behaviours.

Methods: GBM were recruited using respondent-driven sampling (RDS) in Vancouver (02/2012-02/2015). Participants completed a computer-assisted self-interview that assessed sexual behavior, social variables, and loneliness. Loneliness was measured using a 6-item Loneliness Scale (alpha=.77) at study enrollment. We examined demographic and sexual behaviour factors associated with loneliness scores using multivariable linear regression applying RDS adjustments.

Results: We recruited 774 participants with a median age of 34, of whom 75.5% identified as White. The analysis showed (see Table) that GBM were less lonely if they reported greater access to social supports (*coefficient*=-.32, $p<.001$) and were gay men who were “out” (*coefficient*=-.97, $p<.001$). GBM who reported a greater number of sex partners in the past 6-months reported higher loneliness (*coefficient*=.01 per sex partner, $p=.009$), as did those who did not use condoms during anal sex over the past six months (*coefficient*=-.54, $p=.005$), and those who participated in receptive anal sex during group sex but did not use a condom (*coefficient*=-.97, $p=.027$).

Conclusion: The results support the link between social supports and less loneliness among GBM. Loneliness was also associated with condomless anal sex and having more sexual partners. These findings suggest that STI/HIV interventions to improve loneliness among GBM may have additional benefits beyond direct mental health improvements, including reductions in STI/HIV transmission/acquisition.

	Loneliness Scale Score			
	Estimate	**95% CI**		**p-value**
Social Support Scale	**-0.32**	**-0.35**	**-0.28**	**<.0001**
P6M Male Sex Partner Number	**0.01**	**0.00**	**0.01**	**0.009**
Being "out" (gay men only)				
No/Still coming out	Ref			
Yes	-0.97	-1.37	-0.57	<.0001
% of Condom Used during Anal Sex				
Ever	Ref			
Never	.54	0.16	0.92	0.005
P6M Group Sex Condom Use Frequency (only if participated in group sex) - Receptive Anal Sex				
Ever	Ref			
Never	.97	0.11	1.83	0.027
No group sex in past 6M	N/A			
P6M Group Sex Condom Use Frequency (only if participated in group sex) - Insertive Anal Sex				
Ever	Ref			
Never	-.39	-1.14	0.36	0.309
No group sex in past 6M	N/A			

Social Sciences: The Health of African, Caribbean and Black Communities
Sciences sociales : La santé des collectivités africaines, caraïbéennes et noires

SSP14.01

Hiv Prevention Among Heterosexual Blackmen in Ontario: the Need to Revisit Provincial Policy

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Ontario has the highest number of HIV infections, and African, Caribbean, and Black heterosexual (ACB) men account for a disproportionate share of HIV diagnoses—in Ontario and Canada. Discourses have interpreted ACB men's vulnerability to HIV as 'self-inflicted'. These discourses have privileged biomedical explanations hinged on behavioural factors including ACB men's poor adherence to condom use, multiple concurrent sexual partnerships and non-adherence to facility-based HIV services. HIV/AIDS policy in Canada have assumed this trajectory, notwithstanding the fact that unique characteristics of the ACB community could provide viable policy options for addressing HIV vulnerabilities and building resilience among this vulnerable population. As part of an Ontario based study called weSpeak, we examined the perspectives of stakeholders from AIDS Service Organizations and heterosexual ACB men on the heightened risk of HIV infection among heterosexual ACB men in London Ontario. Analysis of four focus group discussions (N=24) and thirteen in-depth interviews (N=13) revealed that while service providers perceived HIV vulnerability among heterosexual ACB men as mostly behavioural, there was consensus that HIV services may not be culturally tuned and sensitive to the unique health needs of this population. Heterosexual ACB men indicated the crucial contribution of persistent structural barriers including a disconnect with service providers, stereotypes and stigma that limit their engagement with service providers and other stakeholders in building resilience to HIV. The findings emphasise the urgent need to engage ACB men in the design of specific health policies and strategies aimed at addressing disproportionate vulnerability of HIV infection among this vulnerable population. More broadly, the study makes a strong case for community-centered health policy making in Ontario.

Social Sciences: The Health of African, Caribbean and Black Communities
Sciences sociales : La santé des collectivités africaines, caraïbéennes et noires

SSP14.02

The Care Collective: Increasing HIV Testing among African, Caribbean and Black (ACB) Women in Ontario by Encouraging the Integration of Testing into Self-Care Practices

Keresa Arnold

African and Caribbean Council on HIV/AIDS in Ontario (ACCHO), Toronto, ON

B**ackground:** More than half of women diagnosed with HIV in Ontario in 2017 were African, Caribbean and Black (ACB). This highlights how health access and outcomes for ACB Ontarians are negatively impacted by the social determinants of health, including anti-Black racism. The Care Collective is a community-based, HIV testing campaign developed by the African and Caribbean Council on HIV/AIDS in Ontario (ACCHO). It aims to encourage ACB women to know their status by incorporating testing into self-care practices. The Care Collective has four branches: The Care Salon, The Care Program, The Care Package, and The Care Connection.

Methods: In 2019, focus groups, interviews, stakeholder discussions and online surveys were done with ACB women living with HIV, service providers and community members to determine the campaign's direction. This resulted in the development of The Care Collective, which will be launched with The Care Salon on National Black HIV/AIDS Awareness Day in 2020. Championed by "influencers", interest will be generated through a video on social media, mobilizing women to five salons across Ontario. Implementation will continue by engaging organizations that provide physical, spiritual, and mental care, and offering HIV tests at pre-existing events or programs.

Results: Survey data indicated that 57% of the ACB women had never had an HIV test. The campaign has the potential to increase HIV testing, awareness and knowledge among women. On social media, the campaign will reach significant numbers across Facebook, Twitter, Instagram and LinkedIn. Women involved in the campaign highlighted the far-reaching benefits of centering ACB women in HIV conversations, while promoting holistic health.

Conclusion: With less than optimal HIV testing among ACB women, The Care Collective can significantly increase testing in Ontario, generate a shift in how HIV is discussed, and highlight the need for greater resources and focus on ACB women in HIV programming.

Social Sciences: The Health of African, Caribbean and Black Communities
Sciences sociales : La santé des collectivités africaines, caraïbéennes et noires

SSP14.03

Sociopolitical Contexts of Health and HIV Vulnerability among Heterosexual African Caribbean and Black (ACB) Men in Ottawa

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HIV disproportionally affects people of African descent in Canada and the United States America (USA). They represent a significant number of people living with HIV in Ontario, yet the research on HIV vulnerabilities and resilience of heterosexual Black men (HBM) is almost non-existent in Canada. weSpeak is a 5-year community-based program of research guided by Socio-environmental and Intersectional theories, which mobilize self-identified heterosexual ACB men to engage in community responses to HIV using mixed methods. weSpeak program went beyond focusing on individual HIV vulnerability to examining the structural determinants of the HIV vulnerabilities among heterosexual ACB men. The study involves four Ontario cities: Toronto, Ottawa, London, and Windsor to identify and understand factors that affect their behavior and literacy towards sexual health. This paper focused on the African, Caribbean, and Black men who were based in the Ottawa community, and outlines the secondary data analysis of weSpeak qualitative data, retrieved from focus groups and interviews. The analysis of this research paper addresses the sociopolitical conditions of health and HIV-related vulnerability among Heterosexual ACB men. Sixty-three people participated in in-depth individual interviews and focus group discussions in Ottawa. The transcribed verbatim and Nvivo software using thematic analysis guided the data integration and analysis of this study. It will address the sub-themes of class/ socioeconomic status/employment, racism/white supremacy, policies, systemic barriers and media representation defining Black identity are key contexts that overlap with one another to have an impact on the health of heterosexual ACB men. The findings point to the need for strategies targeting HIV prevention and meaningfully engaging ACB community formulation of policies, social and political decisions that affect HIV vulnerability and create barriers to healthcare access for heterosexual ACB men.

Social Sciences: The Health of African, Caribbean and Black Communities
Sciences sociales : La santé des collectivités africaines, caraïbéennes et noires

SSP14.04

Undoing the Unseen: Stigma and its Reduction Among African, Caribbean, and Black Women Living with HIV in Ontario

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B**ackground:** There is little evidence of interventions that aim to address the intersecting forms of marginalization in order to promote health equity for African, Caribbean and Black (ACB) women living with HIV (WLWH) in Ontario

Objectives: Develop and pilot test a stigma reduction intervention that addresses intersectional stigma and is tailored to the needs of ACB WLWH.

Methods: In-depth interviews (n=20) were conducted with ACB WLWH and their service providers (n=18). A mixed sampling method was used for recruitment to ensure a diverse sample of respondents was obtained. Respondents were screened for eligibility prior to participating. All interviews were digitally recorded, transcribed and analyzed using NVIVO software. A thematic analysis was conducted to identify, analyze and report the themes that emerged in the data

Preliminary Results: 20 ACB WLWH participated: 50% of African ethnicity, 40% Caribbean, and 10% other. At baseline, the average time spent in Canada was 16.1 years and mean age 41.2 years. Although a majority of participants (85%) had completed high school and some postsecondary education, 50% had an income of $30,000 or less. Preliminary data showed high scores among women on the Berger Stigma Scale.

Themes:

1. Stigma: Many women experienced stigmatization from health care providers and the health care system, and feared negative impacts on their quality of life
2. Resources: Women identified that there was a lack of adequate programming that provided both practical and therapeutic supports to help navigate internalized stigma throughout the life cycle.

Conclusions: Many women experience internalized stigma and require more comprehensive, wrap-around health care provision. These findings suggest that ACB WLWH need an intervention that combats intersectional stigma using a culturally relevant approach. The proposed intervention is presented here and along with an evaluation of its acceptability, feasibility, and satisfaction. Plans for a province-wide and national roll-out will also be discussed.

Social Sciences: The Health of African, Caribbean and Black Communities
Sciences sociales : La santé des collectivités africaines, caraïbéennes et noires

SSP14.05

The Dangers of Mass Media and Pop Culture in Relation to HIV Vulnerability: a Case Study of Young African, Caribbean and Black Canadian (ACB) Men in Windsor, Ontario

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Mass media and pop culture have contributed to unhealthy sexualities and irresponsible sexual behaviours among young people. Sex is most often presented as a casual activity without any consequences, rarely sexual risks are discussed. The portrayal of sexual activities has contributed to unhealthy sexual attitudes among youth. The consequences are compounded among young ACB men because of their being stereotyped as irresponsible, reckless and incapable of dealing with issues affecting their health. This paper focuses on the role of mass media and pop culture on young ACB men's vulnerability to HIV in Windsor, Ontario. Based on 3 focus group discussions, involving a total of 32 self-identified ACB men (19 youth-16-24 years and 13 adults- 40 years plus), the paper explores ACB men's views on Black identity, vulnerability, sexuality and resilience. The results suggest that mass media and pop culture have immense influence on risk sexual behaviours among young ACB men. For instance, Participants noted that musicians influence how men are supposed to act through their music and expectations. Older ACB men expressed their inability to control what their children have access to, which they suggest may influence young men's vulnerability to HIV. In addition, the negative portrayal of Black men in the media defines and shapes how participants conduct themselves and perform what is displayed as a version of their reality. Of great omission in pop culture and mass media is the failure to teach young people the risks and responsibilities associated with sexual activities and the importance of having positive role models whom they can learn from.

Social Sciences: The Health of African, Caribbean and Black Communities
Sciences sociales : La santé des collectivités africaines, caraïbéennes et noires

SSP14.06

HIV Vulnerability and Resilience among Heterosexual African, Caribbean and Black (ACB) Men in Windsor, Ontario: a Perspective of Service Providers

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The ACB people make less than 5% of the Ontario population but account for more than 20% of all HIV positive people. Straight ACB men account for over 60% of these infections. Despite the negative portrayal of straight ACB men and their sexual lives, the weSpeak data from Windsor suggest that these men face a lot of challenges that affect their vulnerability and resilience to HIV. This paper explores the perspectives of service providers in relation to HIV vulnerabilities, resilience and health promotion among straight ACB men living in Windsor. One focus group discussion with 6 service providers from various organizations working with ACB people in Windsor, Ontario was conducted. The aim was to understand service providers' perspectives on ACB heterosexual men's vulnerability and resilience to HIV in relation to masculinity and to suggest ways of promoting sexual health among ACB communities. The result suggests that racialization of HIV and social pressures intersect and overlap to influence vulnerability of straight ACB men. Also due to masculinity norms, most ACB men fail to admit their vulnerable circumstances as the result they normally don't seek health services. Lastly, participants noted that ACB men lack the right tools (information and education) to cope and sustain themselves with everyday challenges, which push them into risky behaviours. Given the complexity of issues faced by straight ACB men, HIV prevention strategies need to include conversations on race and its impact on health. There was also emphasis on the need and importance of informal safer spaces for ACB men to talk about their issues. Lastly, collaboration and coordination of community organizations and the available services was suggested to be important and necessary.

Social Sciences: The Health of African, Caribbean and Black Communities
Sciences sociales : La santé des collectivités africaines, caraïbéennes et noires

SSP14.07

African, Caribbean and Black (ACB) Women Taking Control Over HIV/AIDS and Sexual Health: a Sustainable Model for Culturally Responsive and Evidenced Based HIV Prevention

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Background: HIV continues to disproportionately affect African, Caribbean, and Black (ACB) women in Toronto. In 2014 - 2015, 51% of all new HIV infections in Ontario occurred among ACB women (OHTN, 2016) in 2016-2017 that number rose to 54.3% (OHESI, 2017). The African, Caribbean and Black Women Taking Control over HIV/AIDS and Sexual Health initiative is a three-year project that is part of a larger HIV Program at Women's Health in Women's Hands CHC (WHIWH CHC) and focuses primarily on treatment, support, and care for women living with HIV (WLWH).

Method: Applying an evidence-based approach and an established train-the-trainer model, WHIWH has trained 20 Community Health Ambassadors (CHAs) to engage ACB women living in Toronto. The promotion of safer sex and healthy relationships is the foundation of 180 workshops being conducted in ACB communities. The program partners with 30 community organizations in order to deliver HIV prevention workshops to front-line and support staff and a critical component of the program is the provision of anonymous point-of-care (POC) testing and linkage to care for those diagnosed with HIV.

Results: Outcomes from January 2017 to date include; 77 HIV prevention workshops, 64 capacity building workshops for service providers and community members, 99 outreach activities reaching 10000+ ACB women, and 462 ACB women received their status through our HIV anonymous POC testing initiatives.

Conclusion: The CHA program is a culturally responsive population-based intervention that is working to decrease the disproportionate rates of HIV transmission among ACB women living in Toronto. It is an example of a comprehensive approach to the "Care Cascade" which includes HIV education, testing, diagnosis and linkage to primary healthcare as part of a holistic continuum. This program is one of many at WHIWH CHC supporting progress towards 90-90-90 and empowering communities to lead the way.

Social Sciences: The Health of African, Caribbean and Black Communities
Sciences sociales : La santé des collectivités africaines, caraïbéennes et noires

SSP14.08

Spirituality and Religious Practices as a Means of Supporting the Wellness Outcomes of African, Caribbean, and Black Women Living with HIV in Winnipeg, Manitoba

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African, Caribbean and Black (ACB) women in Manitoba are over-represented in HIV infections relative to other racial groups (Government of Manitoba, 2018). Epidemiological evidence suggests that coming to Canada from an endemic country with higher HIV prevalence is the most commonly reported primary HIV transmission risk, including heterosexual contact (PHAC, 2009).

As life expectancies of those who have access to HIV treatment and care extend past a decade or more, HIV has become increasingly regarded as a chronic condition, a long-wave event and illness to be managed over a life-time, that is interposed with moments of 'acute' intensity—eruption and abatement of symptoms, spread and remission of malignancies, fluctuating episodes of illness, wellness and disability which often affect HIV individuals including ACB women in chronic ways (Sangaramoorthy, 2018; Nixon, Hanass-Hancock, Whiteside & Barnett, 2011). The changes imposed by HIV signal a diminished quality of life and the need to utilize adaptive behavior.

Accordingly, spirituality and religion are often used as a base on which African, Caribbean and Black women stand to negotiate and transcend adverse conditions that cause stress (Harvey, Johnson & Heath, 2013; Szaflarski, 2013). Likewise, spirituality or religion serves as a personal and communal source of solace and hope, and it is used as a strategy for coping with chronic illnesses like HIV/AIDS. Spirituality/religion is also considered an important cultural strength within ACB community and is particularly relevant to health and well-being, including health promotion and health recovery (Harvey et al., 2013; Arrey, Bilsen, Lacor & Deschepper, 2016). This study will illustrate the current state of knowledge on spirituality/religion in HIV among HIV-positive ACB women in Manitoba and outline the ways and how ACB women use spiritual or religious activities to cope with their illness and support their wellness outcomes.

Social Sciences: The Health of African, Caribbean and Black Communities
Sciences sociales : La santé des collectivités africaines, caraïbéennes et noires

SSP14.09

The Relationship Between Demographics, Health Needs and the HIV Care Cascade Outcomes

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B**ackground:** The HIV epidemic persists in Ontario, but the demographics of those affected have shifted over time. These increases may be partially due to migration patterns, but a disproportionate burden of HIV transmission may be shifting to specific sub-populations.

Methods: The OHTN Cohort Study (OCS) is a longitudinal cohort of people living with HIV. In this analysis, we examined the relationship between the year of HIV diagnosis and various demographic and social characteristics. Comparing the demographics of new diagnoses in Ontario, the OCS appears to be representative of current demographic patterns in the epidemic.

Results: Over time, the HIV epidemic in Ontario has become more ethnically diverse and correlated to certain social determinants. In 1980-1987, over 80% of OCS participants diagnosed were White, compared to under 60% in participants diagnosed from 2013-2017. The percent of Black participants more than doubled (3% in 1988-1992 to 20% in 2013-2017) and participants with Other race doubled (11% in 1988-1992 to 23% in 2013-2017). There has been an increase in experiences of Early Childhood Adversity (ECA >=3; 24% in 1988-1992 to 32% in 2013-2017) and a decline in earnings (% earning more than $30k; 50% in 1980-1987 to 41% in 2013-2017). The shifting demographic and syndemic characteristics of the epidemic impact performance in the HIV care cascade. In the OCS, we found a relationship between Black race, ECA, and income, and lower engagement in the stages of the care cascade from an HIV visit, to ARV treatment, and viral suppression.

Conclusions: We find that a growing complexity of social factors in people living with HIV and a relationship between those factors and the care cascade and achievement of viral suppression. To prevent HIV transmission and achieve optimal health for people living with HIV, the structural drivers of health inequity must be addressed.

Social Sciences: The Health of African, Caribbean and Black Communities
Sciences sociales : La santé des collectivités africaines, caraïbéennes et noires

SSP14.10

Law and Un/Detectability Uncertainties: Social Organization of HIV health Care for African Immigrants Living with HIV in Toronto

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B**ackground:** ACB migrants living with HIV face health disparities that increase their burden of living with HIV and impact their effort of access and engagement in HIV care. Despite these gaps, HIV response in Canada currently consists of legal and healthcare policies and practices couched in scientific knowledge of undetectable HIV viral load. This study explored the tensions and disconnections existing between the realities of accessing and engaging in HIV care and how the institutional complex of HIV care is currently organized and determined the material health outcome and consequences for ACB migrants living with HIV.

Methods: The study employed Institutional Ethnography to conduct 20 in-depth interviews with ACB migrants living with HIV in Toronto and 15 in-depth interviews with health care providers and policy/decision makers involved in the delivering of HIV care in Toronto. Textual analysis of regulations, policies, legislations, and guiding principles connected to HIV care and healthcare in general were also conducted. Mapping of institutional orders s and social relations that organize and coordinate HIV healthcare and treatment was done

Results: Several issues emerged as presenting barriers to HIV care and attainment of undetectable viral load and optimal health for ACB migrants living with HIV. Immigrant status is a determinant and barrier to accessing HIV treatment and care. Physician fee-for -service and lack of health coverage of uninsured services and prescription drugs such HIV medication and treatment of co-infections impact quality of HIV care. Healthcare providers lack of awareness of health risk factors specific to ACB migrants. Legal practices associated with HIV non-disclosure impacts patient-provider relationship.

Conclusion: Understanding and addressing the multiple and intersecting structural and socio-cultural factors that significantly impact access and engagement in HIV care and social determinants of health will help improve HIV care and health outcome of ACB migrants living with HIV.

Social Sciences: U = U
Sciences sociales : I = I (indétectable = intransmissible)

SSP15.01

Messaging Transmission: A Qualitative Analysis of Factors in the Uptake of U=U in Canadian Public Health Messaging

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B**ackground:** A scientific consensus has emerged that an HIV-positive person with an undetectable viral load does not transmit the virus sexually, commonly known as “undetectable equals untransmittable” (U=U). However, the uptake of this science in Canadian public health messaging has been inconsistent. This study identified factors that may facilitate or delay knowledge transfer and exchange for public health messaging.

Methods: Public endorsements and communications of the U=U message by 61 Canadian HIV and public health organizations between 2016 and July 2019 were compiled and analyzed. Organizations were grouped into discrete categories: national HIV organizations, local and regional HIV organizations by region, and public health authorities. U=U adoption within each category was charted over time. Qualitative one-on-one interviews were held with nine participants from organizations purposively sampled across multiple time periods of adoption. Interview transcripts were analyzed using framework analysis.

Results: Patterns of U=U adoption varied with region and type of organization, with national HIV organizations being the first category of organizations to reach 50% adoption, followed by local and regional HIV organizations in Ontario. Public health authorities were later to adopt than HIV organizations. Qualitative interviews identified factors that played a role in the timing of adoption, including perceived relevance to target audiences of the organization, congruence with pre-existing organizational values, institutional agility, risk tolerance, and the influence of funders, policy-makers and thought leaders.

Conclusion: The findings point to strategies that can leveraged by researchers, knowledge brokers and public health practitioners to expedite the uptake of new research in public health messaging. These include knowledge translation to reframe research in alignment with the interests and values of organizations and their audiences, identifying and altering characteristics of an institution’s culture and decision-making processes that may hinder adoption of new research, and leveraging the influence of thought leaders.

Social Sciences: U = U
Sciences sociales : I = I (indétectable = intransmissible)

SSP15.02

"1 + 1 = 0 / HIV + Effective Treatment = 0 Sexual Transmission": the Process of Creating a Simple Message About U=U Without Saying U=U in Quebec, Canada

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Context: Robust data prove that maintaining an undetectable viral load leads to no HIV sexual transmission, also known as "Undetectable = Untransmittable (U=U)". Community organizations who are members of COCQ-SIDA asked for the creation of a clear and assertive message in French that would help explain U=U to people living with HIV (PLWHIV) and to the general population.

Description: An *ad hoc* committee was created with 5 organizations and 5 COCQ-SIDA employees in September 2018. The committee reviewed existing campaigns and expressed the desire to depersonalize the message by referring to the virus and the treatment, not the person. Of 20 messages created, 6 variations were selected for testing with two focus groups (N=17) in June 2019. Participants were recruited through newspaper ads in an effort to reach the general public. Each FG started with an update on the science regarding U=U, then participants were asked their perception of U=U, the six messages (content) and the graphics (look).

Lessons learned: The fears expressed by participants in both focus groups (resistance to the phrase "impossible to transmit", adherence to the traditional condom message) underlined the challenge of communicating complex scientific information to the general public. In parallel, the member groups and PLWHIV were becoming more accepting of the U=U (I=I in French) message, and the message we developed was slightly difficult for them to integrate. It is clear that more time needs to be allocated to explaining the science to the uninitiated, but that parallel processes need to take place with those more familiar with the subject. Attention also needs to be paid to "competing" messages.

Next steps: We need to evaluate the understanding and integration of the "1+1=0" message among our members and partners and combine those results with other learning from this project into future message development activities.

Social Sciences: U = U
Sciences sociales : I = I (indétectable = intransmissible)

SSP15.03

Undetectable Equals Untransmittable (U=U) Campaign Message Among Priority Populations in Ontario: Insights from the Canadian HIV Stigma Index

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B**ackground:** In 2016, the Prevention Access Campaign launched the Undetectable = Untransmittable (U=U) campaign in order to promote awareness of Treatment as Prevention (TasP) and reduce HIV stigma. U=U indicates that people living with HIV who are on antiretroviral therapy (ART) and have achieved and maintained an undetectable viral load cannot sexually transmit their HIV infection to others. Increasing targeted U=U education and awareness campaigns may have a significant impact on reducing HIV stigma and improving overall health outcomes among priority populations in Ontario.

Methods: Peer researchers administered a series of questions about U=U to 380 adults living with HIV who participated in the Canadian HIV Stigma Index, a community-led study that gathers data about the location, context, and intersectionality of HIV stigma.

Results: A majority of participants have heard of the U=U message (72.9%), and of those who are aware of the message, 87.2% accept the validity of the U=U statement. Higher levels of awareness of U=U was significantly associated with identifying as Caucasian, gay, and having greater than a high school education ($p<0.05$). Greater awareness of U=U was also significantly associated with those who indicated having a higher social support system, lower levels of internalized stigma, and excellent overall health ($p<0.05$).

Conclusions: Our results provide evidence of how the U=U message may vary by specific intersectionality factors, and that this knowledge may help to inform how to design and implement targeted HIV prevention strategies in order to reduce stigma and promote TasP among priority populations.

Social Sciences: Young People's Health
Sciences sociales : Santé des jeunes et adolescents

SSP16.01

Addressing An Unmet Need: Young Women ≤30 Years Living with HIV (Often Overlooked and Highly Vulnerable)

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B**ackground:** Approximately 100/2000 HIV patients at the Southern Alberta Clinic (SAC), are not virally suppressed and ~41% of these patients are women. 14.5% of these are women ≤30 years, and struggle with both medication adherence and social stability. Independently, several young women approached program staff about joining a clinic-run support group, expressing difficulties adjusting to HIV care and feelings of isolation. These women described feeling 'overlooked' because they did not fall into the usual demographic populations for support groups accessed through the community. Physical and sexual abuse, refugee status, drug addiction, and mental health issues had previously been documented. In order to be responsive to the needs of these vulnerable women, with perinatal or risk-based HIV, we established a support group to help improve their emotional, social and physical health.

Methods: 20 women ≤30 years have been contacted, usually in-person at their clinic visit. Monthly meetings are facilitated by a registered nurse, social worker, and clinical support facilitator. Topics for discussion are selected by the participants resulting in themes such as relationships, disclosure, and mental health.

Results: To date, 14/20 participants expressed interest, and regular attendance of a pilot group (n=6) has been established. Appreciation of engaging with other women living with HIV was universally expressed. Simultaneous use of gentle facilitation and free discussion with the aim of promoting mutual support, improving self-esteem and quality of life while addressing stigma and interpersonal violence was implemented. This led to increased viral suppression (n=2), clinic attendance (n=6), and completion of lab work among attendees (n=6).

Discussion: We plan to facilitate ongoing monthly support sessions and eventually expand this approach to other underserved, vulnerable populations such young men struggling to deal with HIV. Success will be gauged by their own historic data such as viral load, quality of life, social stability and employment.

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