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CONGRÈS DE

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A Boomerang Effect: From HIV to SARS-CoV2 and Back again

**Effet boomerang : Du VIH au
SRAS-CoV2 et retour**

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ORAL ABSTRACTS / EPOSÉS ORAUX

Basic Sciences Oral Abstracts / Sciences fondamentales exposés oraux

60 Retinoic Acid Transcriptionally Reprograms Macrophages for Increased Permissiveness to HIV-1 Replication

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Abstract The intestinal environment facilitates HIV-1 replication/viral reservoir (VR) persistence via mechanisms involving the gut-homing elixir retinoic acid (RA), which transcriptionally reprograms CD4+ T-cells for increased HIV-1 infection. Consistently, colon-infiltrating CD4+ T-cells carry viral reservoirs (VRs) in people living with HIV-1 (PLWH) receiving antiretroviral therapy (ART). Intriguingly, integrative infection in colon macrophages (MΦ), a pool constantly replenished by circulating monocytes, represents a rare event in ART-treated PLWH, thus raising new questions on HIV-1 permissiveness/persistence in gut-residing MΦ during ART. We hypothesized that the rarity of VRs in colon-infiltrating MDM of ART-treated PLWH is likely not the consequence of their resistance to infection, but rather due to their rapid turn-over in vivo. Thus, we aimed i) to explore the effect of RA on HIV-1 replication and ii) to identify molecular mechanisms by which RA modulates HIV-1 replication in monocyte-derived MΦ (MDM) in vitro.

MDM generated in the presence/absence of RA in vitro were analyzed by FACS for CD4, CCR5 and CXCR4 expression, and exposed to replication-competent and single-round VSV-G-pseudotyped HIV constructs. HIV replication was measured by ELISA and FACS, as well as nested real-time PCR using specific primers for early/late reverse transcription and integrated HIV-DNA. RNA-Sequencing was performed using the Illumina technology. Validations were performed by RT-PCR or ELISA.

Results demonstrated that RA promotes HIV-1 replication in MDM by facilitating CD4/CCR5-mediated HIV entry and post-entry mechanisms. Gene set variation analysis and HIV interactor NCBI database interrogation revealed profound RA-mediated transcriptional reprogramming associated with effector functions, metabolic/signaling status, and HIV-1 dependency/restriction factors. Functional validations and pharmacological antagonism demonstrated the contribution of RA-modulated mTOR/S6K and Wnt/ β -catenin/TCF4 pathways.

These results support a model in which macrophages in RA-rich tissues represent important HIV-1 targets via mTOR/S6K and Wnt/ β -catenin/TCF4-dependent mechanisms that can be therapeutically targeted.

338 Anti-HIV-1 Gene Cassette Activity and Toxicity Expressed in Lymphocytes is Influenced by Interplay Between shRNA Sequence Identity and Human RNA Pol III Promoter Selection

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Introduction: Gene therapy using a combination of antiviral RNAs could induce long-term remission from HIV-1 infection. Short hairpin (sh)RNAs designed against conserved regions of the HIV-1 genome exploit the RNA interference pathway to precisely target HIV-1 RNA for degradation. Their sequence and pairing with an RNA polymerase III promoter (7SK, U6, or H1) must be tested to ensure that the resulting promoter-shRNA cassette is safe and effective. Here, we optimized top-performing shRNAs and investigated a possible mechanism for promoter-dependent shRNA efficacy.

Methods: We assessed short-term efficacy of cassettes by cotransfecting shRNAs with the HIV-1 molecular clone pNL4-3 in HEK 293T cells, then measuring viral production. Long-term efficacy was assessed by expressing cassettes from lentiviral vectors in SUP-T1 cells before infection with HIV-1 NL4-3 to compare replication kinetics. We probed cassette cytotoxicity with cell metabolism and competitive cell growth assays. Guide strand expression was quantified with Northern blots.

Results: 7SK, U6, and H1 promoter efficacies were tested with one shRNA in clinical trials and one targeting a conserved sequence in the HIV-1 Gag coding region. shRNAs expressed from 7SK and U6 were best able to inhibit viral production. We screened other top-performing shRNAs and identified three that significantly delayed NL4-3 replication when expressed from H1, and even more so when expressed from 7SK and U6 promoters. Cell growth was negatively impacted by 7SK and U6-containing cassettes, but the extent varied depending on the shRNA identity. One shRNA impacted cell growth less than others, suggesting that these effects are partly sequence specific. 7SK and U6 promoters produced the most guide strands, indicating that cassette efficacy is partly dictated by transcriptional efficiency.

Conclusion: 7SK and U6 generate the most effective shRNAs, and the shRNA that impacted cell growth the least is the best molecule from our panel to pursue for future gene therapies.

38 Reducing Inflammation as HIV Prevention: Effects of Aspirin on T Cells, NK Cells, and mTOR Phosphorylation

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Introduction: HIV prevention ranges from condoms to biomedical interventions, such as pre-exposure prophylaxis (PrEP), for which uptake is lower in women. Therefore, women need more HIV prevention options. HIV-exposed seronegative (HESN) individuals remain uninfected despite repeated exposures. Some HESN cohorts have observed decreased Tcell and increased natural killer (NK) activation, without affecting the overall immune response to infections. In a pilot clinical study, 6-weeks daily low-dose (81mg) anti-inflammatory acetylsalicylic acid (ASA/aspirin), reduced female genital tract Tcell activation (CD4+CCR5+Tcells) by 39%, suggesting aspirin may induce a broader HESN-like phenotype. Here, we present aspirins effect on NK and Tcells.

Methods: Blood was collected from 40 HIV-uninfected women from Nairobi, Kenya before and after 6-weeks aspirin. NK and T-cell phenotypes/functions were assessed by flow cytometry. Tcell cytokine production/proliferation to peptide pools (CEF (Cytomegalovirus, Epstein Barr, Influenza) and HPV (Human Papilloma Virus)), and NKs by degranulation/cytokine production to PMA-ionomycin/K562s.. Titres of total/influenza-specific IgG were assessed by ELISA. mTOR phosphorylation was assessed by flow cytometry.

Results: Following 6-weeks aspirin, there was increased IFN γ , IL-2, and TNF α in memory CD4+Tcells, and TNF α in memory CD8+Tcells in response to HPV peptides. There was no change with CEF and no impact of either pool on proliferation. Total blood IgG decreased(p=0.027), though influenza-specific IgG did not. While aspirin didn't alter NK cell function, there was an increased proportion of activation marker NKp46(p=0.025) and co-expression of CD38+NKp46+NKG2A+(p=0.045), a similar NK phenotype observed in HESN individuals. Exposure to ASA in vitro reduced mTOR phosphorylation in CD4+Tcells by 10%(p=0.021), which correlated with reduced CCR5 expression(p=0.0184).

Conclusion: This study showed that 6-weeks daily ASA reduced HIV target cells and induced a HESN-like phenotype characterized by reduced Tcell and increased NK activation without impacting the recall antigens response potentially through inhibiting the mTOR pathway supporting ASA's further assessment as a new HIV prevention tool.

154 BCL-2 antagonist in combination with a latency reversal agent as a strategy to eliminate latent HIV-infection

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The “kick and kill” approach of eradicating HIV requires the reactivation of virus-infected long-lived cells harboring integrated latent HIV proviruses known as “viral reservoir (VR)”. Latency reversing agents (LRAs) can reactivate latent viruses to enhance their immune recognition but are inefficient at sensitizing reactivated cells to death. Recent evidence reveals that latently HIV-infected cells have an intrinsic resistance to cell death responses modulated by the BCL-2 pro-survival protein. Previously, we showed that a novel bivalent SMAC mimetic (SM) reactivates latently infected CD4+ T cells by engaging the non-canonical NF- κ B pathway and induces a modest reduction of VR in humanized mice. In this study, we examined if a novel BCL-2 inhibitor alone or in combination with the SM could augment the sensitivity of latently-infected cells to cell death. Using HIV latency models of CD4+ T cells, our in vitro results reveal that the BCL-2 inhibitor alone possesses selective toxicity towards latently-infected cells (2D10, JLat 10.6 CD4+ T cell models of latency) but is not sufficient to reactivate efficiently integrated proviruses. Sequential treatment of the SM and BCL-2 inhibitor can additively reduce the frequency of latently-infected cells via the activation of caspase-3. In primary CD4+T cells infected with a dual reporter virus, the combination of BCL-2 inhibitor with SM reduces the frequency of latently-infected cells by ~30%. In a study with humanized CCST mice (Colas et al, Stem Cell Reports, in press), combined treatment of the Bcl-2 inhibitor and SM significantly reduces viral load and shows a trend towards a reduction of p24+CD4+T cells in the spleen and liver. Overall, these results provide the rationale to evaluate the therapeutic potential of combining LRAs with Bcl-2 antagonists in the context of VR elimination strategies in preclinical humanized mouse models.

177 Combination Therapy with MG1 and SMAC Mimetics to Selectively Kill HIV Infected Cells

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Introduction: The main challenge in finding an HIV cure is the HIV reservoir of latently infected CD4+ T-cells and persistently infected macrophages. These cells are phenotypically indistinguishable from their healthy counterparts and thus difficult to target. We have demonstrated that latently/persistently HIV infected cells are susceptible to killing by the interferon sensitive oncolytic rhabdovirus virus MG1. The efficiency of MG1 killing can be potentially increased by using small pro-apoptotic molecules called second mitochondria derived activators of caspases (SMAC) mimetics. SMAC mimetics have been shown to increase oncolytic virus killing in several different cancer models and have also been shown to selectively kill HIV infected cells.

Methodology: First, latently HIV infected J1.1 cells and OM10.1 cells were infected with MG1-eGFP in low volume for 2 hours, and then treated with SMAC mimetics. In subsequent experiments, cells were treated with SMAC mimetics for 24 hours and then infected with MG1. Flow cytometry was done 24 and/or 48 hours post infection to assess cell viability via PI staining, and caspase 3/7 activity via FLICA staining.

Results: For latently infected J1.1 cells, either concurrent SMAC mimetic treatment and MG1-eGFP infection or 24-hour pre-treatment with SMAC mimetic followed by MG1 infection resulted in significantly greater killing than with MG1 alone. This increased killing was accompanied by increased casp3/7 activation. For the latently infected OM10.1 cells, only SMAC mimetic treatment followed by MG1 infection resulted in increased cell death and increased caspase3/7 activation.

Conclusion: This project identifies a potential novel cure strategy by employing combination therapy with oncolytic viruses and SMAC mimetics to eradicate the viral HIV reservoir and demonstrates the importance of cell type in evaluating such strategies.

337A polyvalent HIV-1 virus-like particle formulation leads to reactivate a significant portion of the latent HIV-1 reservoir within CD4+ T cells in individuals receiving combination antiretroviral therapy during chronic infection

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BACKGROUND/AIMS

The persistence of a latent HIV reservoir within the population of CD4 T cells fails combined antiretroviral therapy. The elimination of this latent viral reservoir is a crucial aspect of current strategies for an HIV-1 cure. Our previous non-infectious virus-like particle (VLP) specifically reactivated the latent viral pool in HIV-specific CD4+ T cells of individuals treated with antiretroviral therapy during acute HIV infection. In this study, we propose that this VLP can also reactivate the latent viral pool during chronic HIV infection, regardless of subtype B or D.

METHODS

This study examined 15 subtype B and 17 subtype D HIV-1 infected individuals receiving cART after 6 to 20 years. We used our previous VLP called ACT-VEC to induce transcriptional activity in provirus. Ex vivo co-culture experiments were used to assess its efficacy in patients treated in the chronic stage of infection. We measured antigenicity, latency reversal, and virus diversity using IFN- γ ELISpot, qRT-PCR, and deep sequencing respectively.

RESULTS

ACT-VEC was highly effective in reactivating latent HIV-1 in CD4 T cells of chronic patients on cART, releasing 100 to 1000-fold more HIV-1 into culture supernatant than other stimulations with common recall antigens, HDAC inhibitors, and PKC agonists. Even after 6-20 years of cART, ACT-VEC reactivated 1000-fold more HIV-1 latent virus than in patients treated during acute infection. The amount of HIV-1 released with ACT-VEC correlated directly with the infectious virus produced from the same patients' activated PBMCs. A high proportion of latent infectious viruses with genetic diversity were released by ACT-VEC latency reversal as determined by Nanopore and Illumina sequencing of viral genomic RNA.

CONCLUSION

ACT-VEC effectively reactivates latent HIV-1 in patients with chronic infection, targeting HIV-specific CD4+ T cells. Even after 20 years of cART, ACT-VEC reactivated the large proportion of HIV-1 reservoir in both Ugandans and Canadians.

160 The role of Viral protein R in HIV-1 infection and the establishment of viral reservoirs in vivo

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Antiretroviral therapy (ART) lowers plasma viral load to undetectable levels. However, in individuals under ART, integrated proviruses remain transcriptionally silent but replication competent, in multiple cellular compartments, named viral reservoirs. Here, we investigate the possible role of HIV accessory viral protein R (Vpr) in limiting the establishment of transcriptionally silent proviruses in repressive regions of the chromatin, a condition prone to the establishment of viral reservoirs. Previous studies have shown that Vpr hijacks the Cullin4-DDB1/DAF1 E3 ubiquitin ligase complex to target DNA repair factors (e.g., HLTf, UNG2) and epigenetic modulators (e.g., HUSH and NuRD complexes). Such events lead to G2-M arrest and apoptosis in dividing cells. In addition, Vpr enhances viral replication in terminally differentiated myeloid cells. Our study assesses for the first time the role of Vpr in the establishment of productive infection and viral latency during infection of Bone-Marrow-Liver-Thymus (BLT) humanized mice. NOD/SCID/IL2r γ null mice were engrafted with human fetal liver hematopoietic stem cells (CD34+) and autologous thymus, promoting maturation and education of T-cell progenitors. BLT mice were infected with a wild-type (WT) or a Vpr-defective HIV-1 strain for 4 or 11 weeks. Preliminary results suggest that absence of Vpr reduces the overall infection efficiency in BLT mice as well as during ex-vivo infection of splenic hCD4+ T isolated from uninfected mice. In contrast, as previously reported, no difference was observed upon infection of primary human CD4+ T cells or T-cell lines. Furthermore, in 2 out of 6 infected mice, Vpr-defective virus reverted to a WT sequence and displayed a WT phenotype, indicating that there is a selective replication advantage for maintaining Vpr function in BLT mice. Current efforts on understanding the cellular and molecular mechanisms underlying Vpr-mediated enhancement of HIV infection in vivo is likely to shed light on novel host restrictions that HIV-1 must overcome to persist.

124 Dendritic cells and IL-7 drive the proliferation and prolonged survival of antigen responsive, HIV latently infected CD4+ T cells.

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Background

Antiretroviral therapy (ART) can suppress HIV viremia to undetectable levels in PLWH, but upon ART withdraw, viremia rebounds, indicating the establishment of latently-infected cells even under prolonged ART. Naïve and memory CD4+ T cells recirculate through secondary lymphoid organs, where they continuously contact dendritic cells and are exposed to high IL-7 levels that are required for their long-term maintenance. In this study, we asked whether similar mechanisms can be co-opted to maintain latently-infected T cells under ART.

Methods

We generated a dual-fluorescent HIV reporter system that allows for longitudinal assessment of HIV latency in T cells. We performed a series of co-culture studies with autologous dendritic cells to address how various viral antigens modulate the proliferative/survival responses of latently-infected T cells by flow cytometry. Our experimental readouts included the expression of Gagp24, survival markers and cell-proliferations in primary T cells.

Results

Different DC:T cell ratios caused varying HIV reactivation and T cell proliferation in time course studies, and we identified that some latently-infected T cells can maintain proliferation without detectible virus reactivation. We show that the addition of viral antigens can trigger a proliferative response in a subset of latently-infected T cells, and that DC:T cell contacts drove the expression of pro-survival molecule survivin. Cell-cell contact with DCs results in the differentiation of latently-infected T cells from a predominantly central memory (TCM) to an effector memory (TEM) phenotype, which is consistent with T cell subsets that harbor replication competent provirus in PLWH. Interestingly, DC-mediated proliferation was driven by both MHC-II:TCR interaction and co-stimulatory signaling. Finally, IL-7 signalling induces strong expression of the anti-apoptotic protein bcl-2 in latently-infected CD4+ T cells.

Conclusion: Our study demonstrates that antigen-specific signals through DC:T cell interactions, along with IL-7 signals, can collectively contribute to the maintenance of latent T cell pools under ART suppression.

17 Temsavir prevents the immunoregulatory activities of shed gp120

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Downregulation of CD4 by HIV-1 protects infected cells from antibody-dependent cellular cytotoxicity (ADCC). However, productively-infected cells shed gp120 which can then bind CD4 at the surface of uninfected bystander CD4+ T cells, thus sensitizing them to ADCC mediated by HIV+ plasma. Soluble gp120-CD4 interaction on multiple immune cells also triggers a cytokine burst. CD4 engages gp120 within a cavity located at the interface between the inner and outer domains of gp120 known as the Phe43 cavity. The FDA-approved small molecule temsavir acts as an HIV-1 attachment inhibitor. Temsavir binds under the Env β 20- β 21 loop and within the Phe43 cavity, therefore preventing Env-CD4 interaction. We recently demonstrated that temsavir alters the overall antigenicity of Env by affecting its processing and glycosylation. Here, we show that temsavir also blocks the immunomodulatory activities of shed gp120. Temsavir prevents gp120 shed from productively-infected cells to interact with uninfected bystander CD4+ cells. This protects uninfected bystander CD4+ T cells from ADCC responses mediated by HIV+ plasma and prevents a gp120-induced cytokine burst. Mechanistically, this depends on the capacity of temsavir to reduce soluble gp120-CD4 interaction at the surface of bystander cells, but also to control the levels and the antigenicity of shed gp120. Consistent with its ability to decrease Env proteolytic cleavage, we show that temsavir significantly reduces gp120 shedding. In agreement with temsavir's impact on Env antigenicity, gp120 released from temsavir-treated cells exhibits a reduced capacity to interact with CD4 and to coat primary CD4+ T cells. Altogether, our study reveals how temsavir block the immunomodulatory activities of shed gp120 that are dependent on CD4 interaction. Our results suggest that the clinical benefits provided by temsavir could extend beyond blocking viral entry.

72 A Peculiar Transcriptional Signature of Th17-Polarized CD4+ T Cells during Chronic HIV Infection despite Antiretroviral Therapy

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Th17 cells are rapidly depleted during HIV infection and contribute to HIV persistence, whereas their frequencies and functions are not fully restored by antiretroviral therapy (ART). However, molecular mechanisms underlying these alterations are understudied. RNA-sequencing (Illumina Technology) was performed in freshly FACS-sorted Th17 cells (CD4+CD25-CD45RA-CCR6+) from aviremic ART-Treated (ST, n=6), elite controllers (EC, n=3) and uninfected controls (HD, n=5). Th17 cells from STs vs. HDs showed alterations in the TGF- β 1/smad2-3 pathway, indicative of impairments in their generation and stability. Other pathways related to Th17 differentiation were downregulated in STs vs. HDs, including p38, PTEN, RUNX1, NFAT, and Notch. Consistently, the RORC2 repressor NR1D1 was upregulated, while Semaphorin 4D, a RORC2 inducer, decreased in STs vs. HDs. Migration markers CCR9, α 4 β 1, CXCR5 and CCR7 decreased in STs vs. HDs, indicating diminished migration potential towards the gut and inflammatory tissues. Metabolic alterations were observed in STs vs. HDs, comprising decreased expression of mitochondria genes, energy metabolism, and PI3K-AKT-mTOR pathway. Furthermore, in STs, sphingolipids synthesis and amino acid transport were downregulated. In STs vs. HDs, decreased expression of transcription factors RUNX1, NFAT, and CREB, along with lower CDK6 expression and increased expression of EED and TP53BP1, are associated with increased HIV persistence/latency. Similarly to the ST group, Th17 cells in ECs showed decreased expression of Semaphorin 4D and downregulated PI3K-AKT-mTOR pathway. Decreased synthesis of sphingolipids and amino acid transport and higher expression of NR1D1 were also observed in Th17 cells from EC and ST vs. HD donors. Furthermore, compared to HD donors, Th17 cells in ECs showed a unique metabolic profile related to an increase in the TCA cycle, fatty acid β -oxidation, cellular response to hypoxia, and decreased inositol phosphate metabolism. The Th17 transcriptional profiling revealed impaired differentiation, stability, migration, and metabolic transcriptomic signature linked to chronic HIV infection despite viral-suppressive ART.

220 Liver CD4+ T cells of SIV-infected rhesus macaques display exhaustion and lipid metabolism gene profile

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Since the 1990s, HIV-replicating cells have been described in the liver causing diseases and comorbidities. Understanding liver alterations related to CD4+ T cell infection is poorly addressed so far.

Herein, rhesus macaques (RMs) were infected with SIVmac251 (20 Animal Infectious Dose 50, AID50). On the day of euthanasia, liver cells were mechanically isolated from both infected and non-infected RMs. Phenotypic analyses were performed by flow cytometry. The levels of viral DNA were quantified by qPCR. Gene profile of sorted CD4+ T cells was assessed by RNA-sequencing and bioinformatic analyses.

We found that hepatic CD4+ T cells from healthy RMs express higher levels of CCR5 compared to those in the blood. Furthermore, consistent with CD4+ T cell depletion characterizing Aids, hepatic memory CD4+ T cells were also severely depleted in SIV-infected RMs. Interestingly, by analyzing the expression of CCR5 and programmed cell death 1 (PD-1), a marker of exhaustion, PD-1+CCR5- and PD-1+CCR5+ expressing CD4+ T cells were significantly higher in SIV-infected RMs compared to healthy RMs. Consistent with viral detection, transcriptomic analyses revealed inflammatory and interferon (IFN) gene signatures. Most importantly, our study revealed mitochondrial gene alteration supporting defective oxidative phosphorylation (OXPHOS). Whereas glycolytic gene machinery was not overexpressed in CD4+ T cells, our results highlighted a lipid metabolism signature that is increased in SIV-infected RMs.

Given the role of PD-1 in reprogramming T cell metabolism, our results provided new insights related to hepatic CD4+ T cell gene metabolism profiles during viral infection.

28 Phenotype of SIV-infected cells in blood and tissues using a new single cell approach

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CD4+ T cells are the main cellular targets of both HIV and SIV. However, the cellular subsets in which SIV actively replicates in blood and tissues from non-human primates (NHPs) remain largely unidentified. We developed a novel flow-based approach, using two different antibodies specific for the p27 SIV protein (2F12 and 4B7), to enumerate and phenotype productively infected cells during untreated SIV infection. The assay (SIV-Flow) can detect a single infected cell in a million CD4+ T cells and has a large dynamic range (1 to 100,000 infected cells/106 CD4+ T cells).

We measured the SIV reservoirs in isolated CD4+ T cells from multiple tissues (blood, spleen and different lymph nodes) from 4 SIVmac239-infected ART-naïve rhesus macaques using SIV-Flow antibodies in an 18 parameters cytometry panel, as well as total SIV DNA and cell-associated (ca) SIV RNA quantifications.

We measured higher frequencies of p27+ cells in the spleen (mean 1,887 cells/106 CD4+ T cells) compared to blood and lymph nodes (means 842 and 848 cells/106 CD4+ T cells, respectively). Frequencies of p27+ cells measured by SIV-Flow correlated with total SIV DNA and ca-SIV RNA levels in blood ($p=0.02$; $p=0.0014$; respectively) and partially in the inguinal ($p=0.051$; $p=0.02$; respectively) and mesenteric lymph nodes ($p=0.04$; $p=0.07$; respectively). Analyzing all tissues together, when comparing with the general population, the effector memory cell subset was highly enriched in p27+ cells (enrichment 35.7 fold), and in stem-cell memory cells (enrichment 7.5 fold). Overall, compared to their uninfected counterparts, p27+ cells expressed higher levels of several cellular markers including PD-1 (enrichment 4.1 fold), CD69 (enrichment 2.9 fold), Ki67 (enrichment 5.6 fold) and CTLA-4 (enrichment 2.6 fold).

Our results suggest that activated CD4+ T cells in the spleen are important contributors to SIV replication in chronically infected NHPs.

140 The Adjuvant Role of Nef Inhibitors Towards a Cure for HIV/AIDS

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Despite key advancements in combating HIV-1, a functional cure has yet to be realized. This is primarily driven by the HIV accessory protein, Nef, and its interactions with host proteins that collectively promote HIV immune evasion and contribute to its pathogenicity. Through its interaction with Src family tyrosine kinases (SFK), Nef initiates and misdirects a signalling cascade that results in major histocompatibility complex class I (MHC-I) cell surface down-regulation and sequestration at the trans-Golgi network. By extension, this reduces the presentation of HIV-derived epitopes in the context of MHC-I to limit immune recognition and represents a major impediment towards the development of HIV cure strategies. We therefore performed an *in silico* docking screen and identified a small molecule inhibitor (H3-1) of the Nef-SFK interaction. Indeed, H3-1 counteracted Nef-dependent MHC-I down-regulation in preliminary studies to improve cell surface MHC-I expression in primary human CD4⁺ T cells without associated cytotoxicity. We then assessed H3-1 as a Nef inhibitor in a transgenic mouse model of a HIV/AIDS-like phenotype. Following addition of H3-1 to *ex vivo* culture, transgenic mouse CD4⁺ splenocytes displayed marked enhancement of (i) total cell surface MHC-I and (ii) cell surface MHC-I complexed to a model epitope. Mass spectrometry revealed that H3-1 was rapidly cleared *in vivo* after oral and intraperitoneal administration. This *in vivo* instability is likely due to the peptidic nature of H3-1 and therefore, we have used organic synthesis to generate a peptidomimetic panel of H3-1 analogues with improved biostability. H3-1 analogues displayed improved *ex vivo* plasma stability and future studies will assess *in vivo* plasma stability in transgenic mice. The synthesis of biostable H3-1 analogues capable of resisting Nef-mediated MHC-I down-regulation represents an important step forward in evaluating the role of Nef-SFK inhibitors as adjuvants within a HIV/AIDS functional cure.

173 IFN- α 14 modulates antiviral restriction factors, reduces HIV-1 viral load, and HIV-related hyperactivation.

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Interferon-alpha (IFN- α) is known to induce strong antiviral activities. Humans express 12 different IFN α subtypes which activate downstream signaling and induce antiviral responses in a differential manner. Although IFN- α subtypes signal through the same receptor they induce different host restriction factors. Studies have shown that not all IFN- α subtypes induce an adequate antiviral response to every viral infection. We have shown that IFN- α subtypes differentially control HIV-1 infection and modulate immunity in a differential manner. The clinically available IFN- α 2 subtype has not been highly effective in reducing viral loads during HIV-1 infection and the endogenous production of IFN- α 2 is associated with CD8+ T cell hyperactivation and dysfunction in HIV-1 patients. In contrast, we showed IFN- α 14 reduced HIV-1 viral load significantly in infected MT4C5 cell line as well as in the TKO-BLT humanized mouse model. In addition, three weeks of treatment with IFN- α 14 significantly reduced markers of CD8+ T cell-related dysfunction such as hyperactivation, exhaustion and apoptosis comparable to healthy control levels. Also, low levels of these markers were maintained even after the treatment was withdrawn. Although IFN- α 14 treatment reduced the activation profile and proliferative capacity of total CD8+ T cells, it did not change their ability to secrete cytokines or degranulate upon stimulation *ex vivo*. Thus, the IFN- α 14 subtype may be more clinically effective than the IFN- α 2 subtype. Although IFN- α 14 subtype treatment reduced viral load both *in vitro* and *in vivo* significantly, the question of what restriction factors might play an important role persist.

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157 A Methods Comparison for Detecting and Quantifying Human Proteins in the HIV Envelope

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The surface of HIV displays just one viral protein (glycoprotein 120) but is also decorated with numerous host-derived proteins. Virion-incorporated host proteins have gained much interest in the field because of their preserved functionality and ability to bind to their cognate receptors, thus, altering HIV infectivity and homing. Different laboratory techniques with varying sensitivities are available to detect and quantify these HIV-incorporated host proteins. In this study, we are providing a comparison of sensitivities and detection thresholds for three commonly used techniques, to provide useful information to researchers studying virion-incorporated proteins.

Herein we compared results from conventional virus capture assays and Western blotting (on whole virus lysates), alongside novel techniques in flow virometry (FVM). More specifically, we employed a unique FVM protocol developed by our lab to detect and quantify HIV virion-incorporated proteins on native virions that were stained directly from culture supernatants. We compared these techniques for their ability to detect four host proteins (CD14, CD38, CD59 and CD162) known to be incorporated at high levels into HIV virions. For this study, we generated four pseudovirus stocks, each expressing one host protein by co-transfecting viral expression plasmids and host protein expression plasmids in HEK293T cells. To provide a controlled comparison, all techniques were employed in parallel on identical viral stocks with normalized virus inputs.

Our data show that each technique has advantages and caveats for detecting virion-incorporated proteins, with different thresholds for detection. Additionally, there is a large variance in total virus input required for reliability of each technique, which may be an important consideration when determining which technique to use in future biological studies. Flow virometry detection provided distinct advantages because it enabled highly reproducible quantification of virion-incorporated proteins (number of proteins per virus particle), with the lowest sample requirements and reagent costs, and minimal hands-on experimental time.

51 HIV-1 Vpu downregulates CD48 to escape NK cell mediated Antibody Dependent Cellular Cytotoxicity

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Natural Killer (NK) cells play an important role in host antiviral response against HIV-1, notably by mediating the elimination of infected cells by Antibody Dependent Cellular Cytotoxicity (ADCC). This relies on the capacity of their Fcγ receptor to recognize antibody-coated infected cells and to stimulate NK cells effector functions. These functions are also tightly regulated by an array of activating, co-activating and inhibitory receptors recognizing molecules present at the surface of target cells. To escape NK cell responses, HIV-1 accessory proteins Nef and Vpu downregulate the ligands of several NK cell activating/co-activating receptors, including NKG2D, DNAM-1 and NTB-A. NTB-A belongs to the Signaling Lymphocyte Activating Molecule (SLAM) family of receptors, which was associated with improved NK cell effector functions. Vpu-mediated downregulation of NTB-A was shown to prevent NK cells degranulation and ADCC responses. Considering the role of SLAMs in stimulating NK cell functions, we evaluated whether HIV-1 modulated CD48, the ligand of another SLAM receptor, 2B4. Using a panel of infectious molecular clones defective or not for Nef and/or Vpu expression, we found that Vpu downregulates CD48 from the surface of infected primary CD4⁺ T cells. This modulation depends of Vpu's transmembrane domain and dual phosphoserine motif. Using a NK cell redirection assay, we observed a functional redundancy in the ability of NTB-A and 2B4 receptors to promote NK cells degranulation. Lastly, we confirmed the role of Vpu-mediated CD48 downmodulation in the capacity of infected primary CD4⁺ T cells to evade ADCC responses. Our results support the redundancy of NTB-A and 2B4 in stimulating ADCC against HIV-1-infected cells. Taken together, these results improve our understanding of how HIV-1 succeeds in evading ADCC responses by showing that Vpu must downregulate multiple SLAM ligands to protect infected cells from this response.

306 The Transcriptional Repressor REV-ERB Regulates HIV-1 Replication and Outgrowth in CD4+ T-Cells

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Background: The Th17-polarized CD4+ T-cells are enriched in viral reservoirs (VR) in people living with HIV-1 (PLWH) receiving viral-suppressive antiretroviral therapy (ART). We previously demonstrated that the transcriptional signature associated with HIV permissiveness in Th17 cells includes the circadian clock components/regulators BMAL1 and RORC2, the last identified as a positive regulator of HIV replication/outgrowth. REV-ERB, another circadian clock component, acts as a transcriptional repressor of BMAL1 (a transcriptional activator binding to E-boxes in the HIV LTR) and RORC2 (the master regulator of Th17 polarization). Thus, we hypothesized that REV-ERB restricts HIV-1 transcription/replication and effector functions in Th17 cells via mechanisms involving BMAL1/RORC2 repression.

Methods: Memory CD4+ T-cells of HIV-uninfected individuals were exposed to replication-competent and single-round HIV-1 constructs upon α CD3/ α CD28 triggering in vitro. Early and late reverse transcripts, and integrated HIV-DNA were quantified by nested real-time PCR. HIV-1 replication was quantified by FACS and ELISA. A quantitative viral outgrowth assay (VOA) was performed using memory CD4+ T-cells of ART-treated PLWH. The REV-ERB agonist SR9011 and the antagonist SR8278 were used to modulate REV-ERB activity. Gene expression was quantified by real-time RT-PCR.

Results: HIV-1 replication boosted by TCR activation in memory CD4+ T-cells coincided with a significant downregulation of REV-ERB and an increase of RORC2 mRNA expression. SR9011 decreased RORC2 and IL-17A but not BMAL1 expression and reduced HIV-1 replication in vitro and viral outgrowth in cells of ART-treated PLWH. Despite the reported REV-ERB antagonism-mediated increase in HIV transcription in cell line, SR8278 reduced HIV replication in vitro and viral outgrowth in part via decreasing the expression of the HIV-1 co-receptor CCR5.

Conclusions: These results provide evidence that REV-ERB modulates HIV replication/outgrowth in CD4+ T-cells by mechanisms involving at least in part the repression of RORC2 and/or CCR5 expression, thus identifying REV-ERB as a novel therapeutic target in HIV cure/remission strategies.

Supporting Document

CAHR abstract NYC 2023-01-11.pdf (could not be inserted)

103 Understanding the Viral and Host Transmission Fitness Factors Associated with Different Modes of HIV-1 Subtype B Transmission

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Human immunodeficiency virus 1 (HIV-1) is transmitted by contact with infected fluids, including genital secretions or blood. As a result, HIV-risk groups include heterosexual individuals (HET), men-who-have-sex-with-men (MSM), people who inject drugs (PWID) and people who received contaminated blood transfusions (CBT). When HIV-1 is transmitted, typically only a single clone, or in rare cases, a small number of HIV-1 clones establish the new infection, creating a transmission bottleneck for the virus. The viral clone that establishes infection is called the transmitted/founder (T/F) virus. Specific traits that permit successful transmission have not been well characterized.

This project aims to determine transmission fitness between T/F viruses from different transmission routes through in vitro competitions. Subsequently, phenotypic assays were used to analyze the contribution of select factors to transmission fitness. Competitions on human cervical tissues suggested that tissues favored T/F viruses over chronic viruses and glycosylation might play a role in the process. We also found that T/F viruses from HET and MSM groups often outcompeted T/F viruses from PWID group in T helper type 1 (Th1) cells, while viruses from HET and PWID groups dominated infection in Th17 cells. T/F viruses showed different phenotypic characteristics between different transmission routes and from chronic viruses. T/F viruses from HET group required more stringent cellular co-receptor conformations to enter susceptible cells compared to others. Furthermore, T/F viruses exhibited more rapid cell entry than chronic viruses. However, there is no significant difference in envelope expression level across T/F virus groups and chronic viruses, which indicates that differences between T/F and chronic viruses in this study are more likely due to envelope structure or glycosylation patterns/levels. This project will establish the key viral phenotypes contributing to successful virus transmission to inform the design of a robust anti-HIV vaccine and will help the improvement of antiretroviral therapy strategy.

292 Support for an HIV Reservoir Origin for Persistent Low-level Viremia During ART

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Historically, persistent low-level viremia (pLLV) during ART had been attributed to incomplete antiretroviral adherence/absorption or drug resistance, but new evidence indicates it can originate from the reservoir. We are investigating the potential reservoir origin of plasma virus in an individual with pLLV.

Longitudinal plasma and a recent PBMC sample are being analyzed using sequencing, phylogenetics, and the intact proviral DNA assay (IPDA) to elucidate the reservoir origin of pLLV.

The participant, who has a subtype A or CRF01 AE infection, was diagnosed with HIV in 2003 and initiated ART in Oct 2006. With the exception of two “blips”, pVL was suppressed until February 2020, after which 30 consecutive pVL were detectable (between 50-709 copies/ml) despite receiving 4 active drug classes. No adherence concerns were noted and the presence of drug in plasma was confirmed by mass spectrometry. Drug resistance genotyping of 12 plasma samples during the pLLV revealed an essentially clonal sequence with no resistance mutations, that was distinct from prior genotypes. Bulk sequencing of 5' and gp41 regions confirmed that the pLLV was clonal with occasional limited diversity. To date, 47 proviruses have been single-genome-amplified from PBMC. Of these, two were genetically intact and the remaining 45 were predominantly 3'-defective. One of the intact proviruses matched the pLLV sequence across all query regions. Moreover, it (and the pLLV) shares a unique deletion in the 5' IPDA probe site, allowing sequence-specific quantification of its abundance in the reservoir. We plan to reconstruct within-host HIV evolutionary history from pre-ART plasma, allowing us to infer pLLV age and lineage origin.

Results to date suggest that the reservoir cell harbouring this intact provirus could be a member of a clonally-expanded population that is fueling pLLV. Combining detailed single-genome-sequencing with customized IPDA and within-host HIV dynamics analyses can help elucidate the reservoir origins of pLLV.

15 HIV sequence diversity is impacted by variation at CHD1L and HLA class I loci in a South African population

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HIV viral load (VL) is a predictor of disease progression and transmission, therefore, restriction of VL is key to reducing the amount of people living with HIV (PLWH) and AIDS. VL is variable among individuals and their genetics, particularly in the HLA region, contribute to this variability. HIV escape from HLA restriction is well described and viral mutations can counteract the protective effect of HLA alleles. A genome-wide association study of HIV VL in individuals of African ancestry identified a locus on chromosome 1, near the protein coding gene chromodomain helicase DNA binding protein 1 like (CHD1L), that has a novel association with control of HIV replication. However, not all individuals carrying protective alleles in this locus maintain low VL. In addition, the regions' impact on viral evolution has not been investigated. To address this, we conducted an analysis in 148 PLWH from South Africa with both human and viral sequence data available. Logistic regression was used to test the association between HIV amino acid variants in reverse transcriptase (RT), protease (PR), gag, and nef with host alleles near CHD1L and in HLA. We observed associations between the CHD1L variants rs77029719, rs7519713, rs59784663 and rs73004025 with codon 248 of HIV RT and between CHD1L variants rs7519713 and rs77029719 with codon 18 of HIV gag. These associations are consistent with viral escape from CHD1L pressure. In addition, we observed associations between HLA B*81 and HLA C*18 with RT codon 4 and HLAB*58 with RT codon 196. We report on a viral escape mutation scan, in a South African population, and show evidence of selective pressure by HLA and variants near CHD1L on RT and gag. Our findings provide new evidence of host genetic variation impacting viral evolution in a population highly affected by HIV.

90 Single Cell Transcriptomics Delineate Divergent Localization Of Tissue-Resident Memory T Cells Across The Human Cervical Mucosa

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The cervical mucosa is the primary barrier of the female reproductive tract where tissue-resident memory T (TRM) cells are crucial for optimal localized protection against sexually transmitted infections (STIs) and regulation of the local mucosal milieu. TRM subsets are conventionally characterized by surface expression of the C-type lectin CD69 and/or the integrin CD103, while their functional profiles in human cervical mucosa remain unclear. Our preliminary flow analysis showed that CD45+ immune cells and CD69+CD103+ cells were more frequently observed in the ectocervix.

Here, we used single cell RNA sequencing (scRNAseq) to construct transcriptomic profiles of 9,000 individual cells on the mucosal wall from the ectocervical biopsy and endocervical cytobrush samples. We identified 11 cell types; macrophage and epithelial cells were more frequently observed in the ectocervix, whereas lymphatic endothelial cells, MAST, and pDC were dominant in the endocervix. T and B cells were distributed evenly across the cervical mucosa. By further profiling subclusters of 2,855 T cells expressing CD3D gene, we confirm high expression of the CD69 gene markers and a high proportion of cell expressing T follicular helper cell-related genes. CD4+ Treg cells were concentrated in the ectocervix. Of four distinct CD8+ TRM subpopulations, the subset with GZMB+IFNG+ phenotypes were preferentially localized in the ectocervix, with upregulated energy metabolism-associated gene pathways, while the other three subsets were more confined to the endocervix.

Taken together, this work provides a valuable resource for deciphering the heterogeneity of the immune cells and TRM subsets in the cervical mucosa and a better understanding of their existence and functions is important for optimizing effective vaccines as well as new therapeutic agents against STIs.

234 The Role of CEACAM1 in HIV Pathogenesis

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HIV-1 induced immune 'exhaustion' is marked by sustained and upregulated expression of various inhibitory receptors which play a role in dampening protective immune responses. Therefore, identification and blockade of inhibitory molecules that mediate T cell exhaustion during chronic HIV-1 infection, is a viable strategy to enhancing immune-directed clearance. Recently, Carcinoembryonic Antigen related Cell Adhesion Molecule 1 (CEACAM1), was identified as a negative regulator of T-cell responses in murine models of cancer and inflammatory disease. During chronic HIV-1 infection, CD4 and CD8 T-cells co-expressing CEACAM1 and its ligand TIM-3 exhibited the most dysfunctional responses, suggesting a role for CEACAM1 in HIV-1 pathogenesis. Therefore, we hypothesized that interactions between CEACAM1 and its ligands on HIV-specific T-cells, inhibits their responses and allows viral persistence. To investigate our hypothesis, we characterized CEACAM1 expression on CD4 and CD8 T-cells from HIV-1+ donors with various degrees of viral control and treatment status. Furthermore, we quantified and compared HIV-1 pro-viral DNA between CEACAM1+/- CD4 T-cells from treated and untreated chronically infected donors. Finally, we measured HIV-Gag specific CD4 and CD8 T-cell proliferation and IFN γ production, in the presence of CEACAM1 binding antibody, 18/20. We found that frequency of CEACAM1+CD4 T-cells was elevated during untreated HIV-1 infection (HIV-: 7.045%, acute: 25.66%, chronic: 22.51%) but reduced after treatment (chronic/treated: 12.31%). Differential enrichment of HIV DNA in CEACAM1-CD4 T-cells (76.23%) from untreated donors and in CEACAM1+CD4 T cells (90.04%) in treated donors was evident. Finally, CEACAM1 binding resulted in ~50% reduction in HIV-specific T-cell proliferation and IFN γ production. Together, our data suggests a complex but tuneable function for CEACAM1 during HIV-1 infection. Future work will elucidate the mechanism of 18/20 antibody function, and role of observed changes in killing of HIV-1 infected cells. Validation of this approach would suggest that targeting CEACAM1 may have immunotherapeutic potential during HIV-1 infection.

208 TIGIT Engagement Impairs Antiviral Effector Functions of a Subset of CD8+ T cells

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A persistent latent reservoir in long-lived CD4+ T cells is the main obstacle to eradicating HIV-1 infection. Chronic HIV-1 infection functionally alters CD8+ T cells through upregulation of immune checkpoint (IC) receptors such as TIGIT (T cell immunoreceptor with Ig and ITIM domains). Expression of IC receptors can result in impaired cytolytic activity and failure to suppress viral replication. Therefore, blocking IC receptors could be an adjunct therapeutic approach targeting the HIV reservoir in eradication strategies.

This study employed TIGIT engagement and blockade on CD8+ T cells from people living with HIV (PLWH) to test how TIGIT expression affects T cell function. We tested TIGIT engagement on CD8+ T cells from PLWH in non-specific redirected cytotoxicity assays and tested the impact of TIGIT blockade on HIV antigen-specific CD8+ T cells.

For PLWH with circulating CD8+ T cell cytotoxicity >10% in redirected killing assays, TIGIT engagement reduced cytotoxicity in 8/14 cases, showing that TIGIT engagement impairs killing by CD8+ T cells from some PLWH. About 20% of subjects tested had strong interferon-gamma (IFN)- γ responses against HIV Gag and/or Nef peptides (>1000 spot-forming units/10⁶ peripheral blood mononuclear cells). Stimulation of HIV-specific CD8+ T cells with peptides in the presence of TIGIT-blocking monoclonal antibody increased CD8+ T cell degranulation and IFN- γ production in certain individuals. Thus, generalized and HIV-specific effector functions of CD8+ T cells from a subset of PLWH are inhibited by TIGIT expression.

These data show that TIGIT blockade can improve antiviral effector cell function in certain PLWH. Identifying features of the subset of responsive CD8+ T cells will help direct blockade therapy to those PLWH most likely to benefit. Supported by CIHR.

68 Autophagy inducer spermidine and alpha-ketoglutarate supplementation are effective in restoring protective T-cell immunity in people living with HIV-1

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Background: Our data have shown that anti-HIV-1 T-cell immunity in people living with HIV-1 (PLWH) could be improved through a better use of autophagy, a key catabolic process allowing cells to diversify their nutrients sources to optimize energy production. However, although we were able to boost autophagy in PLWH with the AMPK inducer AICAR, it was not always possible and often partial when compared to elite controllers (EC). EC display optimal T-cell protection against HIV-1 despite years of infection. Therefore, it is critical to find new ways to induce energy metabolism in the aim of fully rescuing T-cell immunity against HIV-1 in every PLWH regardless of sex, aging, and antiretroviral therapies (ART). Here, we aimed to test in PLWH the impact of two anti-aging and anti-inflammatory drugs, the autophagy inducer spermidine and alpha-ketoglutaric acid (KG).

Methods: We assessed the impact of spermidine and KG treatments on energy-dependent T-cell immunity against HIV-1 in PLWH (EC and ART-treated patients with or without CD4 restoration; ART-treated patients also included men, women, and elderly individuals). Briefly, we assessed mitochondrial respiration capacity/energy production for all conditions with Seahorse flux analyser and anti-HIV-1 immunity by flow cytometry. In this context, polyfunctionality, IL-21 production, and cytotoxic activity have been determined respectively in anti-HIV-1 CD4 and CD8 T-cells.

Results: Our data confirm full rescue of energy-dependent T-cell immunity in ART-treated patients regardless of sex and aging, both with spermidine, KG and spermidine/KG co-treatment. When considering the immune non-responders, who represent treated patients with no CD4 restoration, we found that only spermidine/KG co-treatment was effective in ensuring an optimal improvement of their anti-HIV-1 T-cell functions.

Conclusions: This work confirm that it may be possible in all PLWH, including in immune non-responders and elderly individuals, to boost their anti-HIV-1 T-cell immunity with spermidine/KG supplementation.

213 Combating the HIV/TB Co-infection Syndemic: Testing a Novel Mucosal Adenoviral Tuberculosis Vaccine in Naïve and HIV-Infected Humanized Mice

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HIV and Tuberculosis (TB) co-infection place an immense burden on health care systems as they act in synergy to worsen disease prognoses. TB is the most common cause of death in people living with HIV (PLWH) and in turn, HIV is the most significant risk factor for progressing from latent to active TB disease. While HIV and TB are endemic in sub-Saharan Africa, they also disproportionately affect marginalized populations in Canada. Unfortunately, the only licensed TB vaccine, BCG, does not protect from adult pulmonary TB and is not recommended for PLWH. Thus, the development of novel TB vaccines, which are safe and effective in PLWH, remains an urgent global necessity. We have found that humanized mice (hu-mice) are ideal models to research this as they can be successfully infected with HIV, TB and HIV/TB and recapitulate human disease pathology. The immunogenicity of a next-generation respiratory mucosal (RM) trivalent chimpanzee adenoviral-vectored vaccine (Tri:ChAd:TB) was investigated in hu-mice to determine whether it protects from M.tb infection and overcomes immune suppression in HIV-infected hu-mice. When immunizing naïve hu-mice, a trend of increased M.tb-specific CD4+ T cells producing IFN γ and TNF α in the lungs and spleen was observed. Vaccinated hu-mice challenged with M.tb exhibited significantly reduced lung mycobacterial burden, tissue dissemination and lung pathology. HIV-infected hu-mice that were subsequently immunized and challenged with M.tb led to a decreased trend in mycobacterial load in the lungs and spleen compared to their unvaccinated counterparts, indicating that the vaccine may be able to offer protection against TB when co-infected with HIV. These findings demonstrate the protective potential of the RM Tri:ChAd:TB vaccine against TB disease for PLWH. In the future, we will repeat our findings and test this vaccine in antiretroviral treated HIV-infected hu-mice to increase clinical significance in the context of current therapeutics.

278 Considerations for Quantitative Analysis of HIV Target Cells in Foreskin Tissue: Effect Of Cryopreservation on CD4+ T Cell Markers in Foreskin Tissues

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Background: The foreskin is a primary site of HIV acquisition in heterosexual men. However, the biological basis of HIV susceptibility in foreskin tissue remains incompletely understood. Current techniques to analyze immune cell populations in the foreskin rely on processing tissue immediately after circumcision, which can be logistically difficult. We sought to determine whether viable cells could be recovered from cryopreserved foreskin tissues, and to characterize the effect of cryopreservation on the relative proportions of CD4+ T cell subsets.

Methods: Foreskin tissues from HIV-negative males aged >18 were collected immediately after voluntary circumcision (n=10). For each sample, tissues were sectioned into 0.25cm² pieces, and half were cryopreserved in 10% DMSO to be thawed and digested later ("frozen"), while the remaining half was immediately digested into a cell suspension ("fresh"). In both conditions, cell suspensions were created through mechanical and enzymatic digestion, stained with antibodies against CD3, CD4, HLA-DR, CD38, CD25, CD127, CCR4, CXCR3, CCR6, CCR5, and CCR10; and analyzed by flow cytometry.

Results: We observed significant increases in the proportion of CD4+ T cells expressing CCR5 after cryopreservation (medians fresh vs. frozen: 55.1%, 67.7%, p=0.0012), CD38 (2.7%, 4.7%, p=0.0146), and CXCR3 (3.6%, 8.2%, p=0.0086) after cryopreservation. However, the relative rankings of matched participants' fresh and cryopreserved samples was maintained. Moreover, there were no significant differences between the proportion of CD25 (12.5%, 14.1%), CCR4 (54.0%, 54.9%), CCR6 (44.3%, 40.6%), HLA-DR (15.3%, 17.9%), CCR10 (6.0%, 5.7%), and CD127 (72.5%, 72.3%) between fresh and cryopreserved foreskin samples.

Significance:

Digestion and analysis of T cell subsets from foreskin tissue is feasible after cryopreservation. Despite some variation, the ranking of participants' matched samples was well maintained for these markers; thus, inter-individual comparisons remain valid. For HIV researchers lacking access to fresh foreskin tissue, these data suggest that cryopreservation and delayed immune analysis is a viable alternative.

227 Antigen Specificity of Latently HIV-Infected Cells: The Role of the Microbiota

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Although antiretroviral therapy (ART) controls viral replication, HIV persists as an integrated provirus in latently infected CD4+ T cells. Clonal expansion of infected cells has been shown to contribute to the maintenance of HIV reservoirs during ART. However, the antigen specificities of the majority of these T cells clones are unknown. Since HIV infection induces the translocation of bacterial products from the gut to the blood, we hypothesized that microbiota derived antigens could be responsible for the proliferation of latently infected CD4+ T cells.

We developed a sensitive and specific flow-cytometry based assay to identify bacteria-specific CD4+ T cells in the blood. PBMCs isolated from 10 people living with HIV under ART were stimulated for 18h with 12 bacterial lysates from gut microbiota species (including *E. coli*, *L. Acidophilus* and *R. Intestinalis*) and 3 pathogenic species (*M. Tuberculosis*, *S. Typhimurium*, and *C. Difficile*). We observed that the combined expression of CD40L, CD69 and 4-1BB could discriminate microbiota-specific CD4+ T from the LPS induced signal and that activation of bacteria-specific cells was abolished when HLA-I was blocked. All participants had detectable microbiota-specific CD4+ T cells with a mean of 0.07% of circulating CD4+ T cells. The highest frequencies of bacteria specific cells were detected against *C. Difficile*, *R. Intestinalis* and *S. Typhimurium* (mean of 0.14%). We are using this activation induced marker approach to sort bacteria-specific CD4+ T cells and perform HIV genome near full length amplification to measure the frequency of microbiota-specific CD4+ T cells harbouring HIV proviruses.

Our results indicate that microbiota-reactive CD4+ T cells are frequently detected in the blood of people living with HIV. Preliminary data indicate that microbiota-specific CD4+ T cells harbour HIV proviruses. Using next generation sequencing, we will then determine if bacteria-specific CD4+ T cells are enriched in intact HIV proviruses.

357 PICH115 and HIV latency : a new potential target to block HIV

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The main obstacle towards Human Immunodeficiency Virus's (HIV) eradication is latency. A better understanding of HIV gene expression is required to fight latency. Our laboratory identified the Pre-Initiation Complex of HIV (PICH), a cellular protein complex that binds HIV's promoter. The identification of PICH proteins followed by their knockdown showed that they have a positive impact of HIV gene expression. We are studying the role of each PICH protein on HIV transcription to evaluate their potential as drug targets. My project focuses on PICH115, a protein that interacts with Tat.

First, Chromatin ImmunoPrecipitation assays indicated that PICH115 can be found on HIV proximal promoter. Then, we mapped the interaction site between Tat and PICH115. CoImmunoPrecipitation experiments, performed by transfecting plasmids coding for Flag-Tat and different domains of His-PICH115 in HEK293T cells, showed that the N-acetyltransferase and the tRNA-Binding domains of PICH115 are required to interact with Tat in cellulo. To verify if this interaction was direct, we carried out GST-Pulldown with recombinant proteins of fragments of GST-Tat and HA-PICH115. We observed a direct interaction between the core domain of Tat and the N-acetyltransferase and tRNA-Binding domains of PICH115 in vitro. We finally demonstrated that this interaction has consequences on Tat interaction with TAR RNA, an essential step for HIV transcription. Indeed, in ElectroMobility Shift Assays, when a fluorescent TAR RNA probe is incubated with recombinant Tat, the presence of recombinant PICH115 increases the binding of Tat to TAR.

To conclude, we showed that PICH115 binds HIV's proximal promoter, we mapped Tat and PICH115 interaction site and highlighted its impact on Tat-TAR interaction. Eventually, we will explore the role of the N-acetyltransferase function of PICH115 on HIV gene expression. These data will refine our understanding of HIV gene expression to develop new Shock and Kill or Block and Lock strategies.

Clinical Sciences Oral Abstracts / Sciences cliniques éposés oraux

41 The Effect of Hepatic Steatosis and Fibrosis on Cardiovascular Disease Risk in Patients with Hepatitis C

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Background. Metabolic dysfunction-associated fatty liver disease (MAFLD) is the most common cause of chronic liver disease worldwide, with a prevalence at 25%, with a higher prevalence in people living with the hepatitis C virus (HCV) (45–55%). Both MAFLD and HCV are linked with an increased risk of cardiovascular disease (CVD). We aimed to determine whether hepatic steatosis and liver fibrosis are associated with increased CVD risk in people with HCV.

Methods. This was a retrospective study including people living with HCV consecutively screened for hepatic steatosis and fibrosis by Fibro scan at a single centre. Hepatic steatosis and significant liver fibrosis were defined as controlled attenuation parameter (CAP) ≥ 275 dB/m and liver stiffness measurement (LSM) ≥ 8 kPa, respectively. CVD risk was assessed using the 10-year atherosclerotic cardiovascular disease (ASCVD) risk score. A linear regression modelling adjusted for confounders was used to identify ASCVD risk variables.

Results. 155 patients with HCV (mean age 60 years, 44% male, 30% with undetectable HCV viral load). Hepatic steatosis and significant liver fibrosis were found in 25% and 48% of patients, respectively. The prevalence of low, borderline, intermediate, and high ASCVD risk was 38%, 10%, 20%, and 32%, respectively. Prevalence of intermediate-high ASCVD risk categories was higher in patients with hepatic steatosis vs those without (59% vs 47%, $p < 0.05$), and in patients with significant liver fibrosis vs those without (57% vs 45%, $p < 0.01$). On linear regression analysis, both CAP (regression coefficient 0.03, 95% CI 0.001-0.06) and LSM (regression coefficient 0.14, 95% CI 0.01-0.32) were independently associated with ASCVD risk score after adjusting for liver transaminases and BMI.

Conclusions. Hepatic steatosis and significant liver fibrosis are associated with increased ASCVD risk in people living with HCV. Cardiovascular disease should be assessed in patients with HCV and with hepatic steatosis and/or liver fibrosis.

237 Painful Memories: Associations Between Pain and History of Trauma and Stigma Among People Living with HIV in the Ontario HIV Treatment Network Cohort Study

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Background: Experience of pain is highly prevalent among people living with HIV. Mental health conditions are associated with worse pain outcomes and are common in people living with HIV, many of whom have also had adverse childhood experiences (ACEs) and other forms of adversity and trauma. Our aim was to examine associations between pain and traumatic events and HIV stigma among adults living with HIV in Ontario.

Methods: We conducted a cross-sectional analysis using data from the Ontario HIV Treatment Network Cohort Study (OCS). Adults, age 16 and older, who completed the OCS questionnaire in 2019 were included in the analysis. Associations between pain prevalence in the preceding 3 months, and diagnosis of post-traumatic stress disorder (PTSD), history of intimate partner violence (assessed using an 8-item questionnaire), ACEs (measured using the 10-item ACE questionnaire, scored 0-10), and HIV stigma (measured using the 12-item HIV-stigma scale, scored 12-60) were assessed using chi-squared test and one-way analysis of variance.

Results: A total of 2061 participants, of which majority were men (78%) with a median [interquartile range (IQR)] age of 52 [43, 60] years were included in the analysis. A total of 1367 (66%) reported pain in the past 3 months. Pain was associated with greater prevalence of PTSD (10.5%, compared to 3.1% among those reporting no pain, $p < 0.0001$) but not history of intimate partner violence ($p = 0.5482$). Participants reporting pain had more adverse childhood experiences (mean [IQR] ACE score 3 [3,5]) and higher degree of HIV-related stigma (mean [IQR] HIV-stigma score 35 [28,42]) compared to those without pain (mean [IQR] ACE score 2.3 [2,3], $p = 0.0156$; mean [IQR] HIV-stigma score 32 [33,39], $p < 0.0001$).

Conclusions: Pain appears to be associated with measures of trauma and stigma among this sample of participants living with HIV, suggesting a role for multidisciplinary trauma-informed management approaches in HIV care.

75 Reducing Unnecessary Ordering of CD4 counts in the HIV clinic: A Quality Improvement Project

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Objectives: The Choosing Wisely Guideline from the Association of Medical Microbiology and Infectious Disease Canada suggests not repeating CD4 measurements in patients with HIV infection if the CD4 count is above 500 / μ L with suppressed HIV viral loads for 2 years. A chart audit in the HIV clinic at our centre found that 67% of CD4 orders were deemed to be unnecessary based on current guidelines. Our objective was to reduce CD4 count testing per patient visit in the HIV clinic by 25%.

Methods: A fishbone framework for root cause analysis revealed several potential causes underlying frequent ordering of CD4 counts. A series of Plan-Do-Study-Act (PDSA) cycles were undertaken, starting with education sessions for health care providers, followed by creation of a computerized clinical decision support (CCDS) pop up that would trigger when a CD4 count was ordered less than a year since the last one. Frequency of CD4 count testing per patient visit to our clinic was the primary outcome measure. The number of times the pop up triggered per month was the process measure. The number of patients who required a CD4 count with their routine blood work but did not get one was a balancing measure.

Results: After implementation, there was a 52% reduction in CD4 count testing per patient visit, with no adverse outcomes for patients. The CCDS was more effective than education, consistent with previous studies. The intervention represents >\$23,000 annualized savings.

Conclusion: We present a novel and straightforward intervention that can be implemented in HIV clinics and results in substantial cost savings in addition to aligning patient care with best practices.

249 Adapting cognitive remediation group therapy as a hybrid group intervention for people aging with HIV and cognitive concerns: Focus groups

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Background: Cognitive impairment is a significant co-morbidity for people aging with HIV/AIDS. Lacking pharmacological treatment, psychosocial group therapies may be best suited to help people aging with HIV and cognitive challenges cope with symptoms. Considering public health threats, rural access, etc., in-person group therapies need online/hybrid adaptation.

Methods: Peer-led focus groups discussed adapting cognitive remediation group therapy (CRGT) hybrid/online, including structure, content, and preferences. CRGT combines mindfulness-based stress reduction and brain training activities. Purposive sampling recruited people aging with HIV (40+) from Ontario and Saskatchewan who all self-identified 5+ cognitive concerns (e.g., memory loss). Participatory content analysis—informed by a “Double Diamond” model of intervention development—was employed on transcripts by 7 independent coders.

Results: Ten, two-hour focus groups were conducted between August and November 2022. Participant (n=45) demographics included age (M=53.22, SD=7.62) gender (20 women, 19 men, 6 trans/non-binary/2-spirit), sexuality (19 gay, 18 heterosexual, 8 bisexual/queer/lesbian/2-spirit), and ethnicity (20 white, 15 Black, 6 Indigenous, 4 mixed-race), province (33 Ontario and 12 Saskatchewan), and employment (15 employed, 30 retired/disability). All were retained in care and taking cART. Overall, participants responded favourably to CRGT’s modalities and preferred hybrid group therapies whereby there could be a blend of in-person and online interactions. Preferred intervention facilitators were peers and mental health professionals, with a few participants strictly requesting a physician. Knowledge of HIV’s impacts on cognitive health, including HIV-associated neurocognitive disorder, was very low despite high reports of cognitive concerns (e.g., trouble remembering, impaired attention, difficulty problem-solving).

Conclusion: Given the aging of the HIV population in Canada, increasing support will be required in addition to medical care to improve quality of life, and proactively address concerns about cognition. This presentation will discuss how CRGT could be adapted and implemented in a hybrid manner, alongside considerations for how COVID-19 has impacted intervention research.

319 Self-reported Prevalence of Physical and Mental Comorbidities among Women Living with HIV and HIV-Negative Women in the British Columbia CARMA-CHIWOS Collaboration (BCC3) study

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Background: Accelerated aging has been linked to higher non-communicable disease burden experienced by women living with HIV (WLWH). WLWH are also affected by adverse socio-structural factors that can impact aging. We describe and compare the prevalence of comorbidities and selected social determinants of health among WLWH and HIV-negative controls in BCC3.

Methods: BCC3 is a community-based study of healthy aging enrolling WLWH and controls (trans-inclusive) ≥ 16 y. Socio-demographic characteristics as well as 37 self-reported physical and 13 mental health comorbidities ever diagnosed by a healthcare provider were compared by Chi-Squared or Fisher's tests. Logistic regression was used to adjust for age, without adjustment for multiple comparisons.

Results: Table 1 describes socio-demographic characteristics of women. After adjusting for age, WLWH were more likely to report osteoporosis (34% vs 16%, $p < 0.001$), neuropathy (19% vs 10%, $p = 0.02$), insomnia (41% vs 29%, $p = 0.03$), and substance use disorder (36% vs 23%, $p < 0.01$), while controls were more likely to report personality disorder (9% vs 3%, $p = 0.03$). Similarly, high proportions of women reported peptic ulcer disease (28% vs 26%, $p = 0.99$), iron deficiency (44% vs 49%, $p = 0.46$), migraines (28% vs 24%, $p = 0.47$), anxiety (47% vs 52%, $p = 0.43$), depression (47% vs 54%, $p = 0.15$), and post-traumatic stress disorder (PTSD) (40% vs 32%, $p = 0.12$).

Conclusions: Overall, we observed few differences in self-reported prevalence of physical and mental comorbidities between WLWH and controls. These data suggest that the impacts of non-HIV factors, such as psycho-socio-structural stressors on comorbidity burden should be explored as potential confounders for studies on aging in this population.

24 Efficacy and safety of long-acting subcutaneous lenacapavir in heavily treatment-experienced people with multi-drug resistant HIV: Week 52 results

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Lenacapavir (LEN), a potent first-in-class inhibitor of HIV-1 capsid function, is approved in Canada as a long-acting agent for treatment and in development for prevention of HIV-1.

CAPELLA is an ongoing, phase 2/3 study in heavily treatment-experienced (HTE) people with HIV-1 (PWH) with multidrug-resistance. 36 participants randomized (2:1) to add oral LEN or placebo to their failing regimen. At D15, oral LEN arm received subcutaneous (SC) LEN (Q6M); placebo arm started the oral LEN lead-in, followed by SC Q6M. All randomized participants initiated an investigator selected, optimized background regimen (OBR) at D15. An additional 36 participants started OBR concurrent with LEN (oral lead-in SC) in a non-randomized cohort. We report the Week (W) 52 efficacy and safety results from both cohorts

Of 72 participants enrolled, 64% had CD4 < 200 cells/μL, 46% had HIV-1 resistant to all 4 major classes (NRTI, NNRTI, PI, INSTI), and 53% had OBR with 1 or no fully active agents. 78% (56/72) achieved VL < 50 c/mL and 82% (59/72) achieved VL < 200 c/mL. CD4 count increased by a median 84 cells/μL (Q1 to Q3: 21 to 153) and the proportion of participants with CD4 count ≥ 200 cells/ul increased from 36% at baseline to 68%. Ten participants had emergent LEN resistance (8 previously reported); 4 of 10 subsequently suppressed. One participant discontinued due to injection site nodule (Grade 1). The most common injection site reaction (ISR) was swelling (28% [20/72] and 17% [12/70] after the 1 and 2 SC doses, respectively) and were mild or moderate. The most common AEs (excluding ISRs) were nausea and diarrhea (14% each).

In HTE PWH, LEN was well tolerated and in combination with OBR led to high and sustained rate of virologic suppression at W52. These results support the potential role for LEN for treatment of multidrug resistant HIV-1 infection.

26 Outcomes after switching from 144 weeks of blinded DTG/ABC/3TC or DTG+F/TAF to 96 weeks of open-label B/F/TAF

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HIV guidelines offer switch strategies for virologically suppressed people with HIV-1 (PWH), but long-term clinical follow-up after the regimen switch is often lacking. We present 96-week (W) outcomes on bicitgravir/emtricitabine/tenofovir alafenamide (B/F/TAF) in an open-label extension (OLE) that followed 144W of blinded DTG-based treatment in two treatment-naïve studies.

2 randomized, double-blind, phase 3 studies of B/F/TAF were conducted in PWH initiating first-line therapy – Study 1489: B/F/TAF vs dolutegravir/abacavir/lamivudine (DTG/ABC/3TC) and Study 1490: B/F/TAF vs DTG+F/TAF. We examined cumulative results for participants who were originally randomized/treated with either DTG/ABC/3TC or DTG+F/TAF for 144W and then switched to 96W of B/F/TAF in an OLE (total of 240W of follow-up). Efficacy analysis included HIV-1 RNA <50 copies/mL at each visit after starting B/F/TAF (missing=excluded [M=E] analysis); safety by adverse events (AEs) and laboratory results.

In 1489, 254/315 (81%) participants randomized to DTG/ABC/3TC entered the OLE. In 1490, 265/325 randomized to DTG+F/TAF entered the OLE. After switch to B/F/TAF, efficacy was >96% at every visit through W240 (M=E). Eleven participants had HIV-1 RNA ≥ 50 copies/mL at time of switch, two of whom were later found to have M184V while on blinded DTG/ABC/3TC and resuppressed on B/F/TAF. No resistance detected to any components of B/F/TAF. Across both studies (1489: n=254, 1490: n=265), 2/519 (0.4%) switch participants experienced an AE leading to drug discontinuation during the OLE, none were renal. Grade 3 drug-related AE occurred in one participant, no Grade 4 AEs. Participants switching from DTG/ABC/3TC had numerically greater weight increases 2.4 kg (-0.4, 5.6) than those switching from DTG+F/TAF 1.3 (-1.9, 5.0).

Over 5 years of follow-up, adults initially taking DTG/ABC/3TC or DTG+F/TAF who then switched to B/F/TAF maintained high virologic suppression and few discontinuations. These results confirm long-term safety and efficacy of B/F/TAF in those who switch from a DTG-containing regimen.

329 Burden of Chronic/Latent Viral Infections and Estimated All-Cause Mortality Risk in Women Living With HIV and HIV-Negative Controls in the BCC3 Study

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Background: Women living with HIV (WLWH) in Canada have a shorter life expectancy than both men living with HIV and HIV-negative women. Latent/chronic viral infections may increase inflammation, which could affect health outcomes for WLWH. We compared the prevalence of several chronic/latent viral infections between WLWH and HIV-negative women and investigated the association between the burden of viral infections and estimated mortality risk. **Methods:** BCC3 is a study of women's healthy aging enrolling WLWH and controls (trans-inclusive) ≥16y. Prevalence of eight chronic/latent viral infections (Table 1) was determined by serology or self-report (VZV only). The Veteran's Aging Cohort Study 2.0 (VACS 2.0) estimating 5-year all-cause mortality risk was calculated based on survey data and laboratory results. Statistical analyses employed Mann-Whitney test, Spearman's correlation, and logistic regression. **Results:** WLWH were older than controls and had higher age-adjusted prevalence of 4/8 viruses (CMV, EBV, HSV-2, and HBV), while controls were more likely to harbor HHV-8 (Table 1). WLWH had both a higher median [IQR] burden of viral infections (5 [4-5] vs 4 [3-5]) and VACS 2.0 score (8 [5-22] vs 3 [2-5] %) compared to controls, both p<0.0001. Viral burden was associated with estimated all-cause mortality risk for both WLWH (rho=0.38, p<0.0001) and controls (rho=0.41, p<0.0001).

Conclusions: While a causal relationship cannot be implied between having more chronic/viral infections and 5-year risk of mortality, these data highlight the potential influence of non-HIV latent viruses, some highly prevalent, that could play an important role in the inflammaging/aging and lifespan of WLWH.

Supporting Document

Table 1. Participant age and prevalence of viral infections in the BCC3 study

Latent/Chronic Virus	WLWH (n=126)	Controls (n=220)	p-value
Age, median [IQR] (range)	50 [41-58] (20-77)	46 [30-58] (17-80)	0.03
Cytomegalovirus (CMV), n (%)	104 (83)	138 (63)	<0.001
Epstein-Barr Virus (EBV), n (%)	124 (98)	205 (93)	0.07
Human Herpesvirus-8 (HHV-8), n (%)	10 (8)	45 (20)	<0.01
Herpes Simplex Virus-1 (HSV-1), n (%)	88 (70)	150 (68)	0.95
Herpes Simplex Virus-2 (HSV-2), n (%)	87 (69)	89 (40)	< 0.0001
Hepatitis C Virus (HCV), n (%)	46 (37)	26 (12)	< 0.0001
Hepatitis B Virus (HBV; core antibody), n (%)	24 (19)	13 (6)	<0.001
Varicella Zoster Virus (VZV), n (%)	95 (75)	165 (75)	0.80
Sum of viruses, median [IQR] (range)	5 [4-5] (0-8)	4 [3-5] (1-7)	<0.0001

100 CMV co-infection among children living with HIV in Canada is associated with more frequent HIV viremia and lower CD4/CD8 nadir.

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Background: There is evidence that CMV co-infection among people living with HIV is associated with chronic inflammation and HIV disease progression. Paediatric studies are limited compared to those of adults, particularly outside of resource-limited settings. Our objective was to characterize CMV co-infection among Canadian children living with perinatally acquired HIV (CLWH) and determine the association between CMV viremia and HIV control.

Methods: Sub-study of the prospective, multicenter Early Pediatric Initiation Canada Child Cure Cohort study (EPIC4). CLWH were followed every 3-6 months from 2014–2018. CMV serostatus (IgG) was determined at baseline visit and end of study for those seronegative at baseline, and CMV and HIV viral loads (VL) and lymphocyte subsets were quantified at every visit for those with IgG seropositivity.

Results: 225 CLWH were enrolled with median baseline age of 13.9 years (IQR, 9.3-17.0 years); 121 (53.8%) were female and median follow up was 32 months (IQR, 21-38). 192 (85.3%) were CMV seropositive at baseline (5 with documented congenital CMV). CMV seropositivity was significantly higher among foreign vs Canadian born children (62.5 vs. 18.2%, $p < 0.01$). Thirty-four (17.7%) CMV seropositive CLWH were CMV viremic at least once during follow-up (CMV VL range 85-1991 international units/mL). Though there was no difference in median age of cART initiation (3.7 vs 4.4 years, $p = 0.15$) or incidence of treatment interruptions during follow-up (14.7% vs 8.2%, $p = 0.40$) in those with and without CMV viremia, those with CMV viremia were more likely to have at least one episode of detectable HIV VL (64.7% vs 33.5%, $p < 0.001$), and to have lower CD4/CD8 nadir (0.68 vs. 0.83 $p = 0.043$).

Conclusion: Among CLWH in Canada, CMV viremia is common and associated with HIV viremia and lower nadir CD4/CD8 ratio. Further work is necessary to determine the potential role of CMV in HIV disease progression and chronic inflammation among children.

95 The Rate of Hepatitis C Virus (HCV) Reinfection in Canadians Coinfected with HIV and its Implications for National Elimination

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Background: The World Health Organisation (WHO) set a target of ≤ 2 new HCV infections/100 person-years (PY) in people who inject drugs (PWID), as a way to measure progress towards HCV elimination. As more people are successfully treated for HCV, an increasing proportion of new infections will be reinfections. We consider whether the reinfection rate has changed since the interferon era in Canadians coinfected with HIV.

Methods: The Canadian Coinfection Cohort is representative of HIV/HCV coinfected people in clinical care. We selected cohort participants first successfully treated for a primary HCV infection in either the interferon or direct acting antiviral (DAA) treatment eras. Participants were followed from 12 weeks after completing treatment until the end of 2019 or their last measured HCV RNA. We estimated the reinfection rate in each era using piecewise exponential proportional hazard models.

Results: Among 814 successfully treated participants with additional HCV RNA measurements, there were 62 reinfections. The overall reinfection rate was 2.6/100 PY in the interferon era and 3.4/100 PY in the DAA era (Table). The rate in those reporting injection drug use during follow-up was much higher: 4.7 and 7.6/100 PY in the interferon and DAA eras, respectively.

Conclusions: The reinfection rate in our cohort is now above the WHO target and has increased in PWID since the interferon era. Given coinfected PWID are more likely to be in care – and to have a lower reinfection rate – than other PWID, this suggests Canada is not on track to eliminate HCV by 2030.

Supporting Document

Table Hepatitis C virus (HCV) reinfection rates in each treatment era estimated using piecewise exponential proportional hazard models for interval censored data: in all participants, overall and over time, and in participant subgroups.

HCV treatment era:	Interferon (≤ 2013)		Direct Acting Antiviral (≥ 2014)	
Number of reinfections:	n=13		n=49	
HCV reinfection rate (per 100 person years)		(95% CI)		(95% CI)
Overall	2.6	(1.2 – 4.1)	3.4	(2.5 – 4.4)
First year ^a	3.6	(0.0 – 7.5)	6.9	(4.3 – 9.6)
One to three years ^a	2.5	(0.0 – 5.3),	2.3	(0.8 – 3.9)
More than three years ^a	2.2	(0.0 – 4.4)	1.7	(0.5 – 2.9)
Reported injection drug use ^b	4.7	(1.4 – 7.9)	7.6	(5.3 – 10)
Men reporting sex with men ^b	1.8	(0.0 – 3.6)	2.7	(1.3 – 4.0)

CI, confidence interval.

^a Time zero was 12 weeks after the end of the first successful treatment for HCV.

^b Any participant report during visits from six months after starting a first successful HCV treatment until six months after follow-up ended.

77 Correlates of wanting to take an antibiotic daily for the prevention of sexually transmitted infections among gay and bisexual men in British Columbia

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Background: Gay, bisexual and other men who have sex with men (gbMSM) experience high rates of sexually transmitted infections (STIs). Recent studies on the use of the antibiotic doxycycline as pre-exposure prophylaxis (PrEP) have demonstrated efficacy and acceptability in reducing STIs. As interest in clinical implementation grows, there is a need to understand drivers that support use. We aimed to determine the prevalence and correlates of wanting to take STI-PrEP.

Methods: gbMSM aged 15 and older were recruited into the online Sex Now survey through social media advertisements from 11/2019—02/2020. Participants in British Columbia provided demographic details and responded to a module on STI-PrEP, created using the theory of planned behaviour. Binary logistic regression assessed factors associated with wanting to take STI-PrEP.

Results: Among 296 participants, 97 (32.7%) wanted to take STI-PrEP. Participants were mostly white (77.8% [228/293]), with a mean age of 39.1 years. Odds of wanting to take STI-PrEP were elevated for participants who were single (odds ratio [OR] 2.76, 95% CI 1.31, 5.85) or in open relationships (OR 4.23, 95% CI 1.96, 9.13) compared with monogamous participants. Relative to participants with <10 sexual partners in the previous six months, those with 10-25 sexual partners (OR 2.40, 95% CI 1.22, 4.73) and those with >25 sexual partners were more likely to want to take STI-PrEP (OR 4.09 95% CI 1.69, 9.90). Participants with past-year diagnoses of syphilis (OR 7.20, 95% CI 1.47, 35.4) or gonorrhea (OR 2.62, 95% CI 1.25, 5.47) had higher odds of wanting to take STI-PrEP. There were no associations with age, HIV status, or past-year chlamydia diagnosis and wanting to take STI-PrEP.

Conclusion: Individuals with more sexual partners and previous STIs had higher odds of wanting to take STI-PrEP. Understanding STI-PrEP desirability helps inform clinical indications, economic analyses, and health service planning.

102 Construct validity of the 7-item I-Score: A promising patient-reported measure of barriers to ART adherence for HIV care.

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To identify adherence barriers to antiretroviral therapy (ART) in routine HIV care, we created a 7-item patient-reported measure (Interference-Score). It evaluates seven barrier domains: Thoughts/Feelings, Habits/Activities, Social situation, Economic status, Medication, Care, and Health. The instrument has undergone cognitive testing (content validation). To assess the measure's construct validity, we recruited people with HIV (PHIV) on ART in Canada and France from January to August 2022. Participants completed the measure along with 4 dependent variables (DVs) at baseline (Time 1) and 4 weeks later (Time 2). DVs were dichotomized self-reported measures of adherence (past 7 days, past 4 weeks), intention to adhere, and viral load. Analyses included: 1) inter-item correlations (Spearman's coefficients) to assess item redundancy (Time 1); 2) logistic regressions, with one model per DV, to assess each item's (covariate's) significance; and 3) Receiver operating characteristic (ROC) curve analyses with corresponding areas under curves (AUCs), to evaluate the 7-item models' predictive capacity. Analyses 2) and 3) were performed using I-Score Time 1 items to predict DVs at Time 1 and Time 2, respectively. AUCs were calculated with 95% bootstrap confidence intervals. Analyses included 265 PHIV at Time 1 and 154 at Time 2. Correlation coefficients ranged from 0.33 to 0.68. The items (covariates) of "Thoughts", "Habits", "Health" and "Economic status" were significantly and independently associated with from 1 to 3 DVs. AUCs showed the 7-item models' predictive capacity to be "excellent" to "outstanding" for viral load, correctly classifying >80% of respondents. The models were also "acceptable" for Adherence in the past 4 weeks and past 7 days, correctly classifying ≥72% of respondents. The 7-item I-Score is a simple, valid, and comprehensive tool to evaluate ART adherence barriers in HIV care.

156 Maternal HIV control and risk of hospitalization among children who were HIV-Exposed Uninfected (CHEU) in Montreal, Quebec

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Background

There is increasing recognition that children who were HIV exposed and uninfected (CHEU) are at increased risk of morbidity compared to children HIV unexposed and uninfected (CHUU) controls. With an estimated 1.5 million CHEU born annually, there is therefore a need to identify which specific CHEU may be at risk of adverse outcomes in order to better direct health services for these children.

Methods

Longitudinal cohort study linking data from the Centre maternel et infantile sur le SIDA (CMIS; CHU Sainte-Justine) cohort in Montreal to administrative data from the Régie de l'assurance maladie du Québec (RAMQ). CHEU were matched 1:3 by birth's year, sex and postal code, to CHUU controls, to compare the risk of hospitalization between them.

Results

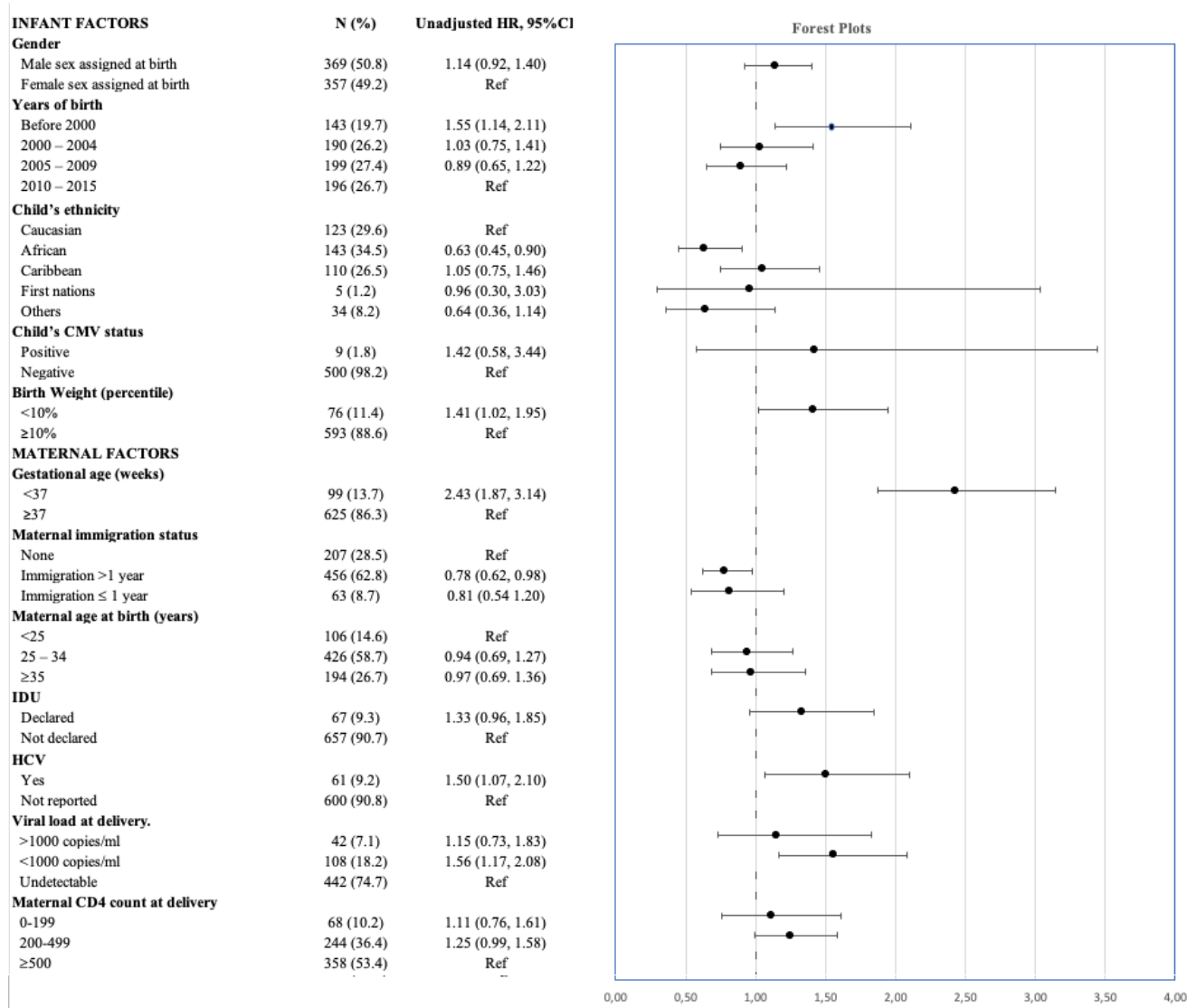
Among 847 CHEU enrolled in the CMIS cohort between 1988 and 2015, 726 were linked to the RAMQ database and matched to 2178 CHUU. There was a significantly higher risk of hospitalization among CHEU at 5-years (Incidence Rate Ratio 1.59[1.39-1.82]). Among CHEU, significant risk factors for hospitalization on univariate analysis included birth's year prior to 2005, prematurity, growth delay, detectable maternal viral load, lower maternal CD4 count, maternal IV drug use, and hepatitis C co-infection (Figure1). Only birth's year was significant in multivariate analysis.

Conclusion

In this resource-rich setting with universal health-care, significant risk factors for hospitalization among CHEU were defined by severity of maternal HIV disease and associated co-infections. These data suggest that infants born to women with advanced HIV disease or co-infections may benefit from enhanced pediatric care.

Supporting Document

Figure 1. Forrest plot of risk factors for hospitalization among CHEU in univariate analysis



155 New HIV infections among Canadian-born children in the previous decade: could these have been prevented?

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Background

Despite highly effective preventive interventions, perinatal HIV infections continue to occur. Our objective was to describe factors associated with new incident HIV infections among Canadian-born children in the last decade, to better understand remaining gaps in the elimination of perinatal HIV infection in Canada.

Methods

Data were analyzed from the Canadian Perinatal HIV Surveillance Program (CPHSP), collected annually from 22 perinatal HIV centers. Demographic and clinical data for children living with HIV (CLHIV) were extracted and analyzed.

Results

197 CLHIV were registered in the CPHSP database between 2012-2021, of whom 36(18.3%) had been born in Canada. Of these Canadian-born children, 92% were confirmed perinatal infections, while 3 were acquired non-perinatally. Most new infections occurred in central Canada (QC/ON)(50%), followed by the Prairies (AB/SK/MB)(39%), Northwest (BC & territories)(8.3%), and Atlantic provinces (2.7%).

Among the 33 perinatal transmissions, 11(33%) mothers had been diagnosed prior to delivery, 7(21%) at delivery and 14(42%) after delivery. In those diagnosed antenatally, likely reasons for transmission included difficulties engaging in care (3), delayed access to care due to recent immigration (2) and late diagnosis in pregnancy (3). Of those diagnosed at delivery, barriers included difficulties engaging in care (3) and failure to screen for HIV in pregnancy despite engagement in care (2). Of those diagnosed after delivery, 9 had had negative first trimester testing, while 3 were not tested during pregnancy. Median age at HIV diagnosis for CLHIV born to women diagnosed after delivery was 22 months [IQR 5.75-38.75]; 6 presented with opportunistic infections, while 7 were diagnosed following parental diagnosis.

Conclusion

Of current Canadian CLHIV, one in five was Canadian-born in the last decade. While significant gains have been made in eliminating perinatal infection, seroconversion after first trimester testing, difficulties engaging in care, and failure to screen in pregnancy remain gaps in perinatal HIV prevention.

145 Feminizing Hormone Therapy in a Canadian Cohort of Transgender Women with and without HIV

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Background: Potential bidirectional drug-drug interactions (DDIs) between feminizing hormone therapy (FHT) and antiretroviral therapy (ART) are of concern for trans women living with HIV and their healthcare providers. As preliminary exploration of this issue, this study aimed to characterize prescribing patterns of FHT and ART among trans women living with HIV and to compare serum estradiol levels to trans women without HIV.

Methods: Retrospective chart review of trans women engaged with primary, HIV, or endocrinology care was completed at seven clinics in Toronto and Montreal from 2018-2019. FHT use (yes vs. no), type of anti-androgen and estrogen, and serum estradiol levels were compared based on HIV status (positive, negative, missing/unknown) using chi-square or Fisher's exact and Kruskal-Wallis tests for categorical and continuous variables, respectively.

Results: Of 1,495 trans women, there were 86 trans women with HIV, of whom 79 (91.8%) were on ART. ART regimens were most commonly integrase inhibitor-based (67.4%). Fewer (71.8%) trans women with HIV were prescribed FHT, compared to 88.4% of those without HIV and 90.2% of those with missing/unknown HIV status ($p < 0.001$). Of the trans women on FHT with recorded serum estradiol ($n = 1,153$), there was no statistical difference in serum estradiol between those with HIV (median: 203 pmol/L, IQR: 95.5, 417.5) and those with negative HIV status (200 pmol/L [113, 407]) or those with missing/unknown HIV status (227 pmol/L [127.5, 384.5]) ($p = 0.633$).

Conclusions: In this chart review, trans women with HIV were prescribed FHT less often than trans women with negative or unknown HIV status. There was no statistical difference in serum estradiol levels of trans women on FHT regardless of HIV status. Further research on DDIs between FHT and ART is needed to better meet the health needs of trans women living with HIV.

265 Breastfeeding by mothers living with HIV in Toronto, Canada: A 7-year retrospective review of management and outcomes

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Background: Exclusive formula feeding remains the preferred infant feeding recommendation for women living with HIV (WLWH) in Canada because vertical transmission (VT) through breastfeeding can occur despite an undetectable maternal viral load (VL). In recent years, some mothers on combination antiretroviral therapy (ART) have elected to breastfeed their infants after informed decision-making. The objective of this study was to describe demographic characteristics, management and outcomes of breast-fed infants born to WLWH in Toronto, Canada.

Methods: A retrospective chart review of all known breastfed infants born to WLWH in Toronto, Canada from 2015-2022. Demographic characteristics, management and clinical outcomes were reviewed.

Results: Twenty-six breastfed infants (1 set of twins) and 20 mothers were included. The median age of mothers at entry to prenatal care was 34.5 years (range 22-47 years); 85% (17/20) were foreign-born. All mothers were on ART during pregnancy and 92% (23/25 pregnancies) had virologic suppression at delivery (2 had detectable VL, 40 copies/mL and 136 copies/mL, respectively). The most common indicated reasons for breastfeeding were bonding with baby, health benefits to baby, and fear of inadvertent HIV disclosure. Median breastfeeding duration was 11 weeks (range 1 day-49 weeks). Fifteen infants exclusively breastfed and 11 mixed-fed. Infant antiretroviral prophylaxis consisted of zidovudine/lamivudine/nevirapine (21/26), zidovudine only (3/26), and nevirapine only (2/26); 88% (22/25) of infants remained on prophylaxis until 1 month after weaning (1 still breastfeeding). No cases of VT were observed. No safety concerns led to discontinuation of infant ART.

Conclusions: Increasingly, WLWH on effective ART are choosing to breastfeed their infants after informed discussions with their care providers. This is the largest series of Canadian data demonstrating no episodes of VT and no safety concerns of extended ART in breastfeeding infants. This information will inform consensus Canadian guidelines on counselling and management of breastfeeding WLWH and their infants.

182 Differential effects of Integrase strand transfer inhibitors compared to Non-nucleoside reverse transcriptase inhibitors on System L-amino acid transporters in Human Placenta

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Introduction. Integrase strand transfer inhibitors (INSTIs) and non-nucleoside reverse transcriptase inhibitors (NNRTIs) are common antiretroviral therapies for pregnant people with HIV. Both have been associated with small-for-gestational-age babies and metabolic complications. The system L-amino acid transporter system is pivotal to normal fetal growth. The Na⁺-independent system L transporters (LAT1, LAT2) are expressed in the placenta but have not been investigated in the context of HIV/antiretroviral exposure. We hypothesize that the expression of system L transporters in the placenta will be altered by antiretrovirals and that this may contribute to poor fetal outcomes.

Methods. Term placentas were collected from 22 Canadian people (16 with HIV, 6 HIV-negative). People with HIV were either on INSTI-based (raltegravir or dolutegravir) or NNRTI-based (nevirapine or efavirenz) antiretroviral regimens. Protein levels of LAT1 and LAT2 were quantified in placenta tissues by Western blot. Placental distribution of LAT1 was confirmed by immunofluorescence. Statistical analyses were performed in GraphPad Prism (v9.0.1).

Results. Babies and placentas were significantly smaller in the NNRTI group than in the control and INSTI groups. LAT2 protein levels were lower in the NNRTI group and correlated with birth weight centile. In contrast, LAT2 protein levels were significantly elevated in the INSTI group compared to controls. LAT1 protein levels were only significantly decreased in the INSTI group compared to the NNRTI group. Immunostaining of LAT1 showed expression in the placental blood vessels and was lower in placentas exposed to INSTIs vs. controls.

Conclusions. Our data suggest differential expression of LAT1 and LAT2 in INSTI vs. NNRTI-exposed placentas. Higher LAT2 in INSTI-exposed placentas may be a compensatory mechanism to account for lower LAT1. Further work is required to determine the differential contributions of the System L transporters to amino acid transfer and how they affect birth outcomes in people taking antiretroviral therapy.

204 Elevated Angiopoietin-1 and Non-Branching Angiogenesis in the Placentas of Individuals Living with HIV exposed to Non-Nucleoside Reverse Transcriptase Inhibitor (NNRTI) Antiretroviral Therapy

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Introduction. Antiretroviral (ARV) use during pregnancy in individuals with HIV is important for maternal health and minimizing perinatal transmission. However, ARVs have been associated with increased risk for adverse birth outcomes including preterm births (PTB) and small for gestational age (SGA) births. The mechanism underlying these adverse effects remain poorly understood. ARV-associated effects on key pathways regulating placenta development and function, including angiogenesis, may contribute to adverse outcomes. We hypothesize that NNRTI use will alter the expression of two key angiogenic factors, angiopoietin-1 and angiopoietin-2, potentially contributing to altered placentation and adverse birth outcomes.

Methods. Term placentas from 16 Canadian individuals (6 HIV positive controls and 10 HIV negative individuals) were included. All individuals with HIV were taking NNRTI-based (nevirapine or efavirenz) ARV regimens. Angiopoietin-1 and 2 protein expression was quantified via Western blot and morphological observations were made via immunohistochemistry for cytokeratin and smooth muscle actin, and H&E staining.

Results. Compared to controls, angiopoietin-1 expression levels were significantly higher in NNRTI-exposed placentas ($p < 0.005$), while angiopoietin-2 expression levels were lower in the NNRTI-exposed placentas compared to controls. Angiopoietin-1/Angiopoietin-2 ratio was significantly higher in the NNRTI-group compared to controls ($p < 0.005$), indicating a potential shift to non-branching angiogenesis. This was supported by immunohistochemical studies showing a prevalence of intermediate villi, and a lack of terminal villi. The stem and intermediate villi of NNRTI-exposed placentas also showed long non-branched blood vessels, while the terminal villi had small, occluded vessels, indicative of non-branching angiogenesis and advanced villous maturation.

Conclusions. Our data provides evidence that NNRTI exposure during pregnancy may influence angiopoietin balance towards a switch from branching to non-branching angiogenesis. Our findings highlight the need for closer investigation of ARVs and their effects on the placenta.

179 Geographic origin trends among mothers living with HIV in Canada and impact on vertical HIV transmission rates

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Background: Migration contributes significantly to new HIV cases in Canada. We describe geographic origin trends among mothers living with HIV and children with vertical infection and the impact of geographic origin on vertical HIV transmission (VT) rates among mother-infant pairs (MIPs) in Canada from 2008-2021.

Methods: The Canadian Perinatal HIV Surveillance Program collects data at 22 centres across Canada. Data reviewed included: antiretroviral use, HIV suppression and infant outcomes. Chi square and Fisher's exact test were used to determine VT rate differences for foreign-born (FBM) versus Canadian-born mothers (CBM).

Results: 3322 MIPs were identified and 1934 (58.2%) were FBM. The majority of FBM were born in Africa (1505), followed by the Caribbean (214), Asia (110), South and Central America (55), Europe (47) and the United States (3). Of African-born mothers, 22%, 26%, 16%, 24% came from Central, East, Horn and West Africa, respectively. The largest numbers of FBM originated from Congo (9.4%), Ethiopia (9.2%), Nigeria (8.9%) and Haiti (6.2%). Over the past 14 years, there has been a decrease in mothers from Haiti and increases in mothers from Congo, Ethiopia and Nigeria. Compared to CBM, FBM were more likely to be diagnosed prior to pregnancy (90.5% vs 82.9%, $p < 0.001$) and to be on ARV at the time of conception (70.7% vs 52.0%, $p < 0.001$), and more likely to be virally suppressed near delivery (90.9% vs 81.5%, $p < 0.001$). Accordingly, VT rate was 1.1% among infants born to FBM versus 2.2% among infants born to CBM ($p = 0.018$).

Conclusions: Geographic origins of HIV+ FBM in Canada have changed over time, shifting to predominantly African in the past 14 years. FBM have higher rates of HIV suppression and lower rates of VT compared to CBM. Understanding the impact of global migration and country-specific cultural and obstetrical/paediatric health issues is imperative to providing optimal HIV care.

67 Second-Generation Integrase Inhibitors Impair Differentiation Toward Ectoderm Lineage in Cultured Human Embryonic Stem Cells

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Each year, ~1.1M children are cART-exposed in utero to prevent vertical transmission of HIV. A recent study demonstrated that second-generation INSTIs bictegravir (BIC), cabotegravir (CAB), and dolutegravir (DTG) exert toxic effects in cultured human embryonic stem cells (hESCs) and a pregnancy mouse model. As their safety is not fully elucidated during pregnancy, our objective was to characterize the effects of four INSTIs in two hESC lines, with respect to markers of early germ layer differentiation.

CA1S and H9 hESCs (n=4 independent experiments) were directed to differentiate towards ectoderm (7-days), endoderm (5-days), or mesoderm (5-days) lineages. During culture, cells were exposed to BIC, CAB, DTG or raltegravir (RAL) (all at 0.5X peak plasma drug concentration) or 0.1% DMSO diluent control. At harvest, hESCs were counted and assessed via flow cytometry for viability, and ectoderm (PAX6+/NESTIN+), endoderm (SOX17+/FOXA2+), or mesoderm (TBXT+/CXCR4+) lineages. INSTI-exposed hESCs were compared to DMSO controls by one-way ANOVA with Bonferroni correction.

CA1S hESCs exposed to BIC, CAB, or DTG during differentiation exhibited decreased proliferation (all ≥ 2 -fold, $p \leq 0.03$), and BIC exposure reduced viability (2.5-fold) during mesoderm differentiation ($p < 0.001$). CA1S hESCs directed to differentiate toward ectoderm with CAB or DTG exposure showed a $\geq 90\%$ decrease in ectoderm marker expression ($p \leq 0.007$). No changes were detected for cells differentiated toward endoderm or mesoderm. In H9 hESCs, exposure to BIC, CAB, and DTG was so cytotoxic that too few cells remained for flow. In both hESC lines, RAL did not induce any cytotoxicity or differentiation dysregulation.

Second-generation INSTIs can dysregulate ectoderm differentiation, which gives rise to neural tube, neural crest cells, and epidermis. In contrast, RAL exhibited a profile similar to controls, a reassuring finding warranting further clinical investigation. Now that cART has virtually eliminated HIV vertical transmission, it is imperative to concentrate on safety in the context of pregnancy and embryonic development.

281 Exploring Factors Associated with Sexual Pleasure among Women Living with and without HIV in British Columbia

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Background: Sexual health research among women living with HIV (WLWH) has largely focused on transmission, with scarce work emphasizing positive aspects of sexuality. Low testosterone levels have been previously described among WLWH, however, the consequences on women's sexuality, including sexual pleasure, are unclear. We compared the frequency of sexual pleasure among WLWH and controls and examined associations with testosterone, controlling for psychosocial variables.

Methods: Cis-gender WLWH and controls were queried regarding socio-demographic variables and one-month history of sexual pleasure (alone or partnered). Plasma total testosterone levels were assayed by ELISA. Groups were compared by Mann-Whitney or Chi-square tests. The relationship between testosterone and sexual pleasure was examined by multivariable logistic regression, controlling for variables listed in Table 1.

Results: Participants (n=194) are described in Table 1. More HIV-negative women (71.2%) were sexually active compared to WLWH (59.0%, p=0.08). Among women with recent sexual experiences (n=128), there was no significant difference in frequency of always/usually experiencing pleasure in WLWH compared to controls (65.3% vs 67.1%, p=0.99). WLWH had lower testosterone levels than controls, however in adjusted analyses, there was no association between total testosterone levels and sexual pleasure (AOR=1.00 [95%CI: 0.99-1.02]; p=0.40). Having children at home was independently associated with lower pleasure (0.17 [0.05-0.51]; p=0.003).

Conclusion: Preliminary results suggest that frequency of sexual pleasure does not differ between WLWH and controls, even after adjusting for potential confounders. Though testosterone levels were lower among WLWH, this was not associated with pleasure, suggesting that psychosocial factors influence sexual pleasure more than biomedical variables.

Supporting Document

Exploring Factors Associated with Sexual Pleasure among Women Living with and without HIV in British Columbia

Table 1. Participant socio-demographic and clinical variables

	WLWH* (n=83)	HIV-negative (n=111)	p-value
Age (years), median [IQR]	51.50 [44.00 to 58.40]	46.80 [28.00 to 56.40]	0.02
Income, n (%)			0.34
≥\$20,000 CAD [†] /year	45 (56.2)	65 (64.4)	
<\$20,000 CAD/year	35 (43.8)	36 (35.6)	

Substance use[‡], n (%)			0.004
Never	30 (38.0)	67 (62.0)	
Past	21 (26.6)	21 (19.4)	
Current	28 (35.4)	20 (19.4)	
Relationship Status, n (%)			0.77
Married/Common Law/Relationship	31 (37.3)	43 (38.7)	
Single	41 (49.4)	57 (51.4)	
Widowed/Separated/Divorced	11 (13.3)	11(9.9)	
Presence of ≥ 1 Mental Health Condition[§], n (%)			0.67
Yes	53 (64.6)	66 (60.6)	
No	29 (35.4)	43 (39.4)	
Presence of Children at Home, n (%)			0.33
Yes	19 (23.5)	18 (16.7)	
No	62 (76.5)	90 (83.3)	
Sexual Activity in Past 1-Month, n (%)			0.08
Yes	49 (59.0)	79 (71.2)	
No	34 (41.0)	32 (28.8)	
Sexual Pleasure in Past 1-Month, n (%)[¶]			0.99
Always/Usually (75 to 100%)	32 (65.3)	53 (67.1)	
Sometimes/Seldom/Never (0 to 50%)	17 (34.7)	26 (32.9)	
Total testosterone levels (ng/dL), median [IQR]			0.01
	32.4 [18.0 to 49.0]	41.7 [26.3 to 67.2]	

*WLWH=women living with HIV; † CAD=Canadian dollars; ‡Substance use=opioids, crack/cocaine, and/or methamphetamines; §Mental Health Condition= meets cut-off on a validated scale for Depression (10-item CES-D), Post-Traumatic Stress Disorder (6-item PTSD Checklist), or Generalized Anxiety Disorder (GAD-7); ¶Among those who were sexually active (n=128). Sexual pleasure was assessed using one item from the Brief Index of Sexual Functioning for Women (BISF-W): “During the past one month, have you felt pleasure from any forms of sexual experience (including self-pleasure or masturbation)?” Responses were dichotomized into two groups (always/usually versus sometimes/seldom/none)

242 PEP-in-Pocket (PIP): Long-term Follow-up of On Demand HIV Post-Exposure Prophylaxis

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Background

Pre-exposure prophylaxis (PrEP) and post-exposure prophylaxis (PEP) are established methods of HIV prevention through the use of antiretroviral medications. However, the suitability of these tools for individuals with infrequent, higher-risk HIV exposures might be limited due to cost, high pill burden and/or barriers to care. PEP-in-pocket (PIP) involves prospectively identifying such individuals, proactively prescribing them 28 days of PEP medication, and providing instructions on when to initiate medications and how to follow up with care. We present long-term follow-up of a cohort of patients using PIP for HIV prevention.

Methods

We conducted a retrospective evaluation of the clinical characteristics and outcomes of patients using PIP for HIV prevention. Patients referred for PrEP or PEP care were offered PIP if they reported a low frequency (0-4 per year) of high-risk HIV exposures of any type. HIV prevention method was chosen through shared decision-making between patients and clinicians and was outside the realm of this study. Patients were followed at regular 4-6 months intervals.

Results

We followed 112 patients aged 20-69 for a total of 183.8 patient-years. 108 (96%) patients were assigned male at birth. Thirty-five (31%) patients self-initiated a total of 64 courses of PIP during the observation period. Patients transitioned between HIV prevention modalities as circumstances warranted: 34 (31%) changed from PIP to PrEP, and 33 (30%) changed from PrEP to PIP. There were 18 episodes of bacterial sexually transmitted infections in 13 individuals (12%). No HIV seroconversions were detected.

Conclusions

PIP is an innovative HIV prevention strategy for individuals with a low frequency of higher-risk exposures, and provides patients with autonomy and agency over their care. Patients may transition between PIP and PrEP based on evolving risk. PIP should be included with PEP and PrEP as a biomedical HIV prevention option for individuals at risk for infection.

262 Updating Canadian Guidelines on HIV Pre Exposure Prophylaxis: A Systematic Review of Clinical Trials & Cohort Studies

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Background: Pre-exposure prophylaxis (PrEP) using oral tenofovir disoproxil fumarate/emtricitabine (TDF/FTC) has been a standard of care HIV prevention intervention since Health Canada approval in 2016, but many scientific advances have occurred since Canadian guidelines were published in 2017.

Methods: We conducted a systematic review of PrEP clinical trials and cohort studies published from July 2017-July 2022. We searched Medline and Embase for studies reporting on at least one of: HIV acquisition, tolerability, toxicity, mental health benefits, drug resistance and perinatal outcomes. Two reviewers independently screened abstracts and publications; data from eligible articles were extracted onto a standardized form. Here we summarize study designs, PrEP regimens, and populations included in the first 45 eligible manuscripts.

Results: Of 5531 abstracts identified, we removed 395 duplicates, screened 5136 abstracts, reviewed 241 full-text articles, and deemed 104 eligible for inclusion. The first 45 eligible studies reported on 75841 participants, and included 25 (56%) prospective cohorts, 16 (36%) randomized trials, 2 (4%) non-randomized trials and 2 (4%) retrospective cohorts. The primary or novel regimen examined was most commonly TDF/FTC (n=45, 67%), followed by tenofovir alafenamide/emtricitabine (n=7, 16%), long-acting injectable cabotegravir (n=3, 7%), tenofovir gel (n=2, 4%), maraviroc (n=2, 4%) and dapivirine (n=1, 2%). Studies covered most key populations including gay, bisexual and other men who have sex with men (n=24, 53%), transgender women (n=15, 33%), heterosexual women (n=18, 40%), heterosexual men (n=7, 16%) and transgender men (n=4, 9%), though none so far have addressed people who inject drugs. Most were conducted in Africa (n=15, 33%), followed by North America (n=10, 22%), Europe (n=3, 7%), Asia (n=3, 7%) and Australia (n=3, 7%); multiple continents were included for n=10 (22%) studies.

Conclusions: Preliminary findings suggest an expansive literature on multiple PrEP regimens in most key populations to inform forthcoming Canadian guidelines.

199 Use of Estrogen Ring and/or Probiotics to Improve Vaginal Health and Decrease Biological Risk of HIV-1 Infection in African/Caribbean/Black Women: Results From A Prospective, Randomized, Open-label, Intervention Phase I Trial

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Background: Human immunodeficiency virus (HIV) remains a leading cause of morbidity worldwide, with over 50% of infections occurring in women. The vaginal microbiome has been shown to play a key role in mediating susceptibility. Specifically, a polymicrobial environment coupled with reduced Lactobacillus colonization is associated with bacterial vaginosis (BV), and increased risk of HIV infection. This study aimed to improve vaginal health among African/Caribbean/Black (ACB) women using intravaginal estrogen and/or probiotic interventions.

Methods: Forty-one ACB women completed a 30-day intervention, randomized to one of four treatment groups: RepHresh™ Pro-B™ probiotic delivered vaginally in combination with the intravaginal estradiol Estring®, oral probiotics with the Estring, vaginal probiotics alone, or the Estring alone. Feasibility was evaluated through enrolment, retention, and intervention protocol (IP) adherence rates, while safety was assessed according to adverse events (AEs) and comprehensive blood panels. In addition, genomic DNA was extracted from cervicovaginal lavage (CVL) samples for microbiome analysis.

Results: The enrolment and retention rates were 0.81 and 0.83 respectively, with an IP adherence greater than 0.70 for those that completed the study. Microbiome data revealed a positive treatment response in 41% (n=17) of participants, with no significant microbial shift occurring in an additional 41% (n=17) of participants. Intervention groups including the Estring and oral probiotic, along with the vaginal probiotic alone had the highest positive responses of 50% and 54% respectively. Amongst participants with a positive treatment response, an overall 13% increase in Lactobacillus spp. from baseline was observed one-week post-treatment. Furthermore, differential abundance analysis indicated a significant reduction in several polymicrobial species associated with BV including, Anaerobius and Prevotella.

Conclusion: Our results demonstrate acceptable enrolment, retention, and adherence, with no severe AEs reported. Preliminary findings also suggest the administration of intravaginal estrogen and probiotics are associated with beneficial shifts in the microbial microenvironment.

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110 Preventative Behaviours and COVID-19 Infection in a Canadian Cohort of People Living with HIV

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Background: Due to intersecting vulnerabilities and social disparities, people living with HIV (PLWH) have faced many challenges during the COVID-19 pandemic. The preventive behaviour measures advocated through the time of pandemic may have resonated differently with PLWH, as some have difficulty placing trust in the health care system. There is a paucity of PLWH-specific data examining demographic factors that affected preventative behavior practices.

Methods: Using data from Canadian Immunity Task Force questionnaire used in the CIHR Canadian HIV Trials Network prospective observational cohort study (CTN328) of PLWH receiving >1 COVID-19 vaccine, we examined the relationship between participants' characteristics and behavioural practices intended to prevent COVID-19 infection. Subsets of participants were included in sub-analyses exploring relationships between preventative behaviours and known COVID-19 infection, multimorbidity or symptomatic COVID-19 infection (special look at the Omicron wave).

Results: Among 375 participants, the mean age was 52.0 years (SD 13.3) and median duration of HIV infection 17 years. Forty-nine participants had COVID-19 infection before study enrolment and 78 contracted COVID-19 during the study. The proportion of participants reporting preventative behaviours included 87% masking, 79% physical distancing, 70% limiting social gatherings, 65% limiting contact with at-risk individuals, 33% self-isolating due to symptoms, and 26% self-quarantining due to possible exposure. Participants with known prior COVID-19 infection (n=25) were more likely to self-quarantine when thought to have been exposed to COVID-19 but were asymptomatic (p<0.001). Participants with multimorbidity were more likely to endorse physical distancing (85.7% vs 75.5%, p=0.044) although this was not significant in an adjusted analysis.

Conclusions: Our PLWH cohort reported high rates of preventative behaviour practices, with select differences among those with prior COVID-19 infection and with multimorbidity. Our results suggest some key motivating factors in facilitating preventative behaviours, that can help in tailoring policy and communication strategies directed at PLWH during subsequent pandemic waves.

334 Adapting and operationalizing the Women-Centred HIV Care model for trans women living with HIV

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Background: Questions remain about the potential of the Women-Centered HIV Care (WCHC) Model to serve trans women, who experience disproportionate rates of HIV. Thus, this study critically sought to explore trans women's insights about the WCHC.

Methods: Semi-structured interviews with 17 trans women were completed in 2022. Participants were recruited through purposive sampling to recruit a sample diverse in gender identity, socioeconomic status, race, and sexuality to elicit perspectives marginalized in research. Interviews were recorded, transcribed verbatim, and analyzed using thematic analysis.

Results: Overall, participants were satisfied with the WCHC Model. They raised unique considerations for the implementation of the model for trans women, exemplified through three overarching themes. First, they identified a lack of knowledge among healthcare providers about trans women's unique needs with respect to each section of the model. For instance, they recognized that while all women are disproportionately affected by violence, healthcare providers must understand how transphobia intersects with violence. Second, participants spoke to the limitations of the healthcare system—long wait times, increasing out-of-pocket costs, and the compartmentalization of care - by which trans women are disproportionately impacted. They spoke to the need for integration between health and social services and for providers to support trans patients with system navigation. Lastly, participants elucidated the tensions between the community and the individual, highlighting that trans women are not monolithic and emphasizing the importance of person-centered care.

Conclusion: Participants' feedback provides key perspectives on the assumed tension between cis women's needs and trans women's needs, which are incorrectly treated as separate in healthcare settings. Their insights advance conceptions of womanhood, community, and self which underpin affirming and inclusive healthcare. This perspective emphasizes the importance of ongoing community involvement in healthcare and has implications for the implementation of the WCHC Model for other groups disproportionately affected by HIV.

32 A Comparative Study of Nonfatal Overdoses in People With and Without HIV in British Columbia, Canada

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Background: The magnitude of the drug toxicity crisis is most severe in British Columbia (BC) and people with HIV (PWH) are disproportionately affected. Nonfatal overdoses (NFODs) are associated with increased mortality in the following year; more insight is needed into the occurrence, determinants, and consequences of NFODs among PWH.

Methods: The Comparative Outcomes and Service Utilization Trends study is a population-based cohort linking demographic and clinical data from the BC Centre for Excellence in HIV/AIDS with administrative data from Population Data BC on all PWH in BC and a 10% general population sample, aged ≥ 19 years. We assessed and compared the age-adjusted incidence rate (IR) of NFOD events resulting in hospitalization or acute care visit, between men and women with and without HIV. Using Poisson regression, we modelled the interaction between sex and HIV-status.

Results: Between 2012-2020, 11,062 PWH (81.8% male) and 474,072 people without HIV (50.3% male) were followed-up for a median of 7.9 (Q1-Q3:7.3-7.9) and 7.9 years (Q1-Q3:4.3-7.9) years respectively. Age-adjusted IRs among men with and without HIV were 40 (95%CI:38-43) and 3.4 (95%CI:3.3-3.5)/1000 PY, IRR=11.8 (95%CI:11.0-12.6), and for women with and without HIV 69 (95%CI:63-74) and 2.7 (95%CI:2.6-2.7)/1000 PY, IRR=25.8 (95%CI:23.7-27.9). Between 2013-2019, the age-adjusted NFOD rate statistically significantly increased among men and women without HIV but not among PWH. After adjusting for age and neighbourhood-level income quintile, HIV remained significantly associated with a higher NFOD rate (IRR=12.7, 95%CI:11.8-13.7). Compared to men without HIV, the NFOD rate in women without HIV was lower (IRR=0.8) whereas it was higher in men (IRR=10.2) and women with HIV (IRR=17.3)(p-interaction<0.001).

Conclusions: These preliminary results demonstrate a significantly higher NFOD rate among PWH compared to people without HIV. The NFOD rate was highest among women with HIV. These findings stress the need for policies and programs oriented toward PWH to mitigate overdoses.

293 High Pandemic-Related Mortality Amongst People with HIV in Saskatchewan, Canada

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Background

Saskatchewan faces an HIV epidemic driven by injection drug use (IDU) with disproportionate representation of younger persons, women, and Indigenous persons. HIV incidence in Saskatchewan in 2021 was 4.5 times the Canadian average.

During COVID-19, the use of synthetic fentanyl surged, leading to high overdose events & deaths.

We characterized the difference in HIV cascade of care outcomes & mortality amongst people with HIV (PWH) in southern Saskatchewan during the pandemic.

Methods

We conducted a retrospective cohort study for all PWH cared for in the Infectious Diseases Clinic (IDC) in Regina between December 31/19 and June 10/22. Age, sex, ethnicity & primary mode of HIV acquisition, cascade of care and mortality data were collected from the IDC database. All deaths along with most likely cause were determined via case review.

Results

On December 31/19 and June 10/22 respectively, IDC cared for 518 and 585 PWH. Amongst the current cohort, 245 (42%) were female, 163 (28%) were ≤ 35 years, 306 (52%) were Indigenous, and 318 (54%) acquired HIV through IDU.

Cascade measures worsened during COVID-19. 58.1% were retained in care & 76.1% virally suppressed (HIV RNA ≤ 200 copies/mL) in December 2019, decreasing to 51.3% (p=0.02) & 68.8% (p=0.06) by June 2022.

80 deaths occurred during the study period, 15.4% of the cohort from December 2019. Most (49, 61.3%) were due to suspected or confirmed overdose. 10 (12.5%) occurred due to complications from IDU. No deaths were directly attributable to COVID-19. Most who died acquired HIV from IDU (69/80, 86%).

Conclusions

We describe intersecting epidemics of HIV and IDU leading to significant morbidity & mortality in high-risk populations during COVID-19. Contributing factors may be disruption of safe supply & harm reduction services. Comprehensive harm reduction and addiction management are needed to reduce morbidity & mortality amongst PWH in Saskatchewan.

Epidemiology and Public Health Oral Abstracts / Épidémiologie et santé publique éposés oraux

62 Prévalence et facteurs associés aux infections sexuellement transmissibles chez les hommes ayant des relations sexuelles avec d'autres hommes initiant la prophylaxie préexposition contre le virus de l'immunodéficience humaine au Bénin

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Les hommes ayant des relations sexuelles avec d'autres hommes (HARSAH) ont un risque accru d'infections sexuellement transmissibles (IST). Les données sur les IST chez les HARSAH sont rares au Bénin. Cette étude visait à évaluer la prévalence et les facteurs associés à *Neisseria gonorrhoeae* (NG), *Chlamydia trachomatis* (CT) et *Treponema pallidum* (TP) chez 204 HARSAH VIH-négatifs de Cotonou au Bénin. Un questionnaire a été complété et les participants ont subi un examen physique fait par un médecin. Des échantillons de sang, anaux, pharyngés et urinaires ont été prélevés. Les prévalences des IST ont été présentées avec un intervalle de confiance à 95% et la régression de Poisson a permis d'identifier leurs déterminants. La prévalence était de 18,6%, 15,2%, 9,8% et 27,9% pour CT, NG tous sites confondus, NG anorectal et NG/CT respectivement. La co-infection CT/NG était de 21% et la localisation multisite de 6,9%. Les IST étaient généralement asymptomatiques (84,2% pour CT/NG) et de localisation extra-génitale (61,4% pour CT/NG). Un seul cas de syphilis non confirmée a été observé. En analyse multivariée, le fait d'avoir moins de 25 ans, de ne pas être célibataire et d'avoir plus de quatre partenaires féminines était associé à CT et CT/NG alors qu'un faible revenu mensuel était associé à CT/NG seul. Le jeune âge, le sexe anal réceptif et les rapports sexuels payants étaient associés à NG. Seul le sexe anal réceptif était associé à NG anorectal. Les infections à CT et à NG sont fréquentes chez les HARSAH VIH-négatifs de Cotonou au Bénin. Leur caractère asymptomatique et extra-génital rend la prise en charge syndromique inefficace et le dépistage aux sites anal et pharyngé incontournable. La syphilis est rare chez ces HARSAH. Les interventions de contrôle et de prévention devraient cibler particulièrement les jeunes HARSAH et leurs partenaires sexuelles féminines.

235 Implementation and success of HIV services through the Know Your Status program in Big River First Nation, Saskatchewan during the COVID-19 pandemic

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Background: The COVID-19 pandemic had impacts on STBBI services including engagement and retention of HIV clients in Canada. This study aimed to (1) estimate the proportion of individuals on treatment among people living with HIV in Big River First Nation and neighboring areas receiving their HIV services (BRFN area) in 2020, and (2) compare the findings of objective (1) with Saskatchewan First Nations communities, provincial and national data.

Methods: Individuals included in the analysis were persons diagnosed in BRFN area who were living with HIV as of December 31, 2020. The variables of interest were total clients on HIV treatment and virally suppressed as per the national PHAC definitions.

Results: Overall, among persons living with HIV in BRFN area, 95% were on treatment and 80% were virally suppressed at the end of 2020. When compared to the overall Saskatchewan First Nations, and general Saskatchewan and Canadian populations, the percentage of clients on treatment and virally suppressed were higher among people with HIV in BRFN area (Table 1).

Conclusions: Despite the disruptions of COVID-19 pandemic, HIV continuum of care estimates for treatment and viral suppression in BRFN area were higher compared to provincial and national estimates. These outcomes are likely related to locally developed and community-led Know Your Status program since 2011 in BRFN area that has provided stability, trust and care to allow for successful treatment outcomes through the pandemic. This success was due to the combined efforts of leadership, its Elders and healthcare workers in a culturally appropriate manner.

Supporting Document

Table 1: Estimated percentage of persons on treatment, and virally suppressed with diagnosed HIV in Big River First Nation and neighboring areas receiving their HIV services (BRFN area), Saskatchewan First Nations communities, and the Saskatchewan and Canadian general populations, at the end of 2020.

	On treatment ²	Virally Suppressed ³
Persons living with diagnosed HIV in BRFN area	95%	80%
Persons living with diagnosed HIV in Saskatchewan First Nations communities ¹	88%	78%
Saskatchewan general population ¹	90%	65%
Canadian general population ¹	77%	73%

Data extracted from: (1) PHAC: Saskatchewan First Nation, Saskatchewan and Canadian treatment and viral suppression estimates <https://www.canada.ca/en/public-health/services/publications/diseases-conditions/estimates-hiv-incidence-prevalence-canada-meeting-90-90-90-targets-2020.html> (as of January 3, 2023).

²PLWH who had at least one ART dispensation in the calendar year.

³PLWH on ART whose latest viral load in the respective calendar year was below 200 copies/mL.

37 Congo Lye: HIV Vulnerabilities & Prevalence Among Young Women in Northern Uganda

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Background: Adolescent girls and young women (AGYW) account for disproportionate numbers of HIV infections in sub-Saharan Africa. This study estimated the prevalence of HIV infection and related vulnerabilities among AGYW under 25 living in post-conflict Northern Uganda.

Methods: The 'Congo Lye' Project is an open cohort involving conflict-affected populations in mid-Northern Uganda. Between December 2020 and March 2023 a total of 888 consenting AGYW aged 13-24 years were enrolled and interviewer-administered data were collected on trauma, depression and socio-demographic-behavioral characteristics. Venous blood was taken for HIV and syphilis serology. Multivariable logistic regression modeling was used to assess the independent effect of factors associated with HIV prevalence.

Results: HIV prevalence was 2.7% (1.1% among 13-14, 1.7% among 15-19, and 5.0% among 20-24). Six (25.0%) out of 24 HIV cases were not sexually active. Among sexually active AGYW (N=424), HIV prevalence was 4.2% (2.2% among 15-19, and 5.2% among 20-24). Among the 24 HIV+, 50% had detectable viral loads. The prevalence of probable PTSD was 2.7% (95%CI: 1.7-4.0) overall, and 4.1% (95%CI: 2.4-6.3) among sexually active AGYW. The mean resilience score was only 60.5 (95%CI: 59.8-61.2). After adjusting for age and district in multivariable logistic regression: AGYW who had a first partner at least 10 years older were 3.68 times more likely to have HIV (95%CI: 1.00-13.61; p=0.051). AGYW who lost a parent (OR: 4.00; 95%CI: 1.54-10.00; p=0.005), had syphilis (OR: 11.93; 95%CI: 3.18-44.81; p<0.001), ever attempted suicide (OR: 5.86; 95%CI: 1.88-18.31; p=0.002), or never vaccinated for HPV (OR: 7.14; 95%CI: 0.88-50.00; p=0.065), were associated with an increased risk of HIV.

Conclusion: The ongoing legacies of war, especially gender violence, are contributing to HIV vulnerability among AGYW in Northern Uganda. Wholistic approaches integrating HIV prevention with culturally-safe mental health initiatives are urgently required in Northern Uganda.

142 Wait times for a PrEP prescription by area of residence in five Canadian cities

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BACKGROUND: HIV preventive services are often concentrated in downtown urban settings. We hypothesized that wait times are longer in less densely populated areas.

METHODS: The PRIMP survey collected cross-sectional data on sociodemographic and PrEP access in Toronto, Vancouver, Ottawa, Hamilton and Victoria between JUL/2019-AUG/2020; among gay, bisexual and other men who have sex with men aged > 19. We analyzed wait times for the first PrEP prescription from the moment the person decided to start PrEP, by area of residence. We used the first three digits of participants' postal codes together with 2016 census data to calculate population density (inhabitants/Km²) for each geographic code. We calculated and mapped the median waiting time (days) for each quartile of population density. We stratified the analyses by former and current PrEP users. Kruskal-Wallis tests were used to test for differences between wait time and population density quartiles.

RESULTS: Areas with longer wait time were generally outside city cores (See Figure). Among current PrEP users, the median wait times (Q1-Q3) for quartiles 1 (less densely populated) to 4 (more densely populated) were: 23 (8-60), n=76; 14 (7-30), n=81; 15 (7-30), n=86; and 10 (5-30), n=85, respectively (p=0.026). Among former PrEP users, the median wait times (Q1-Q3) for quartiles 1-4 were: 14 (7-15), n=38; 10 (7-15), n=33; 13 (7-20), n=38; and 10 (10-15), n=19, respectively (p=0.793).

CONCLUSION: Geographic accessibility may impact PrEP usage. PrEP availability could be improved by considering distribution of providers, ensuring providers are culturally-affirming, and providing online/telemedicine access options.

Supporting Document

Wait times for a PrEP prescription by area of residence in five Canadian cities

Oscar Javier Pico-Espinosa^{1,9}, Mark Hull², Daniel Grace³, Nathan Lachowsky⁴, Paul MacPherson⁵, Kevin Woodward⁶, Saira Mohammed², Robinson Truong¹, Garfield Durrant⁷, Camille Arkell⁸, Darrell H.S. Tan¹

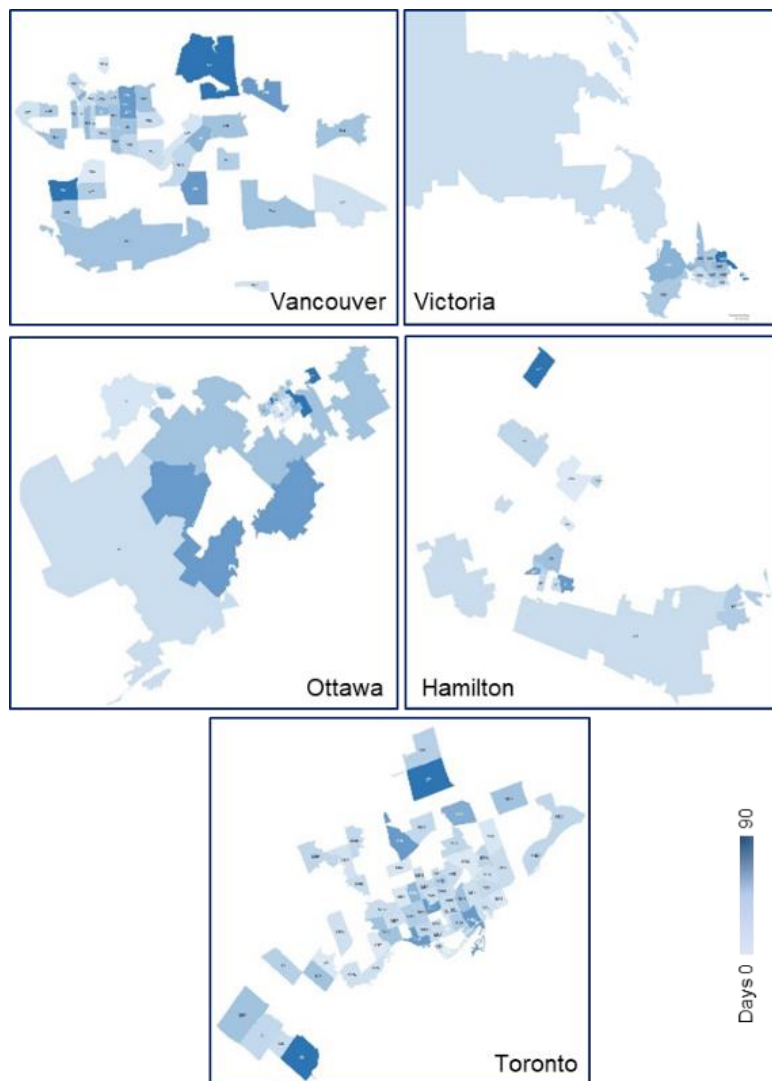
(1) St Michael's Hospital, Toronto, ON, Canada. (2) BC Centre for Excellence in HIV/AIDS, Vancouver, BC, Canada. (3) Dalla Lana School of Public Health, University of Toronto, Toronto, ON, Canada. (4) University of Victoria, Victoria, BC, Canada. (5) University of Ottawa, Ottawa, ON, Canada. (6) McMaster University, Hamilton, ON, Canada. (7) Black Coalition for AIDS Prevention (Black CAP), Toronto, ON, Canada. (8) Canadian AIDS Treatment Information Exchange (CATIE), Toronto, ON, Canada. (9) CIHR Canadian HIV Trails Network, Vancouver, BC, Canada.

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CONCLUSION: Geographic accessibility may impact PrEP usage. PrEP availability could be improved by considering distribution of providers, ensuring providers are culturally-affirming, and providing online/telemedicine access options.



70 Differences in Trends in Engagement in the HIV Care Cascade among Select Subpopulations by Region of Ontario

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Background:

The HIV care cascade measures how people living with diagnosed HIV are engaged in care and treatment. Geographic and subpopulation differences indicate where, among whom, and which cascade metrics require additional supports.

Methods: Using provincial laboratory-based surveillance data, HIV diagnoses between 2009-2020 were linked with viral load (VL) tests within Ontario. HIV care cascade metrics were proportions: 1-In care among diagnosed (≥ 1 VL test/year), 2-On antiretroviral treatment (ART) among diagnosed (reported on last VL requisition or VL<200 copies/ml), and 3-Virally suppressed among diagnosed (<200 copies/ml at last VL test). Tester's address and risk factor information defined Ontario region and select subpopulations: gay, bisexual, and other men who have sex with men (GBMSM), people who use injection drugs (PWID), and males and females who reported heterosexual contact.

Results: In 2020, 15,419 males and 4,288 females were living with diagnosed HIV in Ontario. Cascade metrics (in care, on ART, virally suppressed) varied by subpopulation: GBMSM (90.8%-88.0%-86.2%); PWID (83.2%-73.2%-69.2%); heterosexual males (89.8%-86.3%-83.6%); and heterosexual females (91.2%-88.3%-85.3%). Among GBMSM, cascade metrics were higher in Eastern and Southwest and lower in Northern, Ottawa, and Central West (still above other subpopulations). PWID varied widely: Southwest had the highest metrics (91.5%-80.9%-77.7%, but still below other subpopulations), Eastern had the lowest in care (68.0%), and Northern had the lowest on ART (60.0%) and virally suppressed (56.0%). Among heterosexual males, Eastern had the highest proportion in care (92.3%), but second lowest on ART (80.8%) and virally suppressed (76.9%). Heterosexual females had higher metrics in most regions compared to heterosexual males, particularly in Northern and Eastern regions.

Conclusions:

GBMSM and heterosexual females had the highest cascade metrics while heterosexual males and PWID had lower metrics, particularly among PWID in the Northern and Eastern regions. Tailored efforts across the care cascade should prioritize regions and subpopulations with lower cascade engagement.

35 Identification of people living with HIV in administrative healthcare records: A population-based data linkage study in British Columbia, Canada

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Introduction: Case-finding algorithms can be applied to administrative healthcare records to identify people with various diseases, including people living with HIV (PLWH). When supplementing an existing registry, near-perfect specificity helps reduce the impact of algorithm-identified false positive cases. We evaluated the performance of algorithms applied to healthcare records to supplement an HIV registry in British Columbia (BC), Canada.

Methods: The BC-CfE's Drug Treatment Program provides free HIV medications to medically-eligible persons in BC, and resembles a registry of most PLWH in BC. To identify PLWH absent from this registry, we applied algorithms based on HIV-related diagnostic codes to physician and hospitalizations records. We evaluated 159 algorithms in a validation sub-sample of 6,696 persons with positive HIV tests (of whom 2,482 had a prior negative test) from the STOP HIV/AIDS data linkage (1996-2017). Algorithms were also evaluated based on sensitivity and specificity, as well as the impact on the estimated number of PLWH in BC as of March 2017 (i.e., algorithm-identified PLWH added to the BC-CfE registry).

Results: In the validation sub-sample, median age at HIV-positive test was 37 years, 79.2% were men, and 49.5% resided in Vancouver Coastal Health Authority. For all algorithms, specificity exceeded 96% and sensitivity ranged from 10% to 96%. When supplementing a pre-existing HIV registry, we recommend an algorithm with 99.87% (95% CI: 99.72%, 100.00%) specificity and 79.11% (95% CI: 78.06%, 80.15%) sensitivity, requiring five HIV-related physician encounters or two HIV-related hospitalizations within a 12-month period, or one hospitalization with HIV listed as the most responsible diagnosis. Upon adding PLWH identified by this highly-specific algorithm to the registry, 8,532 PLWH were present in BC as of March 2017, of which 283 (3.3%) were algorithm-identified.

Discussion: This study highlighted the value of applying case-finding algorithms to administrative healthcare records to further identify PLWH in BC.

201 The Epidemiologic and Economic Impact of Rapid Treatment Initiation of HIV with Bictegravir/Emtricitabine/Tenofovir Alafenamide (B/F/TAF) from a Canadian Healthcare Perspective

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OBJECTIVE: Although antiretroviral therapy (ART) should be initiated as soon as possible after HIV diagnosis to reduce viral load, delays are often encountered in clinical practice, contributing to virus transmission. The objective of this study was to assess, from a Canadian perspective, the potential epidemiological and economic impact of rapid ART initiation with bictegravir/emtricitabine/tenofovir alafenamide (B/F/TAF) compared to current initiation in Canadian clinical practice.

METHODS: A dynamic transmission model was adapted to the Canadian setting, over a 20-year time horizon, to estimate the cumulative HIV infection incidence and potential cost savings, based on the number of HIV infections prevented. Three key subgroups were considered: men who have sex with men (MSM), heterosexual males and females, and people who inject drugs (PWID). The impact of rapid treatment initiation with B/F/TAF (7 days as a target) was compared to current clinical practice (45 days). The lifetime direct health care cost of HIV was applied to the number of infected patients to estimate the economic burden of the two scenarios. Productivity costs were added in a scenario analysis.

RESULTS: Over the 20-year projection period, rapid B/F/TAF initiation is expected to prevent 415 HIV infections, resulting in savings of \$139M to the Canadian healthcare system. Nearly half of new HIV infections avoided (42%) were from the MSM, while 33% were from heterosexuals and 25% from PWID. When considering productivity costs, potential savings increased to \$510M. Varying the time to ART initiation by ± 7 days in current clinical practice results in savings ranging from \$115M to \$162M over the 20-year projection period.

CONCLUSION: These results suggest that rapid ART initiation with B/F/TAF in newly diagnosed patients with HIV is a high-value strategy for the Canadian healthcare system to prevent future HIV infections and thus, to reduce related costs of care.

42 Optimizing Linkage to Care to Hepatitis C Virus (HCV) Care for Untreated Individuals Released from Quebec Provincial Prison: Interim Analysis of the Beyond Prison Walls Study

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Background: Only 15% of people in prison with chronic hepatitis C virus (HCV) are linked to HCV care following release from Quebec provincial prisons. We evaluated the impact of a prison-based model of care in the largest provincial adult male prison in Quebec on linkage to HCV care following community re-entry.

Methods: We conducted a prospective, single arm study; men sentenced 2-12 weeks were approached. Participants underwent nurse-led point-of-care HCV-antibody (HCV-Ab) testing (fingerprick OraQuick[®] test). HCV-Ab+ individuals underwent confirmatory HCV RNA testing via venipuncture. HCV RNA+ individuals were assessed by a social worker, who provided community referrals, and a patient navigator, who accompanied participants to their post-release appointment. The primary outcome was linkage to care, defined as the proportion of individuals who presented for an HCV appointment within 30 (“early linkage”) or 90 days (“delayed linkage”) from release. Secondary outcomes included the proportion of released individuals who initiated direct-acting antivirals (DAAs), completed DAAs, and achieved sustained virologic response (SVR).

Results: From January 7, 2020 to December 21, 2022 (interrupted by the COVID-19 pandemic), 335/461 (73%) incarcerated individuals agreed to participate. Overall, 32 (10%) were HCV-Ab+ and 12 (38%) were HCV RNA+ (0 co-infected with HIV). Median age was 43 years; nine (75%) self-identified as white and seven (58%) reported injection drug use one week prior to incarceration. Of the 12, seven (58%) were linked to care, four and three within 30 and 90 days of release, respectively. Of these, six (86%) initiated and five (71%) completed DAAs and, among the three with SVR data, three (100%) achieved SVR.

Conclusions: A multidisciplinary model of care increased linkage to HCV care by four-fold among untreated individuals released from a Quebec provincial prison. Public policy should support similar models of care to promote linkage to care and treatment uptake in this high-risk population.

225 HIV Pre-exposure Prophylaxis Use and Subsequent Bacterial Sexually Transmitted Infections Among HIV-Negative Gay, Bisexual, and Other Men Who Have Sex with Men (GBM)

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Objective: PrEP-using GBM may be more likely to engage in sexual behaviors associated with bacterial STI transmission. We assessed the associations between PrEP use, condomless anal sex (CAS), number of sex partners (NSP), oral sex (OS), and odds of acquiring a subsequent bacterial STI among GBM living in Canada.

Methods: Among 2,008 HIV-negative/unknown-status GBM from the baseline sample of the Engage Cohort Study (recruited 2/2017-8/2019), we fit a structural mediation model to estimate pathways between PrEP use at baseline, and sexual behaviors and bacterial STI diagnoses (gonorrhea, chlamydia and syphilis) observed at 1-year follow-up.

Results: Among baseline participants, 17.0% used PrEP within the last 6 months and 6.8% were diagnosed with a bacterial STI at 1-year follow-up. The direct association between PrEP use at baseline and STI diagnosis at 1-year follow-up (see Figure) was mediated by CAS, $\beta=0.09$, 95%CI [0.03, 0.17], $p=.02$, and the number of sexual partners $\beta=0.08$, 95%CI [0.03, 0.13], $p=.001$. That is, those who were on PrEP at baseline were, 1 year later, more likely to report CAS and a greater number of sexual partners (1-yr later), which accounted for the increase in STI diagnosis in the 1-year follow-up.

Conclusion: PrEP use at baseline was indirectly associated with future bacterial STIs among GBM via both an increased number of sex partners and increased engagement in CAS. Behavioural and biomedical interventions, including consistent STI screening as per PrEP care and potential bacterial STI prophylaxis, are needed to reduce PrEP-using GBM's risk of bacterial STIs.

Supporting Document

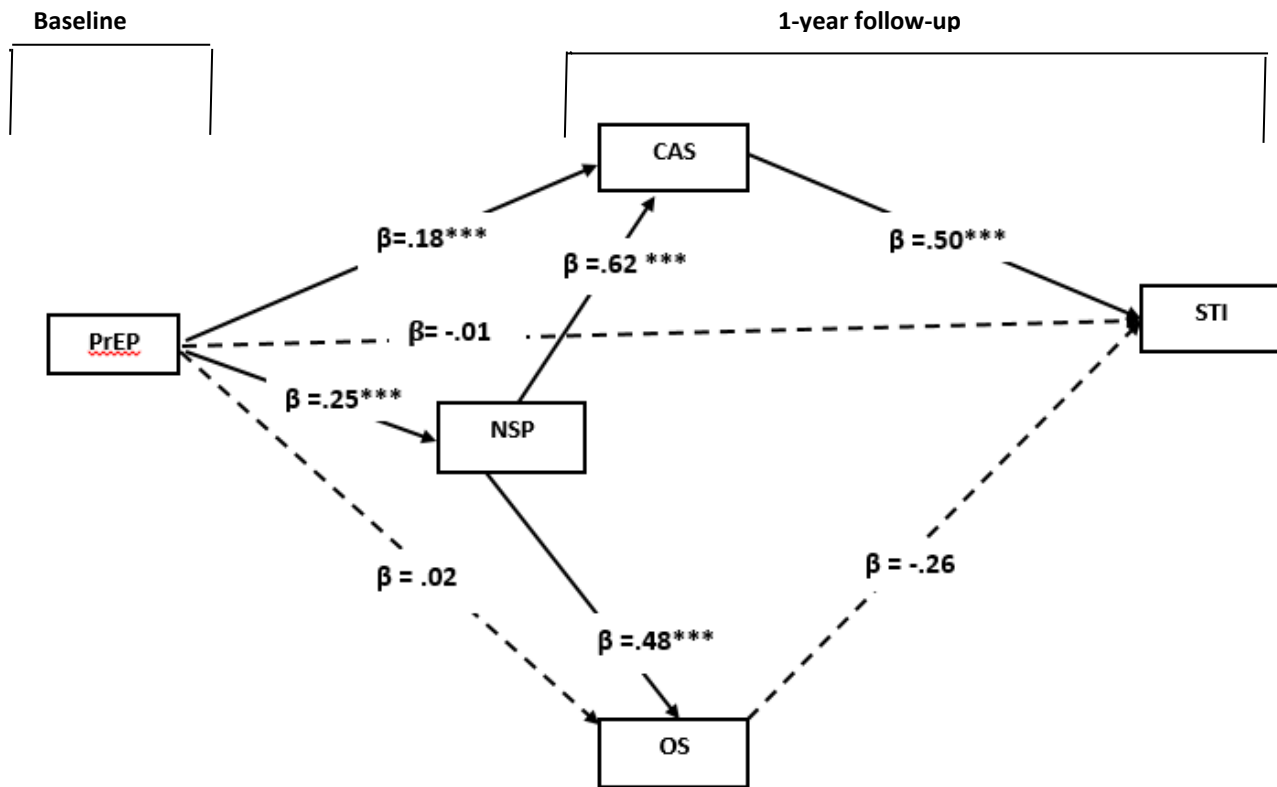


Figure 1. This structural equation model presents associations between pre-exposure prophylaxis (PrEP) use at baseline and bacterial STIs at one-year follow-up, with intermediary associations of condomless anal sex (CAS), number of male sex partners (NSP), and oral sex (OS) at one-year follow-up. Dotted lines represent nonsignificant associations; **solid lines represent significant associations**. B = Standardized coefficient.
 * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

251 HIV PrEP as an Opportunity for HAV, HBV, and HPV Vaccination: An Analysis of the ON-PrEP Cohort Study

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Background: In Ontario, groups eligible for publicly funded vaccines include men who have sex with men (MSM) for hepatitis A virus (HAV); MSM, people who inject drugs, and those with multiple sex partners/sexually transmitted infections for hepatitis B virus (HBV); and MSM aged ≤ 26 years for human papillomavirus (HPV). We explored immunity to/vaccination against these viruses among individuals entering the Ontario PrEP Cohort Study (ON-PrEP).

Methods: ON-PrEP is a prospective cohort of HIV-negative PrEP users from 10 clinics across Ontario. Through deterministic linkage, we used Public Health Ontario Laboratory (PHOL) data from the five years prior to study enrolment to quantify those with serologic evidence of immunity against HAV (IgG reactive) and/or HBV (HBsAb >10). Study personnel determined HPV vaccination status (3 doses=complete, 1-2=partial, 0=unvaccinated) by chart review at baseline. We descriptively analyzed evidence of immunity and vaccination status by study site.

Results: Of the 527 eligible participants, 357 (67.7%) were white, 456 (86.5%) identified as male, and 421 (79.9%) as gay with a mean age of 43.0 (SD=11.1). Serology data for HAV were available for 276 (52.4%) participants with 190 (68.8%) displaying evidence of immunity. Serology data for HBV were available for 302 (57.3%) participants with 198 (65.6%) displaying evidence of immunity. Across study sites, the median proportions of participants with documented immunity towards HAV and HBV were 69.4% (Q1=64.3%, Q3=79.8%) and 68.1% (Q1=58.8%, Q3=76.7%), respectively. Of the 125 (26.5%) participants with HPV vaccination data, 49 (39.2%) completed the vaccine series, 26 (20.8%) received a partial series, and 50 (40.0%) were unvaccinated. All 14 (2.7%) participants that were eligible for publicly funded HPV vaccination (aged ≤ 26) had unknown vaccine status.

Conclusion: Preliminary findings suggest that a sizeable proportion of Ontario PrEP users warrant HAV, HBV, and/or HPV vaccination. PrEP presents an opportunity for improved vaccination against these common infections.

300 An Interrupted Time Series Analysis on the Impact of the COVID-19 Pandemic on HIV and Syphilis Screening in British Columbia, Canada

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Background: The COVID-19 pandemic resulted in disruptions to sexual health services as well as changes to sexual and health-seeking behaviours. The objective of this study was to examine the impact of the COVID-19 pandemic on syphilis and HIV screening in British Columbia (BC), Canada.

Methods: Monthly HIV and syphilis test episodes (30-day window) in BC from January 1, 2018 to June 30, 2022 were examined. Analysis periods were: 1) Pre-Pandemic (January 2018-February 2020); 2) Pandemic – Initial Restrictions (April 2020); and 3) Pandemic – Subsequent Restrictions (June 2020-June 2022; following gradual re-opening of services in BC beginning May 2020). March 2020 and May 2020 were excluded as transition periods. Segmented regression analyses were conducted to assess level and trend changes in syphilis and HIV screening volumes, with adjustment for seasonality and autocorrelation.

Results: Mean monthly pre-pandemic HIV and syphilis screening rates per 100,000 population were 630.4 and 389.6, respectively. During initial restrictions, there were immediate level decreases of 56% for HIV screening (303.8 tests per 100,000; rate ratio [RR] = 0.44 [95% CI: 0.41-0.48, p<0.0001) and 66% for syphilis screening (138.3 tests per 100,000; RR = 0.34 [95% CI: 0.31-0.37, p<0.0001]). During subsequent restrictions, HIV and syphilis screening levels partially recovered (HIV screening RR = 0.82 [95% CI: 0.80-0.85, p<0.0001]; syphilis screening RR = 0.75 [95% CI: 0.72-0.78, p<0.0001]) though remained below pre-pandemic levels, with monthly averages of 561.6 and 345.2 tests per 100,000, respectively. In June 2022, monthly screening rates remained at -22% (HIV) and -24% (syphilis) from the counterfactual.

Conclusion: In BC, HIV and syphilis screening declined as a result of the COVID-19 pandemic, with screening levels not having returned to counterfactual levels by June 2022. Decreased screening for HIV and syphilis may result in delayed diagnoses and undetected infections, potentially leading to increased clinical complications and transmission.

243 Concurrent Sexually Transmitted and Blood Borne Infections (STBBIs) among People Living with HIV in Manitoba, 2018-2022

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Objectives: Our objective is to describe the frequency and type of sexually transmitted and blood-borne infections (STBBIs) amongst people living with HIV (PLHIV) in Manitoba prior to their HIV diagnosis, at entry into HIV care, and during follow-up, disaggregated by sex at birth, gender, drug use, and unstable housing.

Methods: A retrospective cohort study was completed. Clinical charts of all people ≥ 18 years old newly diagnosed with HIV in Manitoba, Canada between January 1st, 2018 and December 31st, 2021 were reviewed. We collected sociodemographic data such as sex at birth, gender, and age, as well as information regarding housing status, prior or current drug use, including use of injection drugs, past and current STBBIs.

Results: 90% of females and 83.3% of males newly living with HIV in 2021, presented with at least one STBBI prior to their HIV diagnosis. At time of HIV diagnosis 88.9% of females and 86.3% of males had a concurrent STBBI. Between 2018-2021, 25-40% of newly diagnosed PLHIV experienced houselessness and had higher proportions of multiple concurrent STBBIs compared to those with stable housing. People who inject drugs had higher numbers of concurrent STBBIs at time of HIV diagnosis, and the number of STBBIs among PWID increased from 2018-2021. Rates of syphilis, hepatitis C virus, Chlamydia and Gonorrhoea all increased from 2018-2021. In 2021 56% of newly diagnosed PLHIV had a syphilis infection and 42% had a hepatitis C virus infection at time of diagnosis.

Conclusions: The significant burden of additional STBBIs prior to HIV diagnosis, and during HIV follow up support the need for comprehensive STBBI testing, point-of-care testing and treatment and greater resources to prevent STBBI transmission, particularly among at-risk groups.

89 COVID-19 vaccinations, cases, deaths and hospitalizations among persons living with HIV in Saskatchewan First Nations communities

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Background: Persons living with HIV are at increased risk for severe outcomes if infected with COVID-19. Thus, these individuals were eligible for immunization during the early COVID-19 vaccine roll out, ahead of the general population. This study aimed to: (1) explore COVID-19 vaccine uptake, cases, deaths, and hospitalizations among those with HIV residing in Saskatchewan First Nations communities, and (2) compare the findings of objective (1) with provincial and national data.

Methods: Individuals included in the analysis were persons residing in Saskatchewan First Nations communities who were living with HIV as of March 11, 2020 (declaration of the global COVID-19 pandemic by the WHO). Case-based data from Saskatchewan's public health surveillance system, Panorama, was used. The variables of interest were total COVID-19 vaccinations, cases, deaths and, ICU and non-ICU hospitalizations.

Results: Overall, among persons living with HIV (PLWH) in Saskatchewan First Nations communities, COVID-19 vaccine uptake rates were lower than in Saskatchewan and Canada. Additionally, when compared to the general Saskatchewan and Canadian populations, the COVID-19 case rate was higher among PLWH in Saskatchewan First Nations communities, while the death and ICU hospitalization rates were lower. See Table 1.

Conclusions: Despite low COVID-19 vaccination rates and high case rates among PLWH in Saskatchewan First Nations communities, there were no reported COVID-19-related deaths or ICU hospitalizations. This could possibly be due to the public health measures that were put in place as well as the continuation of services provided by HIV programs (including Know Your Status programs) during the pandemic.

Supporting Document

Table 1: COVID-19 vaccinations, cases, deaths and hospitalizations among persons living with diagnosed HIV in Saskatchewan First Nations communities, and among the Saskatchewan and Canadian general populations.

	Persons living with diagnosed HIV in Saskatchewan First Nations communities*	Saskatchewan general population**	Canadian general population**
COVID-19 Vaccine Coverage Rate (% of population)			
At least 1 dose	61.7%	81.3%	83.3%
Primary series	56.5%	76.7%	80.5%
Primary series and at least 1 additional dose	31.5%	44.0%	50.4%
Primary series and 2 additional doses	8.4%	20.2%	21.9%
Total COVID-19 Case Rate (per 100,000 population)			
	12,662.3	12,555.0	11,450.0
Total COVID-19 Death Rate (per 100,000 population)			
	0.0	146.0	125.0

Total COVID-19 Hospitalization Rate (per 100,000 population)			
ICU	0.0	143.4	76.7
Non-ICU	649.4	1066.0	420.9

*data extracted from: Panorama (as of November 30, 2022)

**data extracted from: (1) PHAC: Saskatchewan and Canadian vaccine coverage rate from <https://health-infobase.canada.ca/covid-19/vaccination-coverage/> (as of December 4, 2022); Saskatchewan and Canadian case and death rates from <https://health-infobase.canada.ca/covid-19/> (as of December 10, 2022); Canadian hospitalization rates from <https://health-infobase.canada.ca/covid-19/> (as of December 19, 2022); and (2) Government of Saskatchewan: Saskatchewan hospitalization rates from <https://www.saskatchewan.ca/government/health-care-administration-and-provider-resources/treatment-procedures-and-guidelines/emerging-public-health-issues/2019-novel-coronavirus/cases-and-risk-of-covid-19-in-saskatchewan> (as of December 3, 2022).

55 Nurse-led HIV pre-exposure prophylaxis (PrEP-RN)

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Introduction: In Canada, rates of new HIV diagnoses have remained relatively unchanged, despite the availability of various HIV prevention options. To address this issue locally, in Ottawa, we launched Canada's first nurse-led HIV prevention service (PrEP-RN), involving active-offer PrEP referrals and initiations to HIV priority populations.

Methods: PrEP-RN launched in 2018 as pilot within the sexual health clinic in Ottawa. The study uses a two-pronged approach to care: (1) active-offer PrEP referrals by nurses to patients with high-risk HIV indicators and (2) PrEP delivery by nurses. Referrals were offered at the time of STI follow-up, screening, or treatment. Patients who accepted, were offered a referral to the PrEP-RN clinic or other PrEP service. Clinical care, including testing, STI/creatinine monitoring, and follow-up was completed by nurses under medical directives from nurse practitioners.

Results: From August/2018-October/2022, nurses made ~2500 offers for PrEP. Of these offers, 41% of patients accepted a PrEP referral and 44% declined. Offers for PrEP referral and rates of clinical service access within PrEP-RN were highest among gbtMSM; however, a subset of cis-and-trans-women from HIV priority groups also accessed care through PrEP-RN. The implementation of PrEP-RN coincided with a sustained decrease in HIV diagnosis rates in Ottawa (data to 2021). This change was most notable among gbtMSM, where beginning, in 2019, the number of new HIV diagnoses in this group decreased by 82% (from 22 cases to <5).

Conclusions: Findings from the PrEP-RN study show high uptake of PrEP, particularly among gbMSM, when offered by nurses. Using a collaborative approach to identify persons at-risk for HIV and offer supports/connection to PrEP, the PrEP-RN referral process could yield similar reductions in HIV rates in other cities throughout Canada.

172 Needs And Recommendations For PrEP Education In Southeastern Ontario: Qualitative Findings From Public Health Providers, Clinical Managers, And Primary care providers

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To increase PrEP adoption, primary care providers (PCPs) need to have adequate PrEP knowledge, skills and motivation. To acquire the necessary skills to practice PrEP, PCPs also need a supportive learning environment. By conducting 13 semi-structured interviews and thematic analysis, we explored the learning climate experienced by clinic managers and PCPs around HIV PrEP and identified recommendations to improve PrEP learning and adoption in Southeastern Ontario (SEO), a mixed urban-rural setting. Results revealed that participants mainly obtained PrEP knowledge through online resources (CATIE, ontarioprep.ca) and published Canadian guidelines. Most PCPs learned PrEP out of their own initiative with no institutional support. All participants emphasized the importance of continued PrEP education and noted that PrEP educational resources could be improved by 1) the teaching of counselling skills and how to initiate a PrEP conversation, and 2) emphasis on PrEP medication safety as fear and concerns about using PrEP medications remain high. Participants preferred strategies for future delivery of PrEP training that include 1) the provision of incentives; 2) the use of mixed delivery methods (online, in person, expert visits), 3) access to PrEP consultants to discuss complex cases; 4) access to clinical decision support, such as algorithms. We anticipate that this project will generate new insights for increasing PrEP adoption among PCPs who have not yet adopted PrEP and foster the development of a support system to assist those PCP who are struggling to practice PrEP in their clinical environments

347 A Descriptive Analysis of Patients Receiving Injectable ART in a Toronto clinic

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Background

Long-acting injectable cabotegravir and rilpivirine (CAB/RPV-LA) is a novel regimen for maintenance of HIV treatment in virologically suppressed individuals, and may benefit those facing social and structural barriers in obtaining and adhering to oral antiretroviral therapy. Whether these benefits will be realized during real-world implementation remains to be seen.

Methods

Using the RE-AIM (Reach, Effectiveness, Adoption, Implementation, Maintenance) implementation science framework, we analyzed the use of CAB/RPV-LA at a large academic HIV clinic during the first 12 months of its listing on the Ontario Drug Benefit formulary (Dec2021-Nov2022). To assess Reach, we collected demographic, drug coverage, and HIV risk factor data from patient charts, and used postal codes and the Ontario-Marginalization Index (ON-Marg) to assess two dimensions of marginalization: Material Deprivation and Ethnic Concentration. These dimensions evaluate marginalization due to income, education and family structure; and due to structural racism in healthcare, respectively. We further report CAB/RPV-LA Effectiveness (proportion achieving undetectable viral load (HIV RNA<200 copies/mL), Adoption (proportion of clinic physicians prescribing CAB/RPV-LA) and Maintenance (proportion of patients still undetectable at study end).

Results

Thirty-two individuals received CAB/RPV-LA during the study period. Mean age was 43 years, 88% were assigned male sex at birth, 39% were white, 38% had private insurance coverage, and 66% were MSM. Equal proportions were categorized within the lowest and highest quintiles of material deprivation, whereas a majority (59%) had ethnic concentration scores in the highest two quintiles. Effectiveness, Adoption and Maintenance were high, with 100% of patients retaining virological suppression while on CAB/RPV-LA, all clinic physicians prescribing CAB/RPV-LA to ≥ 1 patient, and 97% of patients remaining on CAB/RPV-LA at the end of the study period.

Conclusion

Preliminary data suggest that CAB/RPV-LA is reaching individuals experiencing varying degrees of marginalization. Further implementation research may be beneficial in studying health equity outcomes during its ongoing rollout.

339 Effectiveness of the I'm Ready Program to provide low barrier access across Canada to HIV self-testing to reach first-time testers

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Ten percent of people living with HIV remain undiagnosed. Novel ways to access testing is key to reaching these individuals for diagnosis and care, especially those who have never tested for HIV. This study examines the effectiveness of the I'm Ready, Test app in reaching first-time testers.

The I'm Ready, Test, a mobile app, provides participants the ability to order free HIV self-tests anonymously for home delivery or pick-up across Canada. We examined the first 5,000 consenting participants who completed a pre-test survey between June 2021 and November 2022. The survey collected information on participant demographics and previous testing behaviour. Binary logistic regression was conducted to examine demographic and geographic correlates of first-time testers across key population groups (gay, bisexual, and other men who have sex with men; African, Caribbean, and Black people; Indigenous people; persons who use substances).

Overall, participants enrolled in program were mostly aged <35 years (71%), male (66%), had greater than a high school education (75%), were employed full time (58%), and lived in very large urban areas (58%). The 18-24 age group had the highest prevalence of first-time testers (53%) compared with 20-30% in other age groups (OR=3.30, 95% CI=2.88, 3.78). Results showed the I'm Ready, Test app was more successful in reaching first-time testers who were: (1) women (OR=1.61, 95% CI=1.40, 1.84), (2) transgender (OR=2.10, 95% CI=1.29, 3.42); (3) lived in small cities and rural areas (39%) compared with very large urban areas (29%; OR=1.67, 95% CI=1.19, 2.34), and (4) lived in the Atlantic provinces compared with Ontario (OR=1.29, 95% CI=1.06, 1.58).

Use of a digital health app to provide access to HIV self-testing more effectively reaches first-time testers who are younger adults, women and transgender people, and those living in small cities and rural areas with limited access to facility-based HIV testing.

146 Patterns of testing among repeat users of an online sexually transmitted and blood-borne infection (STBBI) testing system in British Columbia, Canada

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Background: The scale-up of online STBBI testing services has changed the testing landscape yet questions remain about how people use these services in relation to provider-based testing. We surveyed repeat users of GetCheckedOnline, British Columbia's online STBBI testing service, about their concurrent use of provider-based testing services.

Methods: Between Nov 21-Dec 6, 2022, we invited GetCheckedOnline users who had consented to be contacted for research, were ≥16 years old, and had tested at least twice through the service (once in the past 6 months) to an online survey. Descriptive results are presented.

Results: Of 1798 invited users, 789 (44%) participated, with 46% identifying as women, 68% as White, and 38% as straight/heterosexual. Over half (57%) reported usually testing for STBBI at least every 3-4 months. Approximately 48% reported only testing through GetCheckedOnline. The remaining 52% reported provider-based testing scenarios that included during health visits for other reasons (50%), needing to speak to providers about sexual health (35%), testing as part of HIV treatment or PrEP (27%), needing tests not offered through GetCheckedOnline (26%), experiencing symptoms (29%), or having had a partner with an STI (14%). Most (88%) agreed that GetCheckedOnline allowed them to test sooner than through a provider, and 86% agreed they test more often because of GetCheckedOnline. If GetCheckedOnline had not been available, most (89%) would have accessed provider-based testing; however, 11% (80/747) would not have sought further testing.

Conclusion: Our findings suggest that most repeat users had shifted all or part of their current testing to GetCheckedOnline, which they perceived as facilitating more frequent and earlier testing. For some, GetCheckedOnline appeared to be the only testing option they would use. Our findings position online STBBI testing as an important complement to provider-based services and suggest that online testing services may help alleviate demands on provider-based testing services.

247 Community-Based Telemedicine for People with Opioid Use Disorder: Co-construction, Outcomes, and Implications for Engaging Marginalized Groups in Care

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Background:

Suboptimal retention in opioid agonist treatment (OAT) has been linked to varied factors including inflexible treatment programs and inadequate dosing. COVID-19 spurred innovation in OAT delivery, including via expansion of telemedicine services. We therefore developed a unique program delivering high-quality telecare for people with opioid use disorder (PWOUD) within a community-based harm reduction setting.

Description:

Procedures were co-constructed by the Centre hospitalier de l'Université de Montréal's Addiction medicine service (CHUM-A) and CACTUS Montréal, a longstanding community-based harm reduction organization. CACTUS workers promoted the program, facilitated eligibility screening, established private on-site telemedicine connections to CHUM-A, and offered holistic ongoing follow-up. CHUM-A offered individualized OAT, often combined with short-acting opioids to reduce withdrawal/illicit consumption, and other health services as needed. Effectiveness was assessed via longitudinal chart review (April 2020–March 2022) and semi-structured interviews with 20 participants.

Results:

71 patients were enrolled during the assessment period. Most reported past-month opioid injection (95%), did not have a family doctor (72%), and had previously received OAT (73%). Over half were unstably housed and one-third reported recent overdose. 12-month retention in OAT was high (80%), with many participants ultimately transferred to the CHUM-A outpatient clinic (51%) or primary care (14%). Five people commenced HIV treatment, 24 were treated for HCV, and 26 transitioned to stable housing. Qualitative data suggest the trusted community setting, strong therapeutic relationships, and expanded medication options were pivotal to success. Technology afforded an efficient structure for patient-centered collaborative care, but participants also shed light on the limitations of telemedicine and the need to integrate additional partners.

Conclusion:

Our community-based telemedicine program provides an alternative treatment pathway for PWOUD disengaged from mainstream services and an efficient means to bridge the health and community sectors. Working collaboratively around the patient, partners leveraged their strengths to support patient retention and catalyze new service trajectories.

198 Economic Evaluation of Routinized Syphilis Screening Among Men Living with Human Immunodeficiency Virus: Net-Benefit Regression of a Stepped Wedge Cluster Randomized Controlled Trial

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Background: Syphilis is a curable sexually transmitted infection that disproportionately affects men who have sex with men living with HIV. Opt-out syphilis screening with routine HIV viral load tests has been shown to be moderately effective at increasing detection of syphilis, especially early-stage infections. We examined the cost-effectiveness of pairing syphilis tests with routine HIV viral load testing versus physician-initiated syphilis testing (usual care) from the perspective of the health care system (regional Ministry of Health).

Methods: We used patient-level data from the Enhanced Syphilis Screening Among HIV-Positive Men (ESSAHM) stepped randomized trial conducted across four urban clinics in Ontario, Canada, between 2015 to 2017. The study population comprised of adult men diagnosed with HIV and receiving care. The total cost of syphilis screening and frequency of tests were extracted from the trial and adjusted to 2020 Canadian Dollars. We used a net benefit regression (NBR) framework, employing a generalized linear mixed model to estimate the incremental net benefit of the intervention adjusting for fixed and random effects. The clinical outcomes were: (i) detection of new untreated cases of syphilis; (ii) detection of new untreated early-stage syphilis. We then derived cost-effectiveness acceptability curves across willingness to pay (WTP) thresholds.

Results: Among the 3024 patients enrolled, there were 7583 screening tests, 5598 confirmatory tests conducted over the trial period. In total, 217 cases of syphilis and 147 early-stage syphilis were detected. The average additional cost of implementing the intervention was CAD \$6825/clinic compared to cost of usual care. The intervention was cost-effective with a probability of 58% at a WTP of CAD \$6000 for each additional detection of early syphilis.

Interpretation: Upscaling implementation of routinized syphilis screening with HIV viral load may be a cost-effective intervention and aim toward improving efficiency and value in health care for men with HIV co-infection.

Supporting Document

Economic Evaluation of Routinized Syphilis Screening Among Men Living with Human Immunodeficiency Virus: Net-Benefit Regression of a Stepped Wedge Cluster Randomized Controlled Trial

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Abstract:

Background: Syphilis is a curable sexually transmitted infection that disproportionately affects men who have sex with men living with HIV. Opt-out syphilis screening with routine HIV viral load tests has been shown to be moderately effective at increasing detection of syphilis, especially early-stage infections. We examined the cost-effectiveness of pairing syphilis tests with routine HIV viral load testing versus physician-initiated syphilis testing (usual care) from the perspective of the health care system (regional Ministry of Health).

Methods: We used patient-level data from the Enhanced Syphilis Screening Among HIV-Positive Men (ESSAHM) step-wedged randomized trial conducted across four urban clinics in Ontario, Canada, between 2015 to 2017. The study population comprised of adult men diagnosed with HIV and receiving care. The total cost of syphilis screening and frequency of tests were extracted from the trial and adjusted to 2020 Canadian Dollars. We used a net benefit regression (NBR) framework, employing a generalized linear mixed model to estimate the incremental net benefit of the intervention adjusting for fixed and random effects. The clinical outcomes were: (i) detection of new untreated cases of syphilis; (ii) detection of new untreated early-stage syphilis. We then derived cost-effectiveness acceptability curves across willingness to pay (WTP) thresholds.

Results: Among the 3024 patients enrolled, there were 7583 screening tests, 5598 confirmatory tests conducted over the trial period. In total, 217 cases of syphilis and 147 early-stage syphilis were detected. The average additional cost of implementing the intervention was CAD \$6825/clinic compared to cost of usual care. The intervention was cost-effective with a probability of 58% at a WTP of \$6000 for each additional detection of early syphilis.

Interpretation: Upscaling implementation of routinized syphilis screening with HIV viral load may be a cost-effective intervention and aim toward improving efficiency and value in health care for men with HIV co-infection.

321 The Relationship Between Self-reported Comorbidity Burden and Psychological Distress, Resilience, and Social Support among Women Living with HIV and HIV-negative Women in the British Columbia CARMA-CHIWOS Collaboration (BCC3) Study

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Background: Socio-demographic factors are associated with comorbidity burden and other aging outcomes. Here, we investigate the relationship between psychological distress, resilience, social support, and comorbidity burden among women living with HIV (WLWH) and HIV-negative controls in the BCC3 Study.

Methods: BCC3 is a community-based cohort study of healthy aging enrolling WLWH and controls ≥ 16 y. Kessler Psychological Distress Scale (K6), Resilience Scale (RS-14), and the 4-item Medical Outcome Study Social Support Survey (MOS-SSS) were used to assess psychological distress, resilience, and social support, respectively. Thirty-seven physical and thirteen mental diagnoses by a healthcare provider were self-reported. Mann-Whitney and Kruskal-Wallis test, and Spearman's correlation were used.

Results: In unadjusted analyses, WLWH had more physical diagnoses than controls; mental diagnoses were similar (Table 1). In WLWH and controls, having higher social support was associated with lower number of physical ($\rho = -0.2$, $p = 0.01$ and $\rho = -0.3$, $p < 0.0001$) and mental ($\rho = -0.3$, $p < 0.01$ and $\rho = -0.4$, $p < 0.0001$) diagnoses. In both groups, having lower psychological distress and higher resilience was associated with fewer mental diagnoses. For physical diagnoses, a weak relationship with psychological distress among WLWH was detected (Table 1).

Conclusions: These results suggest that for both WLWH and controls, having social support is protective for physical and mental comorbidities while low psychological distress and high resilience may be particularly protective for mental diagnoses, less for physical diagnoses. Our data highlight the importance of considering and addressing psychological distress, resilience, and social support in the prevention and management of comorbidities to promote healthy aging in women with and without HIV.

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Table 1. Number of self-reported comorbidities overall and in relation to measures of psychological distress and resilience groups among WLWH and HIV-negative controls in BCC3

Parameters, median [IQR] (range)	WLWH n=157	Controls n=237	p-value (WLWH vs Cont)
Age (years)	49 [42-58] (20-77)	47 [33-57] (17-80)	0.01
Number of self-reported physical health diagnoses	4 [2-7] (0-16)	3 [1-6] (0-17)	0.01
Number of self-reported mental health diagnoses	2 [0-3] (0-12)	2 [0-3] (0-10)	0.73
Psychological distress (K6) overall score	7 [2-11] (0-24)	7 [3-11] (0-24)	0.88
Resilience (RS-14) overall score	89 [82-95] (31-98)	87 [80-94] (47-98)	0.04
Social support (MOS-SSS) overall score	15 [13-18] (4-20)	15 [11-18] (4-20)	0.43
Physical health diagnoses, median [IQR] (range)			
Psychological distress (K6)			
Low (score < 5)	4 [2-6] (1-15)	2 [1-6] (0-15)	0.30
Moderate (5 ≤ score < 13)	5 [2-8] (1-15)	4 [1-6] (0-17)	0.06
Severe (score ≥ 13)	5 [3-8] (0-16)	4 [2-6] (1-14)	0.22
<i>p-value (within group between levels)</i>	0.046	0.12	
Resilience (RS-14)			
Low-moderate (score ≤ 81)	5 [3-7] (0-15)	3 [1-6] (0-14)	0.013
High (score > 81)	4 [2-7] (0-16)	3 [2-6] (0-17)	0.20
<i>p-value (within group between levels)</i>	0.30	0.56	
Mental health diagnoses, median [IQR] (range)			
Psychological distress (K6)			
Low (score < 5)	1 [0-3] (0-11)	2 [0-4] (0-17)	0.60
Moderate (5 ≤ score < 13)	3 [0-4] (0-6)	2 [1-4] (0-10)	0.67
Severe (score ≥ 13)	4 [2-6] (0-12)	3 [2-6] (0-9)	0.91
<i>p-value (within group between levels)</i>	<0.0001	<0.0001	
Resilience (RS-14)			
Low-moderate (score ≤ 81)	3 [1-5] (0-12)	3 [1-5] (0-9)	0.78
High (score > 81)	2 [0-3] (0-9)	1 [0-3] (0-10)	0.31
<i>p-value (within group between levels)</i>	0.008	<0.001	

161 Utilizing a Life Course Approach to Examine Pathways from Childhood Abuse to Adulthood Mental Health Outcomes Among Women Living With HIV: Findings from a Longitudinal Canadian Cohort Study

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Background: Childhood abuse elevates risks for long-term mental health challenges. Knowledge gaps remain regarding the mechanisms of association, particularly among women with HIV. Informed by the 'chain of risk' life course approach, we examined pathways from childhood abuse to mental health among women with HIV in Canada.

Methods: This five-year longitudinal study with women with HIV in Ontario, British Columbia and Quebec collected data on history of childhood abuse (sexual, physical, verbal) and poverty (income, food insecurity, housing insecurity) at time 1 (T1), substance use and past 3-month (recent) violence at time 2 (T2), and mental health challenges (MHC) (depression, PTSD, mental functioning) at time 3 (T3). We conducted path analysis to examine direct and indirect effects from childhood abuse to adulthood MHC via poverty, substance use, and violence.

Findings: Most (68%) participants with reported data (n=1,315) had experienced ≥ 1 type of childhood abuse. Childhood abuse was directly associated with adult poverty ($\beta=0.17$, $p<0.001$), violence ($\beta=0.16$, $p=0.005$), substance use ($\beta=0.18$, $p<0.001$), and MHC ($\beta=0.13$, $p=0.01$). Additionally, poverty was associated with later substance use ($\beta = 0.27$, $p < 0.001$), violence ($\beta= -0.15$, $p=0.02$), and MHC ($\beta=0.32$, $p<0.001$), and violence ($\beta=0.30$, $p<0.001$) but not substance use ($\beta=-0.05$, $p=0.70$) was associated with later MHC. The total standardized effect of history of childhood abuse on T3 MHC was 0.27 ($p<0.001$), half of which was direct ($\beta=0.13$, $p = 0.01$) and the other half indirect ($\beta=0.13$, $p<0.001$). Poverty ($\beta=0.06$, $p=0.003$) and violence ($\beta=0.05$, $p=0.02$) accounted for 43% and 35% of total indirect effects, respectively.

Discussion: Over two-thirds of women with HIV experienced childhood abuse, double the women's national prevalence (31%). Consequences of this trauma are numerous, including effects on adulthood mental health directly and indirectly via poverty, violence, and substance use. Findings emphasize the need for violence and trauma-aware care across the HIV cascade.

123 Understanding who is left behind in the HIV Care Cascade

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Background:

The 95-95-95 targets monitor treatment and viral suppression, but we must examine those not in care to optimize health for people living with HIV and reduce ongoing transmission.

Methods: Using provincial laboratory-based surveillance data, HIV diagnoses are linked with viral load (VL) tests in the Ontario HIV datamart. In care (IC) was defined as having a VL test within the past 24 months, those never linked to care (NL) have a diagnosis with no linked VL, and lost-to-care (LC) is having no VL for 2 years. A lost-to-follow-up rule is applied, excluding observations more than two years after a VL and seven years after an unlinked nominal diagnosis. Unlinked non-nominal diagnoses were excluded from this analysis.

Results: In 2020, 19,723 people were living with diagnosed HIV in Ontario, with 17,811 people in care (IC), 332 had never linked to care (NL) and 1,580 were lost-to-care (LC) (90% IC, 2% NL, 8% LC). Those not in care were more likely to be female (89% IC, 2% NL, 9% LC) and aged 25-34 years (87% IC, 4% NL, 10% LC). Within the northern region, there were lower rates in care (84% IC, 4% NL, 12% LC), with the highest rates in Southwest (92% IC, 1% NL, 6% LC). Men reporting male to male sexual contact were more likely to be in care (92% IC, 2% NL, 6% LC), while people reporting injection drug use were less likely (83% IC, 4% NL, 13% LC). White individuals were more likely to be in care (92% IC, 3% NL, 5% LC) than non-white individuals (89% IC, 5% NL, 6% LC).

Conclusions:

HIV care outcomes in Ontario differ by population and geography. Linkage to care and ensuring people stay in care are key to ensuring optimal health of people living with HIV and reducing HIV infections.

165 Mind the Gap: Trends in Life Expectancy Among Men and Women Living With HIV in British Columbia, 1996 – 2020

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Background: Life expectancy of people with HIV (PWH) has increased considerably in the last decades. We used data from the Comparative Outcomes And Service Utilization Trends (COAST) study to examine trends in life expectancy between 1996-2020 among men and women living with HIV in BC.

Methods: COAST is a comparative cohort study, including data on all PWH and a 10% general population sample in BC, linking clinical and demographic data from the BC Centre for Excellence in HIV/AIDS with administrative health data from Population Data BC. We calculated life expectancy for PWH at ages 20, 40, and 60 using life tables stratified by sex and calendar period.

Results: At total of 12,710 men (81.4%) and 2,889 women (18.4%) with HIV were included. Median nadir CD4 counts of men and women were 160 (Q1-Q3, 50-310) and 150 (Q1-Q3,43-290) cells/mm³, respectively, and 85% of men and 77% of women were ever on antiretroviral therapy. Life expectancy at ages 20, 40 and 60 increased over time in all strata, but remained lower among women (see table). The sex-gap in life expectancy at ages 20 and 40 increased over time. This gap was not as discernible at age 60.

Conclusion: While life expectancy in men and women with HIV in BC has increased considerably over time, women's life expectancy remains lower than men's, suggesting most deaths among women occur at a younger age. Planned analyses include exploring social determinants of mortality that may contribute to the observed differences in life expectancy.

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Table: Life expectancy at ages 20, 40 and 60 for men and women with HIV between April 1st, 1996 and March 31st, 2020.

Calendar period (1 Apr – 31 Mar)	Sex	Life expectancy (95% confidence interval)		
		At age 20	At age 40	At age 60
1996-2002	Male	24.1 (22.0 – 26.3)	15.8 (14.9 – 16.7)	9.4 (7.9 – 10.9)
	Female	21.6 (19.3 – 23.9)	13.1 (10.9 – 15.3)	7.6 (3.9 – 11.3)
2002-2012	Male	36.7 (35.2 – 38.2)	23.7 (23.0 – 24.4)	13.9 (12.9 – 14.8)
	Female	32.0 (29.9 – 34.2)	20.4 (18.5 – 22.2)	15.5 (12.5 – 18.4)
2012-2020	Male	46.9 (44.8 – 49.0)	31.9 (31.0 – 32.7)	19.1 (18.3 – 20.0)
	Female	40.1 (37.2 – 42.9)	26.8 (25.0 – 28.6)	17.5 (15.4 – 19.6)

139 Impact of the SARS-Cov-2 Pandemic on Birth Outcomes of Pregnant Women Living with HIV

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Background: We describe demographics, antiretroviral treatment during pregnancy, and vertical transmission rates in the Canadian perinatal HIV surveillance cohort of births to women living with HIV (WLWH) and assess the effect of the COVID-19 pandemic on access to optimal therapy and perinatal transmission.

Methods: 22 Canadian pediatric and HIV centres update data including demographics, antiretroviral treatment during pregnancy, and perinatal transmission, on births in WLWH yearly each January. The results reported in this abstract reflect births up to the end of 2021.

Results: The number of HIV-exposed infants per year has increased over time in Canada, but experienced a 17% downturn from 254 births in 2020 to 210 births in 2021. The biggest change was amongst Black women, in whom the number of births decreased from 151 in 2020 to 108 in 2021. The proportion and number of pregnant women sub-optimally treated was 6.6% (86/1297) in the period from 2015-2019 compared to 7.7% (12/155) in May-December 2020; the rate in 2021 was only 4.8% (10/210). The corresponding transmission rates were 1.3% (17/1297) in 2015-2019, 3.2% (5/155) in May-December, 2020, and reverted to 1% (2/210) in 2021. Among those who had acquired HIV through IDU, the sub-optimal treatment rate was 13.6% in the pre-COVID-19 period, 26.1% (6/23) during 2020, and reverted to 7.7% (3/39) in 2021.

Conclusions: The perinatal transmission rates in 2015-19, May-December 2020, and 2021, are consistent with a negative impact during the first year of the pandemic, and resilience in the second year. This was mirrored by the decline of the sub-optimal treatment rate from 2020 to 2021 in women who had contracted HIV through injection drug use. The decline in births in WLWH may reflect a change in reproductive decisions during the pandemic.

91 GetaKit: Applying Multiple Intervention Framework to Support the Offer of HIV Self-tests at Local AIDS Service Organizations

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Introduction: GetaKit is a nurse-led study that evaluates real-world outcomes of mailing HIV self-tests in Ontario. Initially launched in July 2020, a few months ahead of Health Canada's approval of the HIV self-test device, GetaKit has delivered over 5,000 HIV self-test kits across Ontario. The challenge that GetaKit seeks to address is to ensure that HIV self-testing is accessible, appropriate, and linked to care.

Methods: Public health systems are open systems that develop complexities as a result of individuals' nonlinear relationships with their surrounding environment. As such, GetaKit uses both Complex Adaptive System and Multiple Intervention frameworks to evaluate implementation success and inform changes over time.

Results: Since April 2021, GetaKit has implemented the following strategies to lower participant barriers for registration (1) offering curbside pick-up at local agencies, (2) offering on-site registration, (3) staff ability to register and manage participant accounts. While this has resulted in an increase in total number of kits delivered, the GetaKit team observed the limits in transferability from a clinical setting to a non-clinical one. Organizational challenges at ASOs included the following: high staff turnover, barriers to logging into staff accounts, lack of staff buy-in with respect to the utility of the self-assessment. This resulted in creating further barriers for participant registration. The GetaKit team implemented the following strategies: (1) adapting language around the self-assessment algorithm to reflect its nature as a clinical tool, (2) introducing centralized follow-up, (3) launching a revised streamlined registration and self-assessment website that does not require logging in.

Conclusions: Lowering participant barriers only resolved part of the challenges encountered by individuals engaging in the GetaKit system. Further adaptations were required to ensure that partner site staff had sufficient understanding of the system, its application, and resources to support participants.

275 Venue-Based HIV Self-Testing Among Two-Spirit People and Gay, Bisexual, Queer, and Trans Men and Non-Binary People (2S/GBTQ+) Across Canada: Implementation of CTN 344: Sex Now / Test Now 2022 Study

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Background: To address needs for novel HIV testing access, we developed a community-based implementation science study that distributed free HIV self-tests in-person at Pride festival events and community venues across Canada.

Methods: Participants were recruited in-person from 06/2022-09/2022 in English, French, and Spanish. Eligible participants for the Sex Now questionnaire were at least 15 years old, lived in Canada, and identified as part of one of the following: Two-Spirit; gay, bisexual, queer and other non-heterosexual men (cis and trans); non-binary. After completing the questionnaire, participants ≥ 18 years old could opt-into Test Now and receive up to 2 free HIV self-tests, which could be used immediately on-site or kept for future use/distribution. Trained peer support was available in-person and subsequently via text, email, or telephone. Chi-square and t-tests compared participants who opted into Test Now versus not ($p < 0.05$ significant).

Results: Recruitment occurred at 41 events in 21 cities across all provinces and the Yukon Territory. Of the eligible participants who completed Sex Now ($n=3,169/3,476$), 56.4% ($n=1,786/3,169$) opted into Test Now with a total of 2,433 HIV self-tests used or distributed (mean=1.36/participant). Compared with those who did not opt-in, Test Now participants were more likely to self-identify as gay (60.7% versus 56.2%, $p=0.011$), be a person of colour (34.9% versus 27.9%, $p < 0.001$), have higher HIRI-MSM scores (mean=13.0 versus mean=11.5, $p < 0.001$), be on HIV PrEP (18.5% versus 15.2%, $p < 0.001$), and report illicit substance use (34.7% versus 29.6%, $p=0.006$). Test Now participants were less likely to be living with HIV (3.4% versus 6.4%, $p < 0.001$), have ever previously tested for STIs (14.4% versus 20.5%, $p < 0.001$), and to self-identify as trans (18.2% versus 21.7%, $p=0.016$).

Conclusions: Pride festival events were efficient implementation sites for HIV self-test distribution while also highlighting challenges of HIV self-test use in community settings and effective recruitment strategies for key sub-populations.

Key Populations Oral Abstracts / Les populations clés exposés oraux

119 Time to Treatment Initiation and Viral Undetectability for Migrants in a Multidisciplinary HIV Clinic with Rapid and Free B/F/TAF Initiation: The 'ASAP' Study

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Background

Migrants living with HIV (MLWH) experience numerous barriers affecting their antiretroviral treatment initiation and time to viral undetectability. To improve these outcomes, rapid and cost-covered treatment upon linkage to care are recommended. However, quantitative evidence supporting such an approach to care is lacking. As such, we sought to examine the time-to-treatment and time-to-undetectability for MLWH enrolled in a program with free and rapid treatment initiation.

Methods

In January 2020, we initiated a 96-week prospective cohort study at a hospital-based clinic in Montreal, Canada. All patients received bicitgravir/emtricitabine/tenofovir alafenamide (B/F/TAF) free of charge and as soon as possible following care linkage. Median time to B/F/TAF initiation and viral undetectability from linkage to our clinic were calculated and compared between sub-groups via survival analysis (Kaplan-Meier and Cox regression with stratified bootstrapping).

Results

As of December 2022, data for 31/37 enrolled MLWH were available for analysis. Many participants are: men-who-have-sex-with-men (n=16, 52%); from Africa (n=14, 45%); and <39 years of age (n=17, 55%). Ten patients (32%) had insufficient health coverage (i.e., no health insurance or had insurance without coverage for HIV care and/or treatment). Median number of days to ART initiation was 0 (range: 0-42). Median number of days to viral undetectability was 60.5 (range: 0-379). Those with insufficient health coverage had a median of 30.5 days longer to reach undetectability (p=0.002).

Conclusion

Lack of health coverage was found to significantly delay time to viral undetectability. A potential reason for this is that those without coverage are not able to conduct blood tests at our clinic, and instead have to access other facilities that provide free tests. This process may have delayed time to receive results for non-covered patients, hindering efficient care management in our clinic. Thus, further research exploring the impact of administrative delays on reaching viral undetectability is necessary.

327 Comorbid Disease Incidence and Prevalence Among Women Living with HIV and HIV Negative Women in the Children and Women, Antiretrovirals and Markers of Aging (CARMA) Cohort (CTN 277)

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Key Populations Oral Abstract Sessions - Sexual and Gender Minorities, Room 206B, April 29, 2023, 11:00 AM - 12:30 PM

Background: Women living with HIV (WLWH) experience comorbidities more frequently and earlier than those living without HIV. Longitudinal data is needed to better understand changes over time. We examined and compared prevalence and incidence of comorbidities from participants' most recent CARMA study visit among WLWH and HIV-negative control women enrolled in CARMA.

Methods: Prevalence and incidence of comorbidities were measured and compared between 207 WLWH and 59 HIV-negative cis-gender women, ≥19 years, enrolled in the CARMA cohort (2012-2017). Poisson regressions were used to compare total number of comorbidities and incidence, and Chi-square tests to compare prevalence of comorbidities by HIV status, adjusting for age in all models.

Results: Participant demographics and comorbidities are described in Table 1. WLWH were followed longer than controls (4.8 ±2.3 vs. 3.7 ±2.0 years). At most recent study visit, WLWH had a greater number of total comorbidities (3 ±2 vs 1.7 ±1.8; p<0.0001). In age-adjusted analyses, WLWH had a greater incidence of mental health comorbidities compared to controls (incidence [95% CI] 65.7 [46, 94] vs 19.2 [6.2, 59.6] per 1000 person years; p=0.04). Furthermore, smoking and drug use were strong predictors of acquiring an age-related comorbidity (p<0.001).

Conclusion: At the most recent study visit, WLWH had more comorbidities at an earlier age and a greater incidence of mental health comorbidities compared to controls. Regular and earlier screening by health care providers for mental health disorders and other age-related comorbidities among WLWH is paramount. Furthermore, addressing social determinants of health is vital to improve health outcomes.

Supporting Document

Table 1: Demographics and comorbidities compared between WLWH and HIV-Negative Controls

Variable at most recent study visit	WLWH (n=207)	HIV-Negative (n=59)	p-value
Age (years), mean ±SD	44.8 ±10.5	45.2 ±13.3	0.75
Education, n (%)			
Less than high school	64 (31%)	10 (17%)	0.001
Completed high school	38 (18%)	5 (8%)	
Post Secondary	95 (45%)	44 (75%)	
Unknown	11 (5%)	0 (0%)	
Income, n (%)			
<\$15,000/year	103 (50%)	20 (34%)	0.01
≥\$15,000/year	94 (45%)	39 (66%)	
Unknown	10 (5%)	0 (0%)	

Smoking, n (%)			
Current	87 (42%)	12 (20%)	
Past	51 (25%)	11 (19%)	
Never	42 (20%)	35 (59%)	<0.0001
Unknown	27 (13%)	1 (2%)	
Substance Use, n (%)			
Current	31 (15%)	11 (19%)	
Past	79 (38%)	11 (19%)	
Never	64 (31%)	29 (49%)	0.018
Unknown	33 (16%)	8 (14%)	
Mental Health Comorbidities n, (%) *	122 (59%)	20 (34%)	<0.001
Osteoporosis/Osteopenia, n (%)	75 (36%)	6 (10%)	<0.0001
B12 deficiency, n (%)	24 (12%)	0 (0%)	0.006
Hepatitis C infection[@], n (%)	82 (40%)	9 (15%)	0.001
Total Comorbidities (Most recent Study Visit), mean ±SD	3 ±2	1.7 ±1.8	<0.0001
Total Comorbidities (Baseline Visit), mean ±SD	2.1 ±1.6	1.3 ±1.6	<0.0001

*Mental Health Comorbidities: One or more of depression, anxiety, panic attacks; @: Hepatitis C antibody positive

192 A novel approach to care provision for the treatment and prevention of HIV infection in people who use drugs

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Despite investments in the prevention and treatment of HIV, new infections continue to occur and a small but significant proportion of individuals living with HIV are not linked appropriately or retained in care. In Hamilton, Ontario, a rising proportion of new diagnoses occur in people who inject drugs. This group of patients experiences multiple barriers to accessing care and has traditionally been poorly served by the existing clinical infrastructure, particularly when they are affected by poverty and mental health diagnoses. We aim to evaluate a service delivery method which focuses on lowering barriers and providing a patient centred approach to care with the aim of increasing the number of individuals able to access the care they require. This program is different from other HIV clinics because it is housed in a community space (The AIDS Network, Hamilton ON), has weekly drop-in hours to see the doctor, and most patients with a concurrent opioid use disorder are also prescribed a safer supply of opioid medication to replace a toxic illicit opioid supply. This project is ongoing with 13 participants currently enrolled and more referred. At baseline, we conduct a survey with the participant then follow-up with chart review up to 18 months. We are also collecting qualitative data through semi-structured interviews then using reflexive thematic analysis to interpret. Thus far, we have retained all 13 patients in the study and most are adhering to their HIV treatment, resulting in undetectable and untransmissible HIV viral loads. Participants also report reduced cravings when they reach an individualized dose of a safer opioid supply which reduces their risk of overdose. The program's preliminary findings show promise that integrating HIV care in a community setting with peer support, harm reduction supplies, and drop-in services for people who use drugs, will result in positive health outcomes.

263 Les mesures sanitaires de la COVID-19 ont aggravé la crise des surdoses : entrevues semi-dirigées EPIC auprès des personnes utilisatrices de drogue au Québec

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Contexte :

La crise des surdoses au Canada a été exacerbée par les mesures sanitaires venues enrayer la pandémie de COVID-19. Pour comprendre cela, nous nous sommes intéressées au vécu des personnes utilisatrices de drogue à injection au Québec pendant la crise de la COVID-19.

Méthodes :

Dans le cadre du programme multi-pays EPIC, des entrevues individuelles qualitatives semi-dirigées ont été conduites auprès de personnes utilisatrices de drogue au Québec entre août et novembre 2021. Le but de ces entrevues est de documenter le vécu de la crise de la COVID-19, ainsi que de connaître les besoins en matière d'aide communautaire ou sanitaire des personnes interrogées. Les entrevues ont été faites via la plateforme zoom. La partie audio a été enregistrée et retranscrite à l'écrit. L'analyse thématique du contenu a été assurée par deux chercheur-es.

Résultats :

11 personnes ont été interrogées. Le principal sujet de préoccupation abordé lors de ces entrevues est l'impact négatif des mesures sanitaires sur la crise des surdoses. Les participant-es ont notamment évoqué les mesures de couvre-feu et de confinement, qui les ont poussé-es à consommer à leur domicile, sans supervision. L'accès aux centres d'injection supervisés ou aux services communautaires d'analyse de drogue a été restreint ou empêché à cause de ces mesures. Les participant-es ont aussi indiqué avoir vécu un ralentissement ou une réduction dans la qualité des services de santé.

Conclusions :

Les réponses à ces entrevues ont mis en évidence la nécessité d'utiliser les structures communautaires pour les personnes utilisatrices de drogue et les effets néfastes en cas de restriction à l'accès à ces services. Ces témoignages permettent de mettre en lumière les vécus des personnes utilisatrices de drogue pendant cette pandémie et à identifier les besoins en matière de prévention et de réduction des méfaits pour cette population vulnérable au VIH.

176 “This is not for me”: Black women’s experiences of structural racism in accessing HIV services

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Background: Black women continue to be disproportionately impacted by the HIV epidemic in Canada. Public health research is beginning to implicate anti-black racism in such health disparities, particularly within the context of service access. The aim of this study was to understand how structural forms of racism influence Black women’s experiences of accessing HIV testing, antiretroviral therapy, and pre-exposure prophylaxis through services provided by hospitals, Toronto sexual health clinics, and private practices.

Method: In this qualitative study, recruitment and data collection took place between February 2021 - April 2022. Interviews were conducted with Black women who accessed services during the preceding 12 months (n=20, 12 living with HIV). To construct a profile of structures, discourses, and knowledge systems organizing services, interviews with clinical, government, and community response leaders (n=10) were conducted alongside the collection of archival and policy documents (n=75). Interviews were transcribed verbatim and all texts were analyzed in NVivo software using a critical race narrative methodology.

Results: Four themes were identified: 1) Black women are at the periphery of HIV service infrastructure. Service networks are concentrated within downtown Toronto resulting in access disconnected from Black neighbourhoods and their social realities. 2) Standard constructs of HIV risk are racially stigmatizing. ‘HIV-endemic’ status characterizes Black women’s risk as natural and ‘foreign’, institutionalizing differential assessment and care. 3) Immigration status impacts service engagement. Connections to care via immigration pathways limited service awareness and treatment access for women living with HIV. 4) Preconceptions of Black women shaped the ‘clinical encounter’. Ignoring/minimizing treatment adherence difficulties and providers’ resistance to self-advocacy were experienced as racially motivated.

Conclusion: Structural racism impacts how Black women experience HIV services and their subsequent prevention and treatment decision-making. Critically thinking about the ways racism shapes Toronto’s service network can ensure Black women equitably access the interventions they want and need.

299 Facilitators and Deterrents of Quality of Life among African, Caribbean and Black Women Living with HIV in British Columbia, Canada

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Background: The quality of life (QOL) of African, Caribbean and Black Women Living with HIV (ACB WLWH) is adversely impacted by barriers to care services, and intersecting stigmatization and marginalization. There is limited evidence on QOL for ACB WLWH based on 4 major domains (physical health, psychological and spiritual wellbeing, social and economic factors, and family health) and related facilitators and barriers.

Methods: Qualitative, descriptive study using semi-structured interview guides

Results: We interviewed 18 ACB women, within the ages 21-71, living with HIV for 4-26 years. Two-thirds identified as non-Canadian citizens and average income was \$1861.8CAD. Regarding physical health, participants identified perceived health status, HIV illness burden, access to HIV medication, and time for personal activities as facilitators. While the deterrents were low energy, pain, COVID-19 misinformation and impact, and poor access to care. The facilitators in the psychological and spiritual domain were peace of mind, gratitude, improvements, and ability to worship in their own language. Psychological deterrents were self-doubt, anxiety, depression, isolation, spiritual fatigue and loss of spiritual community. Having funding, education, employment, and a supportive environment were some social and economic facilitators. Conversely, job loss, inflation and the pandemic negatively affected QOL. In the family domain, one participant identified family support and time spent with family as facilitators while loss of family and inability to travel home were deterrents.

Conclusion: Our findings reveal ACB WLWH's perceptions of QOL, and their experiences of various facilitators and deterrents to it, particularly, during the pandemic.

Implication: Given their vulnerability, there is need to reinforce and deploy innovative interventions to improve QOL for ACB WLWH beyond somatic HIV care services. Government advocacy aimed at improving the psychological, spiritual, economic and family domains of QOL are critical, especially, funding policies and programs that support diversity, inclusion, and health-equity of racialized, stigmatized groups.

326 Associations of Psychological Distress, Sexual Compulsivity, and Escape Motives with Group Chemsex and Condomless Anal Sex Among Gay, Bisexual, and Other Men Who Have Sex with Men (GBM)

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Background: Group chemsex (i.e., using drugs to enhance sex with multiple partners) is associated with increased condomless anal sex (CAS) and sexually transmitted and blood borne infections (STBBIs) among GBM. Sexual compulsivity and avoidant coping behaviours related to psychological distress are associated with chemsex and CAS. We report the effects of psychological distress on group chemsex engagement and CAS with Engage data.

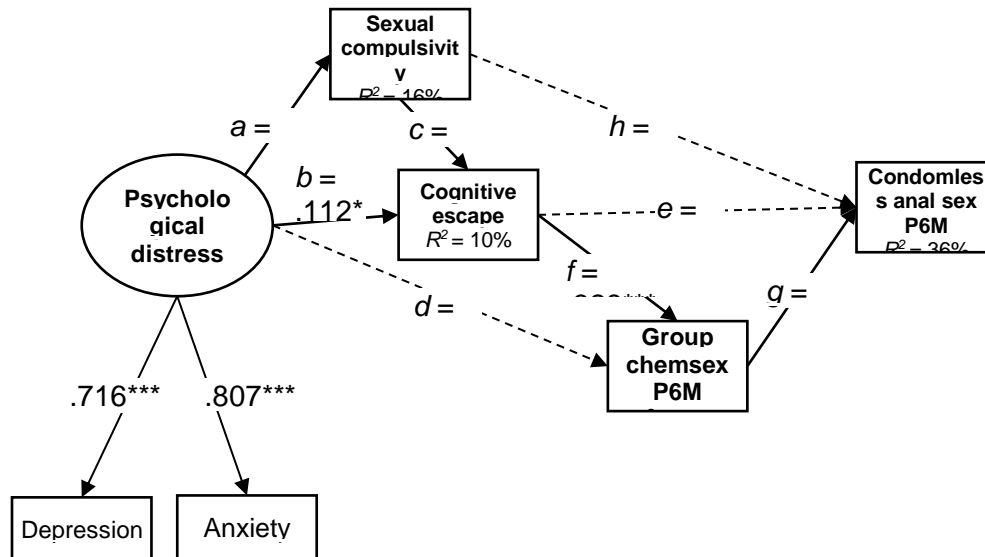
Methods: We examined baseline data from 2,257 participants in Engage, a study of sexually active GBM aged 16+ years, recruited (02/2017-08/2019) using respondent-driven sampling (RDS) in Montreal, Toronto, and Vancouver. An RDS-II adjusted structural equation model was estimated examining sexual compulsivity, cognitive escape (i.e., using drugs to avoid thinking about sexual risks), and group chemsex in the past six months (P6M) as mediators between psychological distress and P6M CAS (i.e., ≥ 1 instance). Analyses were adjusted for potential covariates (e.g., race/ethnicity, P6M PrEP use).

Results: 7.1% participants reported P6M group chemsex and 71.6% reported P6M CAS. The hypothesized model (see Figure) fit the data well (CFI=.95, RMSEA=.03). P6M group chemsex was associated with a greater likelihood of P6M CAS. Psychological distress, sexual compulsivity, and cognitive escape were all indirectly associated with P6M CAS via P6M group chemsex.

Conclusion: Psychological distress is associated with group chemsex via sexually compulsive behaviours and cognitive avoidance. The interrelation of these factors may increase the likelihood of CAS and ultimately STBBIs among GBM. Interventions to reduce chemsex harms could help GBM cope with psychological distress and incorporate other prevention strategies (PrEP use, STI testing).

Supporting Document

Figure. Associations between psychological distress, group chemsex, and condomless anal sex in the past 6 months (P6M).



Note. Model fit statistics: χ^2 (df = 13, N = 2257) = 37.78, $p = .0003$; RMSEA = .03, 90% CI (.02, .04); CFI = .95; WRMR = .84. Standardized path coefficients and factor loadings. * $p < .05$, ** $p < .01$, *** $p < .001$. Dashed paths are non-significant. Psychological distress was indirectly associated with condomless anal sex P6M via sexual compulsivity, cognitive escape, and group sex (acfg = .015, $p = .016$).

228 Gay, bisexual, and queer men's confidence in the "Undetectable equals Untransmittable" (U=U) HIV prevention message: a longitudinal qualitative analysis of the sexual decision-making of PrEP users over time

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Background: Over the last six years, "Undetectable equals Untransmittable", or U=U, has been incorporated into public health messaging, community position statements, and clinician communications with patients in Canada. Our objective was to understand what PrEP-experienced gay, bisexual, and queer men (GBQM) thought about the U=U message and how it informed their sexual decision-making over time.

Methods: We conducted annual longitudinal qualitative interviews with 17 participants who were current or former PrEP users as part of PRIMP, a mixed methods implementation science study (2020-2022). Over three years, 47 interviews were conducted with GBQM in Ontario, Canada. Interviews were transcribed verbatim and coded in NVivo following reflexive thematic analysis.

Results: All participants had heard of U=U at baseline. Participants' sexual decision-making was largely attributed to their confidence in HIV prevention science and to the person taking medication (i.e., themselves using PrEP versus a real/imagined person living with HIV (PLHIV)). Longitudinal narratives of U=U clustered around four overarching themes (1) U=U confidence (i.e., increasing trust in U=U irrespective of their PrEP use); (2) PrEP confidence (i.e., PrEP as sufficient HIV protection making U=U less relevant); (3) combination confidence (i.e., trusting U=U and PrEP as a package); (4) partner confidence (i.e., potential 'distrust' of U=U due to uncertainties about partners' medication adherence). Some participants noted their increased confidence in U=U was related to the normalization of U=U within HIV prevention discourses and growing awareness among queer communities. Overall, men described increased sex with PLHIV over time, including some participants who during earlier interviews said they would 'never be comfortable' with serodifferent sexual partners.

Conclusions: GBQM's use of PrEP shaped how they thought about U=U and sex with PLHIV. To our knowledge, this is the first longitudinal qualitative analysis of U=U in Canada to examine GBQM's shifting relationships to biomedical HIV prevention messages.

109 'Being Seen and Heard': Transgender Diaspora Middle Eastern and North African Youth in Ontario Share Experiences with Stigma and Challenges in Access to Health and HIV Prevention Services

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INTRODUCTION

A highly under-researched community, Middle Eastern and North African (MENA) youth in Canada face unique challenges in navigating HIV and sexually transmitted infections, especially with increased immigration. Transgender MENA youth have been significantly immigrating to Ontario and identified as a key population. YSMENA community-based research study designed to determine HIV risk context and sexual health needs of MENA diaspora youth in Ontario.

METHODS

YSMENA Study employed mixed-methods data collection through quantitative socio-demographic surveys and qualitative focus groups engaging 56 MENA youth, 16-29 years in Ontario. Fifteen focus groups were held with youth sub-groups across the sexual and gender spectrum. Eight self-identifying transgender youth participated in a series of sequential critical dialogical focus group sessions in Arabic to increase access, then translated, transcribed and coded in NVIVO.

RESULTS

Seven youth identified as trans feminine and one as trans masculine; average age was 27 years (SD=2.67); about 90% moved to Canada in the last 10 years and 50% spoke only Arabic. Less than half (45%) have high school education and 75% were receiving social or disability assistance. All trans youth shared rent with a roommate and about 40% described their living arrangement as unstable and unsafe. Themes included layered experiences of exclusion and transphobia; shame, stigma and feelings of isolation from family; and discrimination while accessing health and HIV prevention interventions. Some discussed the precariousness and risks associated with sex work and lack of mental health care. Youth-informed interventions included training for healthcare workers on responding to service needs with respect and compassion. Training for language interpreters was also highly recommended. Overall, transgender youth demonstrated notable resilience and self-acceptance.

CONCLUSIONS

Experiences shared have important implications for strengthening provision of health care services. Bolstering community-based spaces to offer ethno-culturally relevant and non-judgmental service and increased holistic mental health services are recommended.

187 Intersectional Experiences of COVID-19 and HIV among LGBTQ+ People Living with HIV—Protective Behavior Adherence, Pandemic Distress, and HIV Care Disruptions: A Mixed Methods Study (#SafeHandsSafeHearts)

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Background: Scant research has explored in-depth intersectional experiences of COVID-19 and HIV among PLWH during the pandemic. We sought to examine population-location-specific experiences of LGBTQ+ PLWH regarding COVID-19 knowledge, protective behaviours, psychological distress, and impacts on HIV care.

Methods: Using a mixed-methods study with convergent parallel design, we examined challenges faced by LGBTQ+ PLWH amid the COVID-19 pandemic in Toronto, Bangkok, and Mumbai. We used descriptive statistics and chi-squares to examine baseline data (03/21-12/21) from PLWH participants in a multisite clinical trial of an eHealth intervention to increase COVID-19 knowledge and protective behaviours, and reduce COVID-19-related psychological distress among LGBTQ+ individuals. We integrated content analysis of semi-structured post-intervention interviews (12/21-06/22).

Results: Participants (N=57; mean-age 27-years[IQR:9]) were from Toronto (n=9), Bangkok (n=23) and Mumbai (n=25), mostly (n=40) cisgender gay/bisexual-identified, 14 trans-identified, 3 cisgender lesbian/bisexual-identified. COVID-19 knowledge was significantly higher in Toronto vs. Bangkok/Mumbai. Cisgender-gay/bisexual- and cisgender-lesbian/bisexual-identified vs. trans-identified participants had significantly higher protective behaviour (masking/physical distancing) adherence across sites. High prevalence of clinically-relevant anxiety (32%) and depression (25%) symptoms were identified across sites and populations. Qualitative findings reveal lesser access to government/social-welfare/unemployment COVID-19 benefits among trans-people due to inability to change government-ID-card gender (India) and informal employment (“no proof”) (India/Thailand). Overall decreases were reported in ART access (22.8%), HIV-care visits (28.1%), and ART adherence (8.8%). Lengthy waits for HIV-medical care (check-ups/medication) were exacerbated by concerns about COVID-19 transmission in hospitals/clinics, worse COVID-19 outcomes due to HIV, and worse HIV outcomes if one contracted COVID-19.

Conclusions: HIV care disruptions, prevalent psychological distress, and HIV-specific health concerns during the COVID-19 pandemic indicate urgent need for service delivery innovations to facilitate HIV and mental health care among LGBTQ+ PLWH amid ongoing waves of COVID-19, and preparedness for future pandemics. Structural interventions to enable access to pandemic-related government social welfare are crucial for trans people.

240 Mobilizing the Stories of Long-Term Survivors and Caregivers: Community-Based and Artistic Knowledge Mobilization for the “HIV in My Day” Oral History Project

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Background: Within communities disproportionately impacted, HIV/AIDS is a historical experience of loss and resistance and an ongoing health inequity. We are quickly losing opportunities to gather first-hand experiences from the early days of the AIDS pandemic. Critical and intersectional oral history can preserve these essential community histories and centre the experiences of diverse people living with HIV, while also providing insights into how HIV prevention and care can be improved today.

Methods: “HIV In My Day” is an oral history project that collects, preserves, and mobilizes testimonies from the early years of British Columbia’s HIV/AIDS epidemic from survivors and caregivers. Thus far, our community-based team, including several peer researchers living with HIV, has conducted 118 interviews. Here we summarize and reflect on our multiprong community-based knowledge mobilization process.

Results: Activities included: the creation of an online, public oral history archive at the University of Victoria; three community town hall events to seek community input and share key findings; a multimedia display that presented at an arts-based event; an arts-based workshop and exhibition centring the voices and artistic creations of women living with HIV; multiple conference presentations and scholarly articles; a verbatim theatre production, which was part of the Cultch Theatre’s season in December 2022; and a community gathering associated with the play, including an exhibition of art and ephemera, held on December 4, 2022 in Vancouver, BC with 115 participants.

Conclusions: Our multipronged and arts-based approach demonstrates the importance of integrating community knowledge mobilization throughout research projects, from study conceptualization to completion, and also highlights the possibilities of arts-based approaches to engage diverse communities across generations about the histories and evolving meanings of HIV. Collectively, these activities have helped preserve cultural memory of the early AIDS epidemic, promoted cross-generational and cross-sector dialogue, and provided insights into HIV research and care.

69 Experiences of Discrimination Among Indigenous Peoples Living with HIV in Ontario

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Background: Indigenous peoples living with HIV (IPLWH) experience discrimination that has been shown to have negative impact health. The objective of this study is to describe experiences of discrimination among IPLWH in Ontario and its relation to their health.

Methods: 100 IPLWH participants in OHTN Cohort Study (OCS) completed interviews in 2020-2021. The Major Experiences of Discrimination (MED) assessed lifetime experience of discrimination (Williams et al, 1997), which includes refused healthcare, fired, not hired, denied promotion, discouraged from education, evicted/denied housing, denied banking, told “to go back”, stopped by immigration official, denied services in a store/pharmacy, or carded/stopped/searched/questioned by police. For each item, they were asked whether the experience was due to their identity (race, HIV status, gender, age, religion, education level, sexual orientation, or disability).

Results: 70 (70%) experienced at least one and 57 (57%) experienced multiple forms of unfairness. More female IPLWH (86%) reported experiencing unfairness than heterosexual male IPLWH (63%) or gay/bisexual male IPLWH (61%). The most common forms of unfairness were being carded, told to “go back”, and denial of service in store/pharmacy. The most common reasons of discrimination were Indigenous identity, HIV status, and sexual orientation.

IPLWH who experienced unfairness reported ($p < 0.05$) worse health outcomes including, poor/fair self-reported general health (34.3% vs. 13.3%), diagnosis of mental health condition (57.1% vs. 26.7%), loneliness (52.9% vs. 20.0%), and depression (54.3% vs. 20.0%), but reported higher utilization of Indigenous cultural and health services (44.3% vs. 16.7%) than IPLWH with no experience of unfairness. IPLWH who experienced discrimination also reported significantly lower physical and mental health-related quality of life (HRQOL) and lower social support (adjusting for age and gender).

Discussion: The high level of experience of discrimination and its association with poor health outcomes is concerning. Interventions that can reduce the negative impacts of discrimination on health are required.

346 Our Hearts and Minds Together: Building on Our Knowledges in Community Research Fellowship, An Example from the Feast Centre for Indigenous STBBI Research

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Context: What can community research fellowship become when articulated from within First Nations, Inuit, or Métis (FNIM) perspectives?

Background: The Feast Centre for Indigenous STBBI Research at McMaster University in collaboration with CAAN Communities, Alliances and Networks, is a Canada-wide project focused on the use of Indigenous Knowledges in STBBI research with aims to support the development of scholars and scholarship grounded in Indigenous knowledges. Our Community Fellowship (CF) Program supports research training for early-career scholars that comes from within FNIM ways of being and knowing.

Discussion: We explore Indigenous research fellowship through our relational network. In its structures and offerings, the CF Program contributes to developing a skilled multidisciplinary community of Indigenous and allied scholars, intended to increase uptake and implementation of Indigenous informed research practices.

Lessons Learned: The unique structure of the program supports 8 Community fellows in 2022/2023, mentored by Feast Team Members. Further relational programming includes conversations, check-ins, peer mentorship opportunities, and welcoming access to the larger Feast team, including a Council of Elders. Fellows can organically create connections, ask questions, and seek feedback. Our non-prescriptive format engages ongoing consultation on training needs, in a non-hierarchical organization recognizing we all learn from each other. Research skills development opportunities are responsive, including an initial iterative review process and an ongoing learning series. Fellows are encouraged and supported to write about their research for journals and conferences through relational training supports from Knowledge Holders. Community fellowship grounded in Indigenous perspectives advances community-based research supporting Indigenous people's autonomy to respond to STBBI in ways consistent with diverse cultures. Our fellowship builds capacity for researchers regarding Indigenous Peoples and STBBI and channels thinking about policy and program impacts within larger communities. Relational community fellowships flourish when we stand together in joyful connections as an Indigenous research network.

6 The Impacts of the COVID-19 Pandemic on Access to Ceremony, Land-Based Activities and Medicines among Indigenous People living with HIV in Manitoba and Saskatchewan

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¹University Of Manitoba, ²All Nations Hope Network, ³Two-Spirit Consultants of Manitoba

Background: Access to ceremony and cultural programming are key to wholistic health for Indigenous people living with HIV/AIDS (IPHA). This community-based participatory research study explored the impact of the COVID-19 pandemic on access to Indigenous ceremonies, medicines, and land-based cultural activities among IPHA in Saskatchewan and Manitoba.

Methods: The project was grounded in an Indigenized ethical space and utilized etuaptmumk/Two-Eyed Seeing. Participants in Manitoba (n=24) and Saskatchewan (n=21) were recruited using printed flyers, community-based agencies, peers, and social media. Interviews focused on pandemic's impacts on ceremony among IPHA. Data were analyzed using thematic analyses.

Results: Restricted access to ceremonies, cultural activities, and community supports during the COVID-19 pandemic detrimentally affected the overall wellbeing of IPHA. Greater isolation from community, Elders, families, and culture, as well as interruption of ceremonial and cultural gatherings, sweat lodges, and pipe ceremonies resulted in the decline of mental, emotional, and spiritual health for IPHA. Poor access to ceremonies was particularly concerning for IPHA with intersecting vulnerabilities. The COVID-19 pandemic also triggered innovative strengths-based adaptations among IPHA and organizations that serve these communities. Community organizations dropped off supplies of sacred medicines to IPHA, while other innovations focused on online cultural activities embedded in ceremony, including virtual storytelling, sharing circles, smudging, and drumming. Participants also spoke of the ways culture, ceremony, land-based activities, medicines, and Indigenous Knowledges were applied in managing and responding to the impacts of COVID-19.

Conclusion: Indigenous responses to COVID-19 among IPHA in Manitoba and Saskatchewan exemplified the strengths-based culturally appropriate approaches that helped to address pandemic impacts and demonstrated how ceremony and Indigenous ways of knowing can foster innovative program adaptations based on culture and community. Supporting and enabling Indigenous ceremonial practices within HIV continuum of care can contribute to healing, wellbeing and reduce barriers Indigenous people experience within the Western healthcare system.

185 The Well-Being Project: Identifying and Addressing the Impacts of Gender-Based Violence Among Indigenous Women, Two-Spirit, and Gender-Fluid People Living with HIV and/or HCV Amidst the COVID-19 Pandemic

Savannah Swann¹, Sally Woodside², **Ashley Smoke**¹, Florence Ranville¹, Carly Welham¹

¹Dr. Peter AIDS Foundation (Dr. Peter Centre), ²CAAN (Communities, Alliances and Networks)

Issue: There is an urgent need to improve access to culturally relevant gender-based violence (GBV) prevention and intervention resources for Indigenous people living HIV and/or HCV (IPLWH), which has increased over the COVID-19 pandemic. In response, CAAN and the Dr. Peter Centre established the Well-Being Project to identify how COVID-19 has impacted the experiences of GBV amongst this key population, and explore ways to support community-based health/social services in delivering culturally safe, stigma-free, and trauma-informed GBV response services amidst crisis situations.

Description: Phase 1: Following a literature review, we held dialogue sessions in the four directions. We invited Indigenous women (inclusive of transgender women, Two-Spirit, femme-identifying, genderqueer and non-binary people) living with HIV and/or HCV to share expert perspectives and recommendations. Following thematic analysis of the dialogues, participants reconvened to review and verify the findings. Phase 2: Interested dialogue participants supported the creation of a Gender Safety Medicine Basket of resources to increase health/social service providers' capacity to provide stigma-free, trauma-informed, and culturally safe services for IPLWH experiencing GBV amid crises and beyond.

Lessons Learned: Participants' perspectives support the evidence that GBV has increased over the COVID-19 pandemic. Increased isolation due to physical distancing ordinances and service limits is a key contributor to this trend. Participants reported deteriorations in mental health due to the normalization of abuse, increased experiences of racism, and reduced access to safer spaces. These barriers can be mitigated by incorporating wise practices for cultural and gender safety into community-based programming, including culturally-responsive safety planning, Elder engagement, ceremony, and arts- and land-based healing practices.

Recommendations: This presentation will share findings from the Well-Being Project – including the ways that COVID-19 has impacted experiences of GBV amongst IPLWH – and recommendations on culturally-responsive practice for health/social service providers from the perspectives of IPLWH with living/lived experience of GBV.

279 Barriers Black and Indigenous 2SGBTQ+ service users experience in sexually-transmitted and blood-borne infection (STBBI) testing: A qualitative analysis of sexual health service users in Ontario

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Background: Many Black and Indigenous Two-Spirit, gay, bisexual, and people who have sex with men (2SGBTQ+) face structural barriers in STBBI testing spaces. Their negative experiences in testing centers, and issues with access, are informed by systemic racism. Our objective was to understand what role systemic racism plays in shaping the way Black and Indigenous 2SGBTQ+ service users experience testing spaces in Ontario.

Methods: Between June 2020 to December 2021, we conducted semi-structured focus groups and in-depth interviews with Black and Indigenous 2SGBTQ+ service users (n=10) regarding their previous experiences of STBBI testing in Ontario. The interviews were transcribed verbatim and analyzed following reflexive thematic analysis using Nvivo. Recruitment, data collection, and data analysis were conducted by 4 peer researchers in consultation with a community advisory board.

Results: Narrative accounts revealed multiple, intersecting STBBI testing barriers experienced by Black and Indigenous participants. Across accounts, Black and Indigenous 2SGBTQ+ participants identified the following barriers to STBBI testing: 1) Experiencing judgment and discomfort due to racism (e.g. microaggressions from service providers, invasive and inappropriate questions); 2) Lacking cultural community in testing spaces (e.g. lack of cultural symbolism and visible community members in testing spaces); 3) Barriers accessing testing centers and services (e.g., geographic dislocation, displacement, and denial of Indigenous status cards).

Conclusion: The negative accounts identified by Black and Indigenous 2SGBTQ+ service users, signals a need for changes to testing spaces in Ontario and across Canada, to be more inclusive of Black and Indigenous testers. An online testing service could serve as a viable intervention here, however, a change within the system itself is still imperative.

Supporting Document

Barriers Black and Indigenous 2SGBTQ+ service users experience in sexually-transmitted and blood-borne infection (STBBI) testing: A qualitative analysis of sexual health service users in Ontario

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Abstract (Word Count: 267)

Background: Many Black and Indigenous Two-Spirit, gay, bisexual, and people who have sex with men (2SGBTQ+) face structural barriers in STBBI-testing spaces. Their negative experiences in testing centers, and issues with access, are informed by systemic racism. Our objective was to understand what role systemic racism plays in shaping the way Black and Indigenous 2SGBTQ+ service users experience testing spaces in Ontario.

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Conclusion: The negative accounts identified by Black and Indigenous 2SGBTQ+ service users, signals a need for changes to testing spaces in Ontario and across Canada, to be more inclusive of Black and Indigenous testers. An online testing service could serve as a viable intervention here, however, a change within the system itself is still imperative.

304 Intersections of Racism, Sexism, Transphobia and HIV-stigma among African, Caribbean and Black Women Living with HIV

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Background: The Covid-19 pandemic added an additional layer of stigmatization for African, Caribbean and Black women living with human immunodeficiency virus (HIV) (ACB WLWH) in British Columbia (BC). ACB WLWH experience HIV-stigma, racism, sexism, and potentially transphobia on an ongoing basis. The isolation and fear produced during the Covid-19 pandemic intensified the experience of stigmatization for many ACB WLWH.

Methods: We conducted a qualitative descriptive study utilizing in-depth interviews with participants who identified as ACB, are 16 years old, were living with HIV for at least 3 months prior to the beginning of the Covid-19 pandemic and reside in BC. Participants were recruited through purposive and snowballing sampling methods from relevant women's health, HIV and/or ACB organizations in BC. To ensure the trustworthiness of the findings, a member checking event was conducted. Data was analyzed using thematic content analysis.

Results: A total of 18 ACB WLWH were interviewed for the study. 95% of the participants identify as cisgender. The participants displayed diverse perspectives ranging from age 21-71 and living with HIV for 4-26 years. In alignment with current literature, all ACB WLWH identified frequent experiences of stigmatization on the basis of HIV status, race, sex, gender or risk of Covid-19 transmission. One participant explained her experience as a self-identified transgender ACB WLWH as overwhelming and isolating, she described experiences of discrimination even within her community related to her sex, gender and HIV status.

Conclusion: ACB WLWH consistently identified support groups and a strong social support network as key resources in minimizing the effect of intersecting stigma on their quality of life. However, the availability of support groups was a limiting factor for participants in rural areas. More research is needed to explore how support groups can be developed further and what other interventions may be helpful for ACB WLWH.

305 Critical health literacy in the context of knowledge of vertical transmission of HIV among Black mothers in three countries

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Background: Black Canadians are disproportionately affected by HIV infections and more likely to be aware of their seropositive status compared to other racialized groups. Low health and HIV literacy impact HIV prevention and treatment. This paper presents the result of a recent study which examined the HIV+ Black mothers' knowledge of vertical transmission (KVT) of HIV

Methods: We drew data from a mixed-method study of the sociocultural experiences of HIV+ Black mothers (aged 18-49years) in Ottawa-Canada (n=89), United States (n=201) and Nigeria (n=400) with sample size, N=690. We used response data from a set of survey questions assessing their KVT of HIV during: i) pregnancy; ii) delivery; and iii) breastfeeding. "Yes" response indicated knowledge while "No" or "Don't Know" indicated misconceptions or no knowledge. Descriptive analysis and thematic analysis were used for the quantitative and qualitative data respectively.

Results: Majority (80 - 84%) of the mothers had KMCT but significant percentages did not think that HIV can be transmitted from mother to child during: i) pregnancy (Ottawa 38.7%, Miami 25.7%, and Port-Harcourt 12%); ii) childbirth (Ottawa 27.6%, Miami 32.3%, and Port-Harcourt 11.2%); and iii) breastfeeding (Ottawa 27.6%, Miami 19.6%, and Port-Harcourt 11.7%). Quotes from the IDIs indicates some levels of KMTCT: ".my children are safe because I did not breastfeed."- Ottawa; "...I decided not to breastfeed because I didn't want him to get the virus."- Miami; and, "... you don't have to mix feed..., you have to strictly adhere to exclusive breastfeeding guidelines."-Port Harcourt.

Conclusion: Although majority of the mothers had KVT, a significant percentage of them had misconceptions about modes of vertical transmission of HIV. Interventions are necessary to increase critical health literacy particularly among Black mothers in Canada and US where we found greater misconceptions about modes of vertical transmission of HIV.

Keywords: CHL, MTCT/vertical transmission, breast feeding

163 Building Enabling Environments for Transformative Communication for HIV Prevention with and for Northern and Indigenous Adolescents in the Northwest Territories: Mixed-Methods findings

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Background: Innovative approaches for building enabling environments for HIV prevention are needed in the Northwest Territories (NWT), where youth are disproportionately affected by sexually transmitted infections (STIs) and teen pregnancy—both HIV acquisition risk factors. Our mixed-methods study examined Northern and Indigenous youth participation in arts- and land-based Peer Leader Retreats (PLR) in the NWT and associations with HIV prevention self-efficacy.

Methods: We conducted one-week PLR in the NWT with purposively sampled adolescents aged 13-17 years old annually between 2016-2021. Retreats addressed HIV and STIs, safer sex, healthy relationships, and gender equity using interactive learning approaches (e.g., role-plays, Elder teachings, arts-based methods). We conducted pre-post retreat surveys measuring socio-demographics and safer sex self-efficacy (SSSE), and post-retreat focus groups (FG). We conducted thematic analysis of FG data. We conducted paired sample t-tests, and multiple linear regression, to assess pre-post retreat changes in SSSE scores.

Results: There were 326 participants (mean age: 14.5, standard deviation: 1.3), most Indigenous (87%) and young women (64%). A subset (n=158) of these participants, apprentices, and facilitators participated in 24 post-retreat FG. Qualitative narratives revealed that retreats contributed to technical communication (HIV and STI knowledge, condom benefits, correct condom use) and transformative communication (confidence, healthy relationships, sex-positivity). We found statistically significant SSSE mean score increases (2.14, 95% confidence interval (CI)= 1.58-2.71). In multiple linear regression analyses, higher pre-test SSSE ($\beta=0.59$, 95% CI, 0.51-0.67) and gender (women) ($\beta=1.84$, 95% CI= 0.77-2.92) were associated with higher post-test SSSE scores. Sexually diverse (vs. heterosexual) ($\beta= -1.14$, 95%CI= -2.25, 0.03) and food insecure (vs. food secure) ($\beta= -2.44$, 95%CI = -5.05, 0.16) participants had smaller post-test SSSE increases.

Conclusion: Enabling environments such as those fostered in arts- and land-based retreats can build technical (e.g., knowledge) and transformative communication (e.g., confidence) to empower youth in the NWT to engage in HIV prevention practices.

25 Harm Reduction After Hours: a Community-led, First Nations-centered response to record HIV rates in Saskatchewan

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Background: Harm Reduction After Hours (HRAH) is a community-led harm reduction service in Prince Albert, Saskatchewan. Prince Albert's population is 35,926 (2016) Twenty-nine percent of the city's population is First Nations and with a HIV diagnosis rate of 60.3 per 100,000 vs 4.5 per 100,000 nationally (2021). Before HRAH there was only one fixed site needle syringe program (NSP) with limited hours.

Methods: HRA was developed in response to the increased HIV/Hepatitis C rates. Although funding was provided by Public Health Canada, the success of the program can be attributed to it's community-led design. Peers and First Nations peoples were involved throughout the entire process; from initial consultation to daily operating and hiring practices.

Results: A secondary, community-led mobile NSP was developed. This new service added 36 additional hours of operation per week, including evening, weekends and stat holidays. It included paid employment for six people with a history of injecting drug use.

Peers established their own working guidelines in partnership with a sexual health clinic that serves Northern central Saskatchewan. Funding was used to train and employ peers to deliver the harm reduction supplies , make referrals and administer Naloxone. Peers went out in teams of two for safety reasons and distributed harm reduction supplies by foot and carrying supplies. Backpacks and summer/winter clothing was provided. In a 32 month period (2019-2022) 15,948 client contacts made, 294,281 syringes dispensed and 12, 422 inhalation supplies given out. In addition early 80,000 used syringes were collected from clients and the streets. The success of the project can be attributed to the inclusion of peers throughout the entire consultation process and into the development, implementation and hiring of the peers.

29 “Make it more confidential”: A study of the Correctional Service Canada’s Prison Needle Exchange Program

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Background

Ample international evidence demonstrates that prison syringe distribution programs result in a wide range of beneficial health outcomes, yet for decades Correctional Service Canada (CSC) refused to consider their implementation based on unfounded fears that doing so would lead to the proliferation of syringes behind bars and attacks against correctional officers. After a lawsuit by a former prisoner and four HIV organizations, the federal government announced in 2018 that it would introduce a “Prison Needle Exchange Program” (PNEP) in all federal prisons; however, as of 2022, the PNEP only exists in nine of 43 institutions.

Description

Four years after implementation, this study explored how the PNEP is operating by interviewing people formerly incarcerated in a federal prison with a PNEP. Between September 2021 and April 2022, the research team conducted 30 interviews across Canada.

Lessons learned

Research participants described pervasive drug use and routine sharing of injection equipment, indicating the urgent need for the program. Participants also described prison staff who are openly hostile towards people who use drugs, barriers to participating in a PNEP that requires multiple institutional approvals, and the risks of effectively ‘outing’ oneself as a person who uses drugs by participating in the program. People also discussed the lack of program confidentiality and privacy and increased surveillance as major deterrents.

Next steps

Research from other jurisdictions confirms the effectiveness of approaches to prison syringe distribution that respect confidentiality and do not rely on unnecessary surveillance. Disseminating equipment in secure kits to all people in prison upon request without a burdensome application process could ensure that PNEP participation is not recorded in individuals’ files. Access could be enhanced by diversifying how and how much equipment is distributed. As is the experience elsewhere, education and training are key to overcoming resistance and addressing stigma from prison staff.

167 Impact of Healthcare-Relationship and -Experience History on Willingness to Access Hepatitis C Care Among People Who Use Drugs in British Columbia, Canada

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Background: In Canada, people who use drugs (PWUD) experience the highest exposure to the hepatitis C virus (HCV). HCV treatment is essential for individual and population health; to achieve elimination, more people need to seek treatment. This project aimed to characterize PWUDs' healthcare experiences across British Columbia, Canada, assess how these experiences affect their willingness to access healthcare, and to propose community-sourced solutions.

Methods: People with a history of drug use were recruited by peers to participate in one 1-2 hour semi-structured videoconference interview. Analysis of transcripts followed a deductive-inductive iterative process. Analysis, informed by peer knowledge, theories of stigma, and literature, was guided by Interpretive Description to identify themes.

Results: 25 PWUD described aspects of their healthcare experiences and reflected on seeking access to healthcare at different times in their lives. Many participants had poor healthcare relationships and experiences featuring dismissal, judgment, and personal blame. Many PWUD described being denied care for severe conditions including injury and post-surgical pain. Most attributed these experiences to stigma from individual healthcare workers, sometimes enabled by organizational policy. Many participants avoided healthcare, including HCV testing and other care, to reduce anticipated and enacted stigma. Some maintained strong healthcare relationships despite periods of homelessness, disordered substance use, or sex work. In good relationships participants felt their provider listened to them, concentrated on their needs, and was non-judgmental.

Conclusions: Findings identified individual- (e.g., blaming), organizational- (flagging records), and systemic-level (society devaluing PWUD) issues impacting PWUDs' healthcare access and quality. Good healthcare relationships can mitigate such issues, and can thrive despite active drug use or serious life struggles. Healthcare relationships strongly influence PWUDs' healthcare decisions such as timely seeking of care, including HCV care. PWUD identified specific areas for clinicians to concentrate effort and techniques to create and maintain good relationships, e.g., trust-building and demonstrating respect.

105 The Impacts of the COVID-19 Pandemic on Injection Drug Use, Overdoses, and Access to Substance Use and Harm Reduction Services among Indigenous People living with HIV in Manitoba and Saskatchewan

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Background: This community-based participatory research study explored the impacts of the COVID-19 pandemic on drug use, and access to substance use/harm reduction services among Indigenous people living with HIV/AIDS in Saskatchewan and Manitoba.

Methods: The project was grounded in an Indigenized ethical space and utilized etuaptmumk/Two-Eyed Seeing to interweave Indigenous and Western ways of knowing, being and doing. Participants in Manitoba (n=24) and Saskatchewan (n=21) were recruited using printed flyers, community-based agencies, peers, and social media. Interviews focused on pandemic's impacts on substance use and access to substance use programs/supports during the COVID-19 pandemic. Data were analyzed using thematic analyses.

Results: Participants described a variety of impacts of COVID-19 on their substance use, including relapses, increased drug use, and negative impacts of isolation on overdoses and mental health. Injection drug use increased during the pandemic, including the use of fentanyl products and crystal meth. Many participants reported reduced access to harm reduction supplies and interruption of substance use/detox programs and support services during the pandemic. Relapse to substance use during the pandemic occurred in a context of social isolation, co-occurring health issues, family grief and loss related to fatal drug overdoses, homelessness, food insecurity, and inadequate socio-economic resources. Participants also described a variety of ways they coped with the pandemic.

Conclusion: The COVID-19 pandemic in Manitoba and Saskatchewan was characterized by increased overdose risk, and other drug-related harms faced by this community. Reducing barriers to culturally safe healthcare, addressing housing and food insecurity, access to harm reduction, and expanding the response to the toxic drug and overdose crisis are urgently needed. Failure to urgently address the harm reduction needs of Indigenous people living with HIV and experiencing multiple intersecting vulnerabilities may intensify the existing health and social disparities of this group.

218 Twelve characteristics of client-centred supervised consumption services (SCS): A toolkit for service design, delivery and evaluation

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Background: Supervised consumption services (SCS) are life-saving programs that reduce drug-related harms (e.g., overdose, HIV/HCV transmission) and provide support and connection for people who use drugs. Designing, delivering, and evaluating SCS in ways that are client-centred is crucial. Our community-based research group collaboratively developed a toolkit to help service providers and the organizations they work for in creating SCS that are client-focused and respond to client needs in respectful and empowering ways.

Methods: Between May-Aug 2021 we conducted semi-structured interviews (n=15) with clients who use drugs, of three Toronto-based HIV/AIDS organizations and two virtual focus groups with service providers (n=13) from these organizations. Questions focused on how to meaningfully evaluate SCS (e.g., what should be monitored to understand if SCS are operating successfully?) and what aspects of SCS are vital for clients/providers. We conducted follow-up interviews with clients (n=8) and an online survey with providers (n=25) to gather feedback and explore directions for outputs. Data were analysed using thematic analysis.

Results: We identified 12 characteristics of client-centred SCS and developed a supporting toolkit through ongoing engagement with our community advisory group and research team. The characteristics reflect client needs and priorities for SCS, which go beyond providing a space for safe consumption. For each characteristic, we provide: 1) questions to ask when designing and/or evaluating SCS; 2) tips to inform SCS design and operations; 3) tips for understanding and evaluating how well SCS reflect each characteristic. We use participant quotes to highlight important features of these interrelated characteristics.

Conclusions: This toolkit is not intended to be a comprehensive manual for designing and delivering SCS, since such guidelines exist. Rather, it can be an adjunct to existing resources that contributes to planning/implementation of new services and offers suggestions for reflection in evaluating delivery of existing SCS to ensure they are client-centred.

Social Sciences Oral Abstracts / Sciences sociales éposés oraux

260 La crise du COVID-19 a forcé les personnes vivant avec le VIH à dévoiler leur statut VIH : une enquête en ligne EPIC au Québec

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Contexte :

Le dévoilement du statut sérologique est un défi pour les personnes vivant avec le VIH (PVVIH). Dans certaines circonstances, les PVVIH doivent dévoiler leur statut sérologique sans pouvoir choisir la manière appropriée pour le faire. Nous nous sommes intéressé-es à l'impact de la crise sanitaire de la COVID-19 sur le dévoilement non volontaire du statut sérologique.

Méthodes :

Dans le cadre du programme multi-pays EPIC, un questionnaire personnalisé a été diffusé au Québec pour évaluer l'impact de la crise sanitaire auprès des PVVIH entre juillet et novembre 2021. Les personnes ayant eu l'expérience d'un dévoilement non volontaire du statut sérologique ont été comparées aux personnes qui n'ont pas dévoilé sur différents facteurs socio-économiques à l'aide de tests Mann-Whitney ou Chi-2.

Résultats :

Au total, 173 PVVIH (âge médian, IQR : 47 ans [38-59]) ont répondu au questionnaire. Parmi elles, 30% (n=52) ont indiqué que la crise sanitaire les a obligées à dévoiler leur séropositivité. Les personnes ayant dévoilé leur statut sérologique étaient plus jeunes que celles qui ne l'ont pas fait (41ans [33-56] vs 51ans [41-61], p<0,001). Elles avaient plus souvent besoin d'une aide financière (73% vs 47%, p=0,003) ou alimentaire (65% vs 44%, p=0,015). Elles ont aussi plus souvent ressenti un impact négatif de la crise sanitaire sur leur vie personnelle (64% vs 46%, p=0,034). Enfin, Elles étaient plus susceptibles d'avoir interrompu leurs traitements (22% vs 6,1%, p=0,006) ou d'avoir une charge virale détectable (40% vs 8,2%, p<0,001).

Conclusions :

Le jeune âge, le faible revenu, le besoin d'un soutien alimentaire, le bien-être réduit et la non-adhérence aux traitements étaient des facteurs socio-économiques associés au dévoilement non volontaire du statut VIH pendant la crise COVID-19. D'autres études sont maintenant nécessaires pour comprendre l'impact du dévoilement non volontaire pendant la crise sanitaire sur le bien-être des PVVIH.

266 L'index de la stigmatisation des personnes vivant avec le VIH (PVVIH) au Québec : portrait d'une stigmatisation anticipée.

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Contexte:

La stigmatisation persiste toujours en tant que facteur de stress profond dans la vie des PVVIH affectant de nombreux aspects de leur vie. Pour mieux comprendre les déterminants sociaux de la stigmatisation liée au VIH au Québec, une équipe intersectorielle en collaboration avec ReachNexus, a réalisé l'index de la stigmatisation des PVVIH.

Méthodologie:

En 2019, un questionnaire a été administré en face-à-face auprès de 281 PVVIH. Ces entretiens étaient conduits par 9 pairs associés de recherche, dans 8 régions du Québec. Cette étude s'intéresse à l'échelle de stigmatisation anticipée des maladies chroniques d'Earnshaw, c'est-à-dire un score prenant en compte la conscience d'attitudes sociales négatives, la peur de la discrimination et les sentiments de honte. Le score de stigmatisation anticipée a été comparé selon des données socio-démographiques et d'autres mesures de stigmatisation.

Résultats:

Le score moyen enregistré est de 2,7 (pour un score variant de 1 à 5). Un score plus élevé est associé au fait de s'identifier comme femme (2,9 contre 2,5, $p=0,001$), à la présence de dépression (de légère à sévère) (2,8 contre 2,3, $p<0,001$), à un score plus élevé de stigmatisation intériorisée (corrélation: 0,24, $p<0,001$) ou institutionnelle (0,15, $p=0,014$), à une expérience de discrimination en milieu de santé dans les 12 derniers mois (0,21, $p<0,001$) et à un manque actuelle d'interactions sociales positives (-0,27, $p<0,001$).

Conclusion :

Ces données mettent en lumière la relation existant entre l'anticipation d'un dévoilement du statut sérologique ayant des conséquences négatives avec notamment une faible estime de soi (stigmatisation intériorisée) et des symptômes de dépression. Cela réaffirme le besoin communautaire des PVVIH en termes de renforcement des capacités personnelles. De plus, l'appréhension de vivre de la discrimination ainsi que les discriminations avérées en milieu de santé mettent en évidence le besoin de formation du personnel de santé pour un accès plus inclusif.

121 Understanding factors associated with safer sex self-efficacy to advance HIV prevention with Northern and Indigenous adolescents in the Northwest Territories: Findings from Northern and Indigenous community-based sexual health workshops

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Background: The Northwest Territories (NWT) are disproportionately impacted by sexually transmitted infections (STI) compared with Canada's national prevalence. When untreated, STIs increase HIV acquisition risks. Safer sex self-efficacy—knowledge, intention, and relationship dynamics central to safer sex negotiation—is vital to HIV prevention. To address knowledge gaps regarding strategies to increase safer sex self-efficacy (SSSE) with Northern adolescents, our study examined factors associated with SSSE among Northern and Indigenous youth in the NWT.

Methods: We conducted pre- and post-test surveys with a convenience sample of adolescents aged 12-19 years participating in Fostering Open eXpression among Youth (FOXY) and Strengths, Masculinities, and Sexual Health (SMASH) arts-based sexual health workshops developed with and for Northern and Indigenous youth in 17 NWT communities in 2020-2021. Using post-test data, we conducted descriptive statistics, univariate and multivariate linear regression analyses to examine associations between sociodemographic (e.g., age, gender, Indigeneity), psychosocial (self-esteem), and HIV cascade (HIV/STI knowledge, prior FOXY/SMASH participation) variables with SSSE (using the Condom Use Self-Efficacy Scale).

Results: Participants (n=256; mean age: 13.5 years, standard deviation=1.4; Indigenous: 73.5%; white: 15.5%; racialized: 11.0%; sexually diverse: 24%) included cisgender men (55.6%), cisgender women (39.9%), and transgender/non-binary persons (n=4.4%). Most (n=167; 57%) were first-time FOXY/SMASH participants. In multivariable analyses adjusted for age and gender, HIV/STI knowledge ($\beta=0.21$, 95%CI: 0.04-0.37, $p=0.014$), prior FOXY/SMASH participation (vs. first time) ($\beta=1.77$, 95%CI: 0.35-3.20, $p=0.015$), and self-esteem ($\beta=1.73$, 95%CI: 0.06-0.20, $p<0.001$) were associated with higher SSSE. Indigenous ($\beta= -2.47$, 95%CI= -3.49, -0.44, $p=0.003$) and racialized ($\beta= -3.41$, 95%CI= -5.62, -1.20, $p=0.003$) (vs. white) participants reported lower SSE.

Conclusion: We found higher HIV/STI knowledge, self-esteem, and prior FOXY/SMASH participation were linked with increased SSSE among participants. HIV prevention strategies with Northern youth can integrate arts-based approaches, share HIV/STI knowledge, build self-esteem, and include booster sessions while addressing Indigenous and racial disparities in SSSE.

130 Mundane privilege and oppression: How we disclose HIV statuses in everyday interactions

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Disclosing an HIV-positive status during the course of interaction is not so straightforward and poses serious social and potentially legal consequences for those who are faced with the decision to disclose. Disclosing one's HIV-positive status risks social exclusion, discrimination, and even physical violence. Alternatively, concealing one's status, at the very least, threatens social solidarity and, at worst, risks criminalization for HIV non-disclosure. However, very little research has examined the specific interactional conditions wherein disclosure of one's HIV status (or its concealment) are occasioned and, equally, the role HIV-negative people play in creating those conditions.

This paper reports on findings from the HIV, Health, and Interaction Study, a qualitative study of mundane interactions recorded from approximately 65 everyday telephone calls and 20 minutes of face-to-face interactions involving people living with HIV. These interactions are unscripted and unprovoked by a researcher, and are instead reflections of the everyday interactions of people living with HIV.

This presentation reports on three main findings. First, one's HIV positive or negative status can be made relevant (whether or not one discloses) in a host of mundane interactions. Second, HIV-negative people casually display their HIV-negative status, which is treated as taken-for-granted, during everyday conversations. Third, HIV-negative people inadvertently and perhaps unintentionally create social situations in which HIV-positive people must decide to disclose their HIV status. Such disclosures are often performed in such a way that mitigates the breach of normative assumptions about HIV but also reveals the experiences of oppression at the micro level of interaction.

This presentation takes up the call to understand the role that HIV-negative people play in creating the social conditions within which people living with HIV must live. Research should attend not only to the lived experiences of HIV-positive people, but also to the ways HIV-negative people shape those experiences

222 Healthcare Access and PrEP Uptake Among Immigrant Gay, Bisexual, and Other Men who Have Sex With Men (GBM) in Canada's Three Largest Cities

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Background:

Newcomer immigrants are less likely to have a primary healthcare provider.
Among GBM immigrants, the lack of primary healthcare may lead to lower PrEP uptake.

Methods:

We examined data from Engage, a cohort study of GBM aged ≥ 16 years, recruited through respondent-driven sampling (RDS) (02/2017-08/2019) in Montreal, Toronto, and Vancouver, focusing on sexually active PrEP-eligible GBM (HIV Risk Index Score ≥ 10). We used RDS-II-adjusted structural equation modelling to investigate how primary healthcare provider and sexual health clinic utilization reported at enrolment accounted for differences in PrEP uptake between non-immigrants, newcomer (≤ 5 years in Canada), recent (6 – 10 years), and established (> 10 years) immigrants, controlling for various socio-demographic variables (e.g., age, education, etc.).

Results:

A total of 1351 participants (17.9% newcomer, 6.0% recent, and 12.3% established immigrants) were considered PrEP-eligible —24.4% reported PrEP use in the past 6 months, 65.5% having a primary healthcare provider, and 54.9% utilizing other clinics for STI testing.

Primary healthcare provider (not sexual health clinic) utilization was associated with PrEP uptake (see Figure). There was an indirect effect of immigration such that newcomer immigrants were less likely to be on PrEP because they were less likely to have a primary healthcare provider.

Conclusion:

These findings suggest that primary healthcare providers may be important for PrEP access among GBM. Given unequal access to primary healthcare providers among newcomer immigrants versus non-immigrants, it is important to minimize barriers to newcomer healthcare access in order to improve PrEP uptake.

Supporting Document

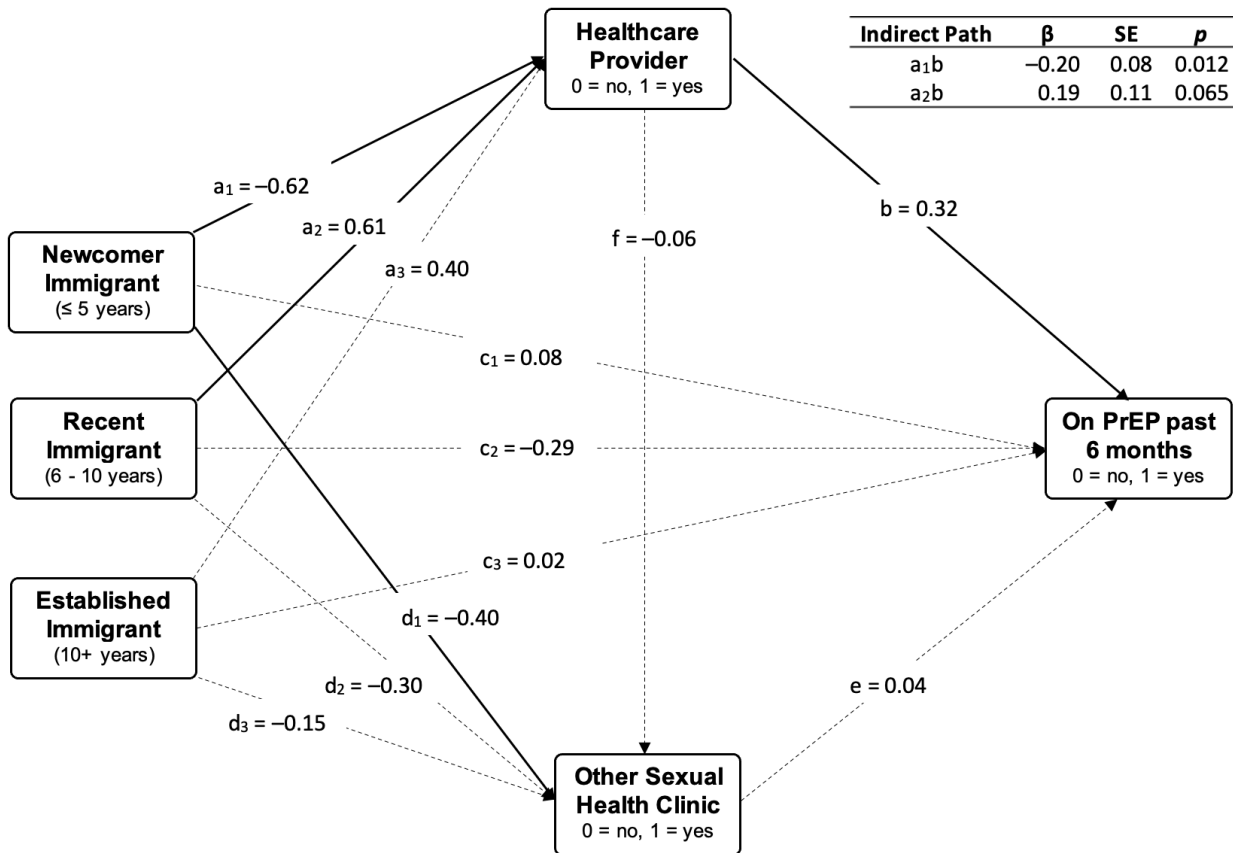


Figure 1. Unstandardized RDS-II adjusted associations between primary healthcare provider (a_1 - a_3), sexual health clinic (d_1 - d_3), and PrEP (c_1 - c_3) utilization among immigrants (1: newcomer, 2: recent, 3: established) and non-immigrants (reference). Solid lines indicate significant associations, $p < .05$. The model was just-identified at CFI = 1 and TLI = 1.

269 Loneliness and sexual risk-taking among sexual minority men in the context of COVID-19

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Background: According to the Loneliness and Sexual Risk Model, higher levels of loneliness are associated with increased sexual risk-taking among GBM. Given that COVID-19 protection measures in Canada (e.g., social distancing and isolation) led to increases in loneliness, this time period may also have elevated sexual risk-taking among GBM.

Methods: Participants (n=1,134) were recruited from Engage, an ongoing cohort study of GBM in Montreal, Toronto, and Vancouver, to take part in the Engage COVID-19 sub-study. Using linear regression, we examined the association between age, loneliness and social support during COVID-19, testing whether age moderated the association between loneliness and sexual risk-taking (e.g., engaging in group, transactional, or anonymous sex; chemsex; or sex with new casual partners). We also explored whether loneliness in the first year of the COVID-19 pandemic (03/2020-02/2021) predicted sexual risk-taking in the same time period as well as one year later (03/2021-02/2022), controlling for education, income, city, living alone, and HIV status.

Results: There was a significant association of age with loneliness (beta=-.144, p<.001) and social support (beta=-.170, p<.001). Age moderated the association between loneliness and sexual risk-taking (p=.003); younger participants experiencing more loneliness were more likely to report engaging in sexual risk-taking. Across age groups, we found that GBM who reported more loneliness in the first year of COVID-19 were less likely to report sexual risk-taking in the second year (OR= 0.75, p = .006).

Conclusion: Loneliness may not have led to increased sexual risk-taking a year later perhaps due to greater isolation (and loneliness) among those who were more concerned about COVID-19. However, it seems that the sexual risk-taking of younger GBM in the first year was particularly impacted by loneliness. Additional support to improve their ability to adaptively cope with feelings of loneliness may help, particularly in contexts where social isolation may be necessary.

96 Relationships and risk: A mixed-methods study of perceptions and management of HIV/STI risk among heterosexual-identifying men who have sex with both men and women

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Background:

Heterosexual-identifying men who have sex with both men and women (H-MSMW) are an under-researched population who may facilitate HIV/STI transmission between MSM and heterosexual sexual networks. Using a mixed-methods approach, we investigated perceptions and management of HIV/STI transmission risk among H-MSMW, and how their relationship status with women affected their sexual behaviour.

Methodology:

We used an exploratory sequential mixed-methods design, comprising semi-structured qualitative interviews (SSIs) with 14 H-MSMW in England, and secondary quantitative analysis of data from 486 H-MSMW participants of the 2010 European Men-Who-Have-Sex-With-Men Internet Survey (EMIS-2010) from 17 Western European countries, including 315 (64.8%) H-MSMW in steady relationships with women. We analysed SSIs thematically to develop initial hypotheses, which we tested quantitatively, estimating prevalence ratios (PR) to measure associations between relationship status and sexual behaviour with male sexual partners.

Results:

H-MSMW interview participants expressed concern about potential HIV/STI acquisition through sex with men, and the consequences of this for the health of, and relationships with, steady female partners. This encouraged the use of risk mitigation strategies, including sexual exclusivity with female partners, condom use, and avoiding sex (with male or female partners) they considered “high” risk of transmission. Quantitative analyses of EMIS-2010 data corroborate these findings; among H-MSMW, having a steady female partner was associated with a reduced likelihood of reporting anal intercourse (AI) with recent male partners (PR=0.81; 95%CI:0.72–0.92) and inconsistent condom use with male AI partners (PR=0.74; 95%CI:0.56–0.97). HIV testing in the previous year was low (24.7%) and not associated with relationship status.

Conclusion:

This innovative mixed-methods study showed that some H-MSMW recognise the need for, and actively employ, strategies to reduce HIV/STI transmission risk, especially where this may affect their relationships with female partners. The limited effectiveness of some strategies and limited reporting of testing suggest the need for targeted sexual health messaging.

282 Awareness and Acceptance of U=U Amongst East and Southeast Asian Men Who Have Sex with Men Living in Ontario

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In 2018, Canada was the first country that signed on to the global campaign for “Undetectable = Untransmittable” (U=U). Despite this, there has been limited research on U=U within a Canadian context and with key populations, such as racialized men who have sex with men. Thus, the current study’s objective was to identify significant factors impacting East and Southeast Asian men who have sex with men’s (AMSM) awareness and acceptance of U=U. Quantitative data was collected from May 2022 to July 2022 through an online survey that asked about sexual health and behaviour, perception of HIV risk, and knowledge and acceptance of U=U. Out of the 106 participants, 52.5% heard about U=U versus 47.5% who had not. Chi-square analysis revealed that AMSM who heard about U=U were more likely to have a family doctor and rated the effectiveness of PrEP and PEP more highly than AMSM who had not heard about U=U ($p < .05$). Similarly, U=U acceptance scores were significantly higher for AMSM who got tested for STIs more frequently within the last year and who rated PEP as highly effective compared to those who did not get tested for STIs and who rated PEP as not effective. Acceptance scores were also significantly higher for AMSM who pursued more information and were exposed to more information on U=U after initially hearing about it, and who identified as completely fluent in understanding English. These results suggest that accessibility to health services and sexual health information benefit in the awareness and acceptance of U=U, in addition to one’s own self-driven research. Given that marginalized communities often face barriers to accessible services and information, future research should continue to explore U=U amongst other racialized groups and communities whose first language is not English.

273 The Importance of Social Connection in the Association of Internalized Homonegativity, Sexual Compulsivity Scores, and Sexual Health Outcomes Among Sexual Minority Men in Canada

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Background: Sexual compulsivity (SC; distress about one's sexual behaviours or urges) is associated with internalized homonegativity (IH), depressive symptoms, and greater risk for sexually transmitted infections (STIs) among gay, bisexual, and other men who have sex with men (GBM). However, social support may mitigate the effects of minority stressors on sexual risk-taking. We examine the association between SC and recent bacterial STI diagnosis, exploring the protective effects of social support on IH and SC scores over time.

Methods: Sexually active GBM were recruited in Montreal, Toronto, and Vancouver (Engage cohort study). This analysis uses data from 1- and 2-year follow-ups (n=1492) to explore the association of SC with recent (past 6 months) bacterial STI diagnosis, depression scores, and IH using linear and logistic regressions. We also examined the moderating effect of social support on the association between IH and SC. Analyses controlled for age, education, HIV status, and financial strain.

Results: Higher IH scores predicted higher SC scores, both directly and indirectly via depression scores, one year later (B=0.15, p<.01, 95%CI:0.06,0.23). This effect was buffered by higher levels of social support (p=.04, 95%CI:-0.05,-0.01) and mediated by depressive symptoms (95%CI:0.01,0.02). There was a significant association between SC scores and recent bacterial STI diagnosis (OR=1.77, p<.001).

Conclusion: Our work shows the importance of recognizing minority stress and other psychosocial factors that increase the risk for STIs among GBM. Interventions should aim to foster social support as a source of resilience as this may mitigate the impact of IH on outcomes like SC, ultimately reducing occurrence of bacterial STIs.

284 “When he got another partner, we had to talk a lot more about STIs”: Exploring STI/HIV prevention decision-making among queer, trans, and non-monogamous young women and non-binary youth

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Background: Sexual relationship power (SRP) inequities, including dominance in condom use decision-making, have been associated with increased HIV incidence among heterosexual women. However, studies and measures of SRP are limited among queer, trans, and non-monogamous young women and non-binary youth (YWNB). The aim of this analysis is to understand how YWNB in diverse relationships perceive condom use decision-making within their intimate relationships.

Methods: Between August-November 2022, cognitive interviews were conducted with gender-inclusive YWNB aged 17-29 living in British Columbia with recent experience (within 12 months) in non-heterosexual and/or non-monogamous relationships. Participants were asked to think aloud about their response and reflect on the relevance of one item of the SRP decision-making dominance sub-scale: “Who usually has more say [you, your partner, both equally] about whether you use condoms/protection.” Interviews were conducted virtually, audio-recorded, transcribed and analyzed using thematic analysis.

Results: Of 30 YWNB (median age=23.5), 46.7% identified as women, 46.7% as non-binary, and 6.7% were unsure/questioning. Most youth identified as pansexual/bisexual/queer (76.7%) or gay/lesbian (20%), with half reporting being in non-monogamous relationships. The relevance of condom use decision-making in youth’s relationships varied, with many YWNB, especially those not having sex with penises, stating the question was not applicable. Those who felt the question was important and applicable discussed condom use as a mutual decision made with partners, either as contraception or one of the multiple and more relevant ways (e.g., testing, open communication, and PrEP) they navigated safer sex practices with sexual partners.

Discussion: Our findings reveal that current measurement of SRP dynamics and HIV/STI prevention strategies, particularly pertaining to condom use, may misrepresent diverse youths’ experiences and agency in their sexual decision-making. Additional measures, research, and sexual health promotion that are relevant and reflective of the diverse needs and experiences of queer, trans, and non-monogamous YWNB are required.

296 Seeing Global Priorities for Health Systems Change Through a National Lens to Optimize Well-being for People Living with HIV in Canada

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Background: In 2021, global experts published the "Consensus statement on the role of health systems in advancing the long-term well-being of people living with HIV" (PLWH) which culminates in five recommendations. To catalyze policy changes that optimize the well-being of PLWH in Canada, these recommendations need interpreting through the lens of our national HIV response and systems of care. A Canadian companion document is being co-created to guide future action.

Methods: With support from the National Community Advisory Committee on Optimal Health and Well-being in HIV (NCAG), Realize is holding six deliberative dialogues (DDs) to engage diverse stakeholders in Canada's HIV response (PLWH, HIV organizations, clinicians). The voices of Indigenous and Francophone communities and PLWH are amplified. DD co-facilitators familiarize participants with the global statement and facilitate identification of priority areas for systems change in the Canadian context using interactive dialogue and activities. Notes and recordings enable thematic analysis.

Results: The first two DDs engaged 6 PLWH and 3 community stakeholders involved in policy, clinical, and community work. In partial alignment with two global recommendations, participants described the need for integrated approaches to primary, HIV-, and other specialist care, tailored to specific sub-population needs (e.g., women). They indicated such a model would decrease reliance on individual providers to address complex issues, and the burden of asynchronous medical visits on PLWH (e.g., travel, time away from caregiving). As in the global statement, drawing attention to and reducing the pervasiveness and harm of intersecting forms of stigma were identified as critical to improving quality of life for PLWH in Canada. Recommendations for monitoring and research tended not to be prioritized.

Conclusions: These DDs are identifying global recommendations for health systems change that most resonate with stakeholders in Canada and facilitating engagement by PLWH whose voices were underrepresented on the global expert panel.

272 “Kind of a decision, and kind of not a decision”: Examining experiences re-engaging with healthcare among people living with HIV who have had a recent treatment interruption

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Background: HIV treatment interruptions (TIs) are common and can limit the effectiveness of antiretroviral therapy (ART). While often viewed as patient non-compliance, TIs may alternatively, signal structural disparities in healthcare access. We conducted a qualitative study to elucidate the pathways and obstacles to treatment re-engagement among people living with HIV (PLWH) with a recent TI in British Columbia.

Methods: Interviewer- and peer-led semi-structured interviews were conducted with 15 PLWH between November 2020 to March 2022. Participants were recruited through the STOP HIV/AIDS Program Evaluation (SHAPE) Study and regional HIV program coordinators and experienced a TI within the past 3-years. The interviews centered on experiences with TIs and various factors that facilitated treatment re-engagement. Participatory analysis involving Peer Research Associates and emergent coding, guided by interpretive description, were used to uncover themes around HIV care and treatment re-engagement.

Results:

Participant experiences centered around re-framing TIs as unintended consequences of de-stabilizing events, rather than intentional non-compliance: “I don’t think it was deliberate, but then again, I don’t know”. De-stabilizing events leading to treatment breaks, such as depression, relapsing, or the illness or death of a loved one, were overwhelmingly associated with shame, fear, and/or despair for participants, which may be reinforced inadvertently by healthcare providers. Supportive pathways to HIV care and treatment focused on fostering trusting relationships, both with providers and with a social support network. A common thread of what facilitated treatment re-engagement was client autonomy, self-determination, and shared power in decision-making with their healthcare provider. In contrast, participants identified that perceptions of punitive measures from providers to encourage compliance were seen as a barrier to re-engaging with care and treatment, ultimately eroding trust.

Conclusions: Strategies which focus on facilitating trusting relationships and fostering shared decision-making with PLWH who have interrupted treatment may be more successful in re-engaging them in care.

270 “It has been life-changing for both patients and us”: the importance of Peers in bridging the gaps of health care connection for people living with HIV experiencing breaks from treatment

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Background

The practice of involving people living with HIV (PLWH) in care provision has gained increasing support, with Peer-roles beginning to be seen as a fundamental component of multi-disciplinary HIV care. We conducted a qualitative study (SHARE) to better understand the strategies which PLWH and their health care providers (HCPs) in British Columbia (BC) use to support care connection and address treatment disengagement.

Methods

PLWH who had experienced a recent HIV treatment interruption (≥ 3 -months) were recruited through the STOP HIV/AIDS Program Evaluation (SHAPE) Study and through regional HIV programs. HCPs were recruited through regional HIV health programs. Academic and Peer Researchers co-conducted semi-structured phone interviews with HCPs and PLWH. The research team utilized participatory thematic analysis and emergent coding, guided by interpretive description.

Results

19 HCPs and 15 PLWH were interviewed between November 2020 to March 2022. Both cohorts emphasized the importance of Peer-engaged and community-rooted supports, which were seen as integral components of enhancing accessibility and creating supporting pathways to care. HCPs described Peers as the link that bridged the gap between the care system and the patient, with PLWH speaking to their importance in providing important community-rooted navigation supports. Participants touched on the value of Peers in relationship building and enriching cultural connections for individuals who had experienced treatment disengagement, in particular for those who were part of communities who experienced increased structural marginalization, such as newcomers, women, and Indigenous PLWH. Continuing challenges included community stigma, limiting some PLWH's participation in Peer programs, and the lack of organizational support for Peer programs which contributed to the systematic under-valuation of their contributions.

Conclusion

Interviewees strongly affirmed the importance of Peers and community-rooted supports as critical components of successful care engagement. Greater involvement of PLWH in care connection and provision is needed to strengthen care continuity for PLWH in BC.

128 “Harm reduction, not harm production”: Removing Barriers to Improve Care for People Living with HIV in Manitoba

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Background:

In 2021, Manitoba (MB) reported the highest numbers of new HIV infections ever, while simultaneously experiencing a decreasing linkage to care and decreasing viral suppression. Our study aimed to identify barriers and facilitators to HIV care and the impacts of the COVID-19 pandemic from the perspectives of front-line service providers who work with People Living with HIV (PLHIV) in MB.

Methods:

We conducted in-depth semi-structured virtual interviews with service providers between October 2022 and January 2023. Purposive sampling was used to include a cross-section of service providers including clinicians, pharmacists, nurses, social workers, harm reduction workers and program managers.

Results:

Service providers (n=26) reported experiences of burnout, increased stress, increased workloads, and a failure of the health care system to adequately fund positions that are needed to tackle the syndemic of high rates of HIV and other sexually transmitted and blood borne infections, and increased methamphetamine use in Manitoba. They noted that the barriers to HIV care that existed for PLHIV prior to the COVID-19 pandemic such as inadequate support for PLHIV using substances (harm reduction or treatment options), housing instability and low income, and inaccessible health care services were exacerbated due to the COVID-19 pandemic and resulted in further socioeconomic disparities among PLHIV, increased substance use, and diversion of health care staff and resources away from HIV care to COVID-19 care.

Conclusion:

Our results indicate that investments in HIV health care and social support systems are needed from all levels of governments in Manitoba to improve linkage to care for PLHIV and to prevent front line service provider burnout.

209 The Peer Navigator Project: A mixed-methods implementation science study of peer navigators to increase street-connected youths' access to HIV prevention, testing, and treatment in Canada and Kenya

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The Peer Navigator Project (PNP) is a collaborative research project that brings together researchers and community partners in Canada (Toronto, Vancouver, London) and Kenya (Eldoret, Huruma, Kitale) to explore and evaluate the use of peer supports for street-connected youths' (SCY) access to HIV and AIDS prevention, testing, and treatment. SCY can cross several key populations, including but not limited to people who use drugs, sex workers, sexual and gender minorities, and African and Black populations. Six peer navigators (PNs) are currently working in five of the study sites, and the project is using quantitative and qualitative data to monitor the PNs interactions with SCY, with a focus on the increased uptake of HIV testing and access to treatment for youth living with or at risk of HIV. Overall, the PN model has been an adaptable and well-received addition to all of the project sites. SCY have improved access to HIV care and have been offered a range of HIV and social service referrals. PNs are positive role models who encourage and support the well-being of youth. However, the PNs must also navigate several structural and systemic challenges based on intersecting stigma of HIV and housing insecurity for SCY to receive ongoing healthcare access. A sustainable PN program needs to advocate for greater recognition of SCYs access to healthcare as a human right.

188 An Environmental Scan of Service Adaptations in Community-Based Harm Reduction Services for Indigenous Peoples in Response to the COVID-19 Pandemic

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Background: Indigenous values of social connection and relational care are foundational to harm reduction (HR) programming, which inform responses to the disproportionate impacts of HIV, drug poisonings, and COVID-19 among Indigenous Peoples. Amid rising rates of HIV infection and drug poisoning deaths, physical distancing ordinances to limit COVID-19 transmission and capacity limits within community-based health and social service organizations have reduced access to culturally responsive Indigenous harm reduction (IHR) programming. These intersecting pandemics have created an urgent need for frontline organizations to adapt and provide culturally responsive IHR services.

Methods: Utilizing a Two-Eyed Seeing (Etuaptmumk) approach to knowledge synthesis, we combined a rigorous state-of-the-art literature review with Indigenous Ways of Knowing and Doing. We completed regional sharing circles (n=6) and key informant interviews (n=4) with service providers/users of frontline HR organizations (n=38). Utilizing western and Indigenous qualitative data analysis methodology, we created a Wise Practices Asset Map of culturally responsive IHR services across Canada.

Lessons Learned: HR services that support connections to kin, community and culture are vital for meeting the needs of Indigenous people who use drugs, particularly amid intersecting public health emergencies. Land-based healing (including use of Sacred Medicines), language revitalization, cultural activities, and ceremony have been effectively implemented within Indigenous and non-Indigenous HR services over the past three years. Indigenous and non-Indigenous HR community champions are spearheading efforts to meaningfully engage Indigenous people and partner organizations in implementing Indigenous approaches to HR, including cultural safety training, Elder engagement, Indigenous-led HR outreach and education, culturally-informed physical spaces, culturally-informed grief support, and more.

Conclusion: This presentation will share results from this rapid synthesis of evidence-based wise practices to facilitate the data-to-action trajectory of effective community pandemic responses. These findings will support frontline HR organizations to implement context-specific, trauma-informed and culturally responsive services for Indigenous people amidst converging pandemics.

288 Meaningful Engagement of Elders Through Partnership: An Example from the Feast Centre for Indigenous STBBI Research

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Background: The Feast Centre for Indigenous STBBI Research is dedicated to community-led research and training across the four pillars of health research (Clinical, Basic Science, Epidemiology, Social Science). The Feast Centre Council of Elders, comprised of a diverse representation of Elders, contributes to decolonizing STBBI responses and increased use of Indigenous knowledges in STBBI research that encourages transformational change in addressing the health needs of Indigenous people living with or affected by STBBI.

Method: Exploring the Meaningful Partnership of Elders in Indigenous STBBI Research is an MSW study that focuses on the expertise of Indigenous Elders. The Talking Circle method was used to highlight the significance of oral tradition and storytelling for Indigenous Peoples and offered a cultural signal to the Elders that this study was premised on egalitarian and supportive values. Thirteen Elders were recruited nationwide to participate in three virtual Talking Circles to explore their experiences in Indigenous STBBI research and to offer guidance to researchers on how to develop and strengthen meaningful research partnerships in the future.

Key Learnings: Five overarching themes emerged from the thematic analysis of these Talking Circles: (1) Understanding the historical and ongoing impacts of colonialism and the need to decolonize STBBI research; (2) Prioritizing the knowledge and lived experience of Elders and Indigenous people living with STBBI throughout the research process; (3) Centering spirituality and ceremony in Indigenous STBBI research; (4) The importance of implementing Indigenous methodologies in STBBI research; and (5) Foregrounding Indigenous ways of being, knowing, and doing in STBBI research.

Implications: Indigenous knowledges are sacred, localized and require deep respect when requested, applied, and shared. This study offers Indigenous STBBI researchers a robust foundation to build meaningful research partnerships with Elders to improve STBBI research and benefit the sexual health and wellbeing of Métis, Inuit, and First Nations communities.

261 Impact of intersecting ethnicity, gender, and sexual orientation identities on HIV stigma: Results from the People Living with HIV Stigma Index Study in Three Canadian Provinces

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HIV stigma negatively affects the health and wellbeing of people living with HIV, with certain populations continuing to be disproportionately affected and often facing intersecting stigmas. While studies have examined the impacts of ethnicity, gender, and sexual orientation on HIV stigma separately, less is known about how these factors may intersect, and potentially exacerbate levels of HIV stigma. To fill this gap, this study aims to examine how these intersecting identities may impact levels of internalized, enacted, and anticipated stigma among people living with HIV in Canada.

Participants were recruited in Ontario, Alberta, and Québec (n=1064) as part of the People Living with HIV Stigma Index study in Canada. This global survey tool was created by and for people living with HIV and contains quantitative scales to measure different types of stigma. Three-way analyses were conducted to examine the effect of intersecting identities on types of stigma. Interaction terms were created by taking the product of the main effects of ethnicity, gender, and sexual orientation with a model being created for enacted, internalized, and anticipated stigma as outcomes.

Levels of internalized, enacted, and anticipated stigma were consistent across most intersecting groups within the sample; however, people occupying certain intersections had significantly higher levels of stigma. For internalized stigma, African, Caribbean, and Black lesbian females had the highest scores ($b = 0.80$, $p=0.09$), while Indigenous lesbian females had elevated scores for enacted ($b = 1.24$, $p=0.01$) and anticipated stigma ($b = 0.71$, $p=0.09$).

Overall, we saw consistent levels of HIV stigma across many key populations, with people in a few specific intersections displaying increased levels. These findings indicate that HIV interventions and programs tailored to specific population at the intersections of ethnicity, gender, and sexual orientation may be effective at reducing HIV stigma and optimizing individual and population health outcomes.

308 Strength in Numbers: Establishing a Global Network of Older People with HIV

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Background: There are over 7.5 million older (age 50+) people living with HIV (PLWH) around the world, and in resource-rich settings, close to 40% of PLWH will be at least 60 years old within the decade. Although this population is strong - both in numbers and experience - older PLWH face challenges having their living expertise acknowledged and their unmet needs (physical, mental, social, financial) addressed by peers, community-based organizations, healthcare providers, policy makers, and global leaders in the HIV response due to persistent ageism.

Actions: To harness the momentum of the first-ever face-to-face networking zone for ageing and older PLWH held at AIDS 2022, representatives from four civil society organizations established a grassroots network called the International Coalition of Older People with HIV (iCOPE HIV). The founding organizational members are leaders in their own jurisdictions when it comes to improving care, optimizing quality of life and fostering empowerment among ageing and older PLWH. Their first collaborative undertaking was to pen and gather support for the Glasgow Manifesto.

Outcome: The Glasgow Manifesto, launched in October 2022, is a call to action by ageing and older PLWH and their allies. The preamble of this living document describes the pressing need to adapt current HIV responses to better address the challenges facing a growing number of older PLWH worldwide. Diverse stakeholders are called upon to implement 10 actions across three domains – care, quality of life, and empowerment. By December 2022, 123 organizations representing every continent had endorsed the Manifesto, committing to advocate for change in their own settings.

Next Steps: iCOPE HIV's founding members continue to rally and engage stakeholders with a mutual interest in equitable health outcomes for ageing and older PLWH in the process of identifying strategic priorities, establishing an inclusive governance and membership model, and planning for sustainability.

328 The Water Wheel Circles Back: Indigenous Teachings to Bring Research Findings Back to Community in a Good Way

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Background: Meaningful knowledge translation (KT) strategies are essential to community-engaged research. The CHIWOS-PAW study uses Indigenous re-search methods to explore how Indigenous Women living with HIV on Coast Salish Territories understand their health and wellbeing through Traditional Medicines and Knowledges. We describe our process to disseminate findings from CHIWOS-PAW with healthcare providers and the broader community through Indigenous KT strategies.

Methods: Our team of Indigenous and non-Indigenous re-searchers, including an Elder, hosted a gathering with the CHIWOS-PAW Wise Women (participants) to discuss how to best share our findings with the community. Through Indigenous Water Teachings and Ceremony, we gathered streams of knowledge to co-create KT outputs to share study findings on how Indigenous Women living with HIV envision their healthcare. Together, we developed a KT strategy to identify our target audience and determine how to best reach them.

Results: Embracing Indigenous arts-based KT methods, we created a strengths-based poster series with Water and Animal Teachings, which summarized key study findings, including: (1) How is health and wellbeing a journey?; (2) How is health connected with Traditional Medicines and Ceremony?; (3) Why are meaningful relationships and community important?; and (4) How are healing health partnerships built?. We expressed gratitude to healthcare providers for their dedication and support. The Wise Women identified healthcare providers and organizations beyond HIV services (e.g., dentists, physiotherapists, labs) as key audiences to reach. Following a multimodal, push-pull approach, poster dissemination was launched September 2022 and resulted in 190 website views, 745 twitter interactions, 4 e-blasts, 18 presentations, and 200+ organizations/providers reached thus far. Posters were disseminated alongside our published CHIWOS-PAW methods manuscript to provide context to an Indigenous approach to research.

Conclusion: With our community experts, we developed an Indigenous arts- and strengths-based KT strategy to support positive actions and meaningful relationships with healthcare providers.
Supporting Document

205 Geographic information system real time mapping of community needles data to target HIV prevention and harm reduction interventions in Regina, Saskatchewan: A community-based rapid assessment and response methodology

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Methodological innovations in public health research are required to significantly reduce new HIV infections in Canada. New HIV infections in Saskatchewan—predominantly through injection drug use—are particularly pronounced, at twice the national average for the past 5 years. A community-based HIV organization has created reportneedles.ca, a real time geographic information system (GIS) to map community needle incidence in Regina, Saskatchewan, and have partnered with researchers to evaluate a rapid assessment and response methodology. Informed by principles of harm reduction and implementation science, this community-based, innovative method will generate geo maps of Regina hotspots where community needle incidence in public spaces is the highest to deploy and evaluate HIV prevention of rapid and self-test kits and harm reduction interventions of Naloxone training and support groups. From April 2021 to November 2022, 32,976 discarded needles have been retrieved from 320 public reports on the reportneedles.ca app. Our community-academic partnership permits a pragmatic trial design whereby community needle incidence, HIV epidemiology, and overdose death rates can be compared between a 1.5-year period of the needle incidence app and a 1.5-year period of the app alongside targeted HIV prevention and harm reduction interventions. Additional data from mixed-method research on the harm reduction interventions comprised of analyses of variance on mean differences pre- and post-intervention using the Opioid Overdose Knowledge Scale and Substance Use Recovery Evaluator alongside open-ended questions on changes in knowledge and behaviour, will further determine whether this methodology is effective. These metrics could indicate safer drug use, reduced rates of HIV infection, and reduced overdose death. This presentation will detail this novel rapid assessment and response methodology, which could be a cost-effective, pragmatic approach to target public health interventions to local areas of highest need.

349 Cultural Care Peer Support Network and Land-based Therapies

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Background

Peer support is an evidence-informed method to support people accessing treatment and care for addictions and chronic illnesses such as HIV. Incorporating culturally appropriate peer support networks into standard care delivery will improve health policies and systems for people living with HIV (PLWH).

Methods

A Peer Support Network provided access to cultural connections, traditional ceremonies, and land-based activities (medicine picking, camping, canoeing) to assist PLWH in acute care settings and rural/on-reserve Indigenous communities. Peers and Elders/Knowledge Keepers guide the cultural activities and program direction. This network aims to continue land-based opportunities for peers to remain engaged in HIV care and supported on their healing journeys.

Results

After three land-based trips in the summer of 2022, 17 peers were engaged, 3 peers participated in multiple trips, and 14 peers carried on to receive Peer Support Training certification – soft skills training on communication, boundaries, referrals, and harm reduction – in December 2022. The Wellness Wheel Peer Support Workers report their impact on PLWH: [“This work is so rewarding... patients have said that if it wasn’t for me helping them, they wouldn’t have anyone”]. One peer reflects on land-based learning: [“As Indigenous people, we have had a lot of trauma ... People enjoy getting back on the land; you’re connected to mother nature and to everything”]. Peer Support Workers have impacted the HIV care cascade outcomes for PLWH by supporting clients in the circle of care and navigating acute care settings and community support.

Conclusion

The Wellness Wheel Peer Support Workers demonstrate a low-cost, low-barrier, supportive intervention for the epidemic of addiction and HIV/HCV in Saskatchewan using strengths-based Indigenous philosophies. Partnerships with community leadership, health staff, and urban clinical teams have increased the recognition and utilization of peer support workers as best practices to provide culturally appropriate care for PLWH.

259 Impact of Health Risks and Protective Factors on HIV Stigma: Results from the People Living with HIV Stigma Index in Atlantic Canada

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HIV stigma negatively impacts the health of people living with HIV; however, less is known about the determinants of stigma and how these may affect an individual's health. We examined the impact of different types of stigma on self-rated overall health and the health risks and protective factors that may contribute to or buffer (lessen) the experiences of stigma in a sample of people living with HIV from Atlantic Canada.

There were 81 people living with HIV recruited from provinces across Atlantic Canada to complete the People Living with HIV Stigma Index, a global survey tool developed by people with HIV to measure nuanced changes in stigma. 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 health risk and protective factor scores were established for each person. Chi-squared tests were used to examine how scores impact rates of internalized, enacted, and anticipated stigma.

Rates of internalized stigma were high (58%) but not significantly associated with self-rated health, while enacted and anticipated stigma were higher (84% and 85%, respectively) and both were associated with lower self-rated health ($p < 0.01$). For those with more than two health risks, rates increased significantly for internalized (33% to 65%, $p = 0.02$), enacted (61% to 90%, $p < 0.01$), and anticipated stigma (67% to 90%, $p < 0.01$). Protective factors had the opposite effect, with increased scores seeing decrease in internalized stigma scores (90% to 46%, $p < 0.01$), but not for enacted or anticipated stigma.

Increasing health risks can have a significant and added impact on experiences of stigma and downstream negative impact on self-rated overall health. Interventions aimed at bolstering internal (e.g., self-efficacy) and external (e.g., social support) resources may help to reduce rates of internalized stigma and associated negative effects on health and wellbeing.

248 Social determinants of health moderate the relationship between stigma and mental health: Results from the People Living with HIV Stigma Index in Ontario

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HIV stigma remains high in Canada, negatively affecting the health and wellbeing of people living with HIV. However, there is a limited understanding about how the social determinants of health impact the relationship between stigma and health. This study examines how enacted, internalized, and anticipated stigma impacts physical, mental, and overall health and how social determinants of health moderate these relationships.

Participants (n=339) were recruited in Ontario from September 2018 – August 2019 to complete the People Living with HIV Stigma Index at baseline (t1) and at follow up (t2) approximately two years later. Moderation models were created with each type of stigma at t1 as the antecedents and physical, mental, and overall health at t2 as the outcomes. Social determinants of health included age, years since HIV diagnosis, gender, sexual orientation, ethnicity, geographic region, education, employment, and basic needs were entered as moderators.

Moderation models were significant only for the mental health outcomes. For internalized stigma and mental health, age was a significant moderator (b = -0.17, 95% CI = -0.32, -0.01). For enacted stigma and mental health, age (b = -0.16, 95% CI = -0.31, -0.01), region (b = 5.13, 95% CI = 1.41, 8.84), and basic needs (b = 5.28, 95% CI = 1.50, 9.05) were significant moderators. Lastly, for anticipated stigma and mental health, region (b = 7.16, 95% CI = 2.60, 11.72), sexual orientation (b = -6.57, 95% CI = -11.51, -1.63), and basic needs (b = 5.51, 95% CI = 0.99, 10.03) were significant moderators.

The relationships between experiences (and different forms) of stigma and how these may affect health outcomes in people living with HIV are complex and multi-factorial. Consideration for how some determinants of health may moderate these relationships may be helpful to consider when developing stigma interventions to be more effective.

30 Considering a gender-centred alternative justice response to HIV non-disclosure criminalization

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Background: Prompted by the significant harmful impacts to people living with HIV of Canada's criminal law on HIV non-disclosure, the HIV Legal Network, in collaboration with the Women & HIV/AIDS Initiative (WHA) and Communities, Alliances & Networks (CAAN), hosted a roundtable about alternative justice responses to HIV criminalization in June 2022. The objective was to gather cross-sector perspectives about whether an alternative justice approach is warranted or appropriate in situations of non-disclosure.

Objectives: Given the interaction between HIV criminalization, disclosure, and gender, including the risks of gender-based violence and gendered power dynamics, gender-centred considerations grounded our discussion. We focused on community-based justice alternatives and how we can foster collaboration between the HIV sector, the sexual assault and gender-based violence sector, and alternative justice organizations in this work.

Discussion: Since most alternative justice responses focus on repairing the harm caused by an individual and include holding people accountable for their actions, our discussion necessarily raised questions around applying the notions of "harms" or "wrongdoing" to HIV non-disclosure: is HIV non-disclosure a wrong or harm in and of itself? Or does it depend on the circumstances and characteristics of the involved parties? Is there still a role for community-based interventions to support people living with HIV and/or their partners around non-disclosure and if so, what forms would such interventions take?

Conclusion: The current state of HIV criminalization is untenable and fails to promote "justice" for anyone involved. Instead, the law exacerbates harms faced by women and gender-diverse people. As such, urgent action is needed to prevent these harms, including through law reform, culturally appropriate resources to support people living with HIV that recognize the many risks associated with disclosure, community-based responses to HIV non-disclosure in appropriate situations, and peer-led support services for Indigenous and racialized communities.

108 Between Worlds: Female-Identifying Diaspora Middle Eastern and North African Women in Ontario on the Intersections of Gender, Sexuality and Sexual Health.

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Background:

Sex and sexual health practices of Middle Eastern and North African (MENA) youth in Canada are under-researched, even as the community grows rapidly due to high immigration rates. YSMENA community-based research study identified key determinants driving how MENA diaspora youth living in Ontario access sexual health and HIV prevention interventions.

Methods:

Using a mixed-methods design, data were gathered through quantitative socio-demographic surveys and qualitative focus groups involving 56 MENA youth, ages 16-29 years in Ontario, of which 24 were female-identified. Six (6) sequential critical dialogical focus groups were held with subgroups: cis heterosexual women (n=14), cis lesbian and bisexual women (n=3), and trans women (n=7), where members in each sub-group participated in two sessions. Sessions were transcribed and coded using NVIVO for thematic analysis.

Results:

Findings offer a rich and nuanced picture of how young MENA women in Ontario navigate sexual relationships, healthcare and demonstrate resiliencies. Average age of the women was 25.7 years (SD=3.92). About 70% were born outside Canada and half (50%) lived less than nine years in Canada. Most (72%) reported having an undergraduate or post-graduate education, yet almost one third of the sample earned <\$10,000/year. Themes common to all subgroups included: (1) pressures to conform to immigrant familial expectations; and (2) barriers when accessing healthcare, sexual health and HIV prevention services. Sub-group specific themes included: societal and cultural expectations to maintain virginity and sexual innocence among cis women; and compounded levels of exclusion due to homophobia and transphobia among trans women. Although challenges faced were deeply entrenched in patriarchy, heteronormativity and internalized shame, many women demonstrated resilience and self-acceptance.

Conclusion:

Study findings have important implications that can support sexual health programming in Ontario to be more inclusive and culturally relevant for young MENA women. Results also offer youth-identified recommendations for healthcare practitioners and service providers.

274 Social-structural factors including gender-based violence and HIV care access during the COVID-19 pandemic among women living with HIV in Metro Vancouver

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Objective: Health and social inequities worsened during the COVID-19 pandemic, yet little research explores how women living with HIV (WLWH) were impacted. This study investigated relationships between social-structural factors, including physical/sexual gender-based violence (GBV) and (1) not completing a follow-up survey during the pandemic, and (2) increased difficulty accessing HIV care during this time.

Methods: Data were drawn from the Sexual Health and HIV/AIDS: Women's Longitudinal Needs Assessment (SHAWNA) Project, an open longitudinal community-based research project with WLWH in Metro Vancouver (2014-present). (1) We compared social-structural factors (measured at most recent follow-up in the 18 months prior to the pandemic) of women we saw during the pandemic (March 15/2020-August 31/2021 based on data available for this analysis) to those we did not, using bivariate analysis. (2) The impact of GBV on HIV care access during the pandemic was assessed using multivariable logistic regression; adjusted odds ratios (AOR) and 95% confidence intervals (CI) are reported.

Results: Among women in this study (n=245), 59.2% were Indigenous, 31.4% were White, and 9.4% were African, Black, South Asian, or other racialized/women of colour, with 11.4% reporting trans gender identity. Compared to women seen during the pandemic, women not seen (n=82; 33.5%) were more likely to report GBV (14.7% vs. 26.8%, p=.011), injection (32.5% vs. 51.2%, p=.004) or non-injection drug use (41.1% vs. 59.8%, p=.007), and less likely to report >=95% ART use (73.0% vs. 58.5%, p=.065) at their most recent follow-up. In multivariable analysis, GBV was significantly associated with increased difficulty accessing HIV care during the pandemic (AOR:3.65; 95%CI:1.21-11.05).

Conclusion: Findings highlight the impact of GBV during the pandemic and the importance of reaching out to women less engaged in care; care should be low-barrier and trauma-informed. Programs/policies should be aware and responsive to GBV impacts on HIV care access in pandemics and generally.

Special Session: COVID-19 vaccination and PLWH // La vaccination contre la COVID-19 et les PVVIH

253 Three Doses of COVID-19 Vaccines in People with HIV: Immunogenicity and Effects on HIV Reservoir

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People with HIV (PWH) older than age 55 have an enhanced risk of complications from SARS-CoV-2 infection, but it is unclear whether COVID-19 vaccines with a booster elicit a durable immunity in this population or whether these vaccines can destabilize HIV reservoirs. We followed 68 PWH on cART aged 55 or over and 23 age-matched HIV–controls (CG) over 48 weeks following three doses (D1-3) of COVID-19 vaccines; 42 PWH were immune responders (IR), 20 were non-responders (INR), and 3 had a low-level viremia (LLV). In both groups, vaccines elicited equally strong anti-spike/RBD IgG responses in serum, and spike IgG in saliva. Serum Abs peaked at 4 weeks post-D3. Week 48 serum IgG responses to spike in PWH vs CG were 916 vs 919 BAU/mL, and 706 vs 752 for RBD, respectively. IgA responses in saliva were lower: 3.83%AUC in PWH vs 20.5 in CG (p=0.039). Median neutralizing titers post-D2 were lower in PWH (NT50 82.9 vs 535, p<0.001). However, at 48 weeks, following D3, PWH had similar titers: 309 vs 269 in CG (p=0.745). Anti-spike cytokine T cell responses were the strongest in IRs: week 48 median 135 SFC/106 PBMC vs 43.8 in CG (p<0.001), but only 12.5 in INRs (p=0.001 vs IR). COVID-19 vaccines did not affect the size of intact HIV reservoir in peripheral CD4+ T cells, except in three LLVs: 93.7% mean increase at 48 weeks. PWH aged 55 and over show diminished neutralizing Ab responses to SARS-CoV-2 with two vaccine doses which are 'rescued' after a booster. They have lower spike-specific IgA in saliva after vaccination which may affect protection. Enhanced spike T cell immunity in PWH suggests Th1 imprinting from HIV infection. COVID-19 vaccines did not destabilize the HIV reservoir in most PWH but may pose potential risk in unsuppressed viremia.

310 COVID-19 Vaccine Hesitancy, Trust, and Access and Intersectional Challenges among Racialized and Sexual and Gender Minority Persons Living with HIV: Findings from a Scoping Review

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Background:

Vaccination is essential to controlling the COVID-19 pandemic; yet, vaccine hesitancy (VH) remains a public health challenge. The WHO Strategic Advisory Group of Experts on Immunization recommends population-, context-, and vaccine-specific research to address VH. We conducted a scoping review to explore multilevel factors associated with COVID-19 VH and broader COVID-19 under-vaccination among marginalized populations in North America.

Methods:

We utilized the scoping review methodology developed by the Joanna Briggs Institute and report results in accordance with PRISMA-ScR guidelines. We searched 9 databases using a search string co-developed with a research librarian. Peer-reviewed articles published from 1/1/20-10/31/21 (initial COVID-19-vaccination), focused on (>50%) marginalized populations, were reviewed using a priori inclusion/exclusion criteria.

Results: The broader search captured 2,496 unique abstracts, scoped to 363 full-text articles, out of which 50 met inclusion criteria. Two articles focused on PLWH; 2 additional provided disaggregated data: medical mistrust, distrust of government contributed to VH, with pandemic-related job loss and housing insecurity associated with lower access. Personal healthcare provider (HCP)-recommendation mitigated VH. Perceived COVID-19 threat and anticipated negative impacts on health were inversely associated with VH, concerns around vaccine safety, side effects and efficacy positively associated with VH. Of 11 articles on racialized populations, 2 addressed PLWH: job loss and logistical constraints (transportation, distance/time) created barriers in access, with VH due to concern the government was withholding information. Personal recommendation from a Black/African-American/Latinx HCP in one's primary language countered VH and fostered trust. Among gay/bisexual PLWH (1 article), medical mistrust and anticipated discrimination in healthcare settings contributed to VH.

Conclusions: Findings reveal the importance of disaggregating structural barriers in vaccine access from COVID-19 VH and understanding intersectional challenges based on HIV-status, racial/ethnic and sexual identity. Providing COVID-19 vaccination in usual/local healthcare venues, with trusted, same-race/ethnicity/language, LGBTQ-affirmative HCPs may mitigate VH and increase uptake among PLWH.

65 Vaccine-induced SARS-CoV-2-specific T-cell Response after 3 Doses in People Living with HIV on Antiretroviral Therapy Compared to Uninfected Controls

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Background: People living with HIV (PLWH) may be at risk for poor immunogenicity to certain vaccine, including ability to develop immunological memory. Here we assessed T-cell immunogenicity following three SARS-CoV-2 vaccine doses in PLWH vs uninfected controls.

Methods: Blood was collected from 39 PLWH on ART and 24 age-matched HIV-negative controls pre-vaccination and after 1st/2nd/3rd dose of SARS-CoV-2 vaccine without prior SARS-CoV-2 infection. Flow cytometry was used to assess ex vivo T-cell immunophenotypes and intracellular Tumor necrosis factor (TNF)- α /interferon(IFN)- γ /interleukin(IL)-2 following SARS-CoV-2-Spike-peptide stimulation. Comparisons were made using Wilcoxon signed-rank test for paired variables and Mann-Whitney for unpaired (median percentages shown).

Results: In PLWH, Spike-specific CD4 T-cell frequencies plateaued post-2nd dose, with no significant differences in polyfunctional SARS-CoV-2-specific T-cell proportions between PLWH and uninfected controls post-3rd dose. PLWH had higher frequencies of TNF α +CD4 T-cells ($p=0.007$) and lower frequencies of IFN γ +CD8 T-cells ($p=0.04$) than seronegative participants post-3rd dose. Regardless of HIV status, an increase in naive (CD4: HIV+ 19.9 vs 28.6 HIV- 11.5 vs 21.6; CD8: HIV+ 8.5 vs 15.9, HIV- 8.3 vs 20.9; $p<0.05$), regulatory (HIV+: 0.8 vs 1.6; HIV-: 0.6 vs 1.2; $p<0.05$), and PD1+ T-cell frequencies (CD4: HIV+ 18.6 vs 20.6, HIV- 9.3 vs 12.2; CD8: HIV+ 22.3 vs 25.0, HIV- 17.0 vs 17.9; $p<0.05$) was observed post-3rd dose.

Conclusion: Two doses of SARS-CoV-2 vaccine induced robust T-cell immune response in PLWH, which was maintained after the 3rd dose, with no significant differences in polyfunctional SARS-CoV-2-specific T-cell proportions between PLWH and uninfected controls post-3rd dose.

216 Uptake of COVID-19, Influenza, and Pneumococcal vaccines among People Living with HIV: Findings from the Ontario HIV Treatment Network Cohort Study

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Background: In Ontario, COVID-19 and Influenza vaccines are available free of charge while Pneumococcal vaccine is covered for older adults (≥65 years) and people with high-risk medical conditions, including HIV. We assessed the uptake of these three vaccines among people living with HIV (PLWH).

Methods: The Ontario HIV Treatment Network Cohort Study (OCS) is a longitudinal cohort of PLWH receiving care in 15 clinics across Ontario. We asked 2,208 OCS participants if they have received COVID-19 (2+ doses), Influenza (in the past year), and Pneumococcal (lifetime) vaccines. Logistic regression modelling was used to identify demographic variables associated with uptake of vaccines.

Results: Overall, the uptake was 93.2% for COVID-19 vaccine, 69.0% for Influenza vaccine, 54.4% for Pneumococcal vaccine, and 40.3% for all three vaccines, with variations by demographic characteristics (see table 1). In multivariable regression analyses, COVID-19 vaccine uptake was not associated with demographic variables; increasing age was associated with higher uptakes of influenza (aOR=1.16, 95% CI: 1.11-1.21) and Pneumococcal (aOR=1.09, 95% CI: 1.03-1.14) vaccines; and PLWH who identified as Black (aOR= 0.72; 95% CI: 0.60 - 0.88) or Latin American (aOR=0.72, 95% CI: 0.53-0.99) and PLWH with less than high school completion (aOR=0.68, 95% CI: 0.53-0.86) had lower uptake of Pneumococcal vaccine.

Discussion: The low uptake of Influenza and Pneumococcal vaccines in PLWH, particularly among young, Black, Latin American, and with low level of education is concerning. Quality improvement initiatives in primary care are needed to ensure that PLWH are up-to-date with all recommended immunizations, including booster doses.

Supporting Document

Table 1. Uptake of COVID-19, Influenza, and Pneumococcal vaccines among OCS participants

Demographic characteristics	N	Uptake of vaccines			
		Had received 2+ doses of COVID-19 vaccine % (95% CI)	Had received Influenza vaccine (in the past year) % (95% CI)	Had received ≥1 doses of Pneumococcal vaccine (lifetime) % (95% CI)	Had received all 3 vaccines % (95% CI)
Total sample	2208	93.2 (92.1 – 94.2)	69.0 (67.1 – 71.0)	54.4 (52.3 – 56.4)	40.3 (38.3 – 42.4)
Age at interview					
20-29	72	83.3 (74.7 – 91.9)	47.2 (35.7 - 58.8)	36.1 (25.1 – 47.2)	16.7 (8.1 – 25.3)

Demographic characteristics	Uptake of vaccines				
	N	Had received 2+ doses of COVID-19 vaccine % (95% CI)	Had received Influenza vaccine (in the past year) % (95% CI)	Had received ≥1 doses of Pneumococcal vaccine (lifetime) % (95% CI)	Had received all 3 vaccines % (95% CI)
30-39	272	89.7 (86.1 – 93.3)	51.5 (45.5 - 57.4)	48.5 (42.6 – 54.5)	28.7 (23.3 – 34.1)
40-49	423	91.5 (88.8 – 94.2)	60.0 (55.4 - 64.7)	44.7 (39.9 – 49.4)	28.1 (23.9 – 32.4)
50-59	674	93.2 (91.3 – 95.1)	67.2 (63.7 - 70.8)	53.9 (50.1 – 57.6)	37.2 (33.6 – 40.9)
60-69	588	96.4 (94.9 – 97.9)	82.3 (79.2 - 85.4)	63.3 (59.4 – 67.2)	54.9 (50.9 – 59.0)
70+	179	95.5 (92.5 – 98.6)	88.8 (84.2 - 93.4)	65.9 (59.0 – 72.9)	59.8 (52.6 – 67.0)
Gender/sexual orientation					
Women	495	87.3 (84.3 – 90.2)	61.2 (56.9 - 65.5)	44.4 (40.1 – 48.8)	29.3 (25.3 – 33.3)
Men - Heterosexual	297	85.9 (81.9 – 89.8)	60.6 (55.0 - 66.2)	46.1 (40.5 – 51.8)	31.3 (26.0 – 36.6)
Men - Gay or Bisexual	1396	97.0 (96.1 – 97.9)	73.6 (71.3 - 76.0)	59.7 (57.1 – 62.2)	46.1 (43.5 – 48.8)
Two-spirit/Gender Queer/Other	20	80.0 (62.5 – 97.5)	65.0 (44.1 - 85.9)	50.0 (28.1 – 71.9)	40.0 (18.5 – 61.5)
Race/Ethnicity					
White	1308	93.7 (92.3 – 95.0)	71.3 (68.9 - 73.8)	60.8 (58.1 – 63.4)	45.6 (42.9 – 48.3)
Black	457	91.2 (88.7 – 93.8)	62.6 (58.2 - 67.0)	39.4 (34.9 – 43.9)	26.3 (22.2 – 30.3)
East/South East Asian	95	89.1 (80.9 – 97.3)	80.0 (72.0 – 88.0)	57.9 (48.0 – 67.8)	48.4 (38.4 – 58.5)
South Asian	69	95.8 (91.8 – 99.8)	73.9 (63.6 – 84.3)	52.2 (40.4 – 64.0)	42.0 (30.4 – 53.7)
Arab/West Asian	26	100.0 (100.0 – 100.0)	73.1 (56.0 – 90.1)	53.8 (34.7 – 73.0)	42.3 (23.3 – 61.3)
Latin American	98	94.9 (90.5 – 99.3)	67.3 (58.1 - 76.6)	42.9 (33.1 – 52.7)	31.6 (22.4 – 40.8)
Multi-race	57	94.7 (88.9 – 100.0)	73.7 (62.3 - 85.1)	64.9 (52.5 – 77.3)	52.6 (39.7 – 65.6)
Other/Unknown	43	83.7 (72.7 – 94.8)	48.8 (33.9 – 63.8)	53.5 (38.6 – 68.4)	32.6 (18.6 – 46.6)
Education level ^c					
Less than high school completion	233	84.5 (79.9 – 89.2)	54.9 (48.5 – 61.3)	38.2 (32.0 – 44.4)	23.6 (18.2 – 29.1)
Completed high school	318	89.9 (86.6 – 93.2)	68.9 (63.8 - 74.0)	50.0 (44.5 – 55.5)	35.8 (30.6 – 41.1)
Trade/Technical/some college	241	92.9 (89.7 – 96.2)	66.0 (60.0 – 72.0)	53.5 (47.2 – 59.8)	37.8 (31.6 – 43.9)
Completed college/Some university	612	93.5 (91.5 – 95.4)	69.1 (65.5 - 72.8)	54.1 (50.1 – 58.0)	39.5 (35.7 – 43.4)
Completed University or higher	773	97.9 (96.9 – 98.9)	75.7 (72.7 - 78.7)	62.5 (59.1 – 65.9)	49.4 (45.9 – 52.9)

Demographic characteristics	N	Uptake of vaccines			
		Had received 2+ doses of COVID-19 vaccine	Had received Influenza vaccine (in the past year)	Had received ≥1 doses of Pneumococcal vaccine (lifetime)	Had received all 3 vaccines
		% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)
Do not know/Prefer not to answer	31	67.7 (51.3 – 84.2)	32.3 (15.8 – 48.7)	29.0 (13.1 – 45.0)	19.4 (5.5 – 33.3)

^a p<0.05

^b Cochran-Armitage trend test.

^c “Don’t know /Prefer not to answer” is excluded from Cochran-Armitage trend test.

POSTER ABSTRACTS / AFFICHES

Basic Sciences Poster Abstracts / Sciences fondamentales affiches

244 Daily Variations in Residual Viral Transcription in ART-Treated People Living with HIV-1

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Biological functions fluctuate in a circadian manner to align with day/night environmental changes. In HIV-uninfected individuals, daily variations were reported for cortisol, melatonin and CD4+ T-cell counts in blood. HIV-1 infection is characterized by alterations in CD4+ T-cell homeostasis, chronic immune activation and gut barrier damage. Daily variations in immunological/virological parameters in people living with HIV-1 (PLWH) receiving antiretroviral therapy (ART) remain poorly investigated.

Eleven ART-treated PLWH (median age: 57 years; CD4 counts: 606 cells/ μ l; time since infection: 242 months; aviremia under ART: 216 months) were admitted for 40 hours. Blood was collected, before food intake, every 4 hours, for 24 hours (8:00, 12:00, 16:00, 20:00, 24:00, 4:00, 8:00). Plasma levels of cortisol/melatonin and markers of intestinal permeability (FABP2, LBP) were measured by ELISA. Flow cytometry allowed the quantification and characterization of leukocyte subsets. CD4+ T-cells were isolated and matched RNA/DNA served to quantify cell associated integrated HIV DNA and LTR-Gag HIV-RNA levels by nested PCR/RT-PCR. Peak/nadir terms were used to define maximal/minimal levels. Plasma cortisol and melatonin levels peaked at 8:00 and 4:00, respectively. Peak plasma FABP2 levels coincided with nadir LBP levels at 4:00. Memory/naive/regulatory CD4+ T-cells counts peaked between 20:00-4:00, with nadir counts at 12:00. The expression of the HIV-1 co-receptors CCR5/CXCR4 and gut-homing molecules CCR6/integrin β 7 on memory T-cells expression levels peaked between 20:00-4:00. Integrated HIV DNA levels in CD4+ T-cells revealed minor daily fluctuations. The HIV-RNA/DNA ratio (surrogate marker of HIV-1 transcription) peaked at 4am.

Daily variations in melatonin/cortisol levels, T-cell counts, mucosal permeability markers and key molecules involved in HIV replication/pathogenesis were observed in ART-treated PLWH. The peak of HIV transcription in CD4+ T-cells, at 4:00, coincided with peak FABP2 and melatonin and nadir LBP levels. These findings should inform therapeutic interventions on HIV-1 cure/remission on the importance of selecting the optimal time of treatment/monitoring.

255 Lower Placental Expression of Catalase and NADPH-Oxidase in Early Gestation in Mice Treated with Dolutegravir

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Background: Dolutegravir (DTG) is a well-tolerated drug used in first-line combination antiretroviral therapy. However, DTG has been associated with oxidative stress in clinical and in vitro studies, a pathway that may contribute to the small increased risk of neural tube defects (NTD) reported. We investigated the effect of DTG on oxidative stress pathways using a murine pregnancy model.

Methods: C57BL/6 mice were mated and randomly assigned to daily treatment with either control (water, N=10), 1xDTG (2.5mg/kg DTG+33.3/50mg/kg emtricitabine (E)/tenofovir disoproxil fumarate (T), N=10), yielding therapeutic levels of DTG, or 5xDTG (12.5mg/kg+33.3/50mg/kg E/T, N=10), yielding suprathreshold levels of DTG. Placentas were collected at gestational day 9.5. Gene expression of oxidative stress markers was assessed by RT-PCR with HPRT as the housekeeping gene using 2 placentas/litter. Linear regression analyses were used to examine relationships between log-transformed factors and treatment. Percentage differences (95% confidence intervals) were calculated by exponentiating the coefficients.

Results: Compared to control, in both therapeutic and suprathreshold DTG-treatment groups we observed a significant decrease in expression of catalase (1xDTG vs. control: -69% (-53%, -79%), p<0.001; 5xDTG vs. control: -58% (-37%, -72%), p<0.001) and NADPH-oxidase 1 (1xDTG vs. control: -78% (-61%, -88%), p<0.001; 5xDTG vs. control: -83% (-69%, -90%), p<0.001). Expression levels of superoxide dismutase 1 (SOD1) were similar between groups, and SOD2 was marginally lower in the 1xDTG group vs. control (p=0.046). Expression of the angiogenic factor VEGF was also downregulated in both DTG groups (-65% (-45%, -77%), p<0.001; -53% (-27%, 70%), p=0.001).

Conclusion: DTG was associated with significant downregulation of the placental antioxidant gene catalase which may suggest increased oxidative stress, a cellular imbalance common to many pathways leading to congenital defects. We also observed downregulation of the ROS producing NADPH-oxidase, as well as VEGF. These data may suggest that DTG influences angiogenic pathways in the placenta.

115 Plasma TILRR protein, risk of HIV seroconversion and severe COVID-19 disease

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TILRR, a co-receptor of IL-1R1, plays an important role in enhancing IL-1/IL-1R1/TLR-NFκB inflammation responses through its association with IL-1R1. TILRR is an important modulator of many genes involved in inflammatory responses and promotes inflammatory cytokine secretion by epithelial cells. It promotes immune cell migration through the induction of soluble inflammatory mediators. TILRR protein is not only expressed in PBMCs and tissues but also circulates in blood. The plasma TILRR protein levels among individuals vary greatly (<2.38ng/ml to >5µg/ml) and are positively correlated with several proinflammatory cytokines. Thus, TILRR not only modulates inflammatory responses in cells and tissues but may also modulate systemic inflammation.

Inflammation is a double-edged sword and underlies a wide variety of physiological and pathophysiological processes. Chronic and persistent inflammation is pathologic and associated with a number of human infectious and chronic diseases, such as HIV, SARS-CoV-2, H1N1, obesity, diabetes, atherosclerosis, asthma and neurodegenerative diseases. The great variations in plasma TILRR protein levels among individuals and its positive correlations with several pro-inflammatory cytokines suggest that high plasma TILRR protein level could be a high risk factor for infectious diseases. We analyzed TILRR protein and proinflammatory cytokines of 941 archived HIV negative plasma samples from 390 women who were HIV negative when they were enrolled in the Pumwani cohort. We find that women with median plasma TILRR protein levels ≥ 100 ng/ml seroconverted significantly faster than women with plasma TILRR protein levels <100 ng/ml ($p < 0.0001$; RR=3.72 and OR=15.29). Our pilot study also showed that median plasma TILRR protein levels in the COVID-19 ICU patients are 38-fold higher than its level in the COVID-19 patients with mild symptoms ($P < 0.00001$). Further studies on the influence of high plasma TILRR protein level as a high risk factor for infectious and chronic diseases would help to develop better diagnostics and better treatment.

18 A new family of small-molecule CD4-mimetic compounds contact the highly conserved aspartic acid 368 and expose vulnerable HIV-1 Env epitopes

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The HIV-1 envelope glycoprotein (Env) trimer mediates viral entry. Env samples different conformations, in its unliganded form it samples a “closed” conformation which resistant to non-neutralizing antibodies (nnAbs). Small-molecule CD4 mimetics (CD4mc) such as BNM-III-170 and MCG-IV-210 sensitize HIV-1-infected cells to antibody-dependent cellular cytotoxicity (ADCC) mediated by nnAbs present in plasma from people living with HIV (PLWH). Structural studies revealed that the new family of MCG-IV-210 CD4mc derivatives bind within the Phe43 cavity in close proximity to the highly-conserved Asp368 residue. We speculated that further optimized MCG-IV-210 analogs capable of forming H-bonds with Asp368 could gain breadth and ADCC potency.

We optimized MCG-IV-210 piperidine nitrogen substituent to develop new CD4mcs. High resolution structures of complexes formed by new analogs and a gp120CRF01 AE core were solved by X-ray crystallography to provide insight into interactions within the CD4-binding cavity and Asp CD4-binding cavity in close proximity to the highly-conserved Asp368. Their capacity to neutralize viral particles and sensitize infected cells to ADCC was measured. The best performing analogs in neutralization and ADCC assays were subjected to structural analyses that confirmed their binding within the Phe43 cavity in a manner similar to MCG-IV-210. In addition, several modifications of the piperidine core improved the position of the new CD4mcs in the Phe43 pocket and surrounding vestibule. Interestingly, two analogs (DL-I-101 and DI-I-102) formed an H-bond with the α -carboxylic acid group of Asp368 and presented improved neutralization and ADCC activities. Overall, the new structural and biological attributes of these molecules make them good candidates for HIV-1 eradication strategies.

20 Anti-Viral and Anti-Inflammatory Effects of novel PPAR γ Agonist, INT131, in an EcoHIV mouse model: Relevance to the Treatment of HIV-Associated Neurocognitive Disorders

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Background: Approximately 50% of people living with HIV develop HIV-Associated Neurocognitive Disorders (HAND), manifested by declined behavior, motor and cognitive functions which impair their quality of life. Activation of peroxisome proliferator-activated receptor gamma (PPAR γ), a transcription factor known to regulate glucose/lipid metabolism can also exert anti-HIV/anti-inflammatory effects. We hypothesized that activation of PPAR γ by a novel selective agonist, INT131, could suppress HIV-associated brain inflammation *in vivo*, in an ecotropic HIV-1 (EcoHIV) mouse model representative of HAND. The goal of this study was to examine the role of INT131 in reversing infectivity and inflammation in brain cerebellum, subcortical and cortical regions in EcoHIV infected mice.

Methods: We quantified markers of interest using qPCR analysis, including viral genes, inflammatory cytokines/chemokines, blood-brain barrier (BBB) tight junction proteins, and examined BBB permeability applying the NaF permeability assay, 21 days post intracranial injection of saline or EcoHIV (2×10^8 pg/ml) in: i) non infected mice, ii) infected EcoHIV mice, and iii) infected EcoHIV mice treated with daily oral administration of INT131 (50 mg/kg/day).

Results: Compared to saline injected controls, exposure of mice to EcoHIV, significantly increased the mRNA expression of viral genes (Vif and Tat), inflammatory markers (Tnf- α , Il-1b, Il-6, and Ifn- γ) and decreased BBB markers (Ocln, Cldn5 and Tjp-1) in brain regions. Oral administration of INT131 significantly reduced the expression of inflammatory markers and restored the expression of BBB markers to control levels. We also observed a restoration of BBB permeability, measured by NaF assay, with INT131 treatment in the EcoHIV mouse model.

Conclusion: Our *in vivo* work revealed that PPAR γ could constitute a potential molecular target for the treatment/prevention of HIV-1 associated brain inflammation, BBB dysfunction, and potentially HAND. Future behavioural studies will investigate the efficacy of INT131, in reversing neurocognitive deficits in the EcoHIV mouse model.

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22 Dolutegravir (DTG)/Bictegravir (BTG)-Based Antiretroviral Therapy Dysregulates Folate Transporters in the Brain

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Background:

HIV+ individuals have a relative high risk of folate deficiency, with the incidence being even higher amongst those with neuropsychiatric symptoms. Folate transport into central nervous system is mainly mediated by reduced folate carrier (SLC19A1/RFC), proton-coupled folate transporter (SLC46A1/PCFT) and folate receptor alpha (Folr1/FR α). Previous findings from our group suggested a potential interaction between DTG and folate transporters at the placenta. We hypothesized that such interactions could also occur at brain barriers including choroid plexus (CP) and blood-brain barrier (BBB).

Methods:

Human cerebral microvascular endothelial cells (hCMEC/D3) and primary cultures of mouse microvascular endothelial cells (in vitro BBB models) were treated with clinically relevant concentrations of DTG (2000, 5000ng/ml) or BTG (3000, 6000ng/ml) for 24h. Isolated mouse brain capillaries were treated ex vivo with DTG (5000ng/ml) or BTG (6000ng/ml) for 5h. C57BL/6 mice were administered orally either DTG (5mg/kg/day); BTG (5mg/kg/day); DTG + backbone (tenofovir alafenamide (50mg/kg/day) + emtricitabine (33.3mg/kg/day) or BTG + backbone; for 14 days. Slc19a1, Slc46a1, Folr1 gene expression was quantified by qPCR in cell cultures, CP and brain capillaries.

Results:

DTG exposure significantly downregulated SLC19A1/Slc19a1, SLC46A1/Slc46a1 gene expression in hCMEC/D3 and mouse BBB cells. DTG exposure robustly downregulated Slc19a1, Slc46a1 and Folr1 while BTG significantly downregulated Slc19a1 in isolated mouse brain capillaries. Chronic treatment of DTG in mice significantly downregulated Folr1, while BTG downregulated Slc19a1, Slc46a1 and Folr1 expression in brain capillaries. Administration of DTG and BTG + backbone in mice significantly downregulated Slc19a1 and Slc46a1 expression at the CP, BTG + backbone also downregulated Folr1 in brain capillaries.

Conclusions:

Our findings suggest a potential interaction between DTG or BTG-based antiretroviral therapy (cART) with cerebral folate transport pathways, which could potentially increase the risk of cerebral folate deficiency among HIV+ individuals. These interactions may also contribute to cART-associated neuropsychiatric adverse effects observed in the clinic.

294 Identification of Novel Integrase Strand-Transfer Inhibitor Resistance Mutations in Ugandan HIV-1

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Integrase strand-transfer inhibitor (INSTI) use in sub-Saharan Africa has increased rapidly in recent years, but little is known about INSTI resistance in the non-subtype B HIV-1 that is prevalent in this region. Uganda has among the highest global burdens of HIV-1, but no studies have analyzed INSTI resistance specific to the strains of HIV-1 in this region. Here, we aim to identify novel INSTI resistance pathways specific to Ugandan HIV-1. We recently sequenced the integrase gene of 51 patients failing treatment on the INSTI raltegravir and 328 patients naïve to INSTI treatment. We identified two novel integrase mutations, I203M and I208L, which often appeared together and were strongly associated with raltegravir failure. Using our yeast-based cloning method, we generated I203M, I208L, and I203M/I208L double mutant viruses in an NL4-3 background. We then selected for high-level raltegravir resistance in these viruses, as well as in wild-type viruses, via a long-term drug-dose escalation experiment using a susceptible human cell line. We tracked the development of raltegravir resistance and the accumulation of drug-resistance mutations within integrase in each virus throughout this experiment. I203M and I208L, both alone and in combination, do not appear to increase resistance to INSTIs. However, I203M and I208L mutants developed INSTI-resistance mutations faster on average compared to wild-type. This corresponded with more rapid development of phenotypic INSTI resistance on average in the I203M and I208L mutants. Thus, we provide early evidence that the I203M and I208L mutations observed in Ugandan raltegravir-experienced patients may influence INSTI resistance by decreasing the fitness costs associated with primary drug resistance mutations. Future experiments will focus on assessing the effect of these mutations on viral fitness. These findings provide new insights on INSTI resistance in Ugandan HIV-1 and will help Ugandan practitioners better predict drug resistance profiles when considering INSTIs as a treatment option.

21Temsavir decreases HIV-1 Envelope Glycoproteins proteolytic cleavage

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The heavily glycosylated HIV-1 envelope glycoprotein (Env) is the sole viral antigen present at the surface of virions and infected cells, thus representing the main target for antibody responses. New small molecules entry inhibitors are being used for the treatment of HIV-1 infected individuals. The FDA-approved HIV-1 attachment inhibitor, temsavir (BMS-626529), is one of them and binds to the gp120 preventing the interaction between Env and the host cell receptor CD4. This molecule also stabilizes Env in a prefusion “closed” conformation. This conformation, known as State 1, is preferentially targeted by broadly neutralizing antibodies (bNAbs). We recently reported that temsavir (TMR) impacts the overall glycosylation of Env but also decreases its cleavage, resulting in a change in Env antigenicity. Here we extended these results to a panel of primary Envs and molecular infectious clones (IMCs). We observed that TMR affects Env antigenicity of most of them but to different extents. Interestingly, this phenotype seems to be linked to the capacity of TMR to impair Env cleavage. Finally, we observed that the effect of TMR on Env processing and bNAb recognition correlate well with the susceptibility of infected cells to antibody-dependent cellular cytotoxicity (ADCC). Overall, our results suggest that the impact of TMR on Env processing and antigenicity should be considered for the development of new antibody-based approaches for temsavir-treated individuals.

116 Comparing the Performance of Dried Blood Spots (DBS) versus Blood for Sexually Transmitted and Blood Borne Illness (STBBI) Serology Testing in Calgary, Alberta

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BACKGROUND

Rates of sexually transmitted and blood borne infections (STBBIs) are rising in Canada. Both structural and individual barriers exist in obtaining testing for STBBIs. Dried blood spots (DBS) are a proven method of blood collection and are used in lower resourced settings to diagnose STBBIs but are not validated within Alberta-based diagnostic laboratories. Blood collection for DBS is also simpler, requiring only a few drops from a lanced finger rather than venipuncture, and scalable. We hypothesized that DBS samples would render similar results to traditionally collected blood samples for STBBIs.

METHODS

Up to 50 participants with each of known HIV, Hepatitis B (HBV) and C (HCV) or, past syphilis infections will be recruited from local subspecialty clinics to provide phlebotomy-collected whole blood samples. From each tube of whole blood, 3-4 DBS cards were prepared, dried, punched, and eluted according to predefined standards. The eluate and plasma samples were then tested for HIV, HCV and syphilis antibodies and HBV surface antigen, using the Abbott Alinity chemiluminescent immunoassay serology platform. HIV+ eluates were confirmed by the Geenius immunoblot.

RESULTS

Preliminary results of 8 participants include 5 having known HIV and 3 having recent syphilis. Among known HIV+ participants, the results of all 5 DBS samples were concordant with matched plasma samples on both the primary and confirmatory serologic assays. Among the 3 syphilis samples, the results were again concordant between DBS and matched traditional serology testing. Recruitment of additional patients with HIV, HBV, HCV, and syphilis is ongoing.

CONCLUSION

These limited data are encouraging and suggest DBS will have a role in combating rising STBBI rates via new testing options in Alberta, however, additional study is required to confirm test performance and population benefits.

360 Alterations of Monocyte Subsets in People with HIV with Subclinical Coronary Artery Disease under Suppressive Antiretroviral Therapy compared to Uninfected Individuals

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Background: Despite the success of antiretroviral therapy (ART) in reducing viral replication, people with HIV (PWH) continue to suffer from chronic inflammation leading to accelerated comorbidities, such as atherosclerosis and coronary artery disease (CAD). Inflammatory monocytes play an important role in the development of atheromatous plaques, but their role in CAD during chronic HIV inflammation remains understudied.

Methods: Blood specimens were obtained from ART-treated PWH with (HIV+CAD+; n=38) and without subclinical CAD (HIV+CAD-; n=40) and uninfected controls with (HIV-CAD+; n=19) and without subclinical CAD (HIV-CAD-; n=24) from the Canadian HIV and Aging Cohort. CAD was determined by the presence of coronary artery plaques measured by cardiac computed tomography angiography in all participants. Monocyte subsets were identified as classical (CD14+CD16-), intermediate (CD14+CD16+), and non-classical (CD14-CD16+) and their effector functions were assessed ex vivo by expression of CD80, CD86, CD62L, CD163, CCR2 and CX3CR1 using flow cytometry. Regulatory T-cells (Tregs) were characterized as CD4+CD25^{high}CD127^{low}FoxP3⁺ cells.

Results: HIV+CAD+ participants showed significantly higher frequencies of classical monocytes and lower non-classical monocyte frequencies compared to HIV+CAD- individuals. In all monocyte subsets, expression of plaque homing marker CX3CR1 was reduced in HIV+CAD+ individuals, while their proportion of CX3CR1-CCR2+ subset was higher versus HIV-CAD- controls. No changes in other monocyte markers were observed between study groups. Moreover, classical monocyte frequencies correlated positively with Treg frequencies in CAD+ groups, whereas non-classical monocyte frequencies negatively correlated with Tregs only in HIV+CAD+ individuals. In HIV+CAD+ participants, frequencies of classical monocytes correlated negatively with age, LDL and LDL/HDL ratio, while their non-classical monocyte frequencies correlated positively with these parameters.

Conclusions: PWH with subclinical CAD display a unique monocyte signature, characterized by an increase in classical and decrease in non-classical monocyte frequencies, and an altered monocyte homing capacity which were linked to their lipid metabolism and Treg frequencies.

97 Bivariate Correlation of Sex, HIV Status and Number of Chronic/Latent Viral Infections with Markers of Immune Aging

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Background: People living with HIV (PLWH) experience accelerated cellular and immunological aging relative to their HIV-negative peers. This may be influenced by co-infection with other chronic/latent viruses (including CMV, EBV, HHV-8, HSV-1, HSV-2, HCV, and HBV) that are known to be associated with markers of aging or age-associated diseases. Our aim was to determine associations between sex, HIV status, number of chronic/latent viral infections, and markers of immune aging, in a cohort of PLWH versus controls.

Methods: CARMA cohort participants, balanced for sex (n=26 female, n=25 male) and HIV status (n=25 HIV+, n=26 HIV-), with a broad range of viral coinfections were selected for this analysis, with age being balanced throughout [20-76y]. Infection status for CMV, EBV, HHV-8, HSV-1, and HSV-2 was determined serologically; HIV, HCV, and HBV were self-reported. Stored live PBMCs were used to assess the CD4:CD8 and proliferation-competent: senescent CD8 T-cell (CD8+, CD28+:CD28-) ratios via flow cytometry. Participants were dichotomized by sex, HIV status, and above and below median number of non-HIV chronic/latent viral infections. Associations between number of viruses, HIV status, and age were assessed using Mann-Whitney and Spearman's correlation.

Results: Female participants exhibited higher CD4:CD8 (1.8[0.9-2.7] vs 1.1[0.3-1.7], p=0.019 and CD8+, CD28+:CD28- ratios (1.4[0.9-2.7] vs 0.9[0.3-1.5], p=0.012) than males. These ratios were also lower in PLWH vs. controls CD4:CD8 (0.7[0.3-1.2] vs 2.0[1.7-3.3], p<0.001 and CD8+, CD28+:CD28- (0.9[0.3-1.4] vs 1.6[0.7-2.7], p=0.0198). Individuals with above-median chronic/latent viral infections exhibited lower CD4:CD8 (1.0[0.5-1.8] vs 1.7[1.0-3.1], p=0.021), but no difference in CD8+, CD28+:CD28- ratio. No correlation was observed with age.

Discussion: These preliminary data suggest that male sex and HIV status may be associated with unfavourable immune cell ratios. Increasing our sample size to >300 CARMA participants with well-balanced age, sex, and HIV status is planned and will allow multivariable analysis and identification of independent associations; thus increasing our understanding of immune aging.

232 Novel Regulators for IL-32 Expression in Inflamed Intestinal Epithelial Cells in the Context of HIV Infection

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Background: Alterations of the intestinal barrier represent a cause for co-morbidities such as cardiovascular disease (CVD) in people living with HIV (PLWH) receiving antiretroviral therapy (ART). Such alterations coincide with the overexpression of IL-32 cytokine family, including isoforms with pleiotropic actions varying from antiviral to immunosuppressive features. We previously demonstrated that IL-32 β is upregulated in the colon of ART-treated PLWH and its expression in intestinal epithelial cells (IEC) is downregulated by the Th17-hallmark cytokine IL-17A. Here, we aimed to identify new modulators of IL-32 expression in IEC, focusing on stimuli/pathways linked to HIV pathogenesis and CVD, including the Th17 cytokines IL-22 and IL-26, the gut-homing modulator retinoic acid (RA), the transcriptional repressor PPAR γ , and the antiviral/immunosuppressive type I interferon (I-IFN).

Methods: The HT-29 IEC were exposed to recombinant TNF- α , IL-17A, IL-22, IL-26, and IFN- β 1a the PPAR γ antagonist T0070907, and all-trans retinoic acid (ATRA). IL-32 $\beta/\gamma/\epsilon$ isoform mRNA were quantified by real-time RT-PCR.

Results: TNF- α -activated IEC upregulated predominantly IL-32 β/γ , and at lower levels IL-32 β mRNA expression. IFN- β 1a acted in synergy with TNF- α to significantly ($p < 0.05$; Paired t-Test, $n = 3$ experiments) augment IL-32 $\beta/\gamma/\epsilon$ expression (median fold change (FC): 3.05/2.05). The IL-32 β/γ mRNA expression was significantly reduced by exposure to IL-17A (median FC: 0.23/0.22) and ATRA (median FC: 0.29/0.38), while IL-22 (Median FC: 1.87/1.46) and PPAR γ antagonist (median FC: 1.9/3.1) exposure led to a significant increase. IL-26 did not modulate IL-32 $\beta/\gamma/\epsilon$ expression.

Conclusions: Our results reveal the capacity of TNF- α to act in synergy with I-IFN and IL-22 to promote IL-32 $\beta/\gamma/\epsilon$ expression in IEC and identify the PPAR γ and RA pathways as new negative regulators of IL-32 expression in inflamed IEC. The identification of these novel IL-32 regulatory networks raises new questions on their potential targeting for counteracting HIV dissemination and persistent inflammation at intestinal level for preventing the occurrence of CVD in ART-treated PLWH.

330 Dynamics of Neutralizing Antibodies and Memory B Cells After Three Doses of COVID-19 Vaccine in People Living With HIV Receiving Suppressive ART

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Background: Limited data exist regarding the dynamics of humoral responses following COVID-19 vaccination and breakthrough SARS-CoV-2 infection in people living with HIV (PLWH) receiving suppressive antiretroviral therapy. Here, we examined the durability and specificity of neutralizing antibodies and memory B cells induced by three vaccine doses in PLWH. The impact of breakthrough infection was assessed in subset of individuals who experienced their first infection after receiving three vaccine doses.

Methods: Humoral responses against wild type (WT, Wuhan), Omicron BA.1 and BA.2.75 spike receptor binding domains (RBD) were assessed in serum of 64 PLWH up to six months post-third dose. IgG antibodies were quantified using ELISA. Neutralization activities were measured using a surrogate assay based on ACE-2 displacement. RBD-specific memory B cells were evaluated by flow cytometry.

Results: Third vaccine doses boosted all humoral measures above levels achieved after two doses, but variant-specific responses remained significantly lower compared to WT. IgG concentrations for all strains declined at a similar rate. Surrogate neutralization activities also declined over time, with those against Omicron strains falling below the limit of detection by six months in ~60% of participants. SARS-CoV-2 infection boosted IgG concentrations and neutralization activities significantly above vaccine-induced levels, though BA.2.75-specific activity remained significantly lower than BA.1. Consistent with a boost in humoral responses following a third dose, a significant increase in both WT- and Omicron-specific memory B cell responses was observed, and these responses persisted overtime.

Conclusion: A third COVID-19 vaccine dose augmented neutralizing antibody and memory B cell responses against WT and Omicron variants in PLWH receiving suppressive ART. While serum antibody levels declined over time after vaccination, the persistence of memory B cells likely contributed to robust responses observed following breakthrough infection.

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52 Humoral responses elicited by SARS-CoV-2 mRNA vaccine in PLWH

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Introduction

While mRNA SARS-CoV-2 vaccination elicits strong humoral responses in healthy individuals, humoral responses in People living with HIV (PLWH) remains to be clarified. Here, we conducted a longitudinal study of vaccine immunogenicity elicited after three doses of mRNA SARS-CoV-2 vaccine in PLWH stratified by their CD4 count.

Methods

We measured the capacity of antibodies to recognize the full SARS-CoV-2 Spikes from different variants of concern (VOC) using a cell-based assay and flow cytometry. We also measured the Fc-mediated effector functions (ADCC) by the capacity of PBMCs to kill CEM.NK^r expressing stable SARS-CoV-2 Spikes in presence of plasma. We measured the relative capacity of antibodies to mediate neutralization of authentic SARS-CoV-2 viruses after the third dose.

Results

After 3 doses of an mRNA vaccine, PLWH having CD4 \leq 250 cells/mm³, had around 2-fold lower levels of antibodies able to recognize the Delta, BA.1 and BA.2 Spikes compared to PLWH having more than 250 CD4 cells/mm³. Albeit the differences were not significant, Fc-effector were lower in individuals having CD4 \leq 250 compared to those with CD4 \geq 250. Strikingly, no major differences were observed in the capacity of plasma from these individuals to neutralize authentic SARS-CoV-2 after the third dose. All groups showed increased recognition of SARS-CoV-2 Spikes after vaccination with antibody levels decreasing over-time.

Conclusions

Our results emphasize the heterogeneity of vaccine immunogenicity in PLWH based on CD4 count. This study will help determine the need for additional boosts according to the populations to be targeted.

250 Investigating early response to COVID-19 vaccination in an immunocompromised population

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SARS-CoV-2 has infected more than 658 million people worldwide causing more than 6.7 million confirmed deaths since the beginning of the COVID-19 pandemic. Immunocompromised individuals in particular are at an increased risk of infection, severe disease, and death. Vaccines have been instrumental in stemming the worst of the COVID-19 pandemic; however, the dynamics of the vaccine induced immune responses in immunocompromised individuals remains a key area of research. Studies have shown end stage renal disease (ESRD) patients have significantly reduced humoral responses and memory B cell formation in responses to COVID-19 vaccination; however, early innate immune responses have yet to be elucidated. To investigate the early innate immune response to COVID-19 vaccination, blood was collected before (BD1) and 1-4 days post dose 1 (PD1) of BNT162b2 vaccination (n=17 ESRD; 28 healthy controls). RNA-Sequencing was performed and differential gene expression and pathway analyses were used to compare groups, controlling for age, sex, and batch. Preliminary analyses of vaccine responses identified 125 significantly differentially expressed genes (DEG) ($1.17E-08 < \text{padj} < 0.04$) in ESRD patients and 107 DEGs ($3.13E-03 < \text{padj} < 0.05$) in healthy controls. 71 DEGs were significant in both populations, 54 unique to ESRD patients and 36 unique to healthy controls. Detailed enrolment and follow-up questionnaires (demographics, medical history, COVID-19 history, medications, etc.) were collected from participants and cellular and antibody responses are being measured at 2 weeks, 6 months, and one-year post vaccination. Long-term immunological impacts will be tested for association with early innate immune responses to COVID-19 vaccination. We show ESRD patients elicit a unique immune response to COVID-19 vaccination compared to healthy controls. These data can help inform ongoing vaccination strategies for all immunocompromised populations, including people newly diagnosed and living with HIV.

151 Neutralization of Omicron subvariants BA.5 and BQ.1 after four COVID-19 vaccine doses in PLWH receiving ART

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Objective: Limited data exist regarding the immune benefits of fourth COVID-19 vaccine doses in people living with HIV (PLWH) receiving ART, particularly now that most have experienced a SARS-CoV-2 infection. We quantified wild-type (WT)-, Omicron-BA.5- and Omicron-BQ.1-specific neutralization up to one month post-fourth COVID-19 vaccine dose in 63 (19 SARS-CoV-2-naive and 44 SARS-CoV-2-experienced) PLWH.

Design: Longitudinal observational cohort.

Methods: Quantification of wild-type (WT)-, Omicron-BA.5- and Omicron-BQ.1-specific neutralization using live virus assays.

Results: Participants received monovalent (44%) and bivalent (56%) mRNA fourth doses. In COVID-19-naive PLWH, fourth doses enhanced WT- and Omicron-BA.5-specific neutralization modestly above three-dose levels ($p=0.1$). In COVID-19-experienced PLWH, fourth doses enhanced WT-specific neutralization modestly ($p=0.1$) and BA.5-specific neutralization significantly ($p=0.002$). Consistent with humoral benefits of 'hybrid' immunity, COVID-19-experienced PLWH exhibited the highest neutralization post-fourth dose, where those with Omicron-era infections exhibited higher WT-specific ($p=0.04$) but not BA.5- or BQ.1-specific neutralization than those with pre-Omicron-era infections. BA.5-specific neutralization was significantly lower than WT in everyone regardless of COVID-19 experience, with BQ.1-specific neutralization lower still (all $p<0.0001$). In multivariable analyses, fourth dose valency did not affect neutralization magnitude. Rather, an mRNA-1273 fourth dose (versus a BNT162b2 one) was the strongest correlate of WT-specific neutralization, while prior COVID-19, regardless of era, was the strongest correlate of BA.5 and BQ.1-specific neutralization post-fourth dose.

Conclusions: Fourth COVID-19 vaccine doses, irrespective of valency, benefit PLWH regardless of prior SARS-CoV-2 infection. Results support existing recommendations that all adults receive a fourth COVID-19 vaccine dose within 6 months of their third (or their most recent SARS-CoV-2 infection).

54 A better understanding of the capacity of small CD4-mimetic molecules to enable HIV-1 Env recognition by plasma from HIV-1-infected individuals

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The HIV Envelope glycoprotein (Env) is the main target of the anti-HIV humoral response. Env can adopt different conformations: the “closed” conformation (State 1); the “partially open” conformation (State 2) and the “open” conformation (State 3). The “closed” conformation is targeted by rare neutralizing antibodies while the “open” conformation can be recognized by easily elicited non-neutralizing antibodies. Env adopts the “open” conformation upon interaction with the CD4 receptor at the surface of infected cells. However, because the viral Nef and Vpu proteins downregulate CD4 expression, Env is mainly exposed in its unliganded “closed” conformation, thus preventing its recognition by commonly elicited anti-Env antibodies.

To force Env to adopt its “open” conformations and expose vulnerable epitopes, we use small CD4 mimetic compounds (CD4mc), which imitate the interaction of CD4 with Env. We previously reported that CD4mc sensitize infected cells to antibody dependent cellular cytotoxicity (ADCC) mediated by plasma from people living with HIV (PLWH). While all plasma from PLWH responded to CD4mc, we observed a wide range of ADCC activity among them. To better understand why some HIV+ plasma are more potent at inducing ADCC, we dissected the antibody content (level and specificity) of a panel of HIV+ plasma samples obtained from a cohort of PLWH (from the FRQS AIDS network). Associations with the presence of antibodies recognizing epitopes within the ADCC potent Cluster A region were observed. Additional work related to CoRBS and CD4i mAbs are ongoing using different families of more potent CD4mc. This information will be crucial in moving forward CD4mc for eradication strategies.

13 Small CD4 mimetics sensitize HIV-1-infected macrophages to antibody-dependent cellular cytotoxicity

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HIV-1 Envelope (Env) conformation determines the susceptibility of infected CD4+ T cells to Antibody Dependent Cellular Cytotoxicity (ADCC). Upon interaction with CD4, Env adopts more “open” conformations, exposing ADCC epitopes. HIV-1 limits Env-CD4 interaction and protects infected cells against ADCC by downregulating CD4 via Nef, Vpu and Env. Limited data exists however of the role of these proteins in downmodulating CD4 on infected macrophages and how this impacts Env conformation. While Nef, Vpu and Env are all required to efficiently downregulate CD4 on infected CD4+T cells, we show here that any combination of these proteins is sufficient to downmodulate most CD4 from the surface of infected macrophages. Consistent with this finding, Nef and Vpu have a lesser impact on Env conformation and ADCC sensitivity in infected macrophages compared to CD4+T cells. However, treatment of infected macrophages with small CD4-mimetics expose vulnerable CD4-induced Env epitopes and sensitize them to ADCC.

98 Vd1 T Cells as an Approach to an HIV Cure

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Background: Modified autologous lymphocytes as treatment against many diseases is the focus of increasing interest. In the context of HIV, this approach is costly, time-consuming, and, to date, has not been particularly effective. The creation of an “off-the-shelf” therapy against HIV may have the best chance of facilitating a scalable cure. Delta One T (DOT) cells, an expanded population of gamma delta 1 (Vd1) T cells, have previously been used in cancer studies and do not appear to induce graft-versus-host-disease (GvHD). Furthermore, they have been shown to kill/suppress target cells both in vitro and in vivo through a wide variety of cytotoxic receptors such as NKG2D and NKG2C which should be able to recognize ligands on HIV-infected cells.

Objective: Determine if DOT cells preferentially enact effector functions against HIV-infected CD4+ T cells.

Methods: First, alpha/beta T cells will be depleted from peripheral blood mononuclear cells (PBMC) using magnetic beads. The remaining cells will be stimulated with a cytokine cocktail according to the DOT cell protocol as published (Almeida et al., 2016). Following expansion, DOT cells will be co-cultured with HIV-infected J1.1 cells or primary isolated CD4+ T cells. Cell death of HIV-infected versus their uninfected counterparts will be assessed by annexin V via flow cytometry. To assess viral replication, a p24 ELISA will be used. To observe DOT cell migration, a transwell assay will be used. In brief, wells will be seeded with HIV-infected or uninfected macrophages, and a suspension of DOT cells will be placed above in a 0.8um filter. Migrated DOT cells will be counted via flow cytometry.

Results: DOT cells have been generated and this protocol is being optimized. HIV-infected cell killing experiments are ongoing.

Conclusions: This project proposes a novel immunotherapeutic “off-the-shelf” cure strategy using activated Vd1 T cells to potentially target and eradicate HIV-infected cells.

224 APOBEC3 Deaminases Can Induce Sublethal Mutations in the HIV1 LTR Causing a Reversible Latency Phenotype

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It is well known that HIV-1 latency is a major hurdle in antiretroviral treatment (ART). Several latency reversing agent (LRA) strategies combined with ART failed in eradicating latently infected reservoirs. The main barrier is the heterogeneity of the latent HIV-1 reservoirs as well as the molecular complexity of latency mechanisms.

Although it is widely known that host transcriptional silencing machinery plays the principal role in HIV-1 latency, it now appears that the rapid evolution of HIV-1 viruses favors the establishment of proviral latency as immune escape mechanism. HIV-1 genetic variants result from error-prone Reverse Transcriptase (RT), APOBEC-3, as well as recombination.

Here we show that G-to-A mutations in the Long Terminal Repeat (LTR) region of the HIV-1 genome introduced by viral RT errors and host APOBEC3 enzymatic activity generate HIV-1 sequences that can display a reversible, latency-like phenotype.

These mutated latency prone viruses (LPVs) display reduced transcription upon infection monitored by reporter eGFP expression, however bounce back up to 30-fold in Jurkat cells and 3-fold in primary CD4+ T cells following LRA induction. In addition, in a longitudinal virus adaptation assay, 5 replicative LPVs displayed the potential to evolve and regain viral fitness following two rounds of LRA activation cycles.

This project also demonstrates that some 5'-LTR mutations in the viral promoter of LPVs mapped to transcription factor binding sites SP-1, NF-kB, NFAT and TAR. These appear to be modulating the viral promoter's ability to respond to transactivation and therefore promote and maintain proviral latency when mutated.

93 Beneficial Impact of Direct Acting Antivirals on HIV Reservoir Persistence in HCV/HIV Co-infected Subjects

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Background: Hepatitis C virus (HCV) co-infection is a challenging comorbidity in people living with HIV, as reflected by larger HIV reservoir size in HCV/HIV co-infected compared to HIV mono-infected individuals. While Direct Acting Antivirals (DAA) cure HCV, HIV reservoirs persist under antiretroviral therapy (ART). Here, we investigated the impact of DAA-mediated HCV cure on HIV-DNA reservoir size and residual HIV transcription in HCV/HIV co-infected subjects.

Method: To measure changes in HIV reservoir markers before and after DAA treatment, total CD4 T cells were enriched from HCV/HIV co-infected individuals (n=20) before DAA (baseline), at the end of treatment (EOT), and three months post-DAA (follow-up). Total DNA and RNA were simultaneously extracted from purified CD4 T cells. Integrated HIV-DNA was measured using quantitative real-time alu-gag nested PCR. Nested RT-PCR was used to measure un-spliced LTR-gag and pol HIV transcripts as well as multiply spliced tat/rev transcripts. The HIV-RNA/DNA ratio was used as a surrogate marker for HIV transcription.

Result(s): We observed a significant reduction in integrated HIV-DNA levels following DAA treatment (approximately 0.7-fold decrease, p= 0,0026). Interestingly, at the follow-up time point post-DAA, patients who had HCV prior to HIV infection showed a more robust significant decrease in integrated HIV-DNA than those who were first infected with HIV (p= 0.0172), raising the possibility that HIV infects HCV-specific T-cells. Although some donors showed a transient elevation of un-spliced HIV RNA at EOT, at follow-up there were no significant differences from baseline. Multiply spliced HIV RNA and HIV-RNA/DNA ratios were not significantly affected by DAA-mediated HCV cure.

Conclusion(s): Together, these results highlight the beneficial impact of DAA on reducing HIV reservoir markers in HCV/HIV co-infected subjects. Future studies should determine whether HCV-specific CD4 T-cells are permissive to HIV infection and contribute to HIV-DNA reservoir persistence during ART.

Keywords: DAA, HCV/HIV co-infection, ART, HIV reservoir

113 HIV restriction factor profile in the brain is associated with clinical status and viral burden

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In a previous study (Mohammadzadeh, et al. mBio. 2021), we reported the persistence of HIV-encoded DNA, RNA and proteins in the brain despite concurrent effective antiretroviral therapy (ART) with undetectable plasma and cerebrospinal fluid viral RNA levels, which was often in association with neurocognitive impairments. Although the determinants of HIV persistence have garnered attention, the expression and regulation of antiretroviral host restriction factors (RFs) in the brain during HIV or SIV infections remain unknown. We investigated the transcriptomic profile of antiretroviral RF genes by RNA deep sequencing with confirmation by qRT-PCR in cerebral cortex from uninfected persons (HIV[-]), HIV-infected without pre-mortem brain disease (HIV[+]), HIV-infected with neurocognitive disorders (HIV[+]/HAND), and neurocognitive disorders with encephalitis (HIV[+]/HIVE). We observed significant increases in RF expression in brains of HIV[+]/HIVE in association with brain viral load. Machine learning techniques identified MAN1B1 as a key gene that distinguished HIV[+] group from HIV[+] groups with HAND. Analyses of SIV-associated RFs in brains from SIV-infected Chinese rhesus macaques with different ART regimens revealed diminished RF expression among ART-exposed SIV-infected animals although ART interruption resulted in induced expression of several RF genes including OAS3, RNASEL, MX2, and MAN1B1. Thus, the brain displays a distinct expression profile of RFs that is associated with neurological status as well as brain viral burden. Moreover, ART interruption can influence the brain's RF profile that might contribute to disease outcomes.

363 Impact of latency reversing agents on human macrophages physiology and virology

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HIV-1 persistence is thought to be the consequence of viral latency in T CD4+ cell populations. It is postulated that viral reactivation combined with antiretroviral treatment would allow clearance of latently infected cells. This "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 physiology, susceptibility to HIV-1 infection and viral production.

Primary human monocyte-derived macrophages (MDMs) were exposed for 6 to 24h with optimal doses of LRAs either used alone or in dual combinations. Studied LRAs were bryostatin-1, JQ-1 and romidepsin. Selected cytokines secretion and expression were monitored by ELISA and RT-qPCR, respectively. Cell viability, phagocytosis, endocytosis, efferocytosis and susceptibility to HIV-1 infection were quantified by flow cytometry. Viral production was assessed by ELISA or Western blot of the viral capsid.

While LRAs did not alter cell viability, bryostatin-1 tend to increase inflammatory cytokines expression and secretion but slightly decreases phagocytosis and endocytosis while romidepsin decreases efferocytosis. Bryostatin-1 or romidepsin stimulation prior to HIV-1 inoculation decreased infection rate. This could be linked to the downregulation of CD4 and SAMHD-1 inactivated form 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 C_{ap}24 and p17.

None of the LRA tested was able to increase HIV-1 production in vitro. Our data indicate that bryostatin-1 stimulation of infected macrophages dramatically decreases HIV-1 production while inducing a pro-inflammatory state. 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.

221 Investigating HIV Viremia and Reservoir Size Following COVID-19 mRNA Vaccination in PWH on ART

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Transient viremia reported following COVID-19 mRNA vaccination in ART-suppressed PWH suggests a stimulatory effect on the HIV reservoir. Another recent study also reported that Nef-specific CD8+ T cells increased and acquired granzyme-B effector function after COVID-19 mRNA vaccination, where this correlated with markers of immune-mediated suppression of HIV-transcribing cells. However, that study did not investigate HIV viremia, nor detect significant reservoir size changes (n=13). We investigated HIV viremia and reservoir size following COVID-19 mRNA vaccination in 62 ART-treated PWH.

Participants (89% male) were sampled pre-vaccination, and one month following the first two vaccine doses. Plasma HIV loads (pVL) were measured using the Cobas 6800 (LLOQ:20 copies/mL). Intact and total HIV copies/million CD4+ T cells were measured using the Intact Proviral DNA Assay. Anti-SARS-CoV-2 S serum antibody concentrations were measured using the Roche Elecsys Anti-S assay.

Pre-vaccination, 82% of participants had pVL<20 copies/mL (max:110 copies/mL). No significant differences in pVL were observed post-vaccination (all p>0.4): one month post-first and second doses, 79% and 85% of participants had pVL<20 copies/mL (max:183 and 79 copies/mL), respectively. Pre-vaccination, the median intact reservoir size was 80 (IQR:28-197; n=46) HIV copies/million CD4+ T cells. Intact reservoir size did not change significantly post-vaccination (all p>0.2): one month post-first and second doses, medians were 85 (IQR:29-184; n=46) and 65 (IQR:22-168; n=29) copies/million CD4+ T cells, respectively. No significant changes in total, nor 5'/3' defective proviral burdens were observed post-vaccination (all p>0.1), nor in any outcome upon stratification by sex, vaccine regimen, or ART type (multiple comparisons addressed using q-values). No correlations were observed between SARS-CoV-2 anti-S antibody concentration post-vaccination, and change in reservoir size, nor observation of detectable viremia (all p>0.2).

While COVID-19 mRNA vaccination may modestly stimulate the HIV reservoir in some individuals, we observed no measurable changes in reservoir size nor lasting plasma viremia following immunization.

229 Term Placenta as a Model to Investigate Mechanisms of HIV-1 Persistence within Tissue-Resident Macrophages of Distinct Origins

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Background: Tissue-resident macrophages (TRM) exist as either embryonically-derived long-lived TRMs with the capacity for self-renewal and/or short-lived TRMs derived from infiltrating monocytes. Difficulties in accessing deep tissue limit functional studies on mechanisms that govern HIV-1 infection/persistence in distinct TRM subsets of people living with HIV (PLWH) receiving antiretroviral therapy (ART). Term placenta is a transitory organ rich in both embryonically-derived (fetal) and monocyte-derived (maternal) TRMs called Hofbauer cells (HbC) and decidual macrophages (dMF), respectively. Thus, term placentae may represent a model to parse out mechanisms of HIV-1 persistence within TRMs.

Methods: Term placentae from HIV-1-negative women were collected within 2 hours of delivery. Placenta was dissected to separate the maternal decidual tissues from the fetal villous tissues. The two compartments were mechanically and enzymatically digested to isolate leukocyte populations. A cocktail of fluorochrome-conjugated antibodies was designed for flow cytometry (BD Symphony A5) identification of myeloid and lymphocyte subsets. In parallel, a fraction of cells was exposed to transmitted founder THRO HIV-1 strain (HIVTHRO) and cultured in the presence of M-CSF for 23 days. HIV-1 integration and replication was measured by PCR and ELISA, respectively.

Results: Our preliminary results indicate that maternal decidual and fetal villous tissues exhibited similar frequencies of helper (CD4+CD3+) and cytotoxic (CD8+CD3+) T cells, NK cells (CD56+), B cells (CD19+) and myeloid cells (CD14+CD3-). Moreover, specific markers were used to distinguish HbC (FOLR2+HLA-DR-) from dMF (FOLR2-HLA-DR+). Finally, we observed more robust viral replication in maternal (peak of 33,672 pg/ml HIV-p24 at day 13 post-infection) compared to the fetal leukocytes (peak of 20,150 pg/ml HIV-1 p24 at day 17 post-infection), thus raising questions on molecular mechanisms underlying these differences.

Conclusion: The placenta represents an accessible experimental model to study mechanisms of HIV persistence in embryonically and versus monocyte-derived TRMs and explore consequences on placental homeostasis.

350 Activating transcription factors (ATFs) during HIV and SIV infection

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Activating transcription factors, ATFs, are a group of basic-region leucine zipper (bZIP) factors, which bind to cyclic AMP response element (CRE) in various promoters and play major role in the UPR (Unfolded Protein Response) process in cells. During HIV and SIV infections, cellular stress have been described associated with mitochondrial and lysosome damages that can lead to cell death (1, 2). Furthermore, with viral HIV Tat, ATF4 binds to a ATF/CREB site in the long terminal repeat (LTR) and thereby increase replication. Whereas a similarity of functions between ATF4 and its paralogue ATF5 has been described in response to cellular stress, it is unknown so far whether ATF5 may also favor HIV/SIV replication. Thus, the main objective of this study is to determine the role of ATF5 in the context of HIV/SIV infection.

We analyzed by q-PCR ATF4 and ATF5 gene expressions and the downstream effector genes both in purified human CD4 T cells and monocytes infected in vitro with HIVBaL. Viral replication and production were assessed by measuring p24 production by ELISA and viral RNA by q-PCR. Our results indicated distinct dynamics of ATF4 and ATF5 gene expression after HIV infection. Furthermore, the dynamics was different comparing CD4 T cells and monocytes. We then analyzed gene expression in lymphoid and non lymphoid organs of SIV-infected rhesus macaques. Sorted CD4 T cell subsets and monocytes were also analyzed. Interestingly, we found a difference in the expression of ATF4 and ATF5 in SIV-infected RMs in comparison to uninfected RMs. Additionnal experiments are actually performed to decipher the role of ATF4 and ATF5 in the context of viral replication.

This project may be ultimately allow to the use of ATF inhibitors as therapeutic targets to control viral replication.

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245 Characterization and Contribution of Liver Natural Killer T cells SIV Infection

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Experimental simian immunodeficiency virus (SIV) infection of rhesus macaques (RM) has provided useful models for studying viral pathogenesis and the host immune response. Thus, viral seeding in the liver has been associated with tissue inflammation and damage and comorbidities in people living with HIV. In addition to classical CD4 T cells, Natural Killer T (NKT) cells have been reported to be infected. However, despite the role of NKT cells in hepatic immunity, little is known so far about their contribution in viral seeding. Thus, we analyzed and characterized the dynamics of hepatic CD4 and NKT cells during SIV infection.

Naïve (n=3) and SIVmac251-infected RMs (20 AID50) (n=12) were sacrificed at different time post-infection. On the day of sacrifice, liver cells were recovered and stained with specific monoclonal antibodies. Cells were analyzed by flow cytometry. Cell sorting was used to isolate cell subsets to quantify the frequency of viral DNA by qPCR.

Our results demonstrated a depletion of CD4 T cells in the liver correlating to that observed in the blood. In contrary, the percentage of NKT, characterized by the expression of CXCR6 and CD161, increased in the liver of SIV-infected RMs compared to uninfected animals. Whereas CD4 T cells from the liver displayed a T cell effector memory phenotype, NKT cells displayed a central memory phenotype. We also demonstrated that hepatic NKT cells express viral DNA.

Thus, we identified in the liver a new subset of infected T cells. These two populations represent potential viral reservoirs in hepatic tissue.

358 Gasdermin E cleavage in neurons causes pyroptosis in HIV-associated neurocognitive disorders

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Background: Despite ART availability, HIV-infected persons develop HIV-associated neurocognitive disorders (HAND) that is associated with neuroinflammation and neuronal damage. As HIV does not infect neurons, the mechanisms underlying neuronal pathology are uncertain. Pyroptosis is an inflammatory form of regulated cell death that is driven by caspase cleavage of the gasdermin proteins. Gasdermin cleavage releases a cytotoxic N-terminal fragment that forms membrane pores to mediate lytic cell death.

Objective: To investigate the molecular mechanisms by which neurons die during HIV infection.

Methods: A multiplatform approach was used including 1) human neuronal cultures, 2) brain samples from persons with and without HAND, and 3) a nonhuman primate model of SIVmac251 infection. Western blotting, immunofluorescence, cytotoxicity assays, and ddPCR were applied to each experimental platform.

Results: Frontal cortex from persons with HIV-associated neurocognitive disorders (HAND) (n=6) showed increased neuronal gasdermin E (GSDME) expression and its cytotoxic cleavage product (N-GSDME), compared HIV-infected neurologically normal (n=8) and uninfected persons (n=10) (p<0.05). Human neurons exposed to the neurotoxic HIV-encoded viral protein R (Vpr) caused time-dependent GSDME cleavage and plasma membrane rupture (PMR) (p<0.05), measured by LDH release and Sytox uptake, which was impaired by siRNA suppression of GSDME. Pre-treatment of Vpr-exposed neurons with the caspase-1 inhibitor, VX-765, reduced cleavage of caspase-3 and GSDME resulting in less PMR (p<0.05). To validate these observations, we examined the frontal lobe tissues from SIV-infected rhesus macaques with (n=5) or without (n=6) SIV-associated neurological disease revealing increased expression of caspase-1, GSDME (p<0.05) and co-localization of active-caspase-3 with GSDME in cortical neurons from animals with brain disease.

Conclusions: The present study represents the first report of HIV-induced convergent cell death pathways in neurons through engaging both caspases-1 and -3, resulting in GSDME-mediated pyroptosis. Neuronal pyroptosis contributes to neuroinflammation and cognitive decline, which represents new therapeutic targets for HAND.

291 Investigating the in vivo Effects of Aspirin on the Vaginal Immune Landscape

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Introduction: Human cohort studies associate bacterial vaginosis (BV) with adverse reproductive health outcomes like genital inflammation and increased HIV risk. We developed a bacterial challenge model to recapitulate BV-associated barrier disruption, elevated cytokine production, and increased T cell activation and recruitment. Dampening of genital inflammation needs to be part of a comprehensive HIV-prevention strategy. Aspirin (ASA) is an anti-inflammatory drug that is widely available, affordable, and accepted. Human cohort studies have found that ASA modulates mucosal immunity by reducing HIV targets (CD4+CCR5+ T cells) in the FRT, but its broad impact on the vaginal mucosa is unknown. In this study, we addressed whether ASA can dampen BV-associated inflammation and epithelial barrier disruption in vivo and whether these effects can lower HIV acquisition risk.

Methods: C57BL/6 mice were intravaginally challenged with BV-associated anaerobes *Mobiluncus mulieris* or *Gardnerella vaginalis*, with daily dosing of 40mg/kg ASA. In vivo assessment of vaginal epithelial layer function using Lucifer yellow dye and immunophenotyping of vaginal T cell subsets were performed to evaluate therapeutic effects of ASA.

Results: Intravaginal challenge with *Mobiluncus mulieris* resulted in a 1.5-fold elevation of activated CD4+CXCR6+ T cell subsets and increased IL-17a, IL-21, and IL-22 expression signatures, whereas daily ASA treatment significantly reduced CXCR6+ T cell frequencies and Th17-associated cytokine expression. Interestingly, no significant alterations to CD4+CCR5+ T cell subsets or IFN γ expression were observed in the presence of inflammatory bacteria. Initial results also show little effect of ASA on epithelial barrier function. Intravaginal challenge with *Gardnerella vaginalis* revealed similar impacts on the vaginal mucosae.

Significance and Impact: Short-term ASA treatment significantly lowered key readouts of vaginal mucosal inflammation induced by BV-associated bacteria, such as the recruitment of CXCR6+ T cell subsets and pro-inflammatory cytokine production. Further assessment of ASA to lower HIV acquisition risk is warranted and currently underway.

170 Vesicular microRNA-155 promotes inflammation and amplifies HIV-1 infection

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The hallmark of HIV-1 infection is rapid and irreversible damage to the immune system. Despite efficient suppression of viral replication by antiretroviral therapy (ART), immune dysfunction persists in people living with HIV (PLWH), leading to comorbidities and vulnerability to co-infections. A strong predictor of viral rebound and immune deficiency is the enrichment of extracellular vesicles (EVs) with microRNA 155 (miR-155). In addition, miR-155 enriched EVs have been shown to enhance HIV-1 infection. MiR 155 is a multifunctional microRNA that regulates genes involved in many immune functions such as immune cell development, activation, and survival. We therefore hypothesized that miR-155 enriched EVs increase HIV 1 infection by promoting a pro-inflammatory state in infected cells.

We used two viral preparations (NL4.3BE with or without miR 155 enriched EVs) to infect human peripheral blood mononuclear cells (PBMCs). RT-qPCR was used to measure the expression of lamin B1, a structural component of the nucleus, and SOCS1 (suppressor of cytokine signaling 1), a regulator of cytokine-mediated cell activation, both targets of miR-155 in infected PBMCs. We also measured IL-15 expression in PBMCs by RT-qPCR and quantified IL-8 in the cell-free supernatant by ELISA. Finally, we infected PMBCs with or without IL-15 to determine if this cytokine had an effect on HIV-1 infection.

Lamin B1 and SOCS1 were downregulated in the presence of miR-155 enriched EVs. Infected PBMCs that received miR-155 enriched EVs overexpressed IL-8 and IL-15. We measured a higher viral load when we added IL-15 to PBMCs during the infection.

Vesicular miR-155 promotes cytokine production in immune cells. The addition of IL-15 to infected cells increased viral replication. These results suggest that the vesicular miR-155 increase HIV-1 infection and viral integration by increasing the production of inflammatory cytokines. This study highlights a potential mechanism for the role of vesicular miR 155 in viral rebound.

127 A Novel Platform for High Throughput Phenotyping of the Surface of HIV with Flow Cytometry

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While it has long been known that enveloped viruses incorporate cellular proteins as they bud through the plasma membrane of infected cells, the impact that incorporated proteins have on viral pathogenesis is often undervalued. For example, some cellular proteins such as tetherin or SERINC5 inhibit HIV infection, whereas others like ICAM-1 or LFA-1 can confer advantages to virions and enhance viral infectivity. While a selection of cellular proteins have been characterized for the roles they play in HIV pathogenesis, many remain unknown or understudied. Mass spectrometry is one technique that has been used previously to identify proteins associated with HIV. Although this technique is powerful and has identified many targets with high sensitivity, it does not determine whether the proteins are inside the virion or on the virion surface. This is an important caveat since several proteins on the HIV surface are known to affect viral adhesion and homing, thus determining protein localization within HIV can provide context as to the role the protein might play during in vivo infection. As a new method for specifically phenotyping the surface of HIV virions, we adapted a commercially available flow cytometry-based cell surface screening kit for use in staining HIV particles. Using this method, we screened for over 300 antigens on the surface of 4 different HIV isolates propagated in primary cells. The screen unveiled over 30 novel proteins in the envelope which were widely reproducible across all viral strains tested and, to our knowledge, have not been previously described in the literature. Bioinformatics analyses show that these novel candidates play roles in adhesion, cell activation and proliferation. Importantly, the screen detected many proteins that are already known to be incorporated in HIV while also yielding many undetectable proteins, which collectively provided a strong validation for protein specificity with this technique.

125 Elucidating the Interplay between HIV RNA Packaging and Nonsense Mediated mRNA Decay

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Human Immunodeficiency Virus (HIV) persists as a global threat with over 38 million people infected. While much is known about HIV viral genomic RNA (vgRNA) packaging, vgRNA's ability to evade the Nonsense Mediated mRNA Decay (NMD) pathway is poorly understood. Typically, NMD functions to degrade "faulty" transcripts that contain Premature Termination Codons (PTCs). Recent studies have demonstrated NMD protein UPF1 robustly and nonspecifically binds RNAs and translating ribosomes are capable of displacing UPF1. Despite the HIV RNA genome containing multiple PTCs, it is not degraded and instead is preferentially packaged into virions. The Arts laboratory has recently identified a critical packaging element termed the Genomic RNA Packaging Enhancer (GRPE) that overlaps the ribosomal frameshifting site needed for translation of the Gag-Pol polyprotein. It is hypothesized the GRPE modulates translational readthrough of the frameshift sequence allowing for UPF1 displacement and subsequent NMD evasion. We hypothesize transcripts undergoing Gag-Pol translation designates these mRNAs as genomic RNA for progeny virions. To elucidate the GRPEs involvement in packaging and NMD evasion, a modified HIV backbone with luciferase reporters was created to quantitatively measure frameshifting frequency. TaqMan qPCR will also be used to determine RNA stability and decay over time. Preliminary experiments place our constructs frameshifting frequency similar to literature values. Mutant frameshifting sequences will be created to evaluate their effects on frameshifting and RNA decay. Wildtype frameshifting frequencies will be calculated as well as in the presence of NMD inhibitors and siRNA knockdowns of NMD proteins. Understanding the mechanism behind NMD evasion could lead to the development of small molecule inhibitors to aid in antiretroviral therapy. In addition, lentiviral gene transduction systems do not harbour a GRPE and incorporation resulted in a >4-fold increase in transduction efficiency, increasing the plausibility of future clinical use.

166 Nef Small Molecule Inhibitors as Adjuvants for an HIV-1 Cure

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HIV-1 is able to evade immune recognition through downregulation of major histocompatibility complex class I (MHC-I) from HIV-infected cells by using the viral protein Nef to interact with host Src family kinases (SFKs). MHC-I downregulation by Nef allows infected cells to evade immune clearance by cytotoxic T lymphocytes (CTLs). Inhibition of the Nef:SFK interaction and subsequent restoration of cell surface MHC-I expression enhances anti-HIV CTL activity. Indeed, Nef:SFK inhibitors have been investigated as adjuvants within an HIV-1 curative strategy. Previously, we developed a 2nd generation Nef:SFK inhibitor that restored surface MHC-I in vitro but displayed degradation in an in vivo murine model. We sought to improve upon the 2nd generation Nef:SFK inhibitor by developing analogs with improved in vivo activity and stability. Using organic synthesis, we have developed four 3rd generation Nef:SFK inhibitors hypothesized to have improved in vivo stability compared to their 2nd generation parental compound. We tested these inhibitors in vitro to characterize their cytotoxicity and efficacy in inhibiting Nef-induced MHC-I downregulation. Stability will be assessed in human serum by mass spectrometry and compared to progenitor compounds. Cells expressing Nef and a SFK were treated with the inhibitors for 18 hours to assess their inhibition of the Nef:SFK interaction using a luciferase-based assay. Primary human CD4+ T cells cultured with a range of concentrations of inhibitors for 24 hours showed using a luminescent assay no significant decrease in cell viability. HIV-1 NL4.3-infected primary human CD4+ T cells showed cell surface MHC-I restoration after treatment with 100 µM of H3-1A, H3-1N and H3-1T. The results of these experiments will provide us with information needed to proceed with in vivo testing and ultimately progress us closer to a potential adjuvant for anti-HIV-1 cure strategies.

361 Productive HIV-1 infection in microglia under cART may drive neuroinflammation

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One of the major complications of human immunodeficiency virus type-1 (HIV-1) infection in the post-antiretroviral therapy era is the development of neurological dysfunctions known as HIV-1-associated neurological disorders (HAND), which could affect up to 50% of people living with HIV.

Microglia are long-lived cells, which may allow them to act as a viral reservoir of active and latent infections. Given that dysregulated microglial functions have emerged as possible causes for various CNS disorders, we postulated that HIV-induced microglial inflammation is an important mediator of HAND.

We used human primary fetal microglia (HPFM) to study the consequences of chronic HIV-1 infection on neuroinflammation. We observed a sustained viral production under antiretroviral treatment in HPFM, correlated with inflammatory responses characterized by an increased CXCL10 secretion, and a potent LPS-induced IL-1 β secretion combined with a reduced IL-10 response. In addition, RNA expression for some inflammation related genes was deregulated in infected cells. The TREM-2-CD33 axis was also deregulated, with a significantly reduced TREM-2 expression.

We further analyzed the mechanisms triggering IL-1 β secretion. We measured a very modest basal secretion but a robust LPS-induced secretion only in HIV-infected cells, suggesting that HIV possess weak priming but potent signal 2 inducing abilities. HIV-induced IL-1 β secretion appears to be only partially dependent on NLRP3 and caspase 1. Preliminary data suggest that secretion mechanisms involve glycogen synthase kinase-3 β mediated autophagy inhibition. Our results also suggest that the inflammatory response is independent on Nef and gp120 but at least partially dependent on Vpr.

Finally, our results evoke a microglia-astrocyte interplay whereby astrocyte derived soluble factors increase both HIV-1 viral production and IL-1 β secretion, and conversely infected microglia conditioned medium induce a proinflammatory phenotype in astrocytes.

In conclusion our data strongly suggest that HIV productive infection in microglia is responsible to some extent of the neuroinflammation leading to HAND.

364 Variable upregulation of TIM-3 by Nef primary isolates, a potential disease-enhancing strategy in HIV-1 chronic infection

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The expression of T-cell immunoglobulin and mucin 3 (TIM-3) in chronic HIV-1 infection is associated with ongoing viral replication, CD4 T-cell depletion, loss of antiviral CD8 T cell activities and progression to AIDS. It was shown recently that the HIV-1 Nef protein upregulates TIM-3 on the surface of infected cells; however, the ability of natural nef isolates to modulate TIM-3 remains to be investigated.

We assessed the ability of 131 Nef clones to upregulate TIM-3. The nef coding region was amplified from plasma HIV RNA isolated from ART-naïve individuals chronically living with HIV-1 subtype A, including 102 chronic progressors (CP) and 29 long-term survivors (LTS) and cloned. The ability of one intact, phylogenetically validated Nef clone per individual to upregulate surface TIM-3 was quantified by flow cytometry. Results were normalized to a reference clone (Nef, SF2 strain).

Our results demonstrated that participant-derived Nef clones display variable abilities to upregulate TIM-3, with a median [IQR] of 1.17 [1.06-1.29]. We found that the ability of LTS clones to upregulate TIM-3 was significantly lower (1.11 [1.01-1.24]) compared to CP (1.19 [1.06-1.31]); ($p=0.01$). TIM-3 upregulation activity correlated negatively with CD4 T-cell count ($\rho = -0.38$, $p < 0.0001$) and positively with pVL ($\rho = 0.26$, $p = 0.008$). In addition, TIM-3 upregulation function strongly correlated with CD4 downregulation function by Nef clones ($\rho = 0.61$, $p < 0.0001$), indicating that these activities may be mechanistically linked. Furthermore, TIM-3 upregulation function strongly correlated with SERINC3 ($\rho = 0.30$, $p = 0.004$) and SERINC5 ($\rho = 0.52$, $p < 0.0001$) downregulation functions in the CP clones. Taken together, these findings indicate that TIM-3 upregulation activity varies among HIV-1 nef isolates and that higher ability to upregulate TIM-3 may contribute to more rapid decline of CD4 T-cell counts, enhanced viral pathogenesis and a faster disease progression.

131 Screening viral host dependency factors and human loss of function polymorphisms to identify broad-acting host directed antiviral targets against HIV and other viruses

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Introduction: Viruses require host cell components to establish and maintain infection. Multiple genome-wide knockout/knockdown studies of HIV and other viruses have identified sets of host dependency factors (HDFs) that are essential for viral replication. Although these factors may be candidates for development of novel antivirals, defining targets that do not lead to drug toxicity is challenging. One opportunity to identify good targets is to define which HDFs harbour homozygous loss of function (LoFs) polymorphisms in healthy people.

Methods: We performed a literature review to identify genome-wide studies of viral HDFs for multiple viruses. We identified 27 studies covering HIV, Hepatitis C, Hepatitis D, SARS-CoV-2, SARS-CoV, Ebola, Influenza A, Zika, Dengue and West Nile virus. These HDFs were intersected with the genome aggregation database (gnomAD), a resource containing >125,000 human exome and >15,000 whole-genome sequences, to identify HDFs that harbour homozygous LoFs in healthy individuals.

Results: We identified 2898 unique HDFs across all viruses. 326 of these were implicated in more than 1 virus and 2 HDFs were implicated in 5 viruses. Using gnomAD data, we found that HDFs implicated in more than one virus tend to be highly intolerant to a LoF mutation suggesting they are highly conserved within the host. Six candidate HDFs that intersect with HIV were narrowed down for CRISPR gene editing, as potential broad-acting drug targets (Table 1).

Conclusion: In silico and in vitro screening of HDFs harbouring homozygous LoFs in healthy people may aid in the development of novel broad acting antivirals.

Supporting Document

Screening viral host dependency factors and human loss of function polymorphisms to identify broad-acting host directed antiviral targets against HIV and other viruses

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Conclusion: *In silico* and *in vitro* screening of HDFs harbouring homozygous LoFs in healthy people may aid in the development of novel broad acting antivirals.

Supporting Document

Table 1: Six candidate HDFs that intersect with HIV for future CRISPR knockout testing with viral infection assays, to verify HDF non-essentiality for the host and to confirm a reduction in viral infection

Top HIV HDF candidates	Viruses sharing the HDF	Loss of function variant from gnomAD	Type of loss of function mutation	Number of Homozygous Loss of function in control individuals
RABEPK	HIV + Hepatitis C	p.Pro135HisfsTer44	Frameshift	3
KRBA2	HIV + Ebola	p.Arg183Ter	Stop gained	1
PI4KA	HIV + Hepatitis C	p.Leu1952CysfsTer45	Frameshift	1
MYEF2	HIV + Hepatitis D	c.1138+1G>T	Splice donor	1
USP6	HIV + West Nile	p.Arg522LysfsTer12	Frameshift	5
ERN2	HIV + Influenza A	p.Cys694TrpfsTer8	Frameshift	2

241 Development and Evaluation of an Ebola Virus Glycoprotein Mucin-Like Domain Replacement System as a New DC-Targeting Vaccine Approach Against HIV-1

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Background and Objective: Development of an effective vaccine against HIV infection remains a global priority. Dendritic cell (DC)-based HIV vaccine and targeting the important regions of HIV-1 envelope (Env) are very promising at optimizing HIV-specific immune responses. The aim of this study is to develop an Ebola virus glycoprotein (EboGP) mucin-like domain (MLD) replacement system as a new DC-targeting vaccine approach against HIV-1.

Methods: We have developed an EboGP-based chimeric protein technology by replacing the MLD of EboGP with HIV C2-V3-C3 (134 aa) (EboGP Δ M-V3) or C2-V3-C3-V4-C4-V5-C5 (243 aa) (EboGP Δ M-V3-5) polypeptides. Virus-like particles (VLPs) were produced in 293T cells transfected with EboGP Δ M-V3, or EboGP Δ M-V3-5 expressing plasmids and packaging plasmid (Δ 8.2). Furthermore, we have produced a recombinant vesicular stomatitis virus (rVSV) co-expressing HIVenv/EboGP Δ M-V3 chimeric protein. Above VLPs or rVSV were used to immunize BALB/c mice and at 35 days post immunization, the sera, vaginal fluid and spleens from immunized mice were collected and measured for anti-HIVgp120 humeral or cellular responses.

Results: The results showed that both EbGP Δ M-V3 and EbGP Δ M-V3-5 incorporated in the HIV VLPs maintained the high efficiency of EboGP-mediated viral entry into human macrophages and dendritic cells (DCs). Animal studies revealed that immunization with VLPs containing the above chimeric proteins, especially EbGP Δ M-V3, induced significantly stronger anti-HIV antibodies than HIV gp120 alone in mouse serum and vaginal fluid. Moreover, the splenocytes isolated from mice immunized with EbGP Δ M-V3 VLPs produced significantly high levels of IFN- γ , IL-2, IL-4, IL-5, and MIP-1a. Additionally, we have demonstrated that rVSV-HIVenv/EboGP Δ M-V3 elicited robust anti-HIV antibody responses that strongly cross-reacted with HIV gp120 recombinant proteins derived from clades B (IIIB), C (C.1086D7), and AE (AE.A244D11).

Conclusion: Our study demonstrated the feasibility of this novel DC-targeting vaccine approach in delivering various large heterologous polypeptides of HIV-1 and/or other emergent infections to DCs for eliciting efficient immune responses against disease.

87 Effect of HIV Infection and Smoking on Pulmonary Mucosal CD8 T-Cell Dynamics during long-term antiretroviral therapy

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Background: Despite the success of antiretroviral therapy (ART), people living with HIV (PLWH) suffer from a high burden of infectious and non-infectious pulmonary diseases, suggesting that their lung immunity is not fully restored. Cytotoxic CD8 T-cells are essential in controlling chronic viral infections. However, excessive CD8 T-cell activation during HIV infection can contribute to lung mucosal tissue damage. Furthermore, tobacco smoking is part of the lifestyle of many PLWH that changes the lung environment, promoting pulmonary inflammation. Herein, we first validated CD8 tissue-resident memory (Trm) and non-Trm markers from animal models in the human lung and used them to characterize the effects of HIV and smoking on pulmonary cytotoxic CD8 T-cells.

Methods: Bronchoalveolar lavage (BAL) fluid and matched blood were obtained from asymptomatic ART-treated PLWH (smokers: n=4; non-smokers: n=7) and seronegative controls (smokers: n=4; non-smokers: n=8). Lymphocytes were isolated and CD8 subsets were characterized by multiparametric flow cytometry.

Results: Human lung Trm consisted of primarily CD69+ cell subsets expressing CD103 and/or CD49a. CD8Trm were largely CXCR6+CXCR3+, while CD8 non-Trm were largely CXCR6-CXCR3+. Levels of CX3CR1 and KLRG1 were highest in CD8 Non-Trm. Most airway CD8 T-cells produced GzmA/B but little Perforin. Both smoking and HIV infection were independently associated with a significant increase in total CD8 T-cell frequencies in BAL. HIV and smoking were associated with increased expression of Perforin and GzmB respectively. GzmA+ and GzmB+ CD8 T-cells showed higher expression of CD103 and CXCR6 in smokers and higher frequencies of CX3CR1+KLRG1+ and Ki67+ cells in PLWH.

Conclusion: Smoking and HIV could promote cytotoxic CD8 T-cell retention in small airways through different mechanisms. While smoking likely increases recruitment and retention of CD8Trm via CXCR6 and CD103 respectively, HIV is associated with CD8 non-Trm recruitment via CX3CR1 from the periphery, which could contribute to increased tissue damage in PLWH despite ART.

59 Immunotherapeutics targeting Immune Checkpoints PD-1 and LAG-3 on Invariant Natural Killer T cells: Implications for HIV Treatment

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Background

Invariant Natural Killer T (iNKT) cells are innate lymphocytes critical in combatting viral infection. Our lab showed in HIV infection, expression of lymphocyte-activation-gene-3 (LAG-3), an inhibitory checkpoint marker, is increased on iNKT cells and correlates with decreased function. Another checkpoint, PD-1, also correlates with decreased function. LAG-3 and PD-1 expression and their relationship to iNKT cellular function is not well characterized, and we hypothesize that blocking PD-1 alone, or in conjunction with LAG-3 via immunotherapeutic blockades, will enhance iNKT function.

Methods

Utilizing peripheral blood mononuclear cells from HIV-uninfected donors (n=4), iNKT expression of LAG-3 and PD-1 and cytokine production was assessed via a multi-day (2, 4, 7, 10 day) in vitro stimulation assay. Efficacy of anti-LAG-3 and anti-PD-1 antibody blockades were assessed via a 10-day proliferation assay (n=9).

Results

LAG-3 and PD-1 proportion and median fluorescence intensity (MFI) peaked at Day 4 and 7, respectively (LAG-3: 88.5%, 6163.8 MFI; PD-1: 80.5%, 7731.8 MFI), with a steep decrease by Day 10, when iNKT proliferation peaked, representing a relationship between LAG-3 and PD-1 expression and iNKT cell activation. Single PD-1 and dual PD-1+LAG-3 blockades showed enhanced proliferation with means of 6 and 6.29 log₂ fold-change compared to the stimulation without blockade control (3.07 log₂ fold-change) (p=0.0005), with follow-up analysis showing the dual PD-1+LAG3 blockade system significantly enhanced iNKT cell proliferative capacity compared to the single PD-1 blockade (p=0.013).

Significance

This study is the first to report iNKT cell LAG-3 and PD-1 expression kinetics and provide proof-of-concept for LAG-3 and PD-1 as immunotherapeutic targets enhancing iNKT proliferative ability. This blockade system will be applied in vitro to samples from people living with HIV to assess if HIV-mediated dysregulation of iNKT function can be reversed, to ameliorate immune responses to various opportunistic infections and boost viral control in a functional HIV cure approach.

Supporting Document



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The following classes are not officially considered complete for transcript purposes. Additional information is available by selecting hyperlinked data.

Doctoral Re-registration - GRAD 8020 - A01

Associated Term	Fall 2022	Credits	0.000
CRN	10232	Grade Mode	Not Graded
Status	Registered Web Jul 22, 2022	Course Level	Graduate
Schedule Type	Graduate Studies	Midterm Grade	
Instructional Method	N/A	Grade Detail	
Campus	Main (Fort Garry & Bannatyne)	Associated Instructor	
		Course URL	

Doctoral Re-registration - GRAD 8020 - A01

Associated Term	Winter 2023	Credits	0.000
CRN	50198	Grade Mode	Not Graded
Status	Registered Web Jul 22, 2022	Course Level	Graduate
Schedule Type	Graduate Studies	Midterm Grade	
Instructional Method	N/A	Grade Detail	
Campus	Main (Fort Garry & Bannatyne)	Associated Instructor	
		Course URL	



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Winter 2023	CRN	Course	Course Title	Credits Level	Status	Grade Mode	Final Grade	Grade	Comment	Grade Change	Reason
	50198	GRAD 8020	Doctoral Re-registration	0.000	Graduate						N
Fall 2022											
	10232	GRAD 8020	Doctoral Re-registration	0.000	Graduate						N

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367 Investigating the Role of Lectins in Lymphocyte Activation Gene-3 (LAG3) Function and T-cell activity During Chronic HIV Infection

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Background: Immune cells, like T-cells, are modulated by several checkpoints to prevent unrestrained immune activity. Upon chronic HIV infection, these regulatory “brakes” of immune cells are co-opted to evade host-immunity. This T-cell exhaustion is due to overexpression of inhibitory immune-checkpoints (IC) that impede effector cytokine responses. As LAG3, an IC, is extensively glycosylated, the lectins, Galectin-3 and liver sinusoidal endothelial cell lectin (LSEctin), are thought to bind glycans on LAG3, engaging LAG3’s function, and thereby inhibit T-cell activation. Hence, thorough appreciation of LAG3 function, activity, regulation entails understanding its interaction with potential ligands. Here, we clarify the role of lectins, LSEctin and Galectin-3, in regulating LAG3-mediated T-cell suppression during chronic HIV infection.

Methods: We developed LAG3+ and LAG3- expressing Jurkats, a CD4+ T-cell line. A ligand-binding assay using N-glycosidase (rids glycosylation sites) will confirm the necessity of LAG3 glycosylation and test lectin-binding efficiency by comparing percent and median fluorescence intensity (MFI) of LAG3+ and LAG3- cells bound to either LSEctin/Galectin-3 by flow cytometry. Moreover, IL-2 and IFN- γ levels within treated cells will assess differential inhibitory strengths for ligands.

Results: Percent and MFI of LSEctin/Galectin-3 binding is greater on LAG3+ cells (LSEctin: 60.4%,1187 MFI; Galectin-3: 84.1%,1345 MFI) than glycosidase-treated counterparts/LAG3- cells (LSEctin: 5.18%,838 MFI; Galectin-3: 13.0%,914 MFI), demonstrating that lectin-binding requires LAG3-glycosylation. With lectin-treatment, percent of IL-2 and IFN γ production is lower (greater T-cell inhibition) in LAG3+ (23.5%;24.0%) than LAG3- cells (71.5%;84.1%) signifying that lectin-binding induces inhibitory LAG3-activity.

Significance: The created in vitro-model demonstrates lectin-binding as an overlooked mechanism instructing LAG3-activity and T-cell immunosuppression during HIV. Understanding lectin interaction in LAG3-engagement would advance optimal lectin/LAG3 antibody blockade use in relieving T-cell suppression and shock and kill alongside current immunotherapy. In deciphering and removing the “LAG3 brakes” while reversing cellular exhaustion, we can reinvigorate host-immunity and inform a functional cure for HIV/AIDS.

76 Mitochondrial HSP60 ensures optimal energy-dependent immunity in antiviral T-cells

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Introduction: Immunometabolism, the crosstalk between immunology and metabolism, has provided new promising therapeutic venues for treating HIV-1. Our laboratory has shown that antiviral T-cell functions in PLWH (people living with HIV) were mediated through autophagy-dependent energy production and could be a target to boost protective immunity in these individuals. Furthermore, Autophagy provides different sources of nutrients (lipids and amino acids for CD8 and CD4 T-cells, respectively) to ensure optimal energy production. However, it remains critical to have a complete picture of how antiviral T-cells use nutrients and metabolic enzymes. Here, we aimed to assess the role of mitochondrial HSP60 in memory T-cell energy production and function.

Goals and Methods: We assessed the expression levels and mitochondrial localization of HSP60 within T-cells following their cellular activation by multiparametric and imaging Flow Cytometry. Blockade of HSP60 within memory T-cells by gene silencing was followed by evaluating expression levels of metabolic enzymes and mitochondrial energy production using western blotting and Seahorse metabolic analyzer, respectively. Finally, evaluating the effector function of T-cells after HSP60 blockade by multiparametric Flow Cytometry.

Results: The results show an increase in mitochondrial HSP60 expression in an HSF-1-dependent manner within memory T cells following cell activation. We found that mitochondrial HSP60 was critical to ensure optimal energy production by stabilizing the expression of several enzymes and nutrient transporters, which were involved in lipid and glutamine catabolism. Finally, our data vouched for our ability to rescue the energy-dependent antiviral immunity of T-cells when HSP60 expression is impaired with alpha-ketoglutarate supplementation.

Conclusion: Overall, our study demonstrates a new metabolic mechanism involving the vital role of HSP60 in providing the energy in Memory T-cells against Viruses which could be a novel therapeutic tool for PLWH. In addition, we show that alpha-ketoglutarate supplementation may be beneficial for boosting T-cell immunity against viruses including HIV-1.

114 The Acyl-CoA-Binding Protein influences T-cell function in people living with HIV

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Background:

Autophagy, a cytosolic-structure degradation pathway producing energy, allows efficient anti-HIV T-cell responses through the production of IL21 in CD4 T-cells. Intracellular acyl-CoA-binding protein (ACBP) favors autophagy whereas secreted extracellular ACBP inhibits autophagy. Herein, we assessed intra- and extracellular ACBP levels in people living with HIV (PLWH) under antiretroviral therapy (ART).

Methods:

Plasma ACBP and cytokine levels were assessed by ELISA in 60 long-term (median 14.7 years) ART-treated PLWH and 30 uninfected controls. Intracellular ACBP levels were assessed by flow cytometry in PBMC. Metabolomic analyses were performed on serum samples by LC-MS.

Results:

ACBP levels were higher in ART-treated PLWH compared to controls (medians 127.5 vs 78.1 ng/mL, $p=0.03$), independently of age, sex and weight. Intracellular ACBP was detected in all leukocytes in both groups. Plasma ACBP levels correlated negatively with its intracellular levels in T-cells ($r=-0.9$, $p=0.02$) and monocytes ($r=-0.9$, $p=0.08$) suggesting that low plasma levels of ACBP are associated with cellular retention of the protein.

In ART-treated PLWH, plasma ACBP levels were neither associated with CD4 nor CD8 T-cell counts, but correlated with levels of growth factors (EGF, G-CSF, GRO), pro-inflammatory cytokines (IFN α 2, IFN γ , IL1 β) and homeostatic factors (IL7 and IL15) ($r>0.3$, $p<0.05$ for all comparisons). Plasma ACBP levels were inversely associated with plasma IL21 levels ($r=-0.54$, $p<0.01$). PLWH with plasma ACBP levels above the median had two-fold higher levels of glutamic acid ($p=0.02$), a higher glutamic acid/glutamine ratio ($p=0.03$) and tended to have higher levels of α -ketoglutarate (1.5-fold difference, $p=0.09$) in their serum.

Conclusion:

Higher plasma levels of ACBP in ART-treated PLWH were associated with inflammation, oxidative stress, and markers of T cell dysfunction. Our findings indicate that circulating ACBP might weaken anti-HIV T cell functions in an IL21 dependent manner. The ACBP pathway might constitute a target for improving anti-HIV T-cell responses.

313 The development of an HIV-1 Transmitted/Founder virus prophylactic vaccine

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A significant roadblock to the production of an HIV-1 vaccine has been the inability to elicit cross-clade neutralizing antibody responses that can protect against the exceptionally high level of HIV-1 genetic diversity circulating in human populations. However, in targeting transmitted/founder (T/F) viruses, which are HIV-1 variants with high transmission fitness, we aim to exploit their unique phenotypic properties for anti-HIV-1 prophylactic vaccine development. By eliciting antibodies capable of targeting and neutralizing T/F viruses before infection occurs, we hypothesize that we will generate enhanced vaccine protection compared to a vaccine designed to target the entire quasi-species. To that end, we used a reverse vaccinology approach, which involved the screening of thousands of HIV-1 subtype B sequences within the Los Alamos database, to identify viruses which exhibit characteristics for enhanced transmission fitness. We aim to use these viral sequences in combination with our established virus-like-particle (VLP) vaccine platform to deliver these T/F envelope (Env) glycoproteins as vaccine immunogens. Our VLPs are genome-less assemblies of HIV structural proteins which are morphologically indistinguishable from HIV-1. We have already published data showing our VLP immunogens possess in-vitro immune priming and recall capabilities. Furthermore, to complement this approach we have structurally engineered mutations in the glycan shield of our Env immunogens to elicit a targeted humoral immune response against sites known to be highly vulnerable to neutralizing antibody mediated attack i.e., the CD4 binding site (CD4bs). These resulting viruses have been shown to exhibit increased vulnerability to neutralization by a variety of known broadly neutralizing antibodies (BnAbs) and changes in viral kinetics. We aim to screen the antigenicity of our immunogens using a murine B cell line before proceeding to animal studies. By generating cross-clade neutralizing antibodies through vaccination, this research will have overcome some of the most significant roadblocks to HIV vaccine development.

217 The Influence of Microbiota-derived Short chain fatty acids on the Integrity and inflammation of the vaginal epithelium and HIV-1 Leakage.

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¹McMaster University

Background

Dysbiotic vaginal microbiota (VMB) in the female genital tract is associated with four-fold higher HIV-1 acquisition risk, while the eubiotic VMB is associated with protection. Dysbiotic VMB has been associated with significant changes in the vaginal metabolome and short chain fatty acids (SCFA) like lactic acid are known to have protective effect against HIV-1. Here, we examined the effect of a variety of SCFA found in vaginal metabolome on vaginal epithelial barrier and inflammation to help explain why women with dysbiotic VMB are more susceptible to HIV.

Methods

Clinically reported SCFA profiles of patients with BV and individuals with optimal VMB were used to create mixtures of SCFAs in concentrations that simulated dysbiotic and eubiotic conditions. These combinations of SCFA were tested on vaginal epithelial cells (VECs) grown in air liquid interface (ALI) cultures in transwells. Effect of exposure to the dysbiotic and eubiotic combinations of SCFA were examine for effect on epithelial barrier function, inflammation and HIV-1 leakage.

Results

An increase in transepithelial resistance (TER) and a decrease in FITC-dextran leakage was observed in response to treatment with eubiotic SCFA concentrations, resulting in enhancement of the integrity of the vaginal epithelial barrier and an increase in ZO-1 and desmoglein expression. VECs treated with dysbiotic SCFAs resulted in a decrease in the integrity of the vaginal epithelial barrier with an associated inflammatory cytokine response and activation of NFκB pathway. Exposing VECs to eubiotic SCFAs abrogated HIV-1 mediated decrease in TER and almost no HIV-1 leakage was observed across VECs grown in ALI conditions. In contrast, HIV-1 leakage into basolateral compartments was significantly increased when cells were treated with dysbiotic SCFAs followed by HIV-1 exposure.

Conclusion

These findings indicate the possible role of bacterial SCFA in increased in HIV-1 susceptibility seen in dysbiotic conditions and provide potential strategies for prophylaxis.

362 Cellular ATLAS of the lymphoid populations for *Macaca mulata* by transcriptomic analyses.

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Introduction :

Studies of the immune system show differences in the composition and proportion of lymphocytes in the peripheral blood and lymphoid organs. During an HIV infection, immunological perturbations occur, including transcriptomic changes in immune cells. Understanding these changes in different organs is necessary to develop personalized treatment. We chose to study SIVmac251 infection in *Macaca mulata*, a relevant model for AIDS studies.

Objectives:

We want to characterize specific or common transcriptomic signatures of lymphoid populations in different organs and create an ATLAS with our dataset and associated bioinformatics analyses.

Methods :

We have uninfected, infected macaques (SIVmac251) and infected individuals who received early antiretroviral therapy (ART). Our laboratory has a cell library and lymph library of these different individuals. Samples include lymphoid tissues such as the spleen, the mesenteric and axillary/inguinal lymph nodes, and the blood. Non-lymphoid tissues such as the liver, lung, or brain are also available. With these samples, the cell sorting by flow cytometry allows us to target specific cell types and subtypes of these cells. By Bulk RNAseq analysis, we obtained the specific transcriptome of these cells. To interpret these results, we have developed a pipeline allowing quality control of reads, alignment with the reference genome, and quantification. For differential expression analysis, we used the DESeq2 package. Furthermore, these approaches are complemented by unsupervised single-cell analysis techniques.

Results:

We have already established transcriptomes for the spleen and mesenteric lymph nodes (for myeloid cells, B and T cells). Among the latter, we have already studied some subpopulations like CD4, CD8, and Tfh for T cells.

Conclusion:

This ATLAS will allow us to create a map of transcriptomic expressions for immune cells in different lymphoid organs under multiple conditions.

180 Duration of Antiretroviral Therapy Influenced the Frequency of NKG2C+CD57+ Adaptive NK cells in Cytomegalovirus Co-infected People Living with HIV

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Background: Of the People Living with HIV (PLWH) enrolled in the Canadian HIV and Aging Cohort Study (CHACS), 94% were co-infected with cytomegalovirus (CMV), which drives the expansion of NKG2C+CD57+ adaptive-like Natural Killer (adapNK) cells. Frequencies of adapNK cells did not differ in CMV+PLWH and CMV+HIV- persons enrolled in the CHACS (groups 1/2) in contrast to reports by others where the frequency of adapNK cells was higher in CMV+PLWH than in CMV+HIV- persons. We questioned whether the discrepancy between our results and those of others was due to differences in age or time on-ART

Methods: We evaluated the frequency of CD3-CD14-CD19-CD56dimNKG2C+CD57+ adapNK cells in 3 groups of CMV+PLWH and 2 groups of CMV+HIV- persons. Group 3/4 were Primary infection (PI) cohort participants.

Groups 1

CMV+PLWH

Older 2

CMV+HIV-

Older 3

CMV+PLWH

Younger 4

CMV+PLWH

Older 5

CMV+HIV-

Younger

Age 55.7(51.1,59.3) 57.7(50.8,62.4) 33.2(30.8,38.2)

54.1(52.9,60.1) 31.5(25.2,36.6)

ART duration Long

None Short Short None

Years on-ART

16.0(8.6,19.1) 1.4(1.0, 2.2) 1.94(1.8,2.0)

% adapNK cells 15.9(5.8,39.4) 13.7(3.7,33.9) 39.8(18.8,58.2) 27.5(18.8,52.85) 15.6(2.5,33.3)

Results: AdapNK cell frequency was similar in groups 1 and 2, group. Group 3 had a higher frequency of adapNK cells than group 5 ($p=0.003$, Mann-Whitney). Groups 1 and 4 were of similar age and significantly older than group 3. Groups 3 and 4 were on-ART for a similar duration that was of shorter than group 1. The frequency of adapNK cells was similar in groups 3 and 4 and higher than in group 1. Time on-ART was negatively correlated with adapNK cell frequency

Conclusion: The absence of significant differences in the frequency of adapNK cells in older CMV+PLWH and CMV+HIV individuals (groups 1 and 2) and in groups 3 and 4 of different ages but similar time on-ART was due a time on-ART dependent decline in the frequency of these cells in group 1

Supporting Document

Table 1. Study Participants

Groups	1 CMV ⁺ PLWH Older	2 CMV ⁺ HIV ⁻ Older	3 CMV ⁺ PLWH Younger	4 CMV ⁺ PLWH Older	5 CMV ⁺ HIV ⁻ Younger
Age	55.7(51.1,59.3)	57.7(50.8,62.4)	33.2(30.8,38.2)	54.1(52.9,60.1)	31.5(25.2,36.6)
ART duration	Long	None	Short	Short	None
Years on-ART	16.0(8.6,19.1)		1.4(1.0, 2.2)	1.94(1.8,2.0)	
% adapNK cells	15.9(5.8,39.4)	13.7(3.7,33.9)	39.8(18.8,58.2)	27.5(18.8,52.85)	15.6(2.5,33.3)

40 The Relationship Between Visceral Adiposity and Nonalcoholic fatty liver disease Diagnosed by Controlled Attenuation Parameter in People with HIV: A Pilot Study

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Background. People with HIV (PWH) face high rates of metabolic dysfunction and non-alcoholic fatty liver disease (NAFLD). Visceral adipose tissue (VAT) is a hormonally active tissue associated with ectopic fat accumulation in the liver. We investigated NAFLD diagnosed by controlled attenuation parameter (CAP) associated to Fibro scan as a marker of visceral adiposity in PWH.

Methods. We conducted a pilot study of HIV mono-infected patients undergoing metabolic characterization and paired CAP with dual-energy X-ray absorptiometry (DEXA) scan. NAFLD was defined as CAP ≥ 285 dB/m, in absence of alcohol abuse. Excess visceral adiposity was defined as VAT > 1.32 Kg. Pairwise correlation, area under the curve (AUC) and logistic regression analysis were employed to study the association between VAT and CAP.

Results. 30 patients (90% male, mean age 48.5, mean BMI 29.9, mean waist circumference 100.9, 50% with NAFLD) were included. CAP was higher in PWH with excess VAT (319+52 vs. 213+52 dB/m, $p < 0.001$). CAP positively correlated with all measurements of visceral fat by DEXA, including VAT ($r = 0.650$, $p < 0.001$), VAT/body weight ratio ($r = 0.565$, $p = 0.001$) and fat mass ($r = 0.390$, $p = 0.033$). After adjusting for duration of HIV infection (aOR 1.01 per year, 95% CI 0.91-1.12), BMI (aOR 1.77, 95% CI 0.74-4.23) and waist circumference (aOR 0.91 per cm, 95% CI 0.68-1.21), CAP remained the only factor associated with excess VAT (aOR 1.05 per dB/m, 95% CI 1.01-1.10; $p = 0.036$). The AUC analysis determined CAP had excellent performance to diagnose excess VAT (AUC 0.92, 95% CI 0.81-1.00), higher than BMI (AUC 0.83, 95% CI 0.68-0.99) and waist circumference (AUC 0.81, 95% CI 0.65-0.97). The optimized CAP cut-off to diagnose excess VAT was 266 dB/m, with a sensitivity of 88.3% and a specificity of 84.6%.

Conclusions.

NAFLD diagnosed by CAP is associated with VAT in PWH independent of anthropometric measurements. CAP could be utilized to diagnose visceral obesity in PWH.

64 Assessing the Measurement Properties of the Episodic Disability Questionnaire (EDQ) with adults living with HIV in Canada, the United States, Ireland and the United Kingdom

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PURPOSE: The Episodic Disability Questionnaire (EDQ) is a patient-reported outcome measure that assesses the presence, severity and episodic nature of disability across six domains: physical, cognitive, mental-emotional health challenges, difficulties with day-to-day activities, uncertainty about future health, and challenges to social inclusion. We assessed the measurement properties of the EDQ among adults living with HIV.

METHODS: We conducted a measurement study with adults living with HIV in five clinical sites in Canada, United Kingdom, Ireland, and United States. We electronically administered the EDQ followed by three reference measures (World Health Organization Disability Assessment Schedule, Patient Health Questionnaire-8; Social Support Scale) and a demographic questionnaire. We administered the EDQ again 1 week later. We assessed internal consistency reliability (Cronbach's alpha;>0.8 acceptable) and test-retest reliability (Intra Class Correlation Coefficient (ICC)>0.8 acceptable). We estimated required change in EDQ domain scores to be 95% certain that a change was not due to measurement error (Minimum Detectable Change (MDC95%)). We evaluated construct validity by assessing 80 hypotheses of relationships between EDQ scores and scores on the reference measures (>75% hypotheses confirmed indicated validity).

RESULTS: Of the 359 participants who completed time point 1 questionnaires; 321(89%) completed the second EDQ. Median age of participants was 51 years (25,75th percentile:42,59), 83% were men, with a median of 4 concurrent health conditions. Cronbach's alpha ranged from 0.84-0.91 (severity scale domains); 0.72-0.88 (presence scale domains); and 0.87-0.89 (episodic scale domains). ICCs ranged from 0.80-0.89 (severity scale domains) and 0.70-0.85 (presence scale domains). MDC95% ranged from 18-24 (out of 100) in the severity scale domains and 35-52 in the presence scale domains. Sixty-five of 80(81%) construct validity hypotheses were confirmed.

CONCLUSION: The EDQ possessed internal consistency reliability, construct validity, and test-retest reliability for severity scale domains, with limited precision when administered electronically with adults living with HIV across five clinical settings in four countries.

189 Comparing testosterone levels and number of comorbidities among women living with and without HIV in British Columbia

Shayda Alexis Swann^{1,2}, Kelly Mathews³, Amber R. Campbell^{2,4,5}, Izabella Gadawska⁵, Elizabeth M. King^{2,6}, Melanie Lee⁶, Sofia L.A. Levy⁷, Vyshnavi Manohara⁷, Charity V. Mudhikwa^{2,6}, Davi Pang⁶, Tetiana Povshedna^{5,8,9}, Shelly Tognazzini⁶, Neora Pick^{2,4}, Valerie Nicholson⁶, Angela Kaida^{2,6}, Helene C.F. Cote^{2,5,8,9}, Melanie C.M. Murray^{1,2,3,4,9}, on behalf of the British Columbia CARMA-CHIOWS Collaboration (BCC3; CIHR CTN 335)

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Background: Testosterone is an important hormone for women's health, with abnormal levels potentially contributing to morbidity. However, current research comparing testosterone levels in women living with and without HIV is lacking. Here, we compare total testosterone levels and their association with number of comorbidities in women living with and without HIV.

Methods: Cis-gender women aged ≥ 16 y were included. Number of select age-related comorbidities (depression/cognitive dysfunction, kidney/liver disease, diabetes, hypertension, cardiovascular/peripheral vascular disease, dyslipidemia, and osteoporosis) were assessed by self-report, validated scales, and medication usage. Plasma total testosterone levels were assayed by ELISA and normalized by log-transformation. Groups were compared by Mann-Whitney or Chi-square tests. Multivariable Poisson and linear regression models assessed variables associated with number of comorbidities and log-transformed testosterone levels, respectively (Table 1).

Results: Participants (n=223) are described in Table 1. Women living with HIV had lower testosterone levels than HIV-negative women. Older age (Prevalence Ratio, PR [95% CI]=1.02 [1.01 to 1.03]; $p < 0.0001$) and past substance use (PR=1.31 [1.03 to 1.65]; $p = 0.03$) were associated with greater number of comorbidities, while HIV and testosterone levels were not. HIV (-11.1 (-18.7 to -2.83)%) and older age (-0.75 (-1.06 to -0.43)%) were independently associated with lower testosterone, whereas ever having hepatitis C virus was associated with higher levels (16.8 (3.31 to 31.0)%).

Conclusion: We observed lower testosterone levels in women living with HIV than HIV-negative women, independent of confounders. Lower testosterone was not associated with having more comorbidities. These findings emphasize the need to investigate the impacts of testosterone on women's health.

Supporting Document

Comparing testosterone levels and number of comorbidities among women living with and without HIV in British Columbia

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Conclusion: We observed lower testosterone levels in women living with HIV than HIV-negative women, independent of confounders. Lower testosterone was not associated with having more comorbidities. These findings emphasize the need to investigate the impacts of testosterone on women’s health.

Table 1. Participant socio-demographic and clinical variables

	WLWH* (n=98)	HIV-negative (n=125)	p-value
Age (years), median [IQR]	50.4 [42.2 to 58.1]	49.2 [28.7 to 56.7]	0.08
Body mass index (kg/m²), median [IQR]	25.5 [21.4 to 31.1]	24.6 [21.5 to 30.6]	0.87
Ethnicity, n (%)			1.00
White	38 (38.8)	48 (38.7)	
Non-White [†]	60 (61.2)	76 (61.3)	
Income, n (%)			0.28
≥\$20,000 CAD [‡] /year	50 (54.3)	71 (62.8)	
<\$20,000 CAD/year	42 (45.7)	42 (37.2)	
Tobacco smoking, n (%)			0.01
Never	25 (27.2)	56 (47.1)	
Past	24 (26.1)	25 (21.0)	
Current	43 (46.7)	38 (31.9)	
Substance use[§], n (%)			0.01
Never	45 (46.4)	81 (65.3)	
Past (>3 months)	27 (27.8)	24 (19.4)	
Current (≤3 months)	25 (25.8)	19 (15.3)	
Hepatitis C virus infection, n (%)			<0.001
Never	58 (60.4)	110 (89.4)	
Ever	38 (39.6)	13 (10.6)	
Number of comorbidities, median [IQR]	3.0 [2.0 to 4.0]	2.0 [2.0 to 4.0]	0.002
Total testosterone levels (ng/dL), median [IQR]	32.7 [20.0 to 45.7]	41.3 [26.0 to 66.5]	0.007

*WLWH=women living with HIV; †Non-White=Indigenous, African/Caribbean/Black, or Other/Mixed; ‡CAD=Canadian dollars; §Substance use=opioids, crack/cocaine, and/or methamphetamines

276 Cortisol levels and burden of age-related comorbidities in women living with and without HIV

Shayda Swann^{1,2,3}, **Amber Campbell**^{2,3,4}, Izabella Gadawska⁴, Elizabeth King^{2,5}, Melanie Lee⁵, Sofia Levy⁶, Vyshnavi Manohara⁶, Charity Mudhikwa^{2,3,5}, Davi Pang⁵, Tetiana Povshedna^{4,7}, Shelly Tognazzini⁵, Neora Pick^{2,3,8}, Valerie Nicholson⁵, Angela Kaida^{2,5}, Helene Cote^{2,4,7,9}, Melanie Murray^{1,2,3,8,9}, on behalf of the British Columbia CARMA-CHIOWS Collaboration (BCC3; CIHR CTN 335)

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Background: Women living with HIV (WLWH) disproportionately experience comorbidities and psychosocial stressors. Chronic stress, which can result in dysregulated cortisol levels, negatively impacts health. We compared cortisol levels in WLWH and HIV-negative women and assessed whether they relate to number of comorbidities.

Methods: Cortisol levels were assayed by ELISA from extracted hair specimens (3cm). Demographics and select comorbidities (depression, cognitive dysfunction, kidney/liver disease, diabetes, hypertension, cardiovascular/peripheral vascular disease, dyslipidemia, and osteoporosis) were ascertained via survey. Demographics were compared by Chi-square or Mann-Whitney test. Multivariable Poisson and median regression models assessed factors independently associated with number of comorbidities and cortisol levels, respectively, adjusting for confounders (Table 1).

Results: Participants (n=245) are described in Table 1. In adjusted analyses, age (Prevalence Ratio, PR [95% CI]=1.02 [1.01 to 1.03] or 2.0 [1.0 to 3.0]% per year; p<0.0001) and past substance use (PR=1.35 [1.05 to 1.75] or 35.0 [5.0 to 75.0]%; p=0.02) were independently associated with greater number of comorbidities, while HIV and cortisol levels were not. Older age (β =0.45 [0.14 to 0.81] per year; p=0.01) and current substance use (26.5 [4.11 to 49.0]; p=0.02) were independently associated with higher cortisol levels, whereas HIV was associated with lower cortisol levels (-13.1 [-22.5 to 3.72]; p=0.01).

Conclusions: After considering potential clinical and psychosocial confounders, we report lower cortisol levels among BCC3 WLWH than HIV-negative women. Further, we observed no association between number of comorbidities and cortisol levels. Substance use was the most important modifiable risk factor for higher cortisol levels and increased number of comorbidities.

Supporting Document

Cortisol levels and burden of age-related comorbidities in women living with and without HIV

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Conclusions: After considering potential clinical and psychosocial confounders, we report lower cortisol levels among BCC3 WLWH than HIV-negative women. Further, we observed no association between number of comorbidities and cortisol levels. Substance use was the most important modifiable risk factor for higher cortisol levels and increased number of comorbidities.

Table 1. Participant socio-demographic and clinical variables

	WLWH* (n=108)	HIV-negative (n=137)	p-value
Age (years), median [IQR]	51.4 [43.4 to 58.6]	49.2 [32.1 to 58.2]	0.07
Waist circumference (cm), median [IQR]	88.5 [77.1 to 105.8]	85.5 [76.0 to 98.0]	0.37
Ethnicity, n (%)			
White	48 (44.4)	58 (42.3)	0.84
Non-White [†]	60 (55.5)	79 (57.7)	
Income, n (%)			
≥\$20,000 CAD [‡] /year	55 (55.0)	79 (64.2)	0.21
<\$20,000 CAD/year	45 (45.0)	44 (35.8)	
Tobacco smoking, n (%)			
Never	21 (21.0)	58 (45.0)	0.001
Past	30 (30.0)	30 (23.3)	
Current	49 (49.0)	41 (31.8)	
Substance use[§], n (%)			
Never	48 (45.3)	85 (63.0)	0.004
Past (>3 months)	28 (26.4)	33 (24.4)	
Current (≤3 months)	30 (28.3)	17 (12.6)	
Number of comorbidities, median [IQR]	3.0 [2.0 to 4.0]	2.0 [2.0 to 3.0]	0.004
Hair cortisol levels (pg/mg), median [IQR]	36.4 [15.8 to 63.6]	37.2 [16.4 to 58.3]	0.64

*WLWH=women living with HIV; †Non-White=Indigenous, African/Caribbean/Black, or Other/Mixed; ‡CAD=Canadian dollars; §Substance use=opioids, crack/cocaine, and/or methamphetamines

16 Healing Together through Common Threads of Trauma

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Background : ICW-NA Approach ;The International Community Of Women Living With HIV - North America 's strategic plan for 2020-2024 provides the background and the rationale for the trauma -informed approaches which address the needs and experiences of women living with HIV. As stated in the plan of comorbidity, aging women living with HIV in the world in 2019 . The factors that place women at risk of HIV are rooted not only in biology but in patriarchal social norms, through which too many often compromising their own health in exchange .Intersecting ,vulnerability, stigmatization and systematic injustice intervention .

Method : Healing Together(HT) is an integrated HIV trauma -informed , stigma- reduction intervention that enhances the ability of BWLWH to powerfully share their lived experiences with each other and others of their choice. The purpose of the healing together is to enlighten participants to the commonality of certain aspect of the human experience . The interconnectedness of specific lived experiences , and how these experiences may or may not have increased vulnerability to HIV . Phase one of the healing together intervention consists of training compromised of six sessions . Training content focuses on the intersectionality of various forms of stigma and trauma resulting

Result : To participate , individual eligibility includes (1) a verifiable diagnosis of HIV , (2) a willingness to learn storytelling techniques on how and when to disclose one's HIV status and lived experiences , (3) receipt of HIV care from a verifiable HIV medical provider ; (4) engagement in case management service .

Conclusion : Healing Together is an approach to reduce trauma ,stigma , share the story of life is a strong education for make change in all community ,(language, age , color of skin ,culture , religion , gender , sex orientation).

81 Heart and Brain Axis in HIV – Exploring Links of Cardiovascular Imaging Markers with Subsequent Brain Structure and Cognition: Rationale and Protocol

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Cardiovascular diseases and neurocognitive disorders have a high prevalence in the HIV population (PLWH), impacting quality of life, treatment compliance, and survival. To our knowledge, no study has addressed the link between subclinical coronary artery disease and cognition in the HIV population so far. Our team has set up the Canadian HIV and Aging Cohort Study (CHACS) which prospectively follows > 1000 PLWH and non-HIV participants. Participants in a cardiovascular sub-cohort of CHACS were previously assessed by cardiac computed tomography (CT) for the evaluation of subclinical coronary artery atherosclerosis. In our current study, we select 30 PLWH from the cardiovascular sub-cohort. Based on the results already obtained in CT, these participants will be classified according to the presence or absence of coronary plaque (volume of plaque > 0 mm³ vs = 0 mm³). Each participant will undergo a brain magnetic resonance (MRI), for structural evaluation (measurement of brain volumes), and functional evaluation by diffusion tensor imaging (measurement of fractional anisotropy and mean diffusivity). Neurocognitive testing using the Brief Cognitive Ability Measure (B-CAM) test battery will yield cognitive function scores. The statistical analysis will compare the neuro-structural integrity of white matter, brain volumes, cognitive scores, and coronary plaque in PLWH. We expect lower fractional anisotropy values, higher mean diffusivity values, lower brain volumes, and lower cognitive scores in PLWH with coronary plaque compared to PLWH without coronary plaque. This pilot study is a preliminary step to a larger study, aiming to assess the link between cardiac impairment and neurocognitive decline in the HIV population.

84 Hepatic steatosis in people with HIV is associated with lower BMI and more liver fibrosis compared to metabolic dysfunction-associated fatty liver disease

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Background: People with HIV (PWH) are at risk of hepatic steatosis (HS) due to a complex pathogenesis, including HIV-related inflammation, frequent metabolic comorbidities and lifelong exposure to antiretroviral therapy. There are limited data whether HIV-associated HS differs in clinical presentation from metabolic dysfunction-associated fatty liver disease (MAFLD). We aimed to compare severity of metabolic and hepatic dysfunction between PWH with HS and MAFLD patients.

Methods: In this international case-control study, 212 consecutive HIV mono-infected patients with HS at McGill University in Montreal were compared to a sex and age matched MAFLD control group at Policlinico Hospital in Milan. Fibroscan with controlled attenuation parameter (CAP) was used to define HS (CAP \geq 248 dB/m), severe HS (CAP $>$ 280 dB/m), and significant liver fibrosis (liver stiffness measurement $>$ 7.0 kPa). Serum fibrosis biomarkers APRI, FIB-4 and Fibroscan-AST (FAST) score were also computed.

Results: PWH presented lower median BMI (28[25-31] vs 29[27-32] Kg/m², p=0.002) and lower prevalence of obesity (26% vs 44%, p<0.001) compared to MAFLD patients, along with a lower prevalence of hypertension (21% vs 38%, p<0.001). The prevalence of dyslipidemia (41% vs 26%, p<0.001) and statin prescription (23% vs 11%, p=0.003), as well as of high triglycerides (26% vs 9%, p<0.001) and low HDL cholesterol (34% vs 15%, p<0.001), was higher among PWH compared to MAFLD patients. No difference in cardiovascular events and diabetes prevalence was observed between the two groups. As for liver disease, PWH had a lower prevalence of severe HS (54% vs 74% p<0.001) but higher prevalence of significant liver fibrosis (15 vs 7%, p=0.03) by Fibroscan, as well as higher serum fibrosis biomarkers APRI, FIB-4 and FAST score, compared to MAFLD patients.

Conclusions: Despite having lower BMI, PWH seem to have a more severe hepatic and atherogenic presentation of HS than MAFLD patients. Screening and follow-up for HS in PWH is recommended.

133 IL-32 Isoforms Differentially Induce Osteoclasts and Osteoblasts: A Potential Role in CVD In HIV Infection

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People living with HIV (PLWH) have a higher risk of developing cardiovascular diseases (CVD) compared to controls. We and others have described that composition of the coronary artery atherosclerotic plaques in PLWH exhibits less calcium deposition, a feature that renders these plaques prone to rupture. However, mechanisms involved in this vulnerability are yet to be identified. Here, we investigated the impact of the multi-isoform proinflammatory cytokine IL-32 that we recently showed to be chronically upregulated and associated with CVD in PLWH, on the differentiation of monocytes to osteoblasts and osteoclasts (cells involved in calcium deposition/resorption, a mechanism involved in plaque formation/destabilization, respectively).

Primary CD14+CD16- monocytes were isolated by negative selection from HIVneg donors. IL-32 isoforms (α , β and γ) were used with/without RANKL (a typical inducer of osteoclasts) and M-CSF to stimulate monocytes for 21 days.

Immunofluorescence imaging was used to analyze the differentiated cells to osteoclasts with the phenotype TRAcP+F-Actin ring+ with multiple nuclei (identified by DAPI) and osteoblasts (F-Actin ringneg osteocalcin+ with single nucleus).

In the absence of co-stimulations, IL-32 γ and IL-32 β alone, compared to negative controls, induced the differentiation of monocytes to osteoblasts (P=0.005). Interestingly, when either IL-32 γ or IL-32 β were combined with RANKL, these IL-32 isoforms counteracted the effect of RANKL and maintained their function by inducing osteoblast differentiation (p=0.028 for both), further suggesting their dominant role in osteoblastogenesis. In contrast, IL-32 α significantly induced the differentiation of monocytes to osteoclasts in a similar magnitude to the positive control RANKL (P=0.02).

Our data suggest that, depending on the dominant IL-32 isoforms upregulated in the site of inflammation in PLWH, a subset of monocytes may either differentiate into osteoblasts or osteoclasts. This may potentially interfere with the calcification or decalcification/destabilization of the atherosclerotic plaques, explaining the increase in non-calcified (high-risk) atherosclerotic plaques observed in PLWH compared to controls.

169 Kaposi sarcoma in ART-treated PLWH: a link with immunosenescence

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Background

Reemergence of HHV-8-induced Kaposi sarcoma (KS) in people living with HIV (PLWH) on antiretroviral therapy (ART) has been described. We aimed to explore immunological and virological factors involved in KS development in ART-treated PLWH compared to HIV-uninfected people with classic KS.

Method

4 groups of 11 participants were compared: 1. ART-treated PLWH with KS (KS HIV+), 2. Age-matched ART-treated PLWH without KS (HIV+), 3. HIV-uninfected patients with classic KS (KS HIV-), 4. Age-matched HIV-uninfected people without KS. We assessed circulating cytokines, anti-HHV-8 IgG levels, anti-HHV-8 specific T-cells, and circulating/skin T-cells phenotypes. HHV-8 viral loads (VL) were quantified and next-generation sequencing was performed.

Results

KS ART HIV+ were younger than KS HIV- ($p < 0.001$). In KS HIV+, anti-HHV-8 IgG levels were higher compared to KS HIV- ($p = 0.02$) and frequency of specific T-cells was low but similar. Circulating and tissular CD4 T-cells of both KS HIV+ and KS HIV- expressed high frequency of senescence markers (CD57+/CD28-) and PD1, higher than in controls. Among cytokines, IL-10 levels were higher only in KS HIV- ($p = 0.02$). HHV-8 VL were lower in KS HIV+ than in KS HIV- in plasma ($p = 0.02$) and PBMCs ($p = 0.04$), but similar in skin biopsies. HHV-8 genetic subtypes A and C were similarly isolated in both KS groups, and a newly identified variant was found in two KS HIV- Inuit participants.

Conclusion

ART-treated PLWH with KS exhibited features of early immune senescence compared to those without KS. Despite the younger age, senescent T-cells frequency was similar among KS HIV+ compared to KS HIV-. However, anti-HHV8 IgG levels were higher in KS HIV+ compared to KS HIV-, which was associated with lower circulating HHV-8 DNA and IL-10 levels. A new HHV-8 variant was isolated in Inuit participants. Altogether, early immune senescence/exhaustion seems involved in the development of KS in ART-treated PLWH.

311 Living with Chronic Pain: Experiences of Women Living with HIV and HIV-negative Women Enrolled in the British Columbia CARMA-CHIWOS Collaboration (BCC3) Study

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Background: Chronic pain (CP) is the most common cause of disability worldwide, and has been associated with HIV, antiretrovirals, trauma, and adverse socio-structural factors. We compared CP among women living with HIV (WLWH) and controls (≥ 16 y) in BCC3.

Methods: We used the Brief Chronic Pain Questionnaire (BCPQ) to screen for CP, and validated surveys to describe CP, psychological distress, and social support (Table 1). Additional questions examined mental health/stigma/sleep. Groups were compared using t-, Chi-Squared, Mann-Whitney tests and logistic regression. Associations with CP were investigated using Spearman's correlation.

Results: Age-adjusted prevalence of CP was not different between WLWH (58/151;38%) and controls (73/230;32%), $p=0.4$, nor was the age of women living with CP in both groups (Table 1). Similar proportions of WLWH and controls reported moderate to extreme stigma (39%vs46%, $p=0.4$), mental health diagnoses (54%vs60%, $p=0.5$), and sleep disturbances (82%vs83%, $p=0.9$) related to CP. While women in both groups shared many pain characteristics and experiences, WLWH reported higher social support. In both groups, CP intensity was high but showed no association with psychological distress. However, higher social support was associated with lower CP intensity among controls ($\rho=-0.3$, $p=0.02$) but not WLWH ($p=0.9$).

Conclusions: In this study of WLWH and well-matched controls, 1/3 of women reported chronic pain in both groups but few differences were observed between groups with respect to CP or pain-related experiences. However, CP intensity and psychological distress were high in both groups, as were CP-related stigma/sleep disturbances/mental health diagnoses, warranting further research and clinical attention to support healthy aging.

Supporting Document

Table 1. Chronic pain characteristics and associated experiences among women living with chronic pain

Parameter	WLWH n=58	HIV-negative controls n=73	p value
Age (years), median [IQR]	51 [46-59]	51 [37-60]	0.22
Pain, Enjoyment of Life, and General Activity (PEG) Scale			
Composite score (0-10 scale), mean ± SD	6.2 ± 2.2	6.3 ± 2.0	0.74
Pain on average last week (0-10 scale), mean ± SD	6.3 ± 2.2	6.5 ± 2.0	0.74
Pain interference with enjoyment of life (0-10 scale), mean ± SD	6.0 ± 2.6	6.0 ± 2.5	0.94
Pain interference with general activity (0-10 scale), mean ± SD	6.1 ± 2.6	6.4 ± 2.6	0.56
Body manikin for pain localization			
Number of body regions affected, median [IQR]	7 [3-13]	7 [3-11]	0.99
Widespread pain present*, n (%)	16 (11)	17 (7)	0.28
Pain Self-Efficacy Questionnaire (PSEQ)			
Overall (0-24 scale), mean ± SD	14.7 ± 6.5	15.5 ± 5.3	0.43
"I can cope with my pain in most situations", (0-6 scale), mean ± SD	3.9 ± 1.6	4.3 ± 1.4	0.13
"I can still do many of the things I enjoy doing, such as hobbies or leisure activity, despite the pain", (0-6 scale)	3.4 ± 1.8	3.9 ± 1.4	0.09
"I can still accomplish most of my goals in life, despite the pain", (0-6 scale)	3.7 ± 1.8	3.7 ± 1.6	0.89
"I can live a normal lifestyle, despite the pain", (0-6 scale)	3.6 ± 2.0	3.6 ± 1.7	0.90
Selected social determinants of health			
The Kessler Psychological Distress Scale (K6) **, n (%)			
5 ≤ K6 < 13 (moderate mental distress)	22 (38)	33 (46)	0.33
K6 ≥ 13 (severe mental illness)	18 (31)	22 (31)	0.99
Medical Outcome Study Social Support Survey (MOS-SSS), 0-20 scale, median [IQR]	15 [12-18]	12 [9-17]	0.01
*Widespread pain was defined based on 2019 American College of Rheumatology criteria. ** K6 was calculated for 56/58 WLWH and 71/73 controls *** MOS-SSS was calculated for 71/73 controls			

332 Platinum Navigation: A Clinical Frailty Study for older adults living with HIV in Southern Alberta

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Background: Frailty affects older adults with HIV more so than the general population who is not infected. Because HIV has been understood as a chronic condition in the past few decades, the affected individuals are now living longer than before. This creates a community of older adults with HIV who are also experiencing comorbidities along with aging. Frailty amongst PWH needs to be assessed in a timely manner so the individuals can lead a healthy life.

Design: A quality improvement study has been ongoing since 2017 where adults with HIV in the Southern Alberta Clinic (SAC) are assessed using the Clinical Frailty Scale. The participants who score 4+ are contacted for consent from the research team to conduct a questionnaire which inquires for additional factors such as loneliness, falls, impaired gait and balance, polypharmacy, unintentional weight loss, food insecurity, and subjective cognitive concerns

Setting: The Southern Alberta Clinic (SAC) in Calgary, Alberta

Participants: Frail adults with HIV who are 50 years or older in Southern Alberta

Results: There has been 1122 patients at SAC who are 50 and older since December 2022. The median age of the total SAC patient population(n=2094) is 54 years (in tables attached). 43 older adults were new since January 2021. 15 patients who had the frailty questionnaire conducted reported major issues with gait and balance; memory; and social connections since Covid-19. Older adults will have the frailty questionnaire conducted continuously to be referred to appropriate clinicians such as geriatrician, social workers or pharmacy.

Supporting Document

SACSTATS.pdf (could not be inserted)

231 Self-Reported Cognitive Difficulties in the Clinic Setting over a 3-year Period: Does this provide information about performance-based cognitive ability in people living with HIV (PLWH)?

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Background: While most existing neuro-HIV studies focus on neuropsychological testing, clinicians are usually responding to self-reports on cognition, not to test results. The relationships between self-reported and performance-based cognitive ability, and how these are influenced by mood have not been well-defined, particularly over time. The objective of this study is to estimate, among older PLWH, the extent to which these constructs co-evolve over time. **Methods:** Data were collected from 4 visits over 27 months of PLWH over age 35 enrolled in the longitudinal +BHN cohort study. At each visit, cognition was measured with a questionnaire about cognitive difficulties (C3Q) and a brief computerized test of cognitive ability (B-CAM). Mood was measured with the Hospital Anxiety and Depression Scale (HADS). Group Based Trajectory Analysis was used to identify groups with unique longitudinal trajectories on each construct, and the extent to which the trajectories of self-reported cognition were concordant with trajectories of mood and performance-based cognitive ability were estimated.

Results: Complete data were available from 845 participants, 85% male, mean age 52.9 (SD: 8.3). Six trajectories were identified for each of the C3Q, B-CAM and HADS. There was a small but statistically significant improvement in C3Q scores over time among 49.0% of participants, a slight statistically significant improvement over time in all participants on the B-CAM and no change on the HADS. Trajectories of performance-based cognition (B-CAM) were not concordant with trajectories of mood (HADS) or self-reported cognition (C3Q), but trajectories of self-reported cognition were concordant with trajectories of mood.

Conclusions: Overall, self-reported cognition was stable over 3 years among older PLWH. Self-reports provided little information about performance-based cognition but were related to mood. To establish the direction of causality, it would be helpful to test the effect of improving anxiety and depression on self-reported cognitive difficulties among older PLWH.

23 The Association Between Anticholinergic Burden and Physical Frailty in Adults Living with HIV in Canada: Variation by Anticholinergic Burden Scales and Exposure Characterization

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People living with HIV (PLWH) are living longer. However, there has been an increase in the early development of aging-related syndromes such as frailty. Drugs with anticholinergic effects are widely used to treat various conditions. However, anticholinergics have been associated with adverse outcomes such as frailty. This study aimed to know the extent to which anticholinergic exposure, measured using different anticholinergic burden scales, is associated with physical frailty in people aging with HIV.

This study used cross-sectional data from 824 middle-aged and older adults living with HIV recruited from five clinics in Canada from the first visit of the Positive Brain Health Now cohort. The anticholinergic burden was estimated using the Anticholinergic Cognitive Burden (ACB) scale, Anticholinergic Drug Scale (ADS), Anticholinergic Risk Scale, and anticholinergic list of the Anticholinergic and Sedative Burden Catalog (ACSBC-Ach). Anticholinergic exposure was characterized by total anticholinergic burden score, use of any anticholinergic, and the number of anticholinergics. The primary outcome was physical frailty determined using a modified frailty phenotype criteria based on self-report items. A multivariable logistic regression model adjusted for confounders was used to estimate the association between anticholinergic burden and physical frailty.

128 (15.53%) were identified as frail. Compared to no use, the use of any anticholinergic as defined using the ACSBC-Ach (1.82[1.07-3.08]) and ADS (1.72[1.04-2.83]) were associated with physical frailty. Anticholinergic burden score and number of anticholinergics estimated using the ACSBC-Ach were also associated with frailty (1.32[1.10-1.57] and 1.44[1.12-1.85], respectively). Using the ACB, only the number of definite anticholinergics was associated with frailty (1.76[1.00-3.05]).

Our results suggest that the anticholinergic burden may increase the risk of frailty in PLWH. The strength of this association may differ depending on how exposure is characterized and the burden scale used. The prevention and management of frailty may benefit from reducing the anticholinergic burden through deprescribing.

66 Cognitive screening considerations for psychosocial clinical trials in HIV, aging, and cognition

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Cognitive impairment is a common comorbidity among people aging with HIV, and a significant source of stress and anxiety. Psychosocial interventions have the potential to alleviate symptoms associated with cognitive impairment and help improve the quality of life of people living with HIV as they continue to age. These interventions are in the infancy of development. Dementia directly related to HIV replication in the brain is most commonly diagnosed as HIV-Associated Neurocognitive Disorder. Cognitive impairment is thought to result from HIV penetrating the blood–brain barrier and causing structural damage to fronto-striatal-thalamatory circuits in the brain. The slow development of interventions may be partially attributed to a common trend of requiring a formal HAND diagnosis to qualify for psychosocial intervention programs. HAND is a diagnosis of exclusion concluded via intensive, time-consuming tests, and many cases of HAND remain undiagnosed, misdiagnosed, or misclassified due to the limitations of the assessment process. HAND screening has been well-recognized as a burden by people aging with HIV and has poor test–retest reliability. Psychosocial trials for dementia in the general population frequently employ a low-barrier entry condition for cognitive impairment, such as the Mini-Mental State Examination or the Montreal Cognitive Assessment. For people aging with HIV, a similarly brief cognitive assessment could partly determine participants’ cognitive strengths and deficits. This presentation will suggest alternate methods of screening for cognitive impairments through the use of brief, low-barrier assessments alongside strategies to validate these briefer screens. Such alternate screening considerations have the potential to ease the burden of extensive testing that is commonly associated with a HAND diagnosis, while still providing valuable insight into individuals’ cognitive functioning, and making psychosocial support more accessible. Screening considerations are critical to consider for closing the research-to-practice gap by trialing interventions that may be efficacious and implementable.

129 Daily intake of Camu Camu extracts decreased liver inflammation in people living with HIV under antiretroviral therapy in the CTN PT032 Camu Camu study

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Background:

Composition of the gut microbiota in people living with HIV (PLWH) receiving ART has been associated with risks to develop cardiovascular, non-alcoholic fatty liver and metabolic diseases. Camu Camu (CC), an Amazonian fruit, was shown to modify the gut microbiota and decrease inflammation in animal models and in smokers. In this pilot study, we assessed whether daily intake of capsules of CC extracts could reduce inflammation and modify gut microbiota and liver markers in ART-treated PLWH.

Methods

22 ART-treated PLWH with a CD4/CD8 ratio below 1 were recruited in a single arm trial. Participants took CC capsules daily for 12 weeks in addition to their ART. Blood and stools were collected at 2 baselines before CC intake, after 4 and 12 weeks of CC and 8 weeks after stopping CC. Serum chemistries were performed by clinical labs. Biomarkers were quantified in plasma by ELISA. Microbiota was characterized in stools by 16S rDNA sequencing.

Results

Median age of participant was 53.5, and 21 were male. CD4 and CD8 counts as well as viral load were not influenced by CC during all study visits. After 4 weeks of CC intake, serum levels of AST and ALT liver enzymes decreased (median 23.5 vs 20.5 and 18 vs 16 IU/mL respectively, $p < 0.001$ for both comparisons) compared to baseline. Similarly, levels of FGF21, a biomarker of non-alcoholic fatty liver disease, decreased at 4 weeks (63.5 vs 60 pg/mL, $p < 0.05$). A trend toward lower levels of AST, ALT and FGF21 was also detected at week 12. Levels of gut damage markers I-FABP and REG3 α , as well microbial translocation marker LPS tended to decrease at week 12. Modification of the gut microbiota was more prominent at week 12.

Conclusions

CC intake was safe and reduced liver transaminases and FGF-21 levels over 12 weeks in ART-treated PLWH.

27 Effectiveness and Safety of Bictegravir/emtricitabine/tenofovir alafenamide (B/F/TAF) in People Living with HIV (PLWH) in Canada, France, and Germany: 36-month (36M) Results of BICSTaR

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Background: BICSTaR is an ongoing, multinational, observational, cohort study evaluating the effectiveness and safety of B/F/TAF in antiretroviral treatment-naïve (TN) and treatment-experienced (TE) PLWH.

Methods: After 2 years, participants from Germany, France and Canada could remain in the study for an additional 3 years (extension phase). Pooled data through 36M, were analyzed for effectiveness (HIV-1 RNA <50 copies/mL, missing=excluded [M=E] /discontinuation=failure [D=F]), safety, SF-36v2 mental component score (MCS), and HIV Symptom Index (HIV-SI).

Results: Of 781 participants, 449 (57%) entered the extension phase (391, 177, 213 from Germany, Canada, France). Most (659) were TE. Pooled effectiveness at 36M was 97% /97% (M=E) and 76%/78% (D=F) in TN and TE, respectively. Persistence on B/F/TAF was 82% (TN) and 81% (TE). Median change in CD4 cell count/ μ L was +232 (TN) and +44 (TE). Canadian specific data in Table1.

Drug-related adverse events (DRAEs) and serious DRAEs occurred in 16%/0% in TN and 14%/0.3% in TE. Median weight change (Q1, Q3) was +4.3 kg (-0.5, 7.3) and +1.7 kg (-1.0, 4.3) for TN and TE. DRAEs leading to discontinuation of B/F/TAF were low, weight increase (2%), depression (1%), and fatigue (1%).

Overall bothersome symptom counts improved (median change [Q1, Q3]) in TN (-2 [-5, 0.5], $p < 0.05$), remaining stable in TE (0.0 [-2, 1]). SF-36 MCS improved for TN (median change [Q1, Q3]: 2.4 [-1.8, 11.1], $p=0.026$) and TE (1.4 [-4.0, 6.7], $p=0.008$).

Conclusion: B/F/TAF continued to demonstrate effectiveness and was well-tolerated through 36M follow-up with improvements in HIV-related symptom burden and MCS.

Supporting Document

Table 1: Summary Canadian cohort B/F/TAF efficacy and safety

	Treatment-naïve	Treatment-experienced
Canada		
N	11	166
Age (years)		
<50, n=7	7	80
≥50 years	4	86
Sex		
Male	10	139
Female	1	27
36M Effectiveness (%<50 copies/mL, M=E)	5 (83%)	98 (99%)

36M Effectiveness (%<50 copies/mL, D=F)	5 (55.6%)	98 (86.7%)
Median CD4 cell count change from baseline (cells/μL)	+114	+8
Median CD4/CD8 ratio change from baseline	+0.47	+0.11
Serious Drug Related Adverse Event	0	0
36M discontinuation, N (%)	3	17

303 Effectiveness of Dolutegravir + Lamivudine in Real-world Studies in People With HIV-1 With M184V/I Mutations: A Systematic Review and Meta-analysis

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Background: Historical drug resistance results are not always available when considering treatment options. In the phase 3 TANGO and SALSA trials evaluating switch to dolutegravir/lamivudine (DTG/3TC), absence of historical resistance results or presence of archived M184V/I mutations did not impact efficacy. This meta-analysis describes virologic failure (VF) using real-world data from people with HIV-1 (PWH) receiving DTG+3TC in suppressed-switch settings, with historical RNA- or archived proviral DNA-detected M184V/I.

Methods: Embase®, Ovid MEDLINE®, MEDLINE® In-Process, and Cochrane library (January 2013-March 2022) and relevant conference archives (2016-2021) were searched for real-world studies reporting virologic outcomes for PWH receiving DTG+3TC (systematic review) and randomized controlled trials (RCTs) assessing M184V/I impact on DTG+3TC efficacy (targeted review). Studies were screened for populations reporting pre-switch M184V/I. Common- and random-effects model analyses were conducted from real-world studies (primary objective) and RCTs (sensitivity analysis; secondary objective).

Results: Of 3492 publications and 198 abstracts, 5 real-world studies and 5 RCTs met search criteria. Few VFs and no treatment-emergent resistance mutations were reported at each time point (Table). Random-effects model-estimated proportions (95% CI) of PWH with historical M184V/I with VF at Weeks 24, 48, and 96 were low in real-world studies (0.01 [0.00-0.14], 0.03 [0.01-0.08], and 0.04 [0.01-0.17], respectively) and RCTs at Week 48 (0.01 [0.00-0.04]); common-effects model estimates for RCTs reporting zero VF events at Weeks 24 and 96 were 0.00 (0.00-0.02) and 0.00 (0.00-0.03), respectively.

Conclusion: This meta-analysis provides reassuring data on outcomes with DTG+3TC in PWH with incomplete history or where M184V/I was inadvertently missed.

Supporting Document

Table. Summary of VF Definitions and Outcomes for PWH With M184V/I RAMs Receiving DTG+3TC in Real-world Studies and RCTs

Study (cohort)	PWH with pre-switch M184V/I, n/N (%)	M184V/I identification method	VF time point, week	VF outcomes, n/N (%)	VF definition
Real-world studies					
Hocqueloux 2021 (Dat'AIDS)	105/695 (15.11)	RNA and proviral DNA genotypes (pooling both)	24	1/105 (0.95)	2 consecutive confirmed VL >50 c/mL or 1 VL >200 c/mL
			48	2/105 (1.90)	
			96	2/105 (1.90)	
Santoro 2021 (LAMRES)	36/533 (6.75)	RNA and proviral DNA genotypes	24	2/36 (5.56)	2 consecutive confirmed VL >50 c/mL or 1 VL >200 c/mL
			48	2/36 (5.56)	
			96	3/36 (8.33)	
Borghetti 2021 (ODOACRE)	48/669 (7.17) ^a	Historical genotypes; does not specify RNA or proviral DNA	24	0/45	1 VL ≥1000 c/mL or 2 consecutive VL ≥50 c/mL
			48	1/45 (2.22)	
			96	2/45 (4.44)	
Galizzi 2020 (NR)	47/174 (27.01) ^b		24	—	2 consecutive confirmed VL
			48	1/47 (2.13)	

		Either RNA or proviral DNA genotypes at baseline (before switch)	96	—	>50 c/mL or 1 VL >50 c/mL followed by ART modification or 1 VL >1000 c/mL
Hidalgo-Tenorio 2019 (DOLAMA)	4/178 (2.25)	Baseline RNA genotype	24	—	2 consecutive VL >50 c/mL
			48	1/4 (25.00)	
			96	—	
RCTs					
ART PRO	21/41 (51.22)	Historical DNA genotype	24	0/21	VL ≥50 c/mL
			48	0/21	
			96	0/21	
SOLAR 3D	50/100 (50.00)	Historical genotypes; does not specify RNA or proviral DNA	24	—	VL ≥50 c/mL
			48	1/50 (2.00)	
			96	—	
TANGO	4/322 (1.24)	Proviral DNA genotype	24	0/4 ^c	VL ≥50 c/mL followed by consecutive VL ≥200 copies/mL
			48	0/4	
			96	—	
DOLULAM	17/27 (62.96)	RNA and proviral DNA genotypes	24	0/17	VL >50 c/mL
			48	0/17	
			96	0/17	
SALSA	5/192 (2.60)	Proviral DNA genotype	24	—	VL ≥40 c/mL and/or target detected
			48	1/5 (20.00) ^d	
			96	—	

ART, antiretroviral therapy; DTG, dolutegravir; VL, viral load; NR, not reported; PWH, people with HIV-1; RAM, resistance-associated mutation; RCT, randomized controlled trial; 3TC, lamivudine; VF, virologic failure. ^aCohort reference reporting the proportion with VF for individuals with M184V/I was used for analysis (n=45 individuals with M184V/I). ^bAssumption: n=60 PWH with M184V/I were reported out of N=220 total PWH with available pre-switch genotype resistance data across 2 groups but not reported for DTG+3TC specifically. Table n with M184V/I was calculated according to the proportion of PWH in the DTG+3TC (n=174) vs other group (n=46). ^cAssumption: Week 24 was not reported, but reports described no VF to Week 48. ^dVFs and discontinuations were not directly reported; study reported n (%) with VL <40 c/mL and target not detected (TND), and here the participant had VL <40 c/mL with qualitative target detected (TD) outcome.

94 Effects of oral cannabinoids on systemic inflammation and viral reservoirs in people with HIV on antiretroviral therapy: results of the CTNPT 028 clinical trial

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Background: Chronic HIV infection is characterized by persistent inflammation despite successful antiretroviral therapy (ART). With anti-inflammatory properties, cannabinoids may represent a potential strategy to reduce systemic inflammation in people with HIV (PWH).

Methods: Ten PWH (median age: 57.5 years, 8 males) on ART were randomized (n=5/group) to increasing doses of oral Δ^9 -tetrahydrocannabinol (THC): cannabidiol (CBD) combination (THC/CBD: 2.5/2.5 to 15/15mg daily) capsules or CBD-only (200 to 800mg daily) capsules, for 12 weeks. Blood was prospectively analyzed as part of the clinical trial before starting and after completing cannabinoid treatment. Hematology and biochemistry profiles were used to assess the safety of cannabinoids. Plasma levels of inflammatory markers interferon (IFN)- γ , tumor necrosis factor (TNF)- α , interleukin (IL)-1 β , IL-6, IL-8, and IFN- γ -induced protein (IP)-10, and anti-inflammatory IL-10 were determined using a Luminex assay, and Lipopolysaccharide (LPS), sCD14, sCD27, gut damage markers regenerating family member (REG)-3 α and intestinal fatty-acid binding protein (I-FABP) were quantified by ELISA. Total HIV DNA and cell-associated RNA were measured in blood CD4+ T-cells and in cell pellets from semen by ultra-sensitive qPCR, and cell-free viral RNA was measured in blood and semen supernatant. Non-parametric Wilcoxon signed rank test was used for statistical analyses. **Results:** Eight individuals completed the study. Cannabinoids did not alter participants' hematology/biochemistry profiles. CD4 count and CD4/CD8 ratio were stable and viral load remained suppressed throughout the study. Cannabinoids significantly reduced mean plasma levels of the following inflammatory markers from the initiation time-point versus the end of the intervention: IFN- γ (10.98-8.54 pg/ml; P=0.03), TNF- α (2.61-2.12 pg/ml; P=0.02), IL-1 β (0.62-0.39 pg/ml; P=0.02), and REG-3 α (5621-4950 pg/ml; P=0.04). Cannabinoids had no significant effect on HIV DNA and RNA levels in blood or semen, nor other plasma inflammatory markers. **Conclusions:** Cannabinoids reduced some inflammatory markers and gut microbial translocation markers in PWH, providing rationale for a larger clinical trial.

197 Implementation of a clinical trial using fecal microbiota transplantation to reduce inflammation in people living with HIV on ART: The Gutsy study (CTN PT 038)

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Background: Non-AIDS comorbidities in people living with HIV (PLWH) on ART are associated with persisting inflammation and modification of the gut microbiota. Fecal microbiota transplantation (FMT) is used for the treatment of recurrent *Clostridium difficile* infections. This process consists of transferring fecal microbes from a healthy individual into another individual. FMT can be performed using colonoscopy, nasopharyngeal tubes or capsules, the latter being easier to implement and leading to a higher engraftment. Previous FMT studies in PLWH with colonoscopy or capsules prepared in other countries showed transient effect on inflammation markers.

Methodology: We developed a randomized, single blind, placebo-controlled FMT study to assess the influence of microbiota modification on the leaky gut and inflammation in ART-treated PLWH with a CD4/CD8 ratio below 1 to select people with dysbiosis and higher risk of non-AIDS comorbidities. 10 participants will be recruited in each arm. All will receive a bowel cleanse to make room for the new microbiota colonization, then two rounds of FMT or placebo capsules (around 35 capsules) 3 weeks apart. Comparisons of the outcomes will be performed at two baselines to assess intraparticipant variability, and up to 12 weeks after the first treatment. In an optional substudy, gut biopsies will be collected by colonoscopy at baseline and week 12.

Hypothesis and challenges: We hypothesized that the bowel cleanse and two rounds of large FMT will increase gut beneficial microbe colonization and reduced leaky gut marker more than in the placebo group. During the implementation of the study, the donor selection process had to be updated to exclude COVID-19 and mPox positive donors with validated diagnosis tests. The study is expected to recruit in April 2023.

Conclusion: the Gutsy study will be the first study using bowel cleanse and FMT in capsules aiming at repairing gut epithelium in ART-treated PLWH.

152 Implementation of the GPS Sexual Health Peer-Administered Counselling Program among Gay, Bisexual, Queer, and other Men Who Have Sex with Men (GBQM)

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Background: Community-based sexual health counselling can complement biomedical approaches by offering attitudinal change and sexual health promotion. Gay-Positive Sex, or GPS, is a peer-administered sexual health counselling program. In a previous RCT, GPS, using a group counselling format, reduced serodiscordant condomless anal sex (CAS) and self-reported sexual compulsivity among Canadian GBQM living with HIV. GPS has not been examined for HIV-negative GBQM nor in individual counselling.

Methods: The present study examines outcomes of a 4-session (four 1 hour-long weekly sessions) peer-delivered individual, in-person counselling version of GPS. GPS was delivered to a mixed-serostatus sample of GBQM who had engaged in CAS in the past 3 months. Sessions were held on-site at 3 community-based organizations in Vancouver, Toronto, and Ottawa. The primary outcome was serodiscordant CAS. Secondary outcomes were loneliness, self-reported sexual compulsivity, and condom use self-efficacy. Multivariable generalized estimating equations (GEE) models examined changes from baseline to post-intervention and 3-month follow-up.

Results: The sample included 39 GBQM and was 82% gay-identified, 69.2% white, 61.5% single, and 66.7% HIV-negative (34.6% of whom used PrEP); all GBQM living with HIV (n=13/39) reported an undetectable viral load. At post-intervention, there were significant reductions in number of casual partners in the past 3 months (IRR=0.44, 95%CI=0.23-0.82, p=0.01), but not 3-month follow-up. Reductions in serodiscordant CAS or any CAS were statistically significant at post-intervention (IRR=0.03, 95%CI=0.02-0.04, p<0.001) but not at 3-month follow-up. There were significant decreases at post-intervention and 3-month follow-up in loneliness and sexual compulsivity and an increase in condom use self-efficacy.

Discussion: The individual format of GPS appears to be effective in promoting the sexual health of GBQM by reducing loneliness, self-reported sexual compulsivity, and increasing condom use self-efficacy among sexually active GBQM. Community-based counselling may be a helpful complementary strategy to promote sexual health of GBQM.

302 Systematic Literature Review of Real-world Experience With the 2-Drug Regimen Dolutegravir and Lamivudine in People With HIV Who Would Not Have Met Inclusion Criteria for the Phase 3 Clinical Program

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Background: In phase 3 randomized controlled trials, dolutegravir/lamivudine (DTG/3TC) demonstrated durable efficacy in treatment-naïve (GEMINI-1/-2) and suppressed-switch (TANGO, SALSA) settings. Trial eligibility criteria included no history of virologic failure (VF) or major NRTI- or INSTI-associated mutations, no hepatitis B virus (HBV) or hepatitis C virus therapy, and viral load (VL) <500,000 c/mL at screening (GEMINI) or <50 c/mL for >6 months (TANGO, SALSA). We analyzed real-world evidence (RWE) for DTG + 3TC use in people with HIV (PWH) with baseline characteristics not consistent with these inclusion criteria.

Methods: We conducted a systematic literature review according to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses statement. RWE studies reporting DTG + 3TC use were retrieved from Ovid MEDLINE®, Embase®, PubMed, Cochrane library, and relevant conference proceedings from January 2013 to February 2022.

Results: This review includes 122 publications from 103 studies of 44 unique cohorts (N=8034 PWH; Table). In PWH with previous VF, probability of VF at 1 year was low (0.4% or 1.2%, depending on VF criteria). In PWH with baseline resistance, VF was low (range, 0%-5.4% at ~1 year), and the difference in VF between those with or without M184V/I was not significant in 3/4 (75%) cohorts. None of the 35 PWH with HBV experienced VF, and 16/18 (89%) treatment-naïve PWH with baseline VL >500,000 c/mL achieved virologic suppression at Week 24.

Conclusion: Published RWE outcomes support clinical data demonstrating the high effectiveness and barrier to resistance of DTG + 3TC in PWH with various baseline characteristics.

Supporting Document

Table. Summary of the Number of PWH in RWE Studies With Reported Use of DTG + 3TC by Baseline Characteristic

Characteristic	Studies identifying PWH with characteristic		Studies reporting effectiveness outcomes	
	Number of cohorts	Number of PWH	Number of cohorts	Number of PWH
Previous virologic failure	7	1134	1	194
Evidence of baseline resistance	10	253	4	211
Evidence of HBV	6	166	1	35
Evidence of HCV	13	431	0	0
Treatment-naïve PWH with VL >500,000 c/mL at baseline	1	18	1	18
Treatment-experienced PWH with VL <50 c/mL for <6 mo before switch	1	13	0	0

DTG, dolutegravir; HBV, hepatitis B virus; HCV, hepatitis C virus; PWH, people with HIV; RWE, real-world evidence; 3TC, lamivudine; VL, viral load.

325 The Changing utilization of HIV-related laboratory tests and impacts on program costs within an HIV Cohort over 20 years

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Background

Improved efficacy of antiretroviral therapy (ART) over the last 20 years has led to improved health among people with HIV, resulting in a reduced need for frequent laboratory monitoring using CD4 count, HIV viral load (VL), and genotypic antiretroviral testing (GART). Reduced laboratory surveillance has been promoted as one approach to decrease growing program budgets. We examine the changing use and costs of HIV-specific laboratory tests within a clinic cohort over a 20-year timespan within context of improved care.

Methods

Among PWH active patients in care at Southern Alberta Clinic (SAC), aged 18 years and older, we evaluated the use and cost of CD4 count, VL, and GART testing between 1/1/2000-12/31/2020. Annual number of tests per patient and per population are reported along with associated costs, which were obtained from SAC database. The impact of reduced testing on the program costs are evaluated.

Results

Between 2000-2020, with improved care options, median CD4 and viral suppression rates increased. Overall, annual CD4 testing increased by 147% from 2000 to 2014 and decreased by 42% in 2020, despite a 172% increase in the cohort population. Concurrently, VL increased by 104% then decreased by 13%, respectively. GART testing decreased from 270 in 2008 to 125 in 2020. However, annual tests per PWH decreased 47% for CD4, 35% for VL and 16% for GART from 2000 to 2020. Annual program costs for HIV-specific lab testing increased from \$186,500 Cdn\$ in 2000 to \$535,611 in 2014 then decreased to \$364,925 in 2020.

Discussion

The frequency of laboratory surveillance of CD4 count, VL, and GART per patient has decreased over time. This has been achievable due to increased rates of viral suppression and improved CD4. Reducing frequency of laboratory investigations among HIV care programs may be a safe approach to help offset other growing budgetary needs.

86 Total Lymphocyte and CD4+ T-Cell Count Changes in Participants Receiving Islatravir (0.25mg, 0.75mg, and 2.25mg Once Daily) and Doravirine±Lamivudine: Post Hoc Analysis From a Phase 2b Dose-Ranging Study (P011)

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Islatravir (ISL) is a nucleoside reverse transcriptase translocation inhibitor being studied for HIV-1 treatment and prevention. Exposure-related decreases in total lymphocyte and CD4+ T-cell counts were observed across ISL trials, especially at higher doses. Pharmacokinetic/pharmacodynamic modeling and simulation predict ISL 0.25mg will increase lymphocyte and CD4+ T-cell counts similar to standard ART. Post hoc analyses of changes in total lymphocyte and lymphocyte subset counts were conducted in a dose-ranging phase 2b study (P011; NCT03272347) of ISL+doravirine (DOR)±lamivudine (3TC). Randomized participants received ISL (0.25mg, 0.75mg, or 2.25mg)+DOR+3TC (100mg/300mg) or fixed-dose combination DOR/3TC/tenofovir disoproxil fumarate (TDF) once daily (part 1). Participants receiving ISL who achieved HIV-1 RNA <50 copies/mL at ≥week 20 (W20) stopped 3TC and continued ISL+DOR (blinded; part 2). Participants randomized to ISL switched to 0.75mg between W60-W84 and continued through W144; participants in the comparator arm continued DOR/3TC/TDF through W144. Post hoc analyses evaluated ISL effects on lymphocytes in parts 1-2 through W72 (predose conversion). Participants who switched to ISL 0.75mg before W72 were censored from the W72 analysis but included in preswitch time points. Incidence of infection and hematology parameters were examined. Percentage changes in total lymphocytes were comparable for ISL 0.25mg and DOR/3TC/TDF and more favorable than ISL 0.75mg and 2.25mg (Table). Increases in CD4+ T-cell counts were similar for ISL 0.25mg and DOR/3TC/TDF. Incidence of infection was comparable across groups through W72. No changes were observed for other hematology parameters. Results support further evaluation of ISL 0.25mg+DOR in treatment-naive and virologically suppressed people living with HIV.

Supporting Document

Table. Change in Total Lymphocyte Count and CD4+ T-Cell Count in Treatment-Naive Participants With HIV-1: MK-8591-011 Parts 1 and 2 (through week 72)

Treatment Group	n	Mean % Change From Baseline (95% CI) ^a
Total lymphocyte count, 10 ⁹ cells/L		
DOR/3TC/TDF	22	15.9 (2.0-29.9)
ISL 0.25mg + DOR 100mg (±3TC)	19	20.5 (4.3-36.6)
ISL 0.75mg + DOR 100mg (±3TC)	19	-0.4 (-14.9 to 14.1)
ISL 2.25mg + DOR 100mg (±3TC)	16	-15.9 (-31.9 to 0.1)
CD4+ T-cell count, cells/mm ³		
DOR/3TC/TDF	22	60.1 (40.2-80.0)
ISL 0.25mg + DOR 100mg (±3TC)	19	79.8 (50.0-109.6)
ISL 0.75mg + DOR 100mg (±3TC)	18	47.1 (26.1-68.2)
ISL 2.25mg + DOR 100mg (±3TC)	16	24.0 (4.7-43.4)

^aThe within-group 95% CIs were calculated based on the t distribution.
 3TC, lamivudine; DOR, doravirine; ISL, islatravir; TDF, tenofovir disoproxil fumarate.

226 Congenital Syphilis in Canada with a highlight on HIV coinfection: Findings of a Canadian Paediatric Surveillance Program Study

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Introduction: Since 2015, the incidence of congenital syphilis (CS) in Canada has increased significantly. The current epidemics of syphilis and other sexually transmitted and blood-borne infections have been described as a syndemic. Canadian studies have reported the prevalence of syphilis among HIV-positive individuals to be around 8% to 11%. The objectives of the study are to describe sociobehavioral risk factors, including coinfections, screening, and treatment of mothers with infants affected by syphilis; and the presentation and management of affected infants.

Methods: Cases of CS were elicited from paediatricians through the Canadian Paediatric Surveillance Program between June 2021 and October 2022. Survey responses were analyzed using descriptive statistics.

Results: In total, 143 cases were reported. The median maternal age was 27 years (range 17-39) and 63% (n=90) resided in urban areas. Substance use was the most reported risk factors for 66% (n=94) of the mothers. 29% (n=41) were not screened for syphilis during pregnancy. The most frequent co-infections were chlamydia (27%, n=38), gonorrhoea (15%, n=22), hepatitis C (14%, n=20) and HIV (5%, n=7). Most affected infants had no physical exam findings of CS (58%, n=83). 24% (n=34) reported intensive care unit (ICU) hospitalization. Most cases began antibiotic treatment within one week of life (89%, n=127). Of the seven mothers with HIV coinfection, six used substances and were screened for syphilis during pregnancy. Six out of the seven affected infant of an HIV coinfecting mother did not require ICU hospitalization. All infants of a coinfecting mother began treatment for syphilis within one week of life.

Conclusions: Syphilis increases the risk of acquisition and transmission of HIV and HIV can enhance the progression of syphilis. It is essential to better understand the clinical and epidemiological interactions between HIV and syphilis in pregnant individuals to reduce vertical transmission to their infants.

31 Sex Differences in the Association of HIV with Metabolic Dysfunction-Associated Fatty Liver Disease

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Background

People with HIV (PWH) are at high risk for metabolic dysfunction-associated fatty liver disease (MAFLD). In the general population, sex differences exist in MAFLD spectrum, with higher prevalence of MAFLD in men, but higher incidence of liver fibrosis in women. Less is known about sex differences in MAFLD in PWH.

Method

This was an international collaborative cohort including consecutive PWH. MAFLD was defined as hepatic steatosis, diagnosed by controlled attenuation parameter >270 dB/m, plus any among type 2 diabetes, BMI>25 Kg/m² or two other metabolic abnormalities. Liver fibrosis was diagnosed as liver stiffness measurement >8 kPa. Incidence of MAFLD and liver fibrosis was assessed through survival analysis.

Results

1359 PWH (25% females, 30% HCV coinfecting) were included. Prevalence of MAFLD at baseline was lower in women than in men (17.7% vs. 24.3%, p=0.013). Compared to men, women with MAFLD were more frequently of black ethnicity (48% vs. 14%; p<0.001), had lower ALT (26.4±20.4 vs. 33.4±22.5; p=0.035), higher HDL cholesterol (1.46±0.57 vs. 1.11±0.33; p<0.001), lower triglycerides (1.69±0.96 vs. 2.47±2.63; p=0.035). 485 of PWH were followed for a median of 3.5 years. Incidence of MAFLD was similar between women and men with HIV. However, incidence of liver fibrosis was higher in women compared to men (7.0 vs. 5.9 per 100 persons-year; p=0.035), particularly after 50 years of age. On multivariable Cox regression and after adjusting for age, MAFLD (adjusted hazard ratio [aHR] 3.3, 95% CI 2.0-5.6) and female sex (aHR 2.2, 95% CI 1.3-3.5) were associated with liver fibrosis while CD4 cell count was protective (aHR 0.99, 95% CI 0.99-0.99).

Conclusion

MAFLD seems a sexual dimorphic disease in PWH. Despite having lower rates of MAFLD, women have higher incidence of liver fibrosis compared to men, especially after 50 years of age. Studies should adequately consider sex differences for MAFLD in PWH.

39 The Effect of Metabolic Dysfunction-associated Fatty Liver Disease on Liver Fibrosis Progression in people with HIV, with and without Viral Hepatitis Coinfection: a Multicenter Cohort Study

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Background

People with HIV (PWH) are at risk for metabolic dysfunction-associated fatty liver disease (MAFLD), a new definition of fatty liver not requiring the exclusion of viral hepatitis. We aimed to investigate the effect of MAFLD on liver fibrosis progression in PWH with and without viral hepatitis.

Methods

Patients with serial liver stiffness measurement (LSM) were recruited from three international cohorts. Fibrosis progression was defined as development of liver fibrosis (LSM >8kPa), or transition to cirrhosis (LSM >13kPa for those with LSM >8 but <13kPa at baseline). MAFLD was defined as hepatic steatosis (controlled attenuation parameter >248dB/m), plus any among type 2 diabetes, overweight or two other metabolic abnormalities. A continuous-time multi-state Markov model was used to describe the process in which PWH moved through the next fibrosis state. Cox regression model was used to identify predictors of fibrosis progression.

Results

1183 PWH were included (25% with HCV, 4% with HBV). Prevalence of MAFLD and liver fibrosis was 46.8% and 14.3%, respectively. Patients were followed for a median 3.5 years. Weight gain was associated with both progression and regression of fibrosis in Markov model: odds ratio (OR)=3.11 (95% CI, 1.59-6.08) and OR=0.30 (95% CI, 0.04-2.51). The incidence rate of fibrosis progression was 3.4 per 100 persons-year, resulting in 9.6% fibrosis progressors. On multivariable analysis, predictors of fibrosis progression were MAFLD and weight gain (see Table).

Conclusion

Liver fibrosis progression occurs in a significant proportion of PWH, independently of HCV coinfection and antiretroviral exposure. Its main drivers include metabolic health variables.

Supporting Document

Table. Predictors of liver fibrosis progression on multivariable Cox regression analysis.

Predictor	Adjusted Hazard Ratio	95% CI	p-value
Age (per year)	0.99	0.95-1.04	0.69
Male sex	1.08	0.43-2.71	0.86
Duration of HIV infection (per year)	1.05	1.00-1.10	0.06
HCV coinfection	1.08	0.45-2.57	0.87
HBV coinfection	2.08	0.56-7.69	0.27
BMI increase	2.64	1.32-5.26	0.006
MAFLD	2.50	1.06-5.89	0.03
On integrase inhibitors	1.47	0.61-3.52	0.39
On protease inhibitors	1.53	0.64-3.63	0.34

343 Antiretrovirals side effects in a contemporary cohort of women living with HIV: Findings from the British Columbia CARMA-CHIWO Collaboration (BCC3)

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Background:

Side effects associated with antiretroviral (ARV) therapy confer considerable morbidity and healthcare expense. However, little is known about how side effects are experienced by groups historically underrepresented in clinical trials, such as women, particularly on contemporary ARV regimens. Herein, we analyze prevalence and influencing factors of side effects experienced by women.

Methods:

Self-reported survey-based data (Dec 2020-Dec 2022) were obtained from women (trans-inclusive) ≥ 16 years, living with HIV, currently taking ARVs, and enrolled in the BCC3 cohort. Side effects were defined as any self-reported adverse effect currently experienced at time of survey completion. Self-reported adherence $< 95\%$ in the previous month was considered suboptimal and polypharmacy was defined as ≥ 3 non-HIV medications. Univariable and multivariable logistic regression models were used to identify factors associated with side effects.

Results:

Among 170 women aged 49 (mean) ± 11 (SD) years, 46% were taking integrase-inhibitors, 15% protease-inhibitors, 9% non-nucleoside-reverse-transcriptase-inhibitors and 18% other/multiple regimens. Sixty-one women (36%) reported having ≥ 1 side effect; median (range) 3 (1-13). The most common were neuropsychiatric (n=40), gastrointestinal (n=34), pain-related, (n=34), and body weight changes (n=19). Suboptimal adherence was reported by 28% of women, and this proportion increased with greater side effects (no side effects: 20%, 1-2: 38%, ≥ 3 : 50%; $p=0.002$). In adjusted analyses, suboptimal adherence and polypharmacy remained independently associated with higher odds of side effects (aOR: 3.2 [1.4-7.2]; $p=0.005$ and aOR: 2.8 [1.1-7.4]; $p=0.04$). ARV class showed no association with side effects.

Conclusion:

Side effects are frequently experienced by women on contemporary ARVs, regardless of drug class. The observed association between suboptimal adherence and side effects draws into question whether non-adherence may sometimes be intentional, to mitigate adverse effects. The association between polypharmacy and side effects has growing implications as women living with HIV age, experience multimorbidity, and greater polypharmacy. Ongoing efforts are needed to reduce ARV-related morbidity.

207 Changes to Metabolic Homeostasis Associated with Dolutegravir in Female Mice

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Background: Dolutegravir (DTG) is associated with weight gain, hyperglycemia, and adipocyte changes. We evaluated the impact of DTG on glucose homeostasis and metabolic health using a mouse model.

Methods: Healthy female C57BL/6 mice were randomly assigned to daily treatment with either control (water, N=15), 1xDTG (2.5mg/kg DTG+33.3/50mg/kg emtricitabine (E)/tenofovir disoproxil fumarate (T), N=13), yielding therapeutic levels of DTG, or 5xDTG (12.5mg/kg+33.3/50mg/kg E/T, N=15) for 9 weeks. Overnight fasted glucose, body weight, and oral glucose tolerance test (OGTT) were measured at 2, 4, 6 and 8 weeks. Fasting hyperglycemia was defined as fasting glucose >10.4 mmol/L and OGTT glucose concentrations were quantified by area under the curve (AUC). Mice were sacrificed at 9 weeks, and tissues and plasma were collected for gene and plasma factor expression of factors in glucose homeostasis pathways. ANOVA and Kruskal-Wallis tests were used for statistical comparisons at various time points.

Results: No differences were observed in weight gain between groups. By week 6, 1xDTG animals displayed a significant increase in overnight fasted glucose. 13 of 28 animals treated with DTG (8 in 1x-DTG, 5 in 5x-DTG) had fasting hyperglycemia at least once, compared to only 1 in the control, and 12 of the DTG mice were euglycemic by week 8. Mice developing fasting hyperglycemia also showed higher OGTT AUC compared to controls. After 9 weeks of treatment, we observed lower plasma leptin and higher plasma corticosterone in DTG-treated mice compared to controls. A negative correlation between leptin and corticosterone levels was observed in the DTG-treated mice. Plasma glucose at 9 weeks positively correlated with plasma corticosterone in DTG-treated mice.

Conclusions: DTG was associated with transient glucose dysregulation in some, but not all, animals. DTG-treated animals also exhibited changes in plasma hormones after 9 weeks of treatment, which may be linked to compensatory mechanisms in energy homeostasis.

82 Exposure to protease-inhibitor-based antiretroviral regimens in utero is associated with hippocampal memory deficits, hyperactivity, and molecular changes in the brain

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Introduction: Treatment of HIV using antiretrovirals (ARVs) has been pivotal in reducing perinatal transmission of the disease. While most children who are HIV-exposed but uninfected remain in good health, previous studies showed that these children are at higher risk for growth impairments, lower IQ levels, language and cognitive delays, and other neurological deficits. We have developed mice models of in-utero ARV exposure to understand the effects of ARVs on the fetal brain and subsequent neurodevelopmental and behavioral outcomes.

Methods: Plugged C57BL/6 female mice were randomly assigned to one of the two treatment arms and administered therapeutic doses of either abacavir/lamivudine+ritonavir-boosted atazanavir (ABC/3TC+ATV/r) or tenofovir/emtricitabine+ATV/r (TDF/FTC+ATV/r) by oral gavage. Control mice received an equal volume of water. Offspring (males and females) were used for behavioral tests (rotarod, open field maze, contextual fear conditioning, and Barnes maze). The hippocampus and striatum were extracted from the brain and used to study gene expression analysis by real-time quantitative PCR.

Results: Compared to the controls, mice exposed to TDF/FTC+ATV/r showed increased hyperactivity through rotarod tests. Additionally, in the open field maze, we found increased rearing and distance traveled in both TDF/FTC+ATV/r and ABC/3TC+ATV/r groups. Further, we observed sex-based differences in hippocampal-dependent behavioral tests, where males in both treatment groups showed deficits in spatial navigation and contextual fear memory. Lastly, gene expression analysis revealed changes in the expression of the neurotrophic factor BDNF and its receptor TrkB, and the glutamate receptors NMDAR and AMPAR in the striatum and hippocampus for both treatment groups.

Conclusion: In-utero exposure to protease inhibitor-based antiretroviral regimens lead to deficits in memory and spatial navigation of exposed mice as well as hyperactivity reminiscent of autism spectrum disorders. This phenotype was supported by our gene expression analysis that showed molecular changes in neurons affecting subsequent behavior associated with specific brain regions.

88 Factors Associated With Weight Loss or Stable Weight After Continuing or Switching to a Doravirine-Based Regimen

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Minimal weight gain was observed with doravirine (DOR)-based regimens in first-line and switch clinical trials. Factors associated with weight loss/stable weight were examined in phase 3 trials for participants continuing or switching to DOR. In the initial 96-week double-blind base studies, adults were randomized to receive first-line treatment with DOR+2 NRTIs or DRV/r+2 NRTIs in DRIVE-FORWARD (P018; NCT02275780) and DOR/3TC/TDF or EFV/FTC/TDF in DRIVE-AHEAD (P021; NCT02403674). Participants could continue or switch to DOR in 96-week open-label extensions (P018+P021 continued or switch groups). In DRIVE-SHIFT (P024; NCT02397096), virologically suppressed adults on stable ART were randomized to switch to DOR/3TC/TDF at day 1 or week 24 and continue through week 144. Weight loss was defined as $\leq -5\%$, stable weight $> -5\%$ to $< 5\%$, and weight gain $\geq 5\%$. Generalized logistic models were used to analyze factors associated with weight change. Most participants who continued or switched to DOR had weight loss/stable weight versus weight gain (Table). No clinical or demographic factors were associated with weight change during the extension for the P018+P021 continued group. Non-Black participants, particularly non-Black women, showed weight loss/stable weight after switching to DOR. Participants switching from PIs had weight loss in P024 and stable weight in P018+P021 versus those switching from NNRTIs. Switching to DOR resulted in weight loss/stable weight in most participants in these trials, although weight change may differ by race, sex, and prior regimen. Further research will characterize the participant profile and mechanism for weight loss/stable weight with DOR.

Supporting Document

Table: Analysis of Factors Affecting the Probability of Weight Loss or Stable Weight Versus Weight Gain After Switching to DOR

	P018+P021 Switch Group N = 423		P024 Group ^a N = 517	
Weight loss, n (%)	40 (9.5)		71 (13.7)	
Stable weight, n (%)	243 (57.4)		340 (65.8)	
Weight gain, n (%)	140 (33.1)		106 (20.5)	
Weight loss vs weight gain variable	OR (95% CI)	P value	OR (95% CI)	P value
Non-Black vs Black	6.14 (1.53-24.60)	0.010	2.37 (0.78-7.17)	0.126
Non-Black vs Black, females	—		6.02 (1.15-31.51)	0.033
Non-Black vs Black, males	—		0.93 (0.23-3.81)	0.923
Female vs male	4.76 (1.52-14.87)	0.007	1.93 (0.60-6.21)	0.272
Female vs male, non-Black	—		4.89 (1.66-14.39)	0.004
Female vs male, Black	—		0.76 (0.11-5.39)	0.782
Age <50 vs ≥ 50 years	3.45 (0.71-16.68)	0.124	—	
Age ≥ 50 vs <50 years	—		1.25 (0.61-2.54)	0.540
Baseline weight ^b	1.06 (1.02-1.10)	0.003	1.04 (1.01-1.08)	0.009
Prior regimen: PI vs NNRTI	1.32 (0.63-2.76)	0.460	2.42 (1.05-5.57)	0.038
Time of switch: Day 1 vs Week 24	—		2.08 (1.06-4.08)	0.033

Stable Weight vs Weight Gain Variable	OR (95% CI)	P value	OR (95% CI)	P value
Non-Black vs Black	2.15 (1.18-3.91)	0.012	1.43 (0.67-3.06)	0.359
Non-Black vs Black, female	—		2.47 (0.77-7.85)	0.127
Non-Black vs Black, male	—		0.83 (0.31-2.19)	0.703
Female vs male	1.37 (0.67-2.79)	0.383	1.01 (0.45-2.27)	0.982
Female vs male, non-Black	—		1.74 (0.73-4.18)	0.214
Female vs male, Black	—		0.58 (0.16-2.13)	0.416
Age <50 vs ≥50 years	1.14 (0.57-2.30)	0.706	—	
Age ≥50 vs <50 years	—		1.67 (1.02-2.74)	0.043
Baseline weight ^b	1.01 (0.99-1.03)	0.471	1.03 (1.01-1.06)	0.016
Prior regimen: PI vs NNRTI	1.67 (1.08-2.58)	0.021	1.06 (0.65-1.73)	0.815
Time of switch: day 1 vs week 24	—		1.40 (0.90-2.16)	0.132

^aThe combined switch group (immediate and delayed switch groups) in P024.
^bThe odds ratio for week 96 in P018+P021 switch group or week 24 in P024 weight versus (weight + 1 kg) is the ratio of the odds of 2 groups, one with weight X and another with weight (X + 1). Odds ratios, 95% CIs, and P values were from a generalized logistic model with the status of weight change (loss, stable, and gain) as outcome variable, and study ID, race, sex, age group, baseline BMI group, and baseline weight as explanatory variables. For P024, the model also included interaction of race and sex, categories of prior ART, and duration of prior ART as explanatory variables. The interaction term was not included in the model for the P018+P021 switch group because there were no Black females in the weight loss category. NNRTI, nonnucleoside reverse transcriptase inhibitor; OR, odds ratio; PI, protease inhibitor.

92 Resolution of Neuropsychiatric Adverse Events After Switching to a Doravirine-Based Regimen in the Open-Label Extensions of the DRIVE-AHEAD and DRIVE-FORWARD Trials

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Neuropsychiatric adverse events (NPAEs) occur with multiple antiretrovirals. Doravirine (DOR) does not significantly interact in vitro with known neurotransmitter receptors. In phase 3 studies, NPAE rates with DOR/lamivudine/tenofovir (DOR/3TC/TDF) as first-line therapy were significantly lower than with efavirenz/emtricitabine/tenofovir (EFV/FTC/TDF) and were similar for DOR+2NRTIs and darunavir/ritonavir (DRV/r)+2NRTIs. We examined NPAEs in participants who switched to DOR-regimens in the open-label extensions of two phase 3 trials.

In DRIVE-AHEAD (NCT02403674) and DRIVE-FORWARD (NCT02275780), participants were randomized to a DOR-regimen (DOR/3TC/TDF or DOR+2NRTIs) or comparator (EFV/FTC/TDF or DRV/r+2NRTIs) for the 96-week double-blind phases. Eligible participants could continue or switch to a DOR-regimen in the 96-week open-label extensions.

In DRIVE-AHEAD week 96 (W96), 155/269 participants (57.6%) who switched from EFV/FTC/TDF to DOR/3TC/TDF reported NPAEs versus 96/364 participants (26.4%) originally randomized to DOR/3TC/TDF. By week 192 (W192), 19/26 participants (73.1%) receiving EFV/FTC/TDF with ongoing NPAEs at W96 had resolved/resolving NPAEs after switching to DOR/3TC/TDF. In DRIVE-FORWARD (W96), 41/233 participants (17.6%) receiving DRV/r reported NPAEs versus 60/383 participants (15.7%) receiving DOR+2NRTIs. By W192, 6/15 participants (40%) with ongoing NPAEs receiving DRV/r (W96) had resolved/resolving NPAEs after switching to DOR+2NRTIs. In the open-label extensions, new-onset NPAEs (most commonly sleep disorders and depression) were reported by 25/269 participants (9.3%) and 18/233 participants (7.7%) who switched in DRIVE-AHEAD and DRIVE-FORWARD, respectively; by W192, these NPAEs were resolved/resolving in ~60.0% of participants.

Among participants with ongoing NPAEs while receiving EFV/FTC/TDF, most experienced resolution after switching to DOR/3TC/TDF. Similar rates of NPAEs with DOR- and DRV/r-based regimens may represent background incidence.

Supporting Document

Table. Resolution of NPAEs After Switch to a DOR-Based Regimen		
	DRIVE-AHEAD	DRIVE-FORWARD
	Switched From EFV/FTC/TDF (Weeks 0-96) to DOR/3TC/TDF (Week 96-192) N = 269 n (%)	Switched From DRV/r + 2 NRTIs (Weeks 0-96) to DOR + 2 NRTIs (Week 96-192) N = 233 n (%)
NPAEs during the double-blind phase (weeks 0-96)	155 (57.6)	41 (17.6)
NPAEs ongoing at week 96	26 (9.7)	15 (6.4)
NPAE not resolved by week 192 (2 years after switch to DOR)	7 (2.6)	9 (3.9)
New-onset NPAE after switch to DOR (weeks 96-192)	25 (9.3)	18 (7.7)
New-onset NPAE not resolved by week 192 (2 years after switch to DOR)	10 (3.7)	7 (3.0)
3TC/TDF, lamivudine/tenofovir; DOR, doravirine; DRV/r; ritonavir-boosted darunavir; EFV/FTC/TDF; efavirenz/emtricitabine/tenofovir; NPAE, neuropsychiatric adverse event; NRTI, nucleos(t)ide reverse transcriptase inhibitor.		

143 COVID-19 Severity : influence of Autophagy and Acyl-CoA-Binding Protein

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Background

Autophagy allow production of IL21 by CD4 T-cell through degradation of cytosolic structures and energy production, allowing efficient cytolytic function of CD8. Autophagy is in part regulated by acyl-CoA-binding protein (ACBP) which has two functions depending on its localization: intracellular ACBP favors autophagy, whereas secreted extracellular ACBP inhibits autophagy. Herein, we assessed whether autophagy and the ACBP pathway were associated with COVID-19 severity.

Methods

Through the BQC-19 Quebec biobank, somalogic proteomic analysis was performed on 5200 proteins in plasma samples collected between March 2020 and December 2021. Plasma from 903 patients (all data available) during the acute phase of COVID-19 were assessed. COVID-19 severity was stratified using WHO criteria. Plasma levels of anti-SARS-CoV-2 (full spike protein or Receptor binding domain) IgG were assessed by ELISA.

Results

Median age of the cohort was 62 yo, 48% were female, 55% had comorbidities. Increasing plasma levels of ACBP were found with severity (mild, moderate, severe and fatal groups having 5.3, 7.3, 9.5 and 10.6 RFU/50µL of plasma, respectively, $p < 0.001$ for all comparisons). Patients with comorbidities had higher plasma ACBP levels (7.4 vs 6.4 RFU/50µL, $p < 0.001$). Plasma ACBP levels were higher during the delta and omicron-variant periods (8.4 vs 6.8 RFU/50µL; $p < 0.001$). Plasma ACBP levels correlated with LC3II levels ($r = 0.51$, $P < 0.001$) and IL6 ($r = 0.41$, $p < 0.001$), but neither with markers IL1 β nor IL8. ACBP levels negatively correlated with IL21 levels ($r = -0.27$, $p < 0.001$), independently of age, sex, and severity. ACBP levels were not associated with levels of anti-SARS-CoV-2 IgG levels.

Conclusions

Plasma ACBP levels were inversely linked with IL21 levels, suggesting that autophagy and IL21 allow control of SARS-CoV-2 infection, independently of the level of SARS-CoV-2 antibody secretion. ACBP is a targetable autophagy checkpoint and its extracellular inhibition may improve SARS-CoV-2 immune control.

323 Epidemiology and Clinical Outcomes of HIV among Clients Accessing Care at Wellness Wheel Mobile Outreach Medical Clinics Prior to and During COVID-19

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Background: Co-infection HIV and syphilis rates in Saskatchewan have spiked at epidemic proportions. These overlapping infections lead to poor clinical outcome and additional complications, particularly among women of child bearing years.

Objective: To better understand the shifting landscape of HIV in relation to an emergence of syphilis infections and other STBBIs through an analysis of the epidemiologic characteristics of newly diagnosed HIV infections.

Methods: A retrospective chart review was conducted with data from the Wellness Wheel Medical Outreach Clinic, which serves on-reserve First Nation communities across Saskatchewan. The data range included diagnosed HIV cases between 2018 and 2021, and was stratified by date of diagnosis into those diagnosed prior to the COVID-19 pandemic (01/01/2018- 12/31/2019) and those diagnosed during the pandemic (01/01/2020-12/31/2021). Differences in socio-demographics, clinical characteristics, treatment outcomes, and pregnancy status between the groups were analyzed.

Results: There were 47 new HIV diagnoses across both time points: 21 prior to the pandemic and 26 during the year following the onset of the pandemic. The proportion of female clients increased from 33% to 69% ($p=0.014$). The gender discrepancy is more significant for those <40 years of age ($p=0.005$). Self-reported heterosexual exposure with no injection drug use increased from 10% to 67% ($p=0.021$). The incidence of pregnancy among female clients diagnosed with HIV increased by 300% across the two periods. During COVID-19, 75% of pregnant clients were diagnosed during prenatal care, and 50% of those were in their third trimester.

Conclusions: Epidemiological characteristics of new HIV diagnosis differed across the two time point periods, with an increase in younger females and in heterosexual transmission risk factors. Further, the high prevalence of pregnancy among new diagnoses demonstrates a need for targeted preventative strategies directed to meet the changing context for HIV infection risk in a post-pandemic context.

212 Marginalized social identities intersect with food insecurity and poor mental health outcomes in shaping access to health care during the COVID-19 pandemic among women living with HIV

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Objective: Intersections between mental health, food security, and access and use of health services have been established among women living with HIV (WLWH). However, limited research identifies how these factors shape access to health services among WLWH during COVID-19. This study, therefore, examined: (1) the prevalence and social-structural correlates of changes to food insecurity, mental health, and social isolation during COVID-19; and (2) how changes to these factors were associated with increased difficulty accessing routine healthcare during COVID-19.

Methods: Data were drawn from the Sexual Health & HIV/AIDS: Longitudinal Women's Needs Assessment (SHAWNA) study. WLWH who completed a pre-COVID questionnaire (03/01/2019-03/01-2020) were included. Bivariate and multivariable logistic regression using generalized estimation equations were used to examine associations between social-structural factors experienced pre-COVID-19 and experiencing (a) heightened negative psychological outcomes; (b) heightened social isolation; (c) negative changes to food insecurity, all measured since COVID-19 restrictions started in BC (COVID-19 study period: 03/15/2020-08/31/2021). We then examined relationships between these variables and (d) increased difficulty accessing routine healthcare during the COVID-19 period. Adjusted odds ratios (AOR) and 95% confidence intervals (CI) are reported.

Results: Among the study sample of 151 WLWH, 54.3% were Indigenous, 36.4% were White, and 9.3% identified as other racialized/women of colour, and 10.6% reported transgender identity. Everyday discrimination (AOR:1.08, CI:1.01-1.15) was associated with negative psychological outcomes. Everyday discrimination (AOR:1.07, CI:1.01-1.14) and gender minority identity (AOR:3.63, CI:0.89-14.88) were associated with heightened social isolation. HIV-related stigma (AOR:1.08, CI:1.01-1.16) and sexual minority identity (AOR:2.60, CI:1.13-5.99), were associated with negative changes to food insecurity. Heightened social isolation (AOR:3.49, CI:1.58-7.75) and negative changes to food insecurity (AOR:2.19, CI:0.96-5.00), were associated with difficulty accessing routine healthcare.

Conclusion: Policies and interventions to address intersecting discrimination and stigma, food insecurity, mental health, and social isolation are urgently needed, alongside and to help improve access to health services.

101 Exploring the link between sociodemographic factors and barriers to ART adherence: A random forest analysis of survey data collected from people with HIV in Montreal

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Introduction: This study aims to establish a risk stratification model for classifying emotional health and belief-related barriers to antiretroviral therapy (ART) adherence based on sociodemographic variables to address barriers to ART adherence in specific PWH sub-populations.

Methods: A cross-sectional survey was self-administered online and in-person between January to November 2022 to PWH in Montreal, at the McGill University Health Centre and HIV community organizations using convenience sampling. It examined sociodemographic factors and seven domains of barriers to ART adherence, identified from prior literature. We focused on the emotional health and beliefs domain (11 items), which includes affect, beliefs about HIV/ART, and motivation. To assess multivariable associations, linear regression models examined the association of barriers with age, sex, education level, sexual orientation, and immigration status as independent variables. Random forest analyses with 1000 classification and regression trees were conducted to explore sociodemographic variables that classify their association with barriers.

Results: A total of 232 PWH were included. Their average age was 51.1 years (SD=12.5). Two-thirds were men (n=153; 66%). Multivariable regression models showed a statistically significant association ($p < 0.05$; t-test for regression coefficients) between age and barriers to adherence related to feeling sad or depressed, discouraged, and viewing medications as reminders of HIV. Random forest analyses, with a global type I error rate $< 5\%$, indicated younger PWH (about < 50 years) more often reported feeling sad or depressed as a barrier; while PWH of other ages, sex, and education levels rarely reported this barrier. Immigration status and age were key classifiers of the barrier for feeling unsure regarding how to take ART (overall classification accuracy (OCA)=89.5%), and that of feeling not informed about ART (OCA=86%).

Conclusion: Recognizing the roles of PWH's age, sex, and immigration status relative to their emotional health and belief-related barriers to ART adherence may help tailor HIV care.

99 Participation and engagement in an Online Community-Based Exercise (CBE) Intervention among Adults Living with HIV

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PURPOSE: Online forms of community-based exercise (CBE) may help to manage disability experienced by adults living with HIV during the COVID-19 pandemic. Our aim was to describe characteristics of adults living with HIV who engaged in a six-month online CBE intervention and their participation in the intervention.

METHODS: We conducted a longitudinal intervention study with adults living with HIV in Toronto who considered themselves safe to engage in exercise between October 2021 and December 2022. Participants engaged in a 6-month online CBE intervention involving a) exercise thrice weekly, b) personalized online coaching sessions with a trainer biweekly, and c) online group educational sessions monthly, using d) home exercise equipment, e) an exercise app and f) wireless physical activity monitor. We documented loss to follow-up and reasons for withdrawal. We characterized participants using descriptive statistics. We assessed biweekly coaching session adherence and reasons for missed sessions using a trainer-completed log.

RESULTS: Of 33 participants who enrolled in the study, 32(97%) initiated the intervention. Most (69%) were men (n=22/32), median age of 53 years (interquartile range[IQR]:43,60), and median of 3 concurrent non-HIV health conditions (IQR:1,7). Twenty-two (69%) participants(n=22/32) completed the intervention. Reasons for non-completion (n=10 participants) were: busy schedule (4 participants); unknown (4 participants); episodic health issues (1 participant); and dissatisfaction with the study (1 participant). Participants (n=32) attended a median of 11 out of 13 (IQR:6,12) biweekly online coaching sessions. Ten of the 32 participants (31%) extended their coaching sessions beyond 6 months due to scheduling issues (holiday break, trainer-participant scheduling conflicts)(6 participants), and/or missed session(s) for unknown reasons (4 participants), or for health reasons (2 participants).

CONCLUSION: Most (69%) participants who initiated, completed the online CBE intervention. Factors that influenced retention and adherence to the online coaching sessions highlight the potential episodic health with HIV, and factors influencing implementation to address in future research.

111 Preliminary Data from an Action for Brain Health Now Cohort Randomized Controlled Trial

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Background

Goal Management Training (GMT) is a promising cognitive rehabilitation intervention that could improve adherence to lifestyle interventions.

Objective

To identify, for the first wave of participants in a novel virtual lifestyle intervention for older people living the HIV in Canada, feasibility and uptake considerations to inform the rest of the trial.

Methods

Data from participants contacted, enrolled, and persisting in the 52-week trial are reported. Participants were recruited from the Positive Brain Health Now study, a multi-site Canadian cohort of 800+ people with HIV (≥ 35 years). Enrolled participants performed the 30-second chair stand test (30CST) and set goals using a mobile application. Participants are sent weekly visual analogue scale (VAS) questionnaires and wear a Garmin Vivofit4 activity tracker to monitor step counts. Downstream outcomes include health-related quality of life (SF-36) and cognitive ability. We created a word cloud using Voyant software to describe the healthy lifestyle goals.

Results

Sixty-one participants were contacted (mean age=58.4, 75.4% male), 13 were enrolled (mean age=57.7, 61.5% male), and 11 are persisting (mean age=57.2, 63.6% male) in the trial. In comparison with participants who did not enrol or dropped out, persisting participants had better physical functioning (mean diff=15.2) and worse role-emotional (mean diff=25.7) SF-36 scores (0-100), as well as a lower proportion of male (63.6% vs 78.0%) and working participants (72.3% vs 92.0%). All enrolled participants were below age- and sex-stratified normative values for the 30CST. The most frequent words in the goal-setting word cloud included sleep (n=23), weight (n=17), fatigue (n=12), and energy (n=12). Of the 130 person measures of persisting participants, we had data on 110 of the VAS questions and step counts. GMT participants (n=7) attended an average of 5.5 of 9 sessions.

Implications

Attention needs to be paid to recruit and maintain those most in need of intervention.

126 Strength-based strategies to improve care access and engagement among adolescents and emerging adults living with HIV in North America: A scoping review

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Introduction: Research demonstrates that youth living with HIV (YLHIV) are particularly susceptible to attrition from the HIV care cascade. In addition to the normative developmental tasks of adolescence, YLHIV bear the added responsibilities of managing their HIV, which may include transitioning to adult care, navigating healthcare systems, accessing and adhering to medications, and addressing experiences of HIV-related stigma. Strength-based practice is an integrative approach to care that aims to cultivate resilience and empowerment among participants. Among adults living with HIV, strength-based frameworks have demonstrated significant improvements in outcomes across the care cascade. This review synthesizes available literature on strength-based strategies in improving clinical engagement among YLHIV in North America.

Methodology: A scoping literature review was conducted using OVID Medline, EMBASE, and PsycInfo. 185 articles were identified, from which 6 studies were selected for inclusion. Inclusion criteria comprised a) implementation of a strength-based initiative for people living with HIV, b) inclusion of participants between 10-25 years of age, and c) reporting on at least one clinical outcome (appointment frequency, appointment attendance, medication adherence, CD4 count, or viral load). Studies were excluded if the intervention was performed outside North America or if the analysis failed to stratify results by age demographics.

Results: Across a variety of geographical settings and diverse populations, all studies showed statistically significant improvements in appointment frequency and attendance, medication adherence, and longitudinal retention in care. Two studies reported significant improvements in CD4 count and viral load compared to youth receiving standard-of-care. Strength-based care also improved participants' resilience and facilitated the development of intrapersonal and intrapersonal assets that contributed to positive long-term personal, economic, social, and clinical outcomes.

Conclusion: Strength-based approaches appear to have promising benefits in supporting engagement of YLHIV through the HIV care cascade. However, further study is needed, particularly among populations facing intersecting marginalizations.

118 Treatment Satisfaction and Perceived Adherence Among Migrants in a Multidisciplinary HIV Clinic with Rapid and Free B/F/TAF Initiation: The 'ASAP' Study

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Background

Migrants living with HIV (MLWH) are a growing and diverse population who experience numerous barriers to HIV care engagement. To improve outcomes, rapid and free treatment dispensation upon care linkage are recommended. However, quantitative evidence supporting such an approach to care is lacking. We sought to examine change over time and by sociodemographics in treatment adherence and satisfaction for MLWH enrolled in a program with free and rapid treatment initiation.

Methods

In January 2020, we initiated a 96-week prospective cohort study at a hospital-based clinic in Montreal, Canada. All patients received bicitgravir/emtricitabine/tenofovir alafenamide (B/F/TAF) for free, on-site, and as soon as possible following care linkage. Three patient-reported measures were administered at weeks 4, 24, 48, and 96 after treatment initiation: (1) Forgetting Treatment (score range: 0-30, higher scores indicate more forgotten days); (2) Perceived Adherence (score range: 1-6, higher scores indicate better adherence); (3) HIV Treatment Satisfaction (score range: 10-70, lower scores indicate greater satisfaction). Descriptive statistics and linear mixed model analyses with bootstrapping for parameter estimates are reported.

Results

As of December 2022, data for 31/37 enrolled MLWH were available for analysis. Many participants are: men-who-have-sex-with-men (n=16, 52%); from Africa (n=14, 45%); <39 years of age (n=17, 55%); unemployed (n=22, 71%). At the four time-points, average scores ranged from: (1) 0.29-0.82 (SD range: 0.66-1.27) for forgetting treatment; (2) 5.09-5.38 (SD range: 0.87-0.98) for perceived adherence; and (3) 15.31-18.31 (SD range: 4.13-6.84) for treatment satisfaction. Those unemployed had a significantly higher estimate of forgetting treatment compared to those with paid employment (p=0.037). No other significant differences were detected by time or between other sub-groups.

Conclusion

Migrants reported few forgotten days of treatment, high perceived adherence, and high satisfaction with B/F/TAF. However, unemployment was linked with forgetting to take treatment by MLWH. Further qualitative research could help understand these results.

158 Using a randomized survey strategy to explore modalities of communicating HIV risk and increasing interest in PrEP

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Background:

HIV Pre-exposure prophylaxis (PrEP) is highly effective, but many PrEP-eligible individuals do not perceive their risk of contracting HIV as high.

Methods:

Non-PrEP-using gay, bisexual, and other men who have sex with men in Ontario and British Columbia answered the cross-sectional PRIMP survey, using REDCap. The HIV Incidence Risk Index (HIRI) and HIV prevalence data were used to estimate individualized risk of contracting HIV. Using a randomization sequence created in STATA, participants received their personalized HIV risk expressed either in 'absolute' ("your risk of acquiring HIV is X%") or 'relative' ("your risk of acquiring HIV is X% higher than other GBM") terms. The survey then asked how this individualized HIV risk a) compared with self-perceived risk, and b) influenced interest in using PrEP; we compared outcomes by study arm among participants with a HIRI score >11.

Results:

We analyzed 289 responses (147 absolute, 142 relative). Mean age was 33.9 (SD=10.2) years. Mean HIRI score was 20.1 (SD=7.4). Participants in the 'absolute' arm appeared more likely to perceive the individualized risk as lower than expected, and less likely to report not knowing how to interpret the information; impact on intention to use PrEP was similar between arms (Table 1). Some participants described the strategy as reductive and anxiety-provoking.

Conclusions:

Communicating personalized HIV risk using absolute or relative wording was effective in increasing interest in PrEP, though both methods could be anxiety-provoking and reductive. Randomized approaches to survey administration can inform strategies for communicating health information, while allowing for community feedback.

Supporting Document

Title: Using a randomized survey strategy to explore modalities of communicating HIV risk and increasing interest in PrEP

Authors: Sawyer Karabelas-Pittman, Oscar Javier Pico-Espinosa, Mark Hull, Daniel Grace, Nate Lachowsky, Paul MacPherson, Kevin Woodward, Darrell H. S. Tan.

Word count: 300 (250; Table counts as 50)/max 300

Abstract:

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Conclusions:

Communicating personalized HIV risk using absolute or relative wording was effective in increasing interest in PrEP, though both methods could be anxiety-provoking and reductive. Randomized approaches to survey administration can inform strategies for communicating health information, while allowing for community feedback.

Table 1:

Survey responses after seeing individualized HIV risk	Absolute Strategy (n=147) (n, %)	Relative Strategy (n=142) (n, %)	p-value
How did this info compare to self-perceived risk?			0.045
higher than expected	79 (54%)	72 (51%)	
same as expected	39 (27%)	43 (30%)	
lower than expected	13 (9%)	3 (2%)	
did not know how to interpret the information	9 (6%)	18 (13%)	
prefer not to answer	7 (5%)	6 (4%)	
Impact on willingness to take PrEP			0.055
Higher interest in taking PrEP	90 (61%)	71 (50%)	
Lower or No Change in Interest	57 (39%)	71 (50%)	

322 200 under 200: Characteristics of the Virologically Non-Suppressed Patient Population in Saskatchewan, Canada

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Background: The province of Saskatchewan (SK) has had the highest rates of HIV in Canada since 2009. Current rates are 16.9 per 100,000 – over 4x the national average. Cases in Saskatchewan have gone from 26 in 2002, to a total estimate of 3500 cases as of 2022. Current data reports that Saskatoon has the highest rates of HIV in the province at 28 cases per 100,000 – equating to 13x the national average. Social determinants of HIV infection in SK indicate higher rates of new infections among women, younger individuals, and Indigenous populations. Poor health outcomes are also amplified by malnutrition, unsafe housing, and barriers to accessing support services and care. Despite efforts to reach patients, numbers of those engaged along the cascade are falling, with infection rates increase and fewer patients retained in care and/or achieving viral suppression.

Objective: To provide an overview of the patient population who have not achieved HIV viral suppression to better understand barriers for the population and to inform appropriate intervention approaches.

Methods: We conducted a retrospective data analysis of active patient electronic medical records having at least one HIV-related visit between May 1, 2019 and April 30, 2022. We defined viral suppression as <200 copies/ml.

Results: The number of patients that are not retained in care, not on antiretroviral medication, and not virally suppressed between 2019-2020, 2020-2021, and 2021-2022, increased from: 20-26%, 35-38%, 42-44%, respectively. Overall men, or those identifying as male, had higher rates of non-suppression than their female counterparts. However, women aged 20-34 had the highest rates of non-suppression across the cohort.

Conclusion: This analysis offers important insights into risk factors, clinical outcomes, and demographic characteristics of the patient population who are persistently unsuppressed. Predictive factors that exacerbate the viral non-suppression require exploration as barriers to accessing care.

83 A scoping review and qualitative analysis of geriatric models of care for individuals living with HIV

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Background/Purpose: Advances in HIV treatment have reduced mortality rates and consequently increased the number of individuals that are 50 years of age or older living with HIV, who are considered older adults living with HIV (OALWH). Despite this, there have been significant gaps in HIV treatment and prevention campaigns for OALWH. Moreover, a gold-standard model of care for the OALWH population has not yet been defined. Developing evidence-based Geriatric-HIV models of care can support an accessible, equitable, and sustainable HIV health care system that supports healthy aging in the OALWH population.

Methods: Guided by Arksey & O'Malley (2005), a scoping review was conducted to explore existing geriatric models of care of OALWH and to determine the key components, identification of gaps in the literature and provide recommendations for future research. Five databases and the grey literature were systematically searched. Titles, abstracts and full texts of the search results were screened independently by two reviewers. Data were analyzed using a qualitative case study and key component analysis approach to identify necessary model components.

Results: 5702 studies underwent title and abstract screening, with 154 entering full-text review. 15 peer-reviewed and 6 grey literature sources were included. Almost all articles were from We identified three main models of care components that may improve the successful delivery of geriatric care to HIV populations: Collaboration and Integration; Organization of Geriatric Care; and Pillars of Care. Most articles included some aspects of all three components.

Conclusions: To provide effective geriatric care to OALWH, health services and systems are encouraged to use an evidence-based framework and should consider incorporating distinct models of care characteristics that have been identified in the literature. Future directions include further study into Geriatric-HIV models of care in different settings as well as their impact on healthy aging in the OALWH population.

320 Models of Care and Loss Rates: Gaps in the Cascade of Care Across Three Clinical Settings in Saskatchewan, Canada

Cara Spence^{1,2,3}, Stuart Skinner^{2,3,4}, Visna Rampersad⁵, Mary Zettl², Larissa Kiesman^{2,6}, Beverly Wudel^{2,4}, Stephen Sanche^{2,4}, Siddharth Kogilwaimath⁷, Marina Klein¹

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Background: In Saskatoon, Saskatchewan (SK), HIV care is primarily accessed at two clinical sites: (1) the Positive Living Program (PLP) located in the Royal University Hospital – an infectious disease clinic providing specialized acute care; and (2) the Westside Community Clinic (WSCC) providing inner-city primary health care and addictions support. A third model, the Wellness Wheel (WW) offers mobile medical and community-led healthcare services to on-reserve First Nation communities across SK. WW provides culturally responsive care in clinical, remote and on-reserve community settings. These models represent three unique care delivery approaches: (1) facility-based care (PLP); (2) community-based care (WSCC); and (3) rural-remote care with Indigenous communities (WW). Collectively, they care for over 2500 persons living with HIV (PLWH).

Objective: To identify the gaps in the HIV care cascade across three different clinical settings, highlighting care model effectiveness in SK.

Methods: We analyzed retrospective active patient electronic medical records from May 1, 2019 to April 30, 2022 who attended at least one HIV-related visit during that period. We defined viral suppression as <200 copies/ml.

Results: HIV rates were found to be increasing across SK, with decreasing suppression rates. The PLP cascade outcomes were lowest, with consistent 50% engagement rates. Total clients at the WSCC and WW also increased across the timepoints. Overall, WSCC had the highest patient numbers with better outcomes along the cascade, despite increases in infection rates. By comparison, the WW community-led care had the highest viral suppression rates.

Conclusions: The care gaps found in the care models offers insight into the limitations in providing HIV care to clients in SK. As rates remain well below the global targets for engagement, treatment and suppression rates, governmental support is required to ensure care capacity and approaches responds to transmission rates and the needs of the patient population.

333 A Comparative Study of Pregnancy Outcomes in Mice Treated with Integrase Strand Transfer Inhibitors (INSTI)

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Integrase strand transfer inhibitor (INSTI) drugs can improve maternal health and prevent vertical HIV transmission. Dolutegravir (DTG) has been linked to neural tube defects and other congenital anomalies. Limited data are available in pregnancy for newer INSTIs. Here we compare outcomes in a mouse pregnancy model for INSTI-based regimens.

C57BL/6 female mice were mated and randomly allocated to treatment arms: Control (water; n=91 litters), DTG (n=103 litters), DTG+TDF/FTC (n=143 litters), raltegravir (RAL)+TDF/FTC (n=113 litters), bicitegravir (BIC)+TDF/FTC (n=76 litters), cabotegravir (CAB)+TDF/FTC (n=86 litters), DTG+3TC (n=96 litters). Dosing for all INSTIs was optimized to yield plasma drug levels equivalent to those reported clinically. NRTIs were administered at 10x the human-equivalent dose. Drugs were administered once daily by oral gavage from day of plug detection to sacrificed on GD15.5. Fetal and placenta weight, and number of resorptions (early fetal loss) were assessed.

Resorption rate was highest in the DTG+TDF/FTC group (9.7%), followed by RAL+TDF/FTC (8.4%), DTG alone (7.2%), DTG+3TC (7.4%), BIC+TDF/FTC (6.9%), control (6.3%), and CAB+TDF/FTC (5.3%). None of the INSTIs were significantly different from control, although resorption rates were significantly higher in the DTG+TDF/FTC vs. CAB+TDF/FTC group. Total viability was also significantly lower in the DTG+TDF/FTC vs. CAB+TDF/FTC group. Compared to controls (0.38g) litter average fetal weight was significantly lower in the DTG+TDF/FTC (0.34g), DTG+3TC (0.35g), BIC+TDF/FTC (0.34g), and CAB+TDF/FTC (0.33g) groups, but not in the DTG (0.37g) and RAL+TDF/FTC (0.37g) groups. Litter average placenta weight was significantly lower in the DTG+TDF/FTC and CAB+TDF/FTC compared to control. Fetal to placenta weight ratio was significantly lower in the BIC+TDF/FTC and CAB+TDF/FTC groups compared to control. A lower percent increase in maternal weight was observed in the DTG, DTG+3TC, RAL+TDF/FTC, BIC+TDF/FTC and CAB+TDF/FTC groups compared to control, but not in the DTG+TDF/FTC group. These results suggest that the birth outcomes may differ between INSTIs.

43 Daily Ritonavir-Boosted Darunavir for Viral Suppression in Pregnancy

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Background: Ritonavir-boosted darunavir (DRV/r) is a preferred protease inhibitor in pregnant women living with HIV (WLWH). Current practice at British Columbia's referral centre (the Oak Tree Clinic) is to dose DRV/r as 800/100 mg daily throughout pregnancy, although guidelines recommend DRV/r 600/100 mg twice daily due to altered pharmacokinetics with once daily dosing.

Objectives: We describe the effect of once daily DRV/r on viral suppression, perinatal HIV transmission, adverse drug effects and adherence in pregnant WLWH.

Methods: This was a retrospective analysis of pregnant WLWH in British Columbia (BC). Eligible patients gave birth between January 2015 and August 2021, and took DRV/r 800/100 mg daily at any time during pregnancy.

Results: Thirty-four patients were included in this study. The mean age was 33 years (SD = 5). Thirty (88%) patients were diagnosed with HIV prior to pregnancy, with 22 (73%) having viral suppression at baseline. Four (12%) patients were diagnosed in pregnancy, with a median baseline viral load of 9,616 copies/mL (range 8,370 – 165,000 copies/mL). Viral suppression was achieved by 16 (100%), 24 (75%), and 26 (74%) patients in first, second, and third trimester, respectively. No perinatal HIV transmission occurred. This regimen was well-tolerated, with adverse drug effects that did not result in discontinuation or change in therapy. The majority of patients maintained at least 75% adherence to once daily DRV/r at all times during pregnancy.

Conclusions: DRV/r 800/100 mg daily appears to be an appropriate dosing strategy for pregnant WLWH who are able to maintain optimal adherence.

341 Differences in Severity of Cervical Dysplasia Between Ontario Residents and Refugees: Advocating for Cervical Cancer Prevention for a Vulnerable Population Living with HIV

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INTRODUCTION

Cervical cancer is the most common cancer among women living with HIV, with recent research citing a six-fold higher risk of developing cervical cancer in this population. Screening programs (i.e. Pap tests) reduce the incidence of cervical cancer. Refugees often have a higher prevalence of abnormal Pap tests and a greater cervical cancer risk due to immunocompromise from a disproportionate HIV burden, limited screening, and/or higher HPV infection rates. Most refugees in Canada have never had cervical cancer screening, despite having Interim Federal Health Program (IFHP) coverage. Our study aims to compare the grade of cervical dysplasia by histology at the initial colposcopy clinic visit between patients billing through IFHP as a proxy for refugee status and through Ontario Health Insurance Plan (OHIP). We hypothesize that refugees present with a higher grade of dysplasia compared to Ontario residents.

METHODS

Following REB approval, a multi-center, retrospective review of all IFHP patients presenting to their first colposcopy clinic at two academic urban centres between Jan. 2015 and Apr. 2020 was conducted. Each IFHP patient meeting inclusion criteria was age-matched to two OHIP patients meeting inclusion criteria (N=154; 52 IFHP, 104 OHIP).

RESULTS

Approximately one-third (30.7%, n=16) of IFHP patients were living with HIV. Histologically, IFHP patients were significantly more likely to have a biopsy result showing HSIL or LSIL compared to OHIP patients ($\chi^2=13.43$, $p<0.01$). OHIP patients are significantly more likely than IFHP patients to have had at least 1 dose of an HPV-vaccine as opposed to no recorded immunization (28% vs 2%, $\chi^2=15.42$, $p<0.001$).

CONCLUSIONS

IFHP patients are significantly more likely to have higher grade histology results and less likely to have at least one dose of an HPV vaccine. Our findings signify the importance of advocating for primary (HPV vaccination) and secondary prevention (screening) for refugees living in Ontario.

134 Impact of adding cabergoline to an online order set on postpartum administration among persons living with human immunodeficiency virus (PLWH): a quality improvement study

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Objective: In Canada, exclusive formula feeding is recommended among persons living with human immunodeficiency virus (PLWH). Cabergoline can be used to suppress physiologic lactation in this population. On December 23, 2020, cabergoline was added to the electronic postpartum medication order-set in our institution. The primary objective of this study was to determine whether this intervention increased the timely ordering and administration of cabergoline.

Methods: A retrospective chart review was performed to assess cabergoline administration among PLWH pre- and post-intervention, between November 2018 and December 2020, and December 2020 and August 2022, respectively. Deliveries among those who chose to breastfeed were excluded.

Results: Seventy-two deliveries among PLWH were included, with 48 occurring in the pre-intervention period and 24 occurring post-intervention. Cabergoline was administered in 62/72 (86%) of eligible patients. Prior to cabergoline being added to the electronic order set (pre-intervention), it was given in 40/48 (83%) of eligible patients, compared with 22/24 (92%) post-intervention. In 7/48 (15%) pre-intervention deliveries, cabergoline was not ordered nor offered to eligible patients, whereas cabergoline was always ordered and/or offered in the post-intervention group. The average time between delivery and cabergoline administration was 382 minutes for the pre-intervention group versus 194 minutes for the post-intervention group.

Conclusions: Cabergoline was administered in a large majority of deliveries among PLWH, both in pre- and post-intervention groups. In both groups, administration was timely. Once cabergoline was added to the order set, time between administration and delivery was approximately halved. Over 1/10th of patients who chose not to breastfeed did not get offered cabergoline prior to our order-set, compared to none after. In this population, preset order-sets appear to improve overall access and timely administration.

135 Infant feeding choices among persons living with human immunodeficiency virus (PLWH): a retrospective chart review

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Objective: While the World Health Organization currently recommends breastfeeding among persons living with human immunodeficiency virus (PLWH) where formula feeding is not safe or available, exclusive formula feeding is recommended in Canada and other high-resource countries. Still, some PLWH choose to breastfeed. Our study reviewed feeding choices in this population in an effort to improve culturally competent counselling surrounding these risk-benefit conversations.

Methods: A retrospective chart review was performed to assess demographic details and infant feeding choices among PLWH between November 2018 and August 2022. Data was analyzed in Microsoft Excel.

Results: Eighty-four deliveries among PLWH took place during the study period. On average, individuals were 34 years of age and the majority had previously had at least one child. Eighteen per cent (15/84) chose to breastfeed. Of those, 11/15 (73%) were born in low and low-middle income countries. Conversely, among those who formula fed, 43/69 (62%) were born in low and low-middle income countries ($p=0.56$, NS). All individuals who chose to breastfeed were on antiretrovirals during their pregnancy and all had undetectable viral loads at the time of delivery.

Conclusions: Despite current guidelines recommending formula feeding in PLWH in Canada, nearly one fifth of our cohort chose to breastfeed. Nearly all of these individuals were born outside of Canada and the vast majority were born in low or low-middle income countries, where infant feeding guidelines may recommend exclusive breastfeeding. Culturally competent risk-benefit conversations surrounding infant feeding choices should acknowledge the differences between recommendations in patients' home country and place of delivery to ensure parents can make informed decisions.

206 Investigating the impact of integrase strand transfer inhibitor (INSTI)-based antiretroviral therapy on early uteroplacental development

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Background: Antiretroviral therapy (ART) is administered to preserve maternal health and prevent perinatal transmission of HIV, however, there are concerns of potential adverse birth outcomes. We have previously shown that protease-inhibitor (PI)-based ART regimens contribute to these adverse events by dysregulating progesterone and altering early placentation events including uterine endometrium decidualization and decidual spiral artery remodeling, which are central to optimal placentation. It is not known whether exposure to INSTI-based ART affects the early gestational events. We hypothesize that decidualization and vascular remodeling is impaired by INSTI exposure.

Methods: Human first-trimester decidua (N=8) were digested and cells were treated with vehicle or various INSTIs at Cmax concentrations alone and in clinically-relevant combinations (Dolutegravir, DTG; Raltegravir, RAL; and Bictegravir; BIC; using the NRTI backbone TDF/FTC). Decidua conditioned media (DCM) was collected after 72h and concentrations of relevant biomarkers were quantified using multiplex assays. Healthy extravillous trophoblast (EVT)-containing villi were dissected from human first-trimester placental tissue and incubated in INSTI-treated or untreated DCM. The degree of EVT outgrowth after 48h was measured by image analysis.

Results: DTG-treated decidual cells had higher levels of secreted matrix metalloproteinase-9 (MMP-9) compared to controls (mean±SD; 22.7 ± 8.1 ng/ml versus 18.6 ± 6.9 ng/ml, p=0.0052) and lower secreted MMP-7 (19.2 ± 7.2 ng/ml versus 38.3 ± 5.1 ng/ml, p<0.0001). Biomarkers of decidualization (angiopoietin-2, prolactin, IGFBP-1) were similar between groups. Placental villi incubated in DCM from DTG- and RAL-treated cells demonstrated a significant reduction in EVT outgrowth as compared to DCM-treated controls.

Conclusions: Our data suggest that DTG and RAL impact decidual soluble factors that affect EVT migration. MMPs are key proteases in the reproductive system and integral to the vascular remodeling process. A reduction in MMP-7 may reflect an impairment of uterine natural killer cell-mediated vascular remodeling. Further studies are necessary to understand the mechanisms involved.

203 Plasma angiopoietin 2 levels are elevated in the 3rd trimester in pregnant individuals with HIV on protease inhibitor (PI)-based ART: a potential biomarker of PI-associated increased placental angiogenesis

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Pregnant individuals with HIV on protease inhibitor (PI)-based antiretroviral therapy (ART) have a greater risk for adverse birth outcomes including small for gestational age (SGA) births. This study assessed levels of the angiogenic factors angiopoietin (ANG)-1 and ANG-2 and their receptor Tie-2 in maternal plasma of pregnant individuals with HIV on PI-based ART and assessed their utility as potential biomarkers of placental pathology.

Maternal plasma samples were collected longitudinally throughout pregnancy from a cohort of Canadian pregnant people with and without HIV. Birth outcomes were recorded. Levels of ANG-1, ANG-2 and soluble Tie-2 (sTie-2) were quantified by enzyme-linked immunosorbent assay. Factors were ln transformed and plotted against gestational age. Mixed effects modeling was used to examine differences between factors and their ratios across gestation by HIV status. Associations with SGA births were examined in the HIV-positive group.

109 pregnant individuals (64 with HIV and 45 controls) were included. All with HIV were on a PI-based ART regimen. Each participant contributed an average of 3 samples across gestation. Maternal plasma levels of ANG-1 and sTie2 remained constant across gestation and did not differ by HIV status. Levels of the ANG-1 antagonist, ANG-2, were significantly higher in the individuals with HIV compared to controls at all time points past 28 weeks gestation. Correspondingly the ratio of ANG-2:sTie-2 was also elevated at these later time points. There were 16 SGA births, all in the HIV-positive group. We did not observe any significant associations between any of the factors or their ratios with SGA births.

It is known that ANG-2 counteracts ANG-1's maturation effect on placental blood vessels in the 3rd trimester. We suggest that the increase in ANG-2 in HIV-positive/PI-exposed group may contribute to the increased branching angiogenesis that we have previously observed in placentas from individuals with HIV on PI-based ART.

254 Systemic Inflammation Markers in Plasma of People Living with HIV throughout Pregnancy According to Class of Antiretroviral Therapy

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Background: The use of antiretroviral therapy (ART) during pregnancy, particularly protease-inhibitor-based regimens (PI), has been linked to adverse outcomes including preterm birth. As this outcome may be related to systemic inflammation, we sought to characterize the inflammatory profile of pregnant people living with HIV (PPLWH) by comparing their levels of inflammatory mediators in the second and third trimesters according to their HIV status and, within PPLWH, their class of ART.

Methods: Samples from 146 PPLWH treated with ART and 24 controls without HIV were retrieved from the CARMA-PREG cohort. Second and third trimester plasma was analyzed via Luminex for 12 markers linked to HIV status and/or pregnancy outcomes: HMGB1, GM-CSF, IFN α , IFN β , IFN γ , IL-10, IL-17, IL-1 β , IL-6, TNF α , AGP, and CRP. Inflammatory mediator levels were further compared between PPLWH treated with integrase strand transfer inhibitors (InSTI) or PI-based regimens and controls.

Results: In bivariate analyses, second and third trimester levels of AGP (alpha(1)-acid glycoprotein) were significantly higher among PPLWH compared to controls. No significant differences between PPLWH and controls were detected for the other markers. There were significantly higher levels of IFN β , IL-6 and IL-10 in the PI subgroup compared to the InSTI subgroup in the third trimester but not in the second trimester.

Conclusion: HIV infection during pregnancy while treated with ART is associated with increased levels of AGP, a marker of inflammation and infection, at both time points studied. Treatment with PI-based regimens is associated with increased IFN β , an immunomodulatory marker of inhibition of HIV viral replication; IL-10, a potent anti-inflammatory cytokine, and IL-6, a pro-inflammatory cytokine, specifically in the third trimester. This could point to an immunological response explaining the association between PI-based regimens and preterm birth. Further investigations into the trends of these markers during pregnancy and pregnancy outcomes would be important in the future.

344 Women Living with HIV are in Need of Adequate Menopause Care

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Background

Women Living with HIV experience earlier menopause than HIV-negative women. We explored timing of menopause, quality of life, and connection to menopause/gynecological care among participants of the Ontario HIV Treatment Network Cohort Study (OCS).

Methods

OCS is a cohort of people in HIV care with clinical and questionnaire data from 15 clinics in Ontario, Canada. From 2021-2022, 450 women aged 30+ completed interviews including reproductive health questions. Women are described as having experienced menopause if they reported menopausal/perimenopausal status or reported no period for more than one year due to natural menopause. 184 experienced menopause at ages that were premature(30-39years)/early(40-45years)/normal(>45years). We examined quality of life using the Short-Form 12 Health Survey (SF-12). Descriptive statistics, t-test, and one-way ANOVA were used for statistical analysis.

Results

Mean age(STD) in years was 47(9.38), 26.6% were white, 63.1% Black, 4.0% Indigenous, 6.3% of other races. For 184 menopausal women mean(STD) age was 54(8.64), 33.5% were white, 55.1% Black, 3.8% Indigenous, 7.6% other. Mean age(STD) of menopause start in premature group was 35(4.41), early 43(1.38), and normal 53.1(3.77). The mean (STD) scores of the SF-12 for physical (PCS-12) and mental health (MCS-12) for the 3 groups of menopausal women were PCS 12 49.8(9.76), 44.2(13.17), 46.6(10.36), and MCS-12 39.7(12.31), 48.0(10.58), 47.6(11.51); lower scores indicating less quality of life, which was significant for those with premature menopause (p=0.05). Of 450 women, 15.8% normally discussed gynecological issues with an HIV specialist, 17.8% with a gynecologist, and 54.8% with a general practitioner. Among menopausal women, 51.4% had never discussed menopause with a provider, and 30.8% think that their menopausal needs and concerns are not met.

Conclusions

Early menopause may have downstream health impacts on women, and we lack knowledge of what causes earlier menopause in HIV+ women. Women living with HIV should have improved access to menopause care.

246 High tolerability and adherence with bictegrovir, emtricitabine and tenofovir alafenamide as HIV post-exposure prophylaxis

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Background: Integrase strand transfer inhibitor-based regimens have become the standard of care for HIV post-exposure prophylaxis (PEP), but no such single tablet regimens are recommended in current Canadian guidelines.

Methods: We analyzed the tolerability of and adherence to bictegrovir, emtricitabine and tenofovir alafenamide (B/F/TAF) as HIV PEP in an ongoing clinical trial of text-messaging support for PEP patients. Adults initiating PEP within the preceding five days for a confirmed or potential sexual exposure to HIV were randomized to either receive short message service (SMS) check-ins using the WelTel platform, or standard care. At randomization, all participants were switched to B/F/TAF to complete 28 days. CBC, ALT and creatinine were assessed at week 2; HIV status at weeks 6 and 12; and adverse events at all visits. We report preliminary results from the week 4 assessment.

Results: 85 participants have been enrolled to date, of whom 81 have completed the week 4 visit and are included in this analysis. Median (interquartile range) age was 29.9 (26.2, 34.5) years. Most (96.3%) were assigned male sex at birth and 23.5% had previously used PEP. At week 4, 84.2% of participants reported completing 28 days of PEP. B/F/TAF was well tolerated, with only 10% experiencing adverse events of grade ≥ 2 severity (Table). There were no laboratory abnormalities deemed at least probably related to study drug.

Conclusions: We observed excellent tolerability and adherence with B/F/TAF as HIV PEP. These data support the use of this single tablet regimen as PEP after sexual exposures.

Supporting Document

Table: Adverse events occurring in >2% of participants receiving B/F/TAF PEP

Adverse event	Overall N (% of participants)	Severity grade ≥ 2 N (% of participants)	Any grade, at least probably related to study drug N (% of participants)
Any AE	28 (35%)	8 (10%)	18(23%)*
Diarrhea	5 (6%)	2 (2%)	4 (5%)
Nausea	8 (10%)	1 (1%)	4 (5%)
Respiratory tract or other infection	3 (4%)	1 (1%)	0 (0%)
Sexually transmitted or genital infection	3 (4%)	1 (1%)	0 (0%)
Dizziness	5 (6%)	0 (0%)	5 (6%)
Headache	3 (4%)	0 (0%)	0 (0%)
Insomnia	3 (4%)	0 (0%)	3 (4%)
Anorexia	3 (4%)	0 (0%)	2 (3%)**
Fatigue	11 (14%)	1 (1%)	10 (12%)

*two pts with missing data **one pts with missing data

315 Updating Canadian guidelines on HIV post-exposure prophylaxis: A systematic review of clinical trials & cohort studies

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BACKGROUND: Post-exposure prophylaxis (PEP) is an effective HIV prevention tool involving 28 days of antiretroviral medications taken within 72 hours of suspected high-risk HIV exposure. We conducted a systematic review of PEP clinical trials and cohort studies to inform a forthcoming update to Canadian PEP guidelines.

METHODS: We searched MEDLINE, EMBASE, and CINAHL for PEP clinical trials and cohort studies published July 2017-July 2022 reporting on at least one of: PEP completion, adverse events (AEs) leading to discontinuation, and/or HIV seroconversion. Abstracts were screened by two independent reviewers via Covidence. Articles that fit eligibility criteria underwent full-text review and data extraction onto standardized electronic forms.

RESULTS: We identified 5081 abstracts, of which 568 were duplicates and 4513 were screened. 74 articles underwent full-text review; 15 met eligibility criteria, including 1 randomized trial (n=157), 7 prospective cohort studies (n=2617), and 7 retrospective cohort studies (n=20975). Exposure types included sexual (n=13 studies) and non-sexual/parenteral (n=5 studies) exposures. Regimens including tenofovir disoproxil fumarate/emtricitabine (TDF/FTC) or tenofovir alafenamide/emtricitabine (TAF/FTC) backbones generally had higher completion rates and fewer AEs compared to regimens with zidovudine/lamivudine (AZT/3TC). Regimens containing rilpivirine (RPV, n=2 studies), raltegravir (RAL, n=4), elvitegravir/cobicistat (EVG/c, n=6), dolutegravir (DTG, n=3) or bictegravir (BIC, n=1) generally showed higher completion rates and/or fewer AEs compared to atazanavir or lopinavir/ritonavir (LPV/r). One study demonstrated high completion rates with long-acting intravenous albuvirtide-containing regimens. AEs were most commonly reported in TDF/FTC or AZT/3TC regimens with LPV/r. Only 3 cases of seroconversion were reported out of all studies; one case involved early PEP discontinuation, and two cases involved multiple HIV exposures after starting PEP.

CONCLUSION: Newer PEP regimens containing TAF/FTC or TDF/FTC backbones and RAL, RPV, ELV/c, DTG, BIC, and long-acting intravenous albuvirtide are associated with high completion rates and minimal side effects. Findings will support decision-making when updating Canadian guidelines.

312 Cortisol levels and prevalence of post-traumatic stress disorder (PTSD) symptoms among women living with and without HIV in British Columbia

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Background: Previous reports suggest that women living with HIV (WLWH) have a high prevalence of post-traumatic stress disorder (PTSD), however, the prevalence of PTSD has not been compared among WLWH and HIV-negative women in Canada. Additionally, there are mixed reports as to whether cortisol levels are elevated among people with PTSD. We compared the prevalence of PTSD in WLWH and HIV-negative women and investigated possible associations between cortisol levels and PTSD.

Methods: Cortisol levels were assayed by ELISA from 3cm extracted hair specimens. Demographic and PTSD data were collected through questionnaires and compared by Chi-square or Mann-Whitney tests. PTSD was defined as self-report of current/past diagnosis by a healthcare provider or meeting criteria on the Post-Traumatic Checklist–6-item Civilian Version. Associations between odds of PTSD symptoms and cortisol levels were investigated through multivariable regression models, adjusting for possible cofounders (Table 1).

Results: Participants (n=251) are described in Table 1. Current and past substance use (Adjusted Odds Ratio, AOR [95% CI] 3.32 [1.12 to 10.70];p<0.04 and 3.11 [1.23 to 8.15];p<0.02), lower income (AOR=2.20 [1.05 to 4.69];p<0.04) and fewer hours of sleep (AOR=0.76 [0.62 to 0.93] per hour;p<0.01) were independently associated with PTSD, while HIV status (p=0.47) and cortisol levels (p=0.77) were not.

Conclusions: We observed no independent association between PTSD and either HIV status or cortisol levels, although there was a high prevalence of PTSD in both groups. Furthermore, substance use, sleep, and income may be potential markers of trauma and important factors to address to improve PTSD care for women.

Supporting Document

Cortisol levels and prevalence of post-traumatic stress disorder (PTSD) symptoms among women living with and without HIV in British Columbia

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Conclusions: We observed no independent association between PTSD and either HIV status or cortisol levels, although there was a high prevalence of PTSD in both groups. Furthermore, substance use, sleep, and income may be potential markers of trauma and important factors to address to improve PTSD care for women.

Table 1. Participant socio-demographic and clinical variables.

	WLWH* (n = 107)	HIV-negative (n = 144)	p-value
Age (years) , median [IQR]	51.6 [43.9 to 58.7]	49.7 [34.3 to 57.9]	0.08
Ethnicity , n (%)			
White	46 (43.0)	63 (44.1)	0.97
Non-White†	61 (57.0)	80 (55.9)	
Income , n (%)			
≥\$20,000 CAD‡/year	55 (55.6)	83 (63.8)	0.26
<\$20,000 CAD/year	44 (44.4)	47 (36.2)	
Substance use§ , n (%)			
Never	50 (47.2)	86 (60.6)	0.06
Past	28 (26.4)	34 (23.9)	
Current	28 (26.4)	22 (15.5)	
Smoking history , n (%)			
Never	28 (26.4)	63 (43.8)	0.02
Past	31 (29.2)	31 (21.5)	
Current	47 (44.3)	50 (34.7)	
PTSD¶ , n (%)			
No	40 (37.4)	65 (45.1)	0.27
Yes	67 (62.6)	79 (54.9)	
Physical Activity , n (%)			
≥150 mins/week	41 (44.6)	77 (56.6)	0.10
<150 mins/week	51 (55.4)	59 (43.4)	
Hair cortisol levels (pg/mg) , median [IQR]	36.5 [15.8 to 64.0]	38.3 [18.0 to 59.5]	0.97
Sleep hours , median [IQR] (Range)	7.0 [6.0 to 8.0] (1.0 to 12.0)	7.0 [5.0 to 8.0]	0.80

*WLWH=women living with HIV; †Non-White=Indigenous, African/Caribbean/Black, or Other/Mixed; ‡CAD=Canadian dollars; §Substance use=opioids, crack/cocaine, and/or methamphetamines; ¶PTSD = post-traumatic stress disorder, assessed by self-reported diagnosis by a healthcare provider or evaluation of symptoms from the Post-Traumatic Checklist – 6-item Civilian Version (PCL-6) where a score of ≥14 defines PTSD, Cronbach’s α = 0.87.

**Data were missing for the following variables: ethnicity (n=1), income (n=22), substance use (n=3), smoking history (n=1), and physical activity (n=23).

10 Healing together Common Threads of Trauma

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Background: The International Community of Women Living with HIV - North America's (ICW-NA) strategic plan start for 2020-2024 provides the rationale for the need for trauma- informed approaches which address the needs and experiences of women living with HIV(WLWH) .As stated in the plan , there were estimated 20.1 million women and girls living with HIV in the world in 2019. Women are expose to violence and poverty and bear a disproportionate burden in caring for their families vulnerabilities, stigmatization and systematic injustice mean women who are predisposed to HIV infection are also more like to experience unemployment housing instability and gender-based violence. Healing together recognizes that intersectional stigma , racism, and poverty heighten vulnerability for premature illness and death for adults women living with HIV, ages 18 years old and older .

Method: Healing Together is an integrated HIV trauma- informed, stigma reduction intervention that enhance the ability to share their living experiences with each other and others of their choice. healing together intervention consists of training comprised of six sessions, is intervention for increase in self-esteem, reducing the silence and isolation associated with HIV.

Results: To participate. individual eligibility includes (1) a verifiable diagnosis of HIV. (2) a willingness to learn storytelling techniques on how and when to disclose one's HIV status and lived experiences (3) receipt of HIV care from a verifiable HIV medical provider, (4) engagement in case management services. (5) attend at least five of six training sessions training, (6) meet and age requirement of 18 years and older.

Conclusion: The HT intervention goal is particularly adept at supporting women in understanding and move through traumatic lived experiences and challenges in a safe , nurturing environment. Intervention goals are to decrease the impact of internalized stigma and trauma experienced by women living with HIV

186 Measuring Quality of Life for People Living with HIV in Ontario

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Background

The UNAIDS 95-95-95 targets encompass testing and treatment outcomes for people living with HIV (PLWH). These targets do not include quality of life (QoL) for people living with HIV, leading to calls for a fourth 95. The PozQol tool which measures quality of life was developed specifically for PLWH.

Methods

The OHTN Cohort Study (OCS) follows PLWH at 15 clinics in Ontario. In 2022, 1842 PLWH completed the PozQol in the annual interview. The PozQol has four sub-scales: health concerns, psychology, sociology, and functionality; and contains 13 questions with answer options ranging from 1 to 5 (not at all to extremely). Its overall mean and sub-group means were calculated using SAS 9.4.

Results

In the health concerns domain, 47% worry about their health and 55% about the impact of HIV on their health. 49% fear the health effects of HIV as they age. For the psychology domain, 82-89% moderately/very/extremely enjoy and feel in control of their life, are optimistic about their future and feel good about themselves. In the sociology domain, 63% feel HIV does not/slightly limits personal relationships and 68% feel a sense of belonging. However, 53% of participants fear being rejected because they have HIV. For the functionality domain, 73% responded that HIV does not/slightly prevents them from doing as much as they'd like and 70% said that having HIV does not/slightly limits opportunities. 20% of respondents said managing HIV wears them out. The overall PozQol mean score was 3.72, health concerns 3.4, psychology and sociology 3.7, and functionality 4.1.

Conclusion

QoL is an important indicator for HIV treatment care and support. PLWH in the OCS show high scores for QoL, but more support is necessary to ensure that PLWH feel confident about their health and free of stigma.

298 Mental Health Service Use and Perceived Unmet Needs among Women Living with HIV

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Background: The prevalence of mental health concerns among women living with HIV in Canada was previously reported to be 57.4%, highlighting the need for accessible mental health care for this population. We aimed to: 1) describe the availability and use of services among women living with HIV with unmet mental health needs and 2) identify characteristics associated with these unmet needs.

Methods: Baseline data from the Canadian HIV Women's Sexual and Reproductive Health Cohort Study were analyzed. Unmet mental health need was defined by participant-reported shortage of mental health support. Self-reported availability and use of mental health services were examined using descriptive statistics. Logistic regression models were constructed to determine associations between sociodemographic, clinical, and psychosocial characteristics and unmet need.

Results: Of 1422 participants, 38% (n=541) perceived unmet mental health needs. Among this subset, 22.1% (n=119) accessed services at HIV clinics, 26.5% (n=143) reported available services at clinics but did not access them, and 51.4% (n=277) indicated these services were unavailable, did not know if services were available, or were not engaged in HIV care. Factors associated with unmet needs included rural residence [adjusted odds ratio (aOR): 1.69, 95% confidence interval (CI): 1.03-2.77], higher educational level (aOR: 1.43, 95% CI: 1.02-2.02), and higher stigma scores (aOR: 1.03, 95% CI: 1.02-1.03). Conversely, African/Caribbean/Black identity (aOR: 0.37, 95% CI: 0.26-0.54), history of recreational drug use (aOR: 0.56, 95% CI: 0.39-0.81), and Quebec residence (aOR: 0.69, 95% CI: 0.50-0.96) were associated with lower odds of unmet needs.

Conclusion: Our findings indicate existing services may not be sufficient to reach all participants or may need to be adapted to respond to specific needs as some participants reported unmet needs despite accessing care. Characteristics associated with unmet needs also reflect geographic and socioeconomic disparities that must be accounted for in future service design.

164 Positively Mindful: Qualitative findings on the experience of PLWH participating in a mindfulness course

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Background: Mindfulness is increasingly popular across Canada and beyond, and there is growing evidence that it can improve the physical and mental wellbeing of people living with HIV (PLWH). However, little is known about the experience of and adverse effects from mindfulness in this population. Cross-sectional and population-based studies show that meditation-related adverse effects can be common in the general population, yet they are underreported in clinical trials of mindfulness-based interventions.

Aim: To explore the experiences of PLWH who participated in an 8-week mindfulness-based stress reduction course (MBSR) as part of a larger feasibility trial

Method: Positively Mindful was the first UK-based research on mindfulness for PLWH, randomising participants to MBSR (n=16) or a waiting list (n=6). Semi-structured interviews were conducted (n=5) with participants allocated to MBSR – three study completers and two dropouts. Transcripts were analysed thematically.

Findings: An unmet need for interventions like mindfulness was identified and emergent themes characterising participant experience included Seeing Anew, Using Course Techniques and Materials, and how the group dynamic and facilitator influenced intervention effect. Interactions with existing mental health conditions necessitated two participants' withdrawal; this did not lead to a negative perception of MBSR or the study in either case. Their data highlight the tension between motivation to engage and capacity to engage in particular mindfulness practices.

Conclusion: Qualitative evidence and adverse effects data on mindfulness is limited but could inform PLWH, researchers and service providers, when assessing its safety and therapeutic potential for specific populations. Our results suggest that, like all health interventions, mindfulness has the potential to improve wellbeing while also having the capacity to elicit unwanted side-effects. This should be factored in when risk assessing its appropriateness for every individual.

33 What patient-reported outcome data are collected to inform routine HIV care? Results from a rapid scoping review

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There is international consensus on the utility of patient-reported outcome measures (PROMs) to inform HIV care; however little is known on the scope of related PROM initiatives to date. Our team conducted a rapid scoping review of literature published from 2005 on efforts to collect PROM data to inform individual patient care within HIV clinical practice. Medline, Embase, PsychINFO, and CINAHL databases were searched on May 4, 2022, using a search strategy designed with an academic librarian. Projects involving symptom screens for tuberculosis case-finding were excluded. Here, findings are presented on the country of origin of retained PROM initiatives and on the patient-reported outcomes (health issues) they measured to inform HIV care. Of 13,062 records generated from the database search, we retained a final sample of 107 documents, referring to 70 distinct initiatives. All except one were led in a single country. Represented were the United States of America (n=30; 43% of initiatives), seven European countries (n=20; 29%), nine African countries (n=12; 17%), two Southeast Asian countries (n=3; 4%), Australia (n=3), Canada (n=2), and Korea (n=1). The most frequently measured patient-reported outcomes were: symptoms of depression (n=40; 57% of initiatives), alcohol use (n=21; 30%), drug use (n=20; 29%), symptoms of anxiety (n=17; 4%), adherence to antiretroviral therapy (n=14; 20%), smoking (n=11; 16%), interpersonal violence or abuse (n=8; 11%), cognitive problems (n=7; 10%), (health-related) quality of life (n=7; 10%), side effects (n=6; 9%), sexual risk behaviors (n=5; 7%), symptoms of post-traumatic stress disorder (n=5; 7%), material deprivation (e.g., housing/financial issues) (n=4; 6%), sexual satisfaction/problems (n=4; 6%), and HIV disclosure (n=4; 6%). All other outcome categories occurred in 3 or fewer initiatives. PROMs initiatives within HIV care have spanned the globe and assessed a wide range of outcomes. However, they have mostly targeted mental health, substance use, and adherence.

307 Association between grey matter volume and social network size among older people living with HIV

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Background: The social brain hypothesis suggests that primates developed a larger brain to meet the social complexities of living in a group. Social group size has been shown to correlate with volumetric changes in several brain regions among both macaques and healthy humans. Here, we tested for a relationship between grey matter volume and social network size in a sample of older people living with HIV in Canada.

Methods: Fifty-eight HIV-positive participants drawn from the Positive Brain Health Now cohort underwent structural brain MRI as part of a pilot neuroimaging study. Social network size was measured using Dunbar's Social Network Questionnaire. Grey matter volumes were assessed with Voxel Based Morphometry, focusing on 7 regions of interest based on a prior study in our group using the same social network size questionnaire in healthy older people.

Results: We observed a correlation between social network size and grey matter volume in the regions of interest, with statistically significant effects in left anterior cingulate cortex and left anterior temporal cortex, controlling for gender, age, and education. However, the direction of the correlation was in the opposite direction to that predicted: those with larger social networks had smaller grey matter volumes. We sought to explain this effect by considering additional variables, including chronic stress, and current and nadir CD4 counts. The negative correlation was more striking in those with CD4 counts < 500, whereas current self-reported stress was not related to grey matter volumes in these regions.

Conclusion: This preliminary study found a negative relationship between social network size and grey matter volume among older people with chronic HIV infection, most striking in those with low CD4 cell counts. Further work is needed to replicate this effect and explore the underlying mechanisms.

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184 Psychological Distress Outcomes, HIV Status, Race, and Financial Hardship Among Patients with Mpox

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Background: Isolation due to infectious disease can have negative impacts on psychological wellbeing, particularly when there is stigma associated with the disease. We describe the psychological distress experienced by a cohort of Mpox patients, and explore how HIV status, race, and financial hardship may influence these experiences.

Methods: Mpox patients seen at St. Michael's Hospital from May-November 2022 self-administered questions from The Kessler Psychological Distress Scale (K10) and questions regarding financial hardship experienced during isolation, at the end of their isolation period. We compared psychological distress scores among HIV+ and HIV- participants, white and racialized participants, and participants who experienced financial hardship versus those who did not, using the Wilcoxon test.

Results: Of 21 respondents, all self-identified as gay/queer/bisexual, 11 (52.4%) were HIV+, 7 (33.3%) were white, 14 (66.7%) were racialized, and median (IQR) age was 38 (33, 43) years. Median (IQR) psychological distress score was 23 (20, 29) out of 45, and 12 respondents (57.1%) reported experiencing financial hardship during isolation. Median (IQR) psychological distress scores were similar among HIV+ and HIV- respondents at 24 (20, 31) and 21 (20, 28) respectively ($p=0.50$); among white and racialized participants at 28 (22, 31) and 21 (20, 25) respectively ($p=0.43$); and among those who did and did not experience financial hardship at 22 (14, 28) and 24 (20, 32.5) respectively ($p=0.24$). Of those who scored in the upper quartile of psychological distress scores, a majority (66.7%) were HIV+.

Conclusions: Patients with Mpox may experience varying degrees of psychological distress. Clinicians should bear in mind the effects of infection and isolation on the psychological wellbeing of Mpox patients. Due to the limited sample size, further research on severity and type of psychological distress in the context of HIV and other comorbid infectious diseases is warranted.

14 Wireless Physical Activity Monitor Use among Adults Living with HIV in a Community-Based Exercise Intervention Study: a Quantitative Longitudinal Observational Study

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OBJECTIVES: Our aim was to examine wireless physical activity monitor (WPAM) use and its associations with contextual factors (age, highest education level, social support, mental health) among adults living with HIV engaged in a community-based exercise (CBE) intervention.

METHODS: We conducted a quantitative longitudinal observational study using data from a community-based exercise (CBE) intervention study with adults living with HIV in Toronto, Canada. Participants received a WPAM to track physical activity during a 25-week CBE intervention involving thrice-weekly exercise, supervised weekly (Phase 1) then a 32-week follow-up phase of independent exercise (Phase 2). Uptake was measured as participants who consented to WPAM use at initiation of the intervention. Usage was defined as the median proportion of days participants had greater than 0 steps out of the total number of days in the study. We measured contextual factors using a baseline demographic questionnaire (age, highest education level) and median scores from the Medical Outcomes Study Social Support Scale and Patient Health Questionnaire (mental health), where higher scores indicated greater social support and mental health concerns, respectively. We calculated Spearman correlations between WPAM usage and contextual factors defined as weak ($\rho \geq 0.2$), moderate ($\rho \geq 0.4$), strong ($\rho \geq 0.6$), or very strong ($\rho \geq 0.8$).

RESULTS: Seventy-six of 80 participants (95%) consented to WPAM use. In Phase 1, 66% of participants (n=76) used the WPAM at least one day. Median WPAM usage was 50% (25th, 75th percentile: 0%, 87%; n=76) of days enrolled in Phase 1 and 23% (0%, 76%; n=64) of days during Phase 2. Correlation coefficients ranged from weak for age ($\rho=0.26$) and mental health scores ($\rho=-0.25$) to no correlation (highest education level, social support).

CONCLUSIONS: The majority of participants consented to WPAM use, however, usage declined over time. Future implementation of WPAMs should consider factors to promote sustained usage with adults living with HIV.

162 Working memory abilities in school-aged children who are HIV-exposed, uninfected: A preliminary study

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Purpose: The present study investigated working memory, an aspect of executive functioning, in children who are HIV-exposed uninfected (CHEU) and children who are HIV-unexposed uninfected (CHUU).

Methods: CHEU and CHUU 6 to 10 years of age underwent developmental assessments through the Kids Imaging and Neurocognitive Development (KIND) study at the Hospital for Sick Children. Two working memory subtest scores (digit and picture span) and Full-Scale IQ (FSIQ) were evaluated with the Wechsler Intelligence Scale for Children – Fifth Edition (WISC). A spatial working memory (SWM) task was administered using the Cambridge Neuropsychological Testing Automated Battery (CANTAB). Five SWM measures were obtained, which included the number of incorrect decisions within four trials of increasing difficulty (cognitive load) and a search strategy score. Group differences and analyses with age were evaluated. Significance was held at $p < 0.05$.

Results: Forty CHEU (23 female, 8.61 ± 1.56 years) and 28 CHUU (11 female, 8.69 ± 1.52 years) were included. There were no between-group differences in FSIQ. The digit span subtest was lower in the CHEU ($p=0.048$) compared to CHUU, but not the picture span subtest or SWM measures. Older age was related to better decision performance on two trials with the highest cognitive load ($p=0.032$ and $p<0.01$, respectively) across groups. When the groups were separated, older age was significantly related to better decision performance on the highest cognitive load trial ($p < 0.01$) only in the CHEU group.

Conclusions: In this preliminary analysis, the CHEU demonstrated lower verbal working memory scores than CHUU on assessment measures. On the SWM task, the CHEU demonstrated age-related performance on the highest difficulty trial, possibly indicating protracted development of more complex non-verbal working memory abilities compared to CHUU. These results suggest a vulnerability in working memory abilities, and further research on other aspects of executive functioning is needed.

335 Estradiol concentrations in trans women with HIV on integrase strand transfer inhibitor (INSTI)-based antiretroviral therapy (ART) compared to those without HIV

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Background: Concern of negative drug-drug interactions between feminizing hormone therapy (FHT) and ART can be a barrier to taking ART for trans women with HIV. We measured serum estradiol concentrations in trans women with HIV taking FHT and INSTI-based ART versus trans women without HIV taking FHT.

Methods: This was a parallel-group study of trans women with HIV (on suppressive ART) and without HIV, ≥18 years, taking ≥2 mg/day of oral estradiol plus a form of anti-androgen therapy, with no changes for ≥1 month. Blood was collected prior to ART and estradiol dosing and then at 2, 4, 6, and 8 hours post-dose and serum estradiol concentrations were measured using CMIA. Estradiol concentrations geometric means (GMs) at each time-point, estradiol C_{max}, area-under-the-curve (AUC) and GM ratios (GMRs) were calculated and compared using Wilcoxon rank-sum tests.

Results: Participants (n=15) (enrolled from March to August 2022) had a median age of 32 (IQR: 28-39). Among trans women with HIV (, the median duration of HIV was 9.5 years (IQR: 5.0-23.0); 6 were on bicitgravir/emtricitabine/tenofovir alafenamide and 2 on dolutegravir/abacavir/lamivudine. Participants took a median oral estradiol dose of 4 mg (range 2-6 mg) for a median of 4 years (IQR: 2-8). Anti-androgen therapy included spironolactone (n=8), orchidectomy (n=6), central hypogonadism (n=1), and cyproterone (n=1). Table 1 summarizes estradiol GMs and GMRs by HIV status. No statistically significant differences were identified by HIV status.

Conclusions: In trans women on FHT, estradiol concentrations were similar between trans women on ART and trans women without HIV.
Supporting Document

Table 1: Median estradiol concentrations of HIV positive and HIV negative groups compared using Wilcoxon rank-sum tests with no statistically significant differences identified.

	HIV positive (n=8) GM (90% CI) (pmol/L)	HIV negative (n=7) GM (90% CI) (pmol/L)	HIV positive: negative GMR (90% CI)	P value
Age (years)	36 (32, 48.75)	30 (27.25, 41.75)		0.04
Estradiol dose (mg)	4 (2.5, 4)	4 (4, 4)		0.68
C _{0h}	203.5 (108.4, 382.1)	247.8 (192.1,319.6)	0.82 (0.42,1.60)	0.78
C _{2h}	496.5 (279.6,881.6)	261.5 (190.9,358.1)	1.90 (1.01,3.58)	0.19
C _{4h}	384.2 (260.6,566.3)	384.2 (260.6,566.3)	1.42 (0.86,2.33)	0.34
C _{6h}	248.9 (157.5,393.5)	257.4 (188.0,352.5)	0.97 (0.57,1.65)	0.96
C _{8h}	254.3 (159.3,405.8)	261.3 (190.6,358.3)	0.97 (0.57,1.67)	0.96
C _{max}	538.2 (311.0,931.1)	292.0 (216.1,394.6)	1.84 (1.00,3.38)	0.19
AUC	2945.7 (1908.2,4547.2)	2096.9 (1533.2,2868)	1.40 (0.84,2.34)	0.34

271 HIV Serostatus as a Moderator Between Sexual Minority Stress and Alcohol Misuse Among Gay, Bisexual, and Other Sexual Minority Men in Canada

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Background: Gay, bisexual, and other sexual minority men (GBM) report high rates of sexual minority stress and alcohol misuse, but findings regarding their relationship are inconsistent. Inconsistent findings may be attributed to the differential impact of minority stress on alcohol misuse among GBM living with HIV versus HIV-negative GBM.

Method: We analyzed the baseline data of 2,449 GBM from Engage, a study of sexually active GBM recruited (02/2017-08/2019) using respondent-driven-sampling (RDS) in Montreal, Toronto, and Vancouver. Sexual minority stress was measured using the Lesbian, Gay, and Bisexual Identity (LGBI) and the Heterosexist Harassment, Rejection, and Discrimination (HHRD) scales. Alcohol misuse was measured using the Alcohol Use Disorders Identification Test-Concise (AUDIT-C), with scores ≥ 4 indicating a positive screen for alcohol misuse. We used multiple logistic regression to model associations between sexual minority stress and alcohol misuse, and whether HIV serostatus moderated this relationship. RDS-adjusted analyses controlled for age, income, sexual orientation, ethnicity, and city.

Results: HIV serostatus moderated only the association between heterosexist harassment and alcohol misuse, $\beta = .36$, 95% CI [.04, .69], $p = .03$. The odds of alcohol misuse increased by 45% for every one unit increase in heterosexist harassment among GBM living with HIV, OR = 1.45, 95% CI [1.08, 1.95], $p = .01$, but not among HIV-negative GBM, OR = 1.01, 95% CI [.89, 1.15], $p = .83$.

Discussion: GBM living with HIV had 45% greater odds than HIV-negative GBM to screen positive for alcohol misuse related to increases in experiences of heterosexist harassment. It is possible that other stressors unique to people living with HIV, particularly HIV stigma, are contributing to their increased risk for alcohol misuse. Future mental health research with GBM may wish to stratify by HIV serostatus to examine differences in risk factors for alcohol misuse.

159 Knowledge of cannabinoid concentration of cannabis products used for medicinal and recreational purposes among people living with HIV: A daily diary study

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Many people living with HIV (PLWH) use cannabis for medicinal reasons. Patients' knowledge of the tetrahydrocannabinol (THC) and cannabidiol (CBD) concentration of the cannabis products they use may be important for guarding against potential risks of cannabis use. Knowledge of cannabinoid (THC, CBD) concentration among people who use cannabis is generally low, but no studies have examined knowledge among PLWH. This study characterized PLWH's knowledge of the cannabinoid concentration of the various products they used each day for 2 weeks. We hypothesized that knowledge of cannabinoid concentration would be greater for cannabis that is being used for medicinal (versus nonmedicinal) reasons, and that greater knowledge of cannabinoid concentration would predict reduced likelihood of negative cannabis-related consequences. PLWH (N=29, 76% men, mean age 47 years) who reported using cannabis for both medicinal and nonmedicinal reasons completed daily surveys over 14 days assessing cannabis use, knowledge of cannabinoid concentration of cannabis products used, reasons for cannabis use (medicinal, nonmedicinal, both), and positive and negative cannabis-related consequences. A total of 361 daily surveys were completed across all participants. Participants reported having at least some knowledge of cannabinoid concentration on an average of 44.9% (THC) and 27.4% (CBD) of the days they used cannabis. Generalized linear mixed models revealed that reporting a greater proportion of medicinal (relative to exclusively nonmedicinal) cannabis use days was linked with greater knowledge of cannabinoid concentration, on average, across days. Further, participants who reported knowledge of cannabinoid concentration on a greater proportion of daily surveys were less likely to report cannabis-related consequences. Findings suggest that PLWH report relatively low knowledge of the cannabinoid concentrations in the cannabis products they use, although knowledge may be higher among those reporting a greater proportion of medicinal use occasions. Moreover, knowledge of cannabinoid concentration may be associated with protection against negative cannabis-related consequences.

61 Manitoba's HIV Syndemic: Identifying the intersection of substance use disorder, houselessness, and other comorbidities in people living with HIV

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Introduction: A syndemic is the clustering of social and health problems at a population level. A syndemic model aims to incorporate social and economic factors, as well as the overlap of other diseases, in understanding and describing a specific disease. Although Canada has met the 90-90-90 HIV targets, Manitoba is reporting increasing HIV cases, suggesting Manitoba's HIV population is distinct. A syndemic model approach is needed to better understand people living with HIV (PLHIV) in Manitoba.

Objective: To describe the Manitoba HIV syndemic with a focus on substance use, houselessness, and previously diagnosed comorbidities in PLHIV in Manitoba.

Methods: A retrospective cohort study was completed. Clinical charts of all people newly diagnosed with HIV in Manitoba, Canada between January 1st, 2018 and December 31st, 2021 were reviewed.

Results: The main self-reported modes of transmission were heterosexual sex and injection drug use. Greater than 60% of women and 40% of men reported injection drug use, with methamphetamine as the primary substance. Of the new diagnoses, 42.4% were female sex. The reported sexual orientation of new diagnoses was: 75.6% heterosexual, 18.8% gay, 5.1% bisexual, 0.5% lesbian. Pre-existing medical conditions was reported by 81.7%, with mental health and sexually transmitted infections the most common. Houselessness was reported by 31%. The average CD4 count at time of diagnosis was 425.5.

Conclusions: Manitoba's HIV population represents a new group of PLHIV, distinct from the typical HIV population of men who have sex with men. The data demonstrates an overlap of injection drug use, houselessness, and mental health comorbidities in new HIV cases, as well as increasing cases amongst females. This is Manitoba's syndemic. A multipronged approach addressing substance use disorder, housing, and mental health supports is needed to help Manitoba's growing, unique HIV population.

331 Medication and Substance Use in Relation to Chronic Pain among Women Living with HIV and HIV-negative Women in the British Columbia CARMA-CHIWOS Collaboration (BCC3) Study

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Background: Chronic pain (CP) is prevalent among women living with HIV (WLWH), and has been associated with biological (antiretrovirals, HIV, diabetes) and social (trauma, stress, violence) factors. CP management in WLWH is a research priority affecting quality of life, adherence to care, and wellbeing. We describe and compare medication and substance use in the context of CP among WLWH and well-matched controls in BCC3.

Methods: BCC3 is a community-based study of healthy aging enrolling WLWH and controls ≥16y. We used the Brief Chronic Pain Questionnaire (BCPQ) to screen for CP. Current pain-related prescriptions, over-the-counter (OTC) medication, and substance use were self-reported. Groups were compared (WLWH with CP vs WLWH without CP and controls with CP) using Chi-Square/Fisher's and Mann-Whitney tests.

Results: WLWH with CP were of similar age as controls with CP but older than WLWH without CP (Table 1). There were no differences in medication/cannabinoid/substance use between WLWH and controls with CP, and less than half of women with CP reported using prescription pain medications. Compared to WLWH without CP, WLWH with CP were more likely to use prescribed medications and opioids for pain/cannabinoids/substances, but not OTC medications. Overdose history was high among women with CP, but there were no differences in overdose experiences within the last 6 months.

Conclusions: WLWH and controls with CP shared similar medication/substance use patterns. These data further suggest that CP is a prevalent comorbidity associated with cannabinoid/substance use, stressing the need for access to safe CP management as a health priority for women aging with or without HIV.

Supporting Document

Table 1. Medication and substance use among WLWH and controls living with or without CP in the BCC3 study

Parameter	WLWH with CP, n=58 (Group 1)	Controls with CP, n=73 (Group 2)	WLWH without CP, n=93 (Group 3)	Controls without CP, n=157 (Group 4)	p-value (Group 1 vs 2)	p-value* (Group 1 vs 3)
Age, years, median [IQR]	51 [46-59]	51 [37-60]	47 [39-57]	44 [29-56] [#]	0.22	0.01
Prescribed non-opioid pain medications, n (%)	27 (47)	27 (37)	13 (14)	13 (8)	0.27	<0.0001
Prescribed opioids for pain, n (%)	28 (48)	28 (38)	19 (20)	12 (8)	0.25	<0.001

Over-the-counter pain medications, n (%)	41 (71)	47 (64)	59 (63)	113 (72)	0.44	0.36
Cannabinoids (CBD, THC), n (%)	28 (48)	34 (47)	24 (26)	43 (27)	0.85	0.005
Current substance use (see below), n (%)	26 (45)	25 (34)	25 (27)	17 (11)	0.22	0.02
Opioids (heroin, dilaudid, oxycodone, morphine, methadone, codeine, fentanyl), n (%)	14 (24)	14 (19)	16 (17)	3 (2)		
Non-opioid sedating drugs (benzodiazepine, gabapentin, ketamine, sleeping pills), n (%)	7 (12)	5 (7)	4 (4)	0 (0)		
Stimulants (cocaine, crack, speed, methamphetamine, methylenedioxyamphetamine, ecstasy), n (%)	20 (35)	17 (23)	21 (23)	13 (8)		
Psychedelics (acid, mushrooms), n (%)	3 (5)	2 (3)	3 (3)	2 (1)		
Stimulant + opioid (heroin + cocaine, talwin & ritalin), n (%)	4 (7)	3 (4)	3 (3)	1 (1)		
Ever experienced overdose, n (%)	25 (43)	28 (38)	20 (22)	19 (12)	0.58	0.004
Overdose in the past 6 months, n (%)	2 (3)	9 (12)	4 (4)	8 (5)	0.11	>0.99
*Significant differences remained after adjusting for age # Controls were also significantly younger than WLWH with CP (p<0.0001)						

297 Prévention du VIH en contexte pandémique : adaptation pour maintenir l'accès à la PrEP pour PUDI à Montréal entre mars et novembre 2020

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Contexte :

Analyse rétrospective des mesures mises en place pour assurer l'accès à la PrEP pour des personnes utilisatrices de drogues par injection (PUDI) dans le cadre d'un projet de recherche intégré en milieux communautaires. La fermeture et les restrictions des milieux cliniques entre mars et novembre 2020 ont créé une situation critique pour les personnes à risque d'une infection du VIH. Les études sur les événements majeurs ont démontré que les risques d'exposition aux infections transmises par le sang augmentent dans ces contextes pour les PUDI.

Méthodes :

Identification des défis : 1) suivi virtuel n'était pas possible avec moins de 35 % des participants qui ont accès à un téléphone et une majorité en logement précaire 2) une infirmière de recherche en retrait préventif COVID-19, 3) les risques de déviation aux protocoles de traitement clinique 4) éviter les risques d'infection au VIH pour les personnes sous la PrEP.

Mesures d'adaptation : 1) Inscription des activités de recherche auprès des PUDI reconnues comme essentielles 2) Mise en place d'un protocole d'accès au traitement plus simplifié en pharmacie de recherche 3) intégration d'un protocole de prévention dans unité de soins hospitaliers spécialisée dans la prise en charge clinique des maladies transmises par le sang.

Résultats : 17 PUDI participants de recherche ont été suivi en milieu hospitalier pour le dépistage régulier, accès à la PrEP par la pharmacie de recherche, et suivi clinique de la PrEP (analyse des niveaux de créatinine....). Parmi les 5 PUDI qui ont poursuivi leur traitement, aucune séroconversion n'a été documentée.

Discussion : L'accès à la PrEP est à considérer dans les milieux cliniques d'intervention pour les PUDI. Au-delà des mesures exceptionnelles, l'approche test and treat et test and prevent est efficace pour la prévention auprès des groupes vulnérables et à risque de l'infection du VIH.

Epidemiology and Public Health Poster Abstracts / Épidémiologie et santé publique éposés affiches

369 Évaluation du Programme provincial de préparation commerciale (P3CN) pour nourrissons nés d'une femme vivant avec le VIH (FVVIH) au Québec

Chebou Tatiana Murielle¹, Suzanne Taillefer, Marie-Michèle Poirier, Christos Karatzios, Marie-Astrid Lefebvre, Roseline Thibeault, Marie-Claude Beaudoin, Isabelle Alarie, Cybèle Bergeron, Fatima Kakkar, Nadia O'Brien, Isabelle Boucoiran
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Introduction : Les recommandations canadiennes pour l'alimentation des nourrissons nés d'une FVVIH privilégient l'utilisation de la préparation commerciale (PC) et appuient sa gratuité. Ainsi, le P3CN a vu le jour au Québec en avril 2021 pour rendre disponible gratuitement cette PC aux familles éligibles.

Objectifs: Évaluer l'implantation du P3CN pour nourrissons nés de FVVIH au Québec.

Méthodes: Etude mixte convergente s'appuyant sur le cadre écologique d'implantation des programmes décrit par Joseph A Durlak et l'analyse comparative fondée sur le sexe et le genre Plus de l'Agence de santé publique du Canada. Les données quantitatives ont été extraites du registre périnatal du VIH au Québec (CIME-Q) et du registre du P3CN. Les données qualitatives ont été collectées via des entrevues semi-dirigées de vingt bénéficiaires et neuf acteurs (coordinatrices et pharmaciens) et les verbatims analysés par thèmes en utilisant une approche inductive et déductive.

Résultats: En considérant l'éligibilité des FVVIH ayant donné naissance à partir d'avril 2019, le P3CN a rejoint 173 familles sur 204 naissances au Québec, dont dix qui ont bénéficié conjointement du P3CN et d'un autre programme, et cinq bénéficiaires d'un autre programme. L'implantation du programme est influencée par des facteurs contextuels notamment les systèmes d'informations et les relations sociales, le soutien financier qu'offre le P3CN aux bénéficiaires malgré les délais de remboursement. Plusieurs adaptations ont été nécessaires soit le choix du mode de remboursement, les moyens de communications à privilégier, la possibilité de récupérer la préparation commerciale dans le centre affilié. La disponibilité des ressources, la cohésion de l'équipe sont des éléments facilitants soulignés par les coordinatrices. Les pharmaciens optent pour une entente simple permettant l'atteinte des objectifs du programme.

Conclusion: Le P3CN est accessible aux familles éligibles qui ont en général une expérience positive. La documentation de l'expérience des bénéficiaires et des acteurs permettra d'améliorer le P3CN.

214 Estimating the Population Size of People Who Inject Drugs in Canada in 2021

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¹*Public Health Agency Of Canada*

Introduction:

People who inject drugs (PWID) are disproportionately affected by HIV and Hepatitis C infections. Estimating the size and distribution of this population is essential in monitoring infectious disease rates and progress towards elimination targets.

Methods:

We estimated numbers of people with 1) a lifetime history of injection drug use (IDU) stratified by sex, and region and 2) IDU within the past 12 months, stratified by sex, using combined weighted Canadian Community Health Survey (CCHS) cycles (2019-2021). We applied the weighted prevalence of IDU to the 2021 Statistics Canada national population size estimate of individuals aged 15yrs+. Further adjustments were made using external data to account for populations not included in the CCHS sample frame (Indigenous Peoples living in a First Nation (on-reserve) community, active military personnel, people experiencing unstable housing, and people who are incarcerated), and to account for false-negative self-reporting of IDU on surveys.

Results:

In 2021, the estimated number of PWID (lifetime) was 373,820, representing 1.15% of the Canadian population 15yrs+. Among these 69% were male, and 31% were female. The estimated number of PWID (past 12 months) was 76,500 or 0.24% of the population, of which 56% were male, and 44% were female. The highest prevalence of lifetime PWID was estimated in British Columbia at 1.59% (72,090), followed by the Prairie provinces at 1.21% (70,010), Quebec at 1.12% (81,950), Ontario at 0.86% (109,380), and the Atlantic provinces at 0.84% (18,150).

Conclusion:

Estimates of PWID at the national and regional levels can be used to inform policy and programming to reduce the impact of HIV and Hepatitis C among PWID. Further work is necessary to refine the methodology and to validate these estimates.

56 The GetaKit Study: Bridging the gap in undiagnosed HIV infections using at-home HIV self-testing kits.

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Background: While new HIV diagnoses occur unabated, in Canada an estimated 11% of persons living with HIV remain unaware of their status. Moreover, there are social and economic challenges to accessing in-person HIV testing services, particularly among marginalized and at-risk population groups. These barriers were made more prominent as a result of COVID-19, where access to STI/HIV screening was greatly reduced. In response to the foregoing issues, we implemented Canada's first at-home HIV self-testing service, GetaKit.

Methods: GetaKit is a prospective cohort study, led by nurse researchers with the University of Ottawa in collaboration with the Ontario HIV Treatment Network. The research operates through a web-based platform (GetaKit.ca), which uses a unique algorithm developed by the team to assess HIV specific risk factors and indications for HIV testing. Self-test kits are available for free to eligible participants. In addition, GetaKit has partnered with several AIDS Service Organizations throughout Ontario who distribute kits locally and provide supports/resources to participants.

Results: GetaKit launched in July 2020 in Ottawa and expanded to Ontario in April 2021. To date, we have distributed over 5000 self-testing kits. Of those who ordered a kit, 81% identified as belonging to an HIV priority population group and 26% reported having never completed HIV testing in their lifetime. Results were reported by 59% of participants who completed testing of which, 70% reported a negative HIV test. Eighteen participants were found to be HIV-positive through GetaKit, all of whom were linked to HIV treatment/care.

Conclusions: Our findings from the GetaKit study to date shows high uptake among persons from priority groups and first-time testers, suggesting that self-testing may be a useful to identify HIV infection among persons who are unaware of their status and to provide linkage to HIV prevention or treatment/care.

85 Adherence to Oral Antiretroviral Therapy (ART) for People Living with HIV (PLWH) in Canada: A National, Retrospective Claims Analysis, 2010-2020

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Background: Maintaining viral suppression requires stringent adherence to ART. Suboptimal adherence can lead to treatment failure, development of drug resistance, fewer ART options, and increased morbidity/mortality. Recent advances have reduced pill burden and dosing frequency, but some PLWH are unable to maintain optimal ART adherence levels. The aim of this study was to describe real-world ART adherence among PLWH across Canada and identify factors associated with suboptimal adherence.

Methods: This retrospective study used medical/pharmacy claims data sources to examine data from PLWH aged ≥ 18 years who initiated an ART regimen between 2010-2020 across seven provinces (Alberta, Manitoba, New Brunswick, Newfoundland and Labrador, Ontario, Saskatchewan, and Quebec). Index date was defined as the date of first dispensing of a multi-class ART regimen. PLWH were followed for ≥ 12 months and baseline characteristics were summarized using descriptive statistics. Adherence was calculated using a Proportion of Days Covered approach, based on ART dispensing, recorded between April 2010 and the last available date. Linear regression analysis was used to determine correlations between suboptimal adherence and baseline characteristics.

Results: We analyzed data from 19,322 eligible PLWH. Among 12,594 PLWH with evaluable baseline data, 10,673 (84.8%) were ART naïve, 74.2% were male, mean age was 42.9 years, and 54.1% received a multi-tablet ART regimen. Of the 19,322 eligible PLWH, 44.7% had suboptimal adherence ($< 95\%$), with approximately 18% having $< 85\%$ adherence. Based on multivariate regression analysis, suboptimal adherence was significantly associated with multi-tablet ART ($p < 0.001$) and younger age ($p < 0.001$).

Conclusion: This large study examined real-world ART adherence patterns, encompassing 45% of the total Canadian PLWH population. Almost half of adult PLWH in Canada had suboptimal ART adherence, with 1 in 5 having adherence levels $< 85\%$. Better understanding of factors influencing adherence may help address gaps in current care practices that may impact treatment outcomes.

8 Characterizing opioid agonist therapy uptake and correlates of retention among people living with HIV in British Columbia, Canada

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Objective: The illicit drug toxicity crisis in British Columbia (BC) has reduced the survival gains among people living with HIV (PLWH) achieved by antiretroviral therapy. We examined opioid agonist therapy (OAT) uptake and correlates of retention in OAT among a cohort of PLWH over a 21-year observation period.

Methods: We analyzed data from the Seek and Treat for Optimal Prevention of HIV/AIDS database between April 1996 and March 2017. PLWH with known gender, age of ≥19 years old, ≥12 months of follow-up, and at least one OAT dispensation were included. OAT treatment episodes with no interruptions in the prescribed doses lasting ≥ 3 days for methadone (the first line of treatment in BC until July 2017), or ≥ 6 days for buprenorphine/naloxone (introduced to BC in 2008) were constructed. Retention in treatment was calculated as no interruption in the prescribed doses for ≥12 months. We examined annual trends in retention. Correlates of retention were modeled using the generalized estimating equation method.

Results: Among 13,433 PLWH in the cohort, 2,151 (16.0%) had at least one OAT dispensation. Retention declined by 1.34 units per year ($p < 0.0001$). In the overall sample, during the first OAT episode, 42.9% ($n=923$) reached the therapeutic dose (≥ 60 mg for methadone [$n=904$], ≥ 12 mg for Buprenorphine/Naloxone [$n=19$]). Correlates of 12-month retention are presented in table 1.

Conclusion: We found a decline in OAT retention among PLWH. Optimal management of opioid use disorder among PLWH aimed at maximized retention and reaching a therapeutic dose is necessary.

Supporting Document

Table 1. Correlates of retention in OAT among PLWH in BC (1996-2017)

	Unadjusted Model OR (95% CI)	Adjusted Model OR (95% CI)
Time-Fixed Variables #		
Gender		
Men [ref]	1.00	1.00
Women	0.88 (0.79, 0.99)	0.90 (0.79, 1.02)
Age (years) (per 10 years increase), median (Q1, Q3)	1.43 (1.33, 1.54)	1.35 (1.25, 1.46)
HCV Co-infection (lifetime)		
No [ref]	1.00	0.90 (0.79, 1.02)
Yes	0.77 (0.68, 0.86)	
Ever Retained before entering the cohort		
No	1.00	1.00
Yes	1.43 (1.18, 1.73)	1.38 (1.14, 1.67)
No OAT Before Entering	0.80 (0.69, 0.92)	0.89 (0.77, 1.03)
Time-varying Categorical Variables		

Total days on previous OAT (365.25 days increase) ##	0.93 (0.92, 0.95)	0.98 (0.97, 1.00)
OAT Type ### Methadone [ref] Bup/Naloxone	1.00 0.39 (0.33, 0.47)	1.00 0.35 (0.27, 0.44)
Depression ## No [ref] Yes	1.00 0.94 (0.82, 1.08)	Not used for selection
Mood & Anxiety Disorder ## No [ref] Yes	1.00 0.95 (0.84, 1.07)	Not used for selection
Psychosis ## No [ref] Yes	1.00 0.74 (0.61, 0.90)	Not selected by the model
Chronic Pain ## No [ref] Yes	1.00 0.78 (0.68, 0.86)	Not Selected by the Model
HIV Viral Load suppression ## (copies/ml) Not Suppressed [ref] Suppressed <200 Unknown	1.00 0.80 (0.72, 0.89) 0.99 (0.91, 1.08)	1.00 1.13 (1.00, 1.27) 1.02 (0.92, 1.13)
Prescriber Type ## GP/Community Medicine [ref] Specialist Unknown	1.00 0.92 (0.76, 1.11) 0.69 (0.60, 0.78)	1.00 0.97 (0.79, 1.20) 0.83 (0.72, 0.96)
Therapeutic Dose within Treatment Episode		
Achieved the Therapeutic Dose ‡ No [ref] Yes	1.00 3.40 (3.13, 3.70)	1.00 3.54 (3.23, 3.88)

Note: Logistic GEE model is modeling the probability that retained = 1; This model is built upon all episodes; covariates were selected based on Type III p-values and Quasi-Akaike Information Criterion (QIC).

Time-fixed variables measured at OAT initiation

Time-varying variable measured at the beginning of each new OAT episode

Time-varying variable measured as of the end of each OAT episode

‡ Assessed across treatment episodes, i.e., ≥ 60 mg for methadone, ≥ 12 mg for Buprenorphine/Naloxone

Abbreviations: OAT: opioid agonist therapy; PLWH: people living with HIV; Bup: Buprenorphine; OR: odds ratio; CI: confidence interval; Q1: 25% interquartile; Q3: 75% interquartile; GP: general practitioner; HCV: hepatitis C virus; ICD-

9/10: International Classification Disease Version 9/10; MSP: Medical Services Plan; DAD: Discharge Abstract Database;
DTP: Drug Treatment Program

48 Checklist for Studies of HIV Drug Resistance Prevalence or Incidence (CEDRIC-HIV): Rationale and Recommended Use

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BACKGROUND: HIV drug resistance (HIVDR) is a major challenge to the effectiveness of antiretroviral therapy. Global efforts in addressing HIVDR require clear, transparent, and replicable reporting of HIVDR studies. **METHODS:** We describe the rationale and recommended use of a checklist of items that should be included in reports of HIVDR incidence or prevalence. After preliminary consultations with experts and establishing the need for guidance, we used a sequential mixed methods approach to create the checklist. **RESULTS:** The Checklist for studies of HIV Drug Resistance prevalence or incidence (CEDRIC-HIV) includes 15 recommended items that would enhance the transparency and facilitate interpretation and comparability of HIVDR studies. **CONCLUSIONS:** This checklist will help authors of HIVDR studies prepare more complete research reports and assist in statistical pooling and interpretation of HIVDR data.

78 Pragmatic randomized controlled trials: an evolving tool for HIV research in Canada

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Background: Observational epidemiologic evidence relating to advances in antiretroviral therapy has helped turn HIV into a chronic manageable condition in Canada. However, the benefits of randomization within a randomized controlled trial (RCT) remain difficult to mimic in observational data analyses. Therefore, as we continue to shift into new HIV treatment eras (i.e., two-drug regimens, long-acting injectable therapies), RCTs will remain necessary to evaluate the safety and effectiveness of novel treatments/interventions. To ensure timely and valid evidence is generated to inform the care of people at risk of, and living with HIV, researchers must continue to use tools in both the experimental and observational epidemiology domains.

Discussion: Pragmatic RCTs (PRCTs), sometimes referred to as “real-world” trials, combine elements of traditional trials (i.e., randomization) with observational data. PRCTs are frequently embedded within routine clinical care and, therefore, can leverage routinely collected health data (e.g., provincial administrative health data). It is known that the secondary use of these observational data expedites the trial and greatly reduces costs; this is particularly true in settings where organizations such as (but not limited to) Population Data BC (British Columbia) or ICES (Ontario) can facilitate administrative data linkages to the individuals (or clusters) involved in randomization. Nevertheless, while PRCTs are an established tool, they were, historically, vulnerable to unaddressed post-randomization confounding (from incomplete adherence to the treatment/intervention), selection bias (from losses to follow-up), and ethical complexities. More recently, however, methodological innovations, often from causal inference efforts in observational research, and modernized ethical guidelines (tailored to PRCTs) are becoming available.

Conclusion: Given the current advances in PRCT methodology and ethics, as well as the expanding administrative health data research infrastructure in Canada (e.g., HDRN Canada: www.hdrn.ca), it is an opportune time for those involved in HIV research to consider whether their research objectives can be met using PRCTs.

122 Representativeness of the OHTN Cohort Study (OCS) by key population and geography

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Background: Since 1995, the OHTN Cohort Study (OCS) has collected data from people living with HIV. Efforts to increase representativeness of key populations and geographies began in 2017. The OCS collects clinical data and conducts an annual interview with participants at 15 clinical sites in Ontario. Public Health Ontario (PHO) analyzes linked diagnostic and viral load data for the provincial HIV Care Cascade. Our goal is to examine the representativeness of the OCS.

Methods: We examined the demographics of OCS participants who were active and consented as of 2021 compared to people living with diagnosed HIV in Ontario estimated by PHO in 2020. OCS and PHO data are compared by health region, key population and sex. PHO demographic and population data is collected through forms completed by testing providers, while the OCS captures it in a participant interview.

Results: Overall the OCS is fairly representative of the population of people living with HIV in Ontario, but there are key differences. The OCS over-represents Toronto and under-represents Central East and West regions. It represents gay, bisexual and other men who have sex with men well but under-represents people who use injection drugs. Both ACB and Indigenous participants are represented proportionally. The median age in the OCS is slightly higher than the province overall and the length of time living with HIV in the OCS is 18 years.

Discussion: OCS participants reflect people living with HIV in Ontario. More efforts should be made to improve geographic representation and recruitment from key populations.

Supporting Document

Representativeness of the OHTN Cohort Study (OCS) by key population and geography

Table 1:

	PHO (2020)	OCS (2021)
Number living with diagnosed HIV	19,990	4,168
Regional distribution		
Northern	3%	4%
Ottawa	10%	11%
Eastern	3%	1%
Toronto	53%	67%
Central East	13%	
Central West	11%	2%
South West	7%	15%
Sex		
Women	22%	22%
Priority population		
Gay, bisexual and other men who have sex with men	60%*	60%
People who use injection drugs	11%	3%
African, Caribbean and Black people	21%*	22%
Indigenous Peoples	2%*	4%
Median age (years)	50	54
Median length of time living with HIV (years)	N/A	18
*Estimated value accounting for anonymous testing		
*Available only for those diagnosed post 2009		

147 The Association Between Rurality and 30-Day Hospital Readmissions Among People With and Without HIV: A Population-Based Cohort Study

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BACKGROUND

Living in a rural area has been associated with higher risk for hospital readmissions. We compared the association between rurality and 30-day hospital readmission in people with (PWH) and without HIV (PWoH).

METHODS

We used linked administrative health data from the Comparative Outcomes and Service Utilization Trends (COAST) study. Index episode of care (EOC) was defined as the first hospitalization between 01/04/2001-31/03/2020 and 30-day readmission as any readmission within 30 days of index EOC discharge date. We classified rurality using Statistical Area Classification; census metropolitan areas were classified as urban (UA), census agglomeration areas as small urban (SUA) and census metropolitan-influenced zones as rural (RA). Multivariable logistic regression was used to examine the association between rurality, HIV-status, their statistical interaction, and readmission following an index EOC adjusting for age, sex, neighborhood income-quintile, health authority, ICU-admission, length of stay, and discharge against medical advice during index EOC.

RESULTS

The study sample consisted of 207,763 individuals (PWH=7,434; PWoH=200,329). HIV-status was associated with higher odds of readmission. We found a significant interaction effect between HIV and living in an SUA (pinteraction=0.046) or RA (pinteraction=0.027) on the risk of readmissions. Among PWoH, living in an SUA or RA were associated with higher odds of readmissions compared to UA; while among PWH, there was no difference in the odds of remissions for any geographical area (see Table 1).

CONCLUSION

Whereas in PWoH living in a more rural area was significantly associated with a higher risk for readmission, the association was significantly reduced among PWH.

Supporting Document

The Association Between Rurality and 30-Day Hospital Readmissions Among People With and Without HIV: A Population-Based Cohort Study

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Table 1: Risk of 30-day readmission among persons with and without HIV.

	Unadjusted	Adjusted
	OR (95%CI)	aOR (95%CI)
HIV status		
Negative [ref]	1.00	1.00

Positive	1.90 (1.78, 2.02)	2.04 (1.89, 2.20)
Rurality (for PHW)		
Urban [ref]	1.00	1.00
Small urban	0.88 (0.72, 1.07)	0.90 (0.74, 1.11)
Rural	0.85 (0.65, 1.12)	0.83 (0.63, 1.10)
Rurality (for PWOH)		
Urban [ref]	1.00	1.00
Small urban	1.13 (1.09, 1.18)	1.11 (1.06, 1.16)
Rural	1.19 (1.14, 1.24)	1.14 (1.08, 1.21)

OR, odds ratio; aOR, adjusted odds ratio; CI, confidence interval

36 Updating the STOP HIV/AIDS program monitoring strategy to reflect the changing landscape of HIV/AIDS in British Columbia, Canada

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Background: Seek and Treat for Optimal Prevention of HIV/AIDS (STOP HIV/AIDS) is a program conceptualized by the BC Centre for Excellence in HIV/AIDS (BC-CfE) that aims to expand HIV testing, care, and treatment in British Columbia (BC), Canada. In 2013, a process monitoring strategy was implemented to assess the benefits of this initiative. The original monitoring report included 13 HIV-related surveillance and treatment indicators, which have been published quarterly in all BC health authorities ever since. However, due to changes in the clinical and demographic characteristics of people living with HIV (PLWH), and to the standards of care for HIV in BC, this report needs to be updated.

Methods: A working group of representatives from the BC-CfE, BC Centre for Disease Control (BCCDC), First Nations Health Authority, and each of the five regional health authorities collaborated on an updated monitoring report. A total of 31 indicators were proposed and assessed based on the following criteria: data quality, validity, scientific evidence, relevance for current clinical care and public health, feasibility, confidentiality, accuracy, and administrative requirement. Once these indicators were finalized, a draft report was created using patient data from the BC-CfE, BC Ministry of Health, and BCCDC.

Results: Of the 31 proposed indicators, 16 were chosen to monitor the results of the STOP HIV/AIDS program. The new report includes modified indicators of HIV testing, disease progression, and the cascade of care, as well as new indicators of the standard of care, viral load levels, and opioid agonist therapy among PLWH. The draft report of these indicators reflects the positive impact of HIV interventions in BC.

Conclusions: We have adapted the STOP HIV/AIDS monitoring strategy to reflect the current landscape of HIV in BC. The continued monitoring of the STOP HIV/AIDS program is essential for optimizing health outcomes and program efficiencies.

80 Free HIV Drugs as a Key Tool Against HIV Pandemic: A Review

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Background

Treatment-related costs are a known barrier to antiretroviral therapy (ART) use by people living with HIV (PLWH). Canadian provinces and territories vary regarding ART-related costs for patients. This review summarizes the results of studies examining the impacts of free ART on care and related outcomes.

Methods

A literature review was conducted using Medline and Embase databases from 1996 onward, with the terms Anti-HIV Agents, Health Expenditures, Insurance, Pharmaceutical Services, HIV, Free, Low-Cost, Cost-Free and Full Coverage. Papers were included if they were original articles in English or French that focused on PLWH receiving free ART compared to those who paid a fee. Studies were excluded if free ART was offered as part of a bundle of free services, limiting attribution of effects on care and ART-related outcomes.

Results

A total of 21 studies reporting on free ART were found (Table 1). Most papers focused on adherence to ART, showing better outcomes with free ART (10/13). Five studies reported on the impact on retention in care, followed by viral suppression (3), mortality (2), and CD4 cell count (1). Most studies reported favourable effects results. Of the studies in high-resource country populations (5), 4 reported on adherence to ART and 2 on viral suppression.

Conclusion

Free ART appears to result in better adherence, retention in care, virologic control and reduced mortality. Efforts to increase the knowledge base, especially in high-resource countries, are needed to determine how free ART could help achieve the United Nations' 95-95-95 targets by 2030.

Supporting Document

Free HIV Drugs as a Key Tool Against HIV Pandemic: A Review

Table 1. Results of studies of the impact of free ART on care and treatment outcomes (n = 21)

Outcome reported	Positive	Negative or No Difference
Adherence to ART	10	3
Retention in Care	4	1
Viral Suppression	2	1
Mortality	2	0
CD4 Cell Count	0	1

193 Can HIV and Infectious Syphilis Surveillance Data Inform Future PrEP Use Among Women in Ontario?

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BACKGROUND: Syphilis has been proposed as a clinical indication for HIV PrEP in women, based on the two agents' biological interactions and shared transmission modes. We explored how often women had a new HIV diagnosis after being diagnosed with syphilis in Ontario.

METHODS: Using health card numbers, first/last names, and dates of birth for deterministic linkage, we extracted HIV serology data on females with positive syphilis tests from PHOL records between April/2010-March/2022. Since women may also enter HIV care based on anonymous HIV testing, we further linked HIV viral load data. We report aggregate numbers of women with new laboratory evidence of HIV infection after their first positive syphilis result.

RESULTS: Among 8151 women with positive syphilis tests during the study period, 6726 (82.5%) had linkable HIV serology tests, and 135 (1.7%) ever tested positive. With further linkage to viral load data, the number of women who ever had laboratory evidence of HIV infection increased to 186 (2.3%; see Table). However, when restricting to women whose first positive HIV test or HIV viral load occurred after their first positive syphilis test, this number decreased to 39 (0.5%). The average number of days between the positive syphilis test and the first laboratory evidence of HIV was 735 days.

CONCLUSION: Although it is clinically appropriate to offer HIV PrEP to women with syphilis, Ontario surveillance data suggest that the absolute number of HIV infections that could be averted in this way seems limited. Other strategies for prioritizing women for PrEP warrant study.

Supporting Document

Year of first + syphilis test	N women with + syphilis test linkable to HIV data	n (%) with HIV test	n (%) with + HIV test	n (%) with + HIV test or VL test after + syphilis test	n (%) whose only + HIV or VL test was after + syphilis test	Days between + syphilis test and + HIV or VL test
2010	942	685 (72.7%)	17 (1.8%)	29 (3.1%)	15 (1.6%)	581.2
2011	957	751 (78.5%)	16 (1.7%)	25 (2.6%)	5 (0.5%)	1350.4
2012	708	530 (74.9%)	15 (2.1%)	21 (3%)	3 (0.4%)	1635.3
2013	553	419 (75.8%)	10 (1.8%)	15 (2.7%)	5 (0.9%)	447
2014	456	354 (77.6%)	2 (0.4%)	3 (0.7%)	1 (0.2%)	1161
2015	449	362 (80.6%)	4 (0.9%)	5 (1.1%)	0 (0.0%)	N/A
2016	520	435 (83.7%)	10 (1.9%)	11 (2.1%)	0 (0.0%)	N/A

2017	501	416 (83%)	7 (1.4%)	10 (2%)	2 (0.4%)	290.5
2018	620	535 (86.3%)	12 (1.9%)	15 (2.4%)	4 (0.6%)	477
2019	625	560 (89.6%)	17 (2.7%)	22 (3.5%)	2 (0.3%)	1025
2020	637	585 (91.8%)	11 (1.7%)	11 (1.7%)	1 (0.2%)	66
2021	989	922 (93.2%)	12 (1.2%)	17 (1.7%)	1 (0.1%)	289
2022	194	172 (88.7%)	2 (1.0%)	2 (1%)	0 (0.0%)	N/A
Total	8,151	6,726 (82.5%)	135 (1.7%)	186 (2.3%)	39 (0.5%)	735

79 Broad molecular surveillance of the new L2b/D-Da recombinant Chlamydia trachomatis lymphogranuloma venereum (LGV) strain yields increasing transmission in British Columbia, Canada

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Background: The transcontinental spread of a novel variant of lymphogranuloma venereum (LGV) has prompted broad surveillance in British Columbia (BC). First identified in BC in 2019, this recombinant strain of Chlamydia trachomatis (L2b/D-Da) possesses a non-LGV ompA genotype which confers increased virulence and the emergence of antimicrobial resistance. Still, the clinical presentation of this variant remains unknown. We aimed to compare the prevalence and clinical presentation of L2b/D-Da LGV to non-recombinant L2b LGV.

Methods: A retrospective chart review of all LGV cases in BC from 01/2019—10/2022 was performed. In BC, all chlamydia-positive rectal specimens are routinely forwarded for LGV testing, where positive cases additionally undergo DNA sequencing. We collected information pertaining to LGV serovar, HIV status, symptoms, and risk factors. Chi-square tests were used to compare L2b/D-Da to non-recombinant L2b LGV.

Results: Among 298 cases of LGV identified during this period, 217 (72.8%) were the non-recombinant L2b serovar and 29 (9.7%) cases were caused by the L2b/D-Da recombinant strain. Most cases were among men who have sex with men (n=288/292 [98.6%]) with a mean age of 38.5. The proportion of recombinant cases increased from 2019 to 2022 (n=4/95 [4.2%] vs. n=19/92 [19.6%]; p < 0.001). A higher proportion of recombinant cases were among individuals who have sex with women, including bisexual men and transgender women (n=3/28 [10.7%] vs. n=3/212 [1.4%]; p=0.054). Compared to non-recombinant LGV, a higher proportion of recombinant cases occurred among transgender women (n=3/29 [10.3%] vs. n=1/217 [0.0%]; p=0.002). There was no difference in experiences of proctitis (n=13/25 [52.0%] vs. 111/199 [55.8%]; p=0.885) or asymptomatic infection (n=9/27 [33.3%] vs. n=71/200 [35.5%]; p=0.995) between the two strains.

Conclusion: L2b/D-Da recombinant LGV is increasing, particularly among individuals who have sex with women. Though molecular studies suggest increased virulence of the strain, the clinical presentation appears to be similar to non-recombinant LGV.

144 Developing a screening tool to reach men who have sex with men living with undiagnosed HIV in Kenya.

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An estimated 18.2% of men who have sex with men (MSM) in Kenya are living with HIV, among whom, an estimated 62.2% remain undiagnosed. To help prioritize and tailor access to HIV testing, we developed a screening tool that could be applied by programs during outreach activities to identify MSM at greatest risk of undiagnosed HIV.

We analyzed data from two rounds of a community-led, bio-behavioural survey of MSM from three counties in Kenya (Kisumu, Kiambu, Mombasa). We defined undiagnosed HIV using self-reported HIV status and dried blood spot HIV antibody test. We selected candidate predictor variables based on established association with HIV prevalence and which could be easily determined in the field. Then we derived a risk score from coefficients of individual key predictor variables retained in a logistic regression model, following stepwise variable selection. We then developed the screening tool using data from Kisumu and Kiambu, and validated tool performance using data from Mombasa.

Four variables associated with undiagnosed HIV were included in the final tool: ever registered with an MSM-focused HIV service program [odds ratio (95% confidence interval): 2.49 (1.60-4.05)]; meeting sex partners via virtual or both virtual and physical venues [2.60(1.56-4.61)], any experience of verbal/physical assault/abuse in the past year [1.82(1.30-2.55)]; and sexual positioning as predominantly receptive or both receptive and insertive [2.13 (1.51 - 3.06)]. The tool achieved 75.6% sensitivity and 53.4% specificity on the validation dataset. Having a risk score cut off of at least 1 was associated with sensitivity of 96%. Based on the estimated population size (32,600), HIV prevalence (16.8%), and undiagnosed fraction among MSM in Kenya (62.2%), the tool has the potential to help reach 2,311 MSM with undiagnosed HIV.

We developed a 4-question screening tool that could help in prioritize MSM for tailored HIV testing and related services.

223 HIV Treatment Attitudes and Bacterial Sexually Transmitted Infections (STIs) Among Gay, Bisexual, and other Men who Have Sex with Men (GBM) in Montreal, Toronto and Vancouver

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Objectives: HIV treatment attitudes are associated with sexual behaviors that lead to increased bacterial STIs. We examined the relationship between these attitudes and bacterial STI diagnoses among GBM living in Montreal, Toronto, and Vancouver.

Methods: The sample included GBM from the Engage cohort study who reported they were aware of Treatment-as-Prevention (TasP). Participants were recruited using respondent-driven-sampling (RDS). Using a structural equation model adjusted for sampling bias (RDS-II weights), we examined the association between HIV treatment attitudes, sexual behaviours, and bacterial STI diagnoses. We estimated direct and indirect paths between HIV treatment attitudes and STIs via condomless anal sex (CAS), number of anal sex partners, and oral sex

Results: Among 1384 GBM, there was a simple direct association between HIV treatment attitudes and STI diagnosis such that more positive attitudes led to increased STI diagnosis (see Table). The mediation model suggests that these effects were mediated indirectly through 2 paths: 1) via increased CAS ($\beta=0.18$, 95%CI[0.09, 0.28], $p<.001$) and 2) via an increase in the number of anal sex partners, which led to CAS ($\beta =0.09$, 95%CI[0.05, 0.12], $p<.001$). There was no statistically significant pathway via oral sex.

Conclusions: More supportive HIV treatment attitudes led to an increase in the number of anal sex partners and condomless anal sex, which in turn increased STI diagnoses. These findings highlight the importance of providing effective STI counselling that addresses how HIV treatment attitudes may lead to STIs, providing regular HIV/STI testing, and developing efficacious prevention strategies for bacterial STIs.

Supporting Document

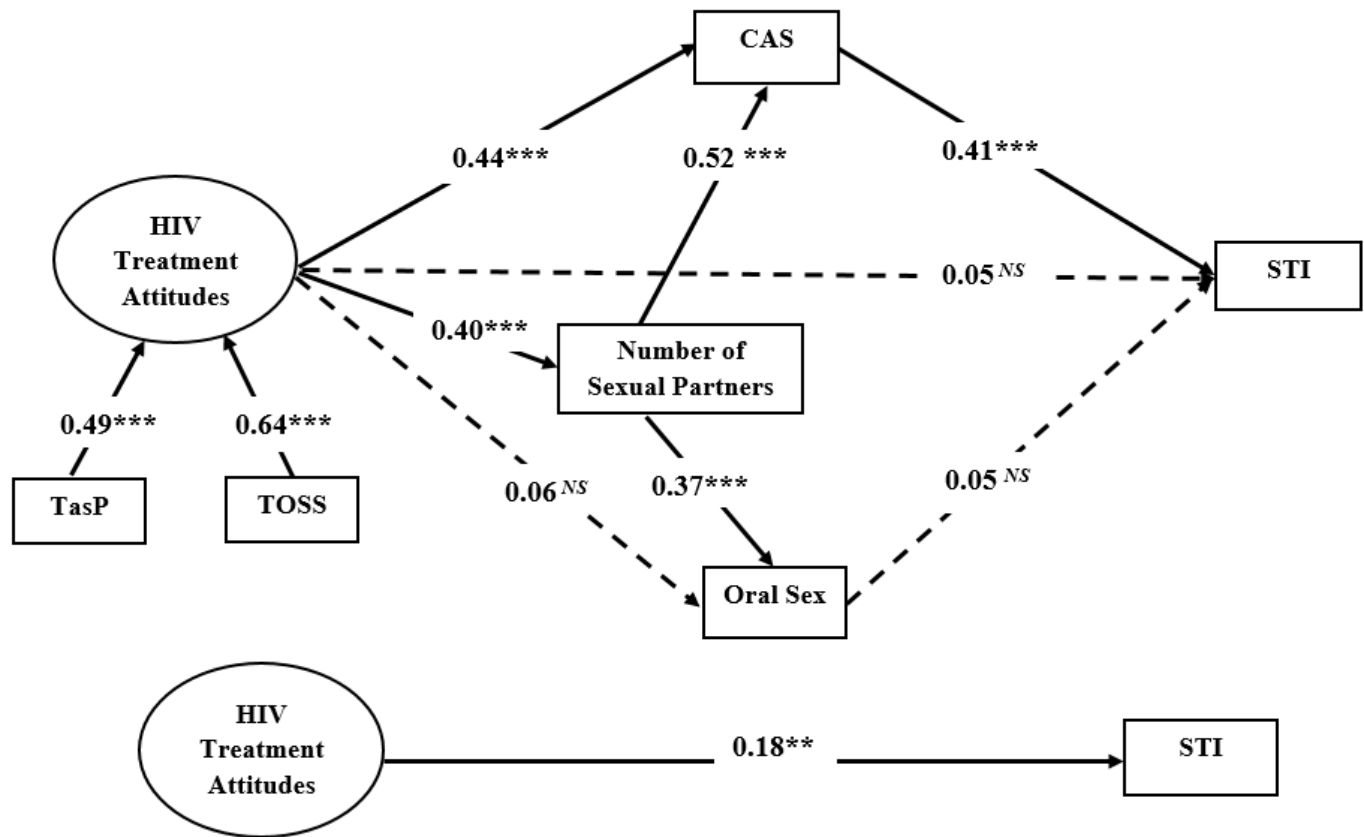


Figure 1

Mediated model (CFI=.96, TLI=.99, RMSEA=.04) examining the associations between attitudes toward HIV treatment and any recent bacterial sexually transmitted infections mediated via sexual behaviors among GBM who were aware of TasP, Engage baseline data (n=1384).

Notes. TasP = treatment as prevention attitude; TOSS = HIV Treatment Optimism-Skepticism Scale; CAS= Condomless anal sex; STI= Sexually transmitted infections. All paths represent standardized estimates. The model was adjusted for age, ethnic-racial identity, annual personal income, sexual identity, relationship status, city, self-reported HIV status and PrEP use in the past 6 months. Dotted lines represent nonsignificant associations; Bold lines represent significant indirect paths. *p < 0.05; **p < 0.01; ***p < 0.001

348 Mpox Cases in British Columbia's Population-Level HIV Treatment and Pre-Exposure Prophylaxis (PrEP) Programs

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As of December 31, 2022, 190 mpox cases have been confirmed in British Columbia (BC). The recent global mpox outbreak has been characterized by human-to-human transmission and has disproportionately affected gay and bisexual men who have sex with men (gbMSM). We describe mpox cases in BC's population-level HIV treatment and PrEP programs.

Adults aged ≥ 19 years, enrolled in BC's HIV Treatment or PrEP programs who had program contact (based on drug dispensing or lab test results) on or after 1-May-2022 were included. Between 1-Jun-2022 and 31-Dec-2022, mpox testing and cases over time, and client demographic and clinical characteristics are described. Wilcoxon rank-sum test was used for age comparison.

Of 16,471 program clients, 148 cases of mpox were diagnosed [51/8247 (0.6%) HIV treatment clients and 97/8224 (1.2%) HIV PrEP clients]. Cases had median age 42 years (Q1-Q3, 35-51) in HIV treatment and 36 years (Q1-Q3, 31-42) in PrEP ($p < 0.001$). All were cis-gender male, and 87% were known gbMSM (risk group unreported in 13%). Of HIV treatment cases, median CD4 count was 665 cells/ μ L (Q1-Q3, 450-920); two had CD4 count < 200 cells/mL. Three clients were diagnosed with mpox within 6 days of new HIV diagnosis. Overall, mpox testing was performed in 166 HIV treatment and 367 PrEP clients. Monthly mpox cases between June to September were 13, 55, 45, 20 respectively, with a decline observed thereafter (< 10 cases/month).

A high number of mpox cases in BC were prescribed HIV PrEP, consistent with overlapping risk behaviour and eligibility criteria for HIV PrEP with mpox transmission and vaccine eligibility. A smaller number of HIV treatment clients were similarly affected. Cases of concurrent HIV and mpox diagnosis emphasize the importance of screening for sexually transmitted infections while evaluating for mpox. Declining mpox cases suggests a potential effect of mpox vaccine uptake and/or altered behaviour.

50 Multiple offers for HIV PrEP yields high uptake among gay, bisexual, trans, and other men who have sex with men (gbtMSM): Results from a nurse-led PrEP service (PrEP-RN)

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Introduction: Current clinical guidelines and research tends to focus on indications, recommendations, and uptake of HIV PrEP among groups known to be at increased risk for HIV acquisition, such as gbtMSM. Less, however, is known about the outcomes of PrEP offers, including patients' rationale for declining PrEP referrals or the effectiveness of multiple PrEP offers to persons at elevated risk for HIV. This study presents on the responses of gbMSM to multiple offers for PrEP referrals.

Methods: In Ottawa, Canada, we instituted Canada's first nurse-led PrEP program, known as PrEP-RN. As part of this service, public health nurses specializing in sexual health offered PrEP referrals to persons with indicators for HIV. Responses to these offers (as accepted, declined, or ineligible) were logged in a database and assessed for multiple occurrences based on chart number. We also recorded the number of recorded HIV diagnoses among participants who were offered PrEP. Data was analyzed using descriptive statistics.

Results: Data from August 2018 to August 2022 yielded 636 instances of multiple PrEP offers made to 263 unique patients, of whom, 99% percent identified as male and gbtMSM. Of the 223 eligible patients, 48% accepted after multiple offers and 52% declined after multiple offers. Seven unique trajectories for accepting or declining were identified. We noted 5 HIV diagnoses during the study period: 2 were among patients who declined PrEP more than once and 3 were identified at PrEP intake among patients who accepted after a single offer, yielding an overall diagnosis rate of 1 in 156 for the sample.

Conclusions: Using a similar approach to smoking cessation, providers can ask patients about PrEP, advise on its risks/benefits, and assist in making referrals where indicated. Repeating these at every clinical encounter could help to increase PrEP uptake and reduce HIV diagnoses among at-risk gbtMSM.

141 Developing a Tool to Support Health Care Providers Counseling about HIV PrEP in Ontario

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Background: Many gay, bisexual and other men who have sex with men (GBM) who may benefit from better HIV prevention strategies are unwilling to use PrEP. At the same time, some health care providers do not feel confident counseling about PrEP. Our aim is to develop a tool to assist health care providers in counseling about PrEP.

Methods: We compiled findings from the PrEP implementation project (PRIMP) and drew from relevant literature on theories of change including: the information-motivation-behavioral skills model; the social cognitive model; the theory of planned behavior; and Fishbein's integrative model. Using those elements, we proposed a framework to guide the development of a counseling tool to assist clinicians in discussing PrEP with potential users.

Results: Our framework consists of four sections. In the first two sections, we address (a) values and (b) information about risk, which together determine whether individuals perceive the need for changing their strategies to stay HIV-negative, including using PrEP. In the second section, information about side effects and cost of PrEP influence the transition from perceived need to intention to use PrEP. In section three, we consider common concerns among GBM: mental health and substance use. In section four, we propose that the ability to seek/start PrEP is influenced by (a) self-efficacy skills and (b) external facilitators, including specific information and organizational features.

Discussion and Conclusion: Interventions to increase PrEP uptake should be theory informed. This framework will be discussed with healthcare partners and community members, and tested among providers and users.

Supporting Document

Developing a tool to support health care providers counseling about HIV PrEP in Ontario

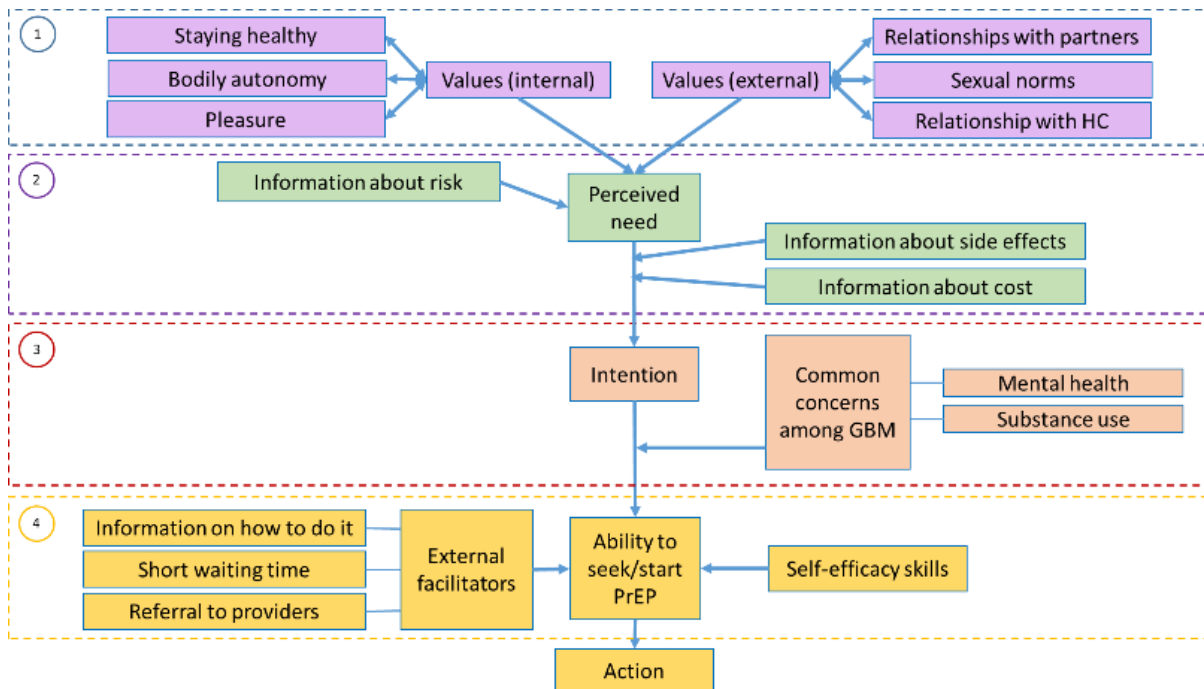
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Background: Many gay, bisexual and other men who have sex with men (GBM) who may benefit from better HIV prevention strategies are unwilling to use PrEP. At the same time, some health care providers do not feel confident counseling about PrEP. Our aim is to develop a tool to assist health care providers in counseling about PrEP.

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Discussion and Conclusion: Interventions to increase PrEP uptake should be theory informed. This framework will be discussed with healthcare partners and community members, and tested among providers and users.

268 Development and Evaluation of a Web-based HIV Pre-exposure Prophylaxis Decision Support Tool for Black Patients

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Objective: HIV Pre-exposure prophylaxis (PrEP) is a highly effective option for the prevention of HIV. The use of PrEP for HIV prevention among PrEP-eligible Black patients remains far below thresholds necessary to achieve the goal of zero new HIV infections. Previous research has shown that most PrEP-eligible Black patients experience decisional conflict, which ultimately affects the quality of their decision-making process for the initiation and adherence to PrEP. Decision support tools (DST) can reduce decision conflict and improve decision making for patient facing health decisions. However, there is currently no decision support tool for PrEP-eligible Black patients who are being asked to consider PrEP for HIV prevention. The purpose of the study was to design, develop and evaluate an HIV PrEP decision support tool for Black patients.

Methods: Using self-determination theory and the Ottawa Decision Support Framework Guideline for Developing and Evaluating Patient Decision Aid, we designed, developed, and evaluated the PrEP Decision Support Tool in three distinct phases; Phase I – Data collection to determine the purpose and content of the DST; Phase II – Design and development of the DST; Phase III – Evaluation of the DST - alpha and beta testing.

Results: The web-based decision support tool contain seven distinct sections; 1).Introduction, 2)clarify the decision, 3) information about PrEP, 4)value clarification exercise, 5) support system, 6) re-assessment of decision-conflict, and 7)plan for next step. Both potential patients and PrEP providers rated the DST high in relevance and content.

Conclusions: A decision support tool to reduce decision conflict for PrEP-eligible Black patients was developed and rated high in content and relevance by patients and PrEP providers.

211 The prevalence of PrEP use and PrEP-to-need ratio in nine Canadian provinces, 2018–2021

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Introduction: Pre-exposure prophylaxis (PrEP) effectively prevents HIV acquisition; measuring trends in uptake is important to inform planning for HIV prevention programs and policies. The PrEP-to-need ratio (PnR) is a construct used by public health organizations such as the US Centers for Disease Control to explore disparities in provision across geographic areas and demographic categories (e.g. age/sex). We aimed to estimate PrEP-use prevalence and PnR for nine Canadian provinces by year (2018-2021), sex, age group and province.

Methods: Annual estimates of persons taking PrEP were generated using IQVIA's geographical prescription monitor dataset for eight provinces. PrEP use in British Columbia (BC) was provided by the BC Centre for Excellence in HIV/AIDS. The PnR was defined as the number of PrEP users divided by new HIV diagnoses. Data on new HIV diagnoses was obtained from the national HIV Surveillance System.

Results: The estimated number of PrEP users increased steadily over the study period, with an annual percentage change of +19.7%. The estimated PrEP-use prevalence was 69.9 per 100,000 persons (range across provinces: 15.9/100,000 in Manitoba (MB) –107.6/100,000 in BC) and the PnR in 2021 was 16.8 (range across provinces: 1.5/100,000 in MB –37.7/100,000 in BC). The number of people taking PrEP, PrEP-use prevalence and PnR were the highest among aged 30-39 years, and higher among males compared to females (approximately 98.0% of people on PrEP).

Conclusion: The use of PrEP increased steadily from 2018 to 2021, and uptake varied across age groups, sex and geography. As PrEP use increases, the PnR increases, however there is no known threshold for PnR and its impact on HIV incidence. PnR may be a useful measure to assess PrEP as a prevention strategy; however, it may not always provide the detail needed to inform prevention programs and policies, especially when information on key populations is unavailable.

57 Uptake of HIV PEP and PrEP among cis and trans women* accessing a nurse-led HIV prevention clinic (PrEP-RN)

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Introduction: In response to increased HIV prevention efforts (PEP and PrEP), HIV rates in Ontario have decreased among gay and bisexmen. By extension, the proportion of first-time HIV diagnoses in females has increased, prompting concern for ongoing HIV transmissions. Presently, uptake of HIV prevention services among persons who identify as women* is limited, largely due to variability of HIV-specific risk factors.

Methods: To explore HIV prevention use among women*, a retrospective review was completed of participants in a nurse-led HIV prevention service (PrEP-RN) in Ottawa, Canada.

Results: Findings showed 10.5% uptake for PEP and 3.3% uptake for PrEP among women*. For PEP, 32 women* presented for assessment and 25 were initiated. Most PEP initiations were made following a potential sexual exposure to HIV, 36% involved a partner who was HIV-positive and not virally suppressed. For PrEP, offers for referral were made to 59 women*; 28 declined and 31 accepted. Among women* who declined PrEP, 32% were HIV contacts and among those who accepted, 80% were due to reported sexual or substance use practices. The highest PrEP engagement occurred among women* receiving services in a safer opiate supply program.

Conclusions: The high uptake of PEP suggests this could be a useful first-line approach to reducing HIV transmission rates in women*. In addition, women* receiving PrEP could benefit from a more supportive approach to care, including assistance with medication use and regular contact with nurses. In using a more collaborative approach to HIV prevention care, progress can be made in addressing ongoing HIV inequities among women*.

257 Evaluating the Impact of Expanding Internet-based Testing for Sexually-transmitted and Blood-borne Infections: Awareness and Use of GetCheckedOnline in Urban, Suburban and Rural Communities in BC

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Background: GetCheckedOnline, BC's online sexually-transmitted and blood-borne infection (STBBI) testing service, has been shown effective in improving testing access and is being scaled up in the province, with two waves of expansion from Vancouver to seven urban, suburban and rural communities. We assessed post-expansion implementation outcomes (awareness, use, and intention to use) in these communities.

Methods: Between July-Sept 2022, we conducted a cross-sectional survey in each community, recruiting in-person and online with oversampling among populations affected by STBBI. Eligible participants were ≥16 years old, sexually active, and BC residents. Questions evaluated awareness, use, and intention to use GetCheckedOnline; these outcomes and key sample characteristics are described.

Results: 1657 eligible individuals were recruited, of whom 67.0% (1099/1641) identified as White, 10.2% (151/1477) identified as trans and 53.0% (793/1496) as non-heterosexual, 39.1% (566/1447) had used illegal/non-prescribed drugs (past year), and 21.5% (315/1466) had ever been homeless. A fifth (20.7%, 319/1543) had never tested for STBBIs, and 66.8% (990/1483) reported experiencing barriers accessing provider-based testing in the past year (e.g., long wait times, not knowing where to access testing). Overall, 35.8% (584/1633) were aware of GetCheckedOnline, of whom 56.3% had used the service (324/576). These outcomes varied by wave of expansion: in Wave 1 communities (2016), awareness was 39.6% and use 60.1% among aware, versus 18.1% and 38.3% in Wave 2 communities (2019-2020), respectively. For 91.1% of participants (1334/1465), it was very easy/easy to go online when they needed to, and 63.1% (1020/1616) were very likely/likely to use GetCheckedOnline in the future.

Conclusion: Our study suggests GetCheckedOnline is improving access to STBBI testing in these communities, as half of people aware of the service had used it in a sample where barriers to accessing provider-based testing were common. Given high intention to use, further promotion of GetCheckedOnline to increase awareness may be beneficial.

314 Evaluation of a Regional HIV Case Management Program in BC: Influences on HIV Cascade of Care Outcomes

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Background

Fraser Health's (FH) Regional HIV Case Management (CM) Program supports people living with HIV (PLWH) who may have challenges adhering to treatment. It promotes timely engagement in care using a team-based approach, including outreach workers, social workers and public health nurses. The program was evaluated in order to characterize the clients who use the service and program effectiveness.

Methods

We conducted a retrospective cohort (2015-2021) analysis of FH CM client information from the BC HIV Drug Treatment Program (DTP). We compared demographics and clinical characteristics of those PLWH in the FH region who were referred for CM to those who were not. We used Wilcoxon rank-sum test and Chi-square to compare CM participants with non-CM DTP participants. We examined changes in HIV health service measures before and after CM referrals for those with at least 12 months of follow-up.

Results

The CM Program followed 560 clients, representing 22.1% of the 2523 FH DTP clients during the study period. Compared to non-CM clients, those in CM were less likely to self-identify as White (28.5% vs. 35.9%; $p < 0.001$) and male (64.3% vs. 79.1%; $p < 0.001$) and were more likely to have a history of injection drug use (33% vs. 15%; $p < 0.001$). Among 89 CM participants with ≥ 1 year of follow-up after enrollment, CM clients saw improvements in viral load testing (79-83% in follow-up vs 58% in year prior to referral), filling ARV scripts (62-72% vs 45%), and viral suppression (33-56% vs 31%).

Conclusions

This evaluation demonstrated positive associations between CM enrollment and client's clinical outcomes and will be informing the program's strategic redesign. This will include tailoring models of care to the most salient needs of the highly marginalized clients and building on program strengths.

171 Facilitators And Recommendations for PrEP Implementation in Southeastern Ontario: Qualitative Findings from Public Health and Primary Care Providers, and Clinical Managers Working With Key Populations.

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This work is part of an implementation science project to increase HIV pre-exposure prophylaxis (PrEP) adoption in Southeastern Ontario (SEO), a mixed urban-rural setting. We broadly invited clinical and managerial staff in primary care practices and sexual health clinics. We used the Consolidated Framework for Implementation Research (CFIR) to develop a semi-structured interview and guide the thematic analysis. To date, we have interviewed 13 participants among physicians, nurses and clinic managers. We identified three types of adopters: 1) those who prioritize PrEP adoption (with or without institutional support); 2) those with a plan for PrEP adoption; and 3) those with interest but without a clear plan. This preliminary analysis revealed the following facilitators for adoption: 1) the availability of a PCP able to prescribe PrEP; 2) the commitment of a PrEP leader (local or provincial expert); 3) the interviewees' perception that the population they serve need/want PrEP and HIV/STI care; and 4) existence of a partnership between PCP and a local public health unit. Participants recommended 1) more PrEP and HIV care training; 2) a commitment from public health units' leadership and the Ministry of Health towards supporting PrEP implementation, 3) increased access to PrEP in terms of medication coverage and availability of PrEP clinics, 4) increased availability of PrEP prescribers in sexual health clinics, and 5) external feedback about the impact that PrEP provided by clinics has in the local community. This data will be matched with implementation strategies, literature reviews, and focus group discussions to design rapid implementation strategies that promote PrEP prescribing among PCP in Ontario.

181 I'm Ready, Talk: Implementation of a peer navigator program to facilitate HIV self-testing and linkage to care in Canada

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Background: The I'm Ready program provides participants with access to free HIV self-test kits for delivery or pick-up at participating locations across Canada. I'm Ready, Talk is a secure telehealth platform where participants can book an appointment with peer navigators (PNs) who counsel and support participants before, during, and after their HIV self-test. This study describes the uptake, satisfaction, and evaluation of the peer navigator program.

Methods: Evaluation of the program included the number of appointments booked, attended, mode, and the reason for appointments between June 2021 to December 2022. An optional post-test survey (n=1,269) collected information on demographics and satisfaction with the platform and with the PNs.

Results: Of the post-test respondents, 195 (15%) reported that access to PNs was the greatest benefit of the platform. Of 172 scheduled appointments, 80 were attended. Appointments were conducted predominately in English (<1% French), with 79% via message chats and 21% by video. There were 31 appointments booked for pre-test support and 40 booked for testing and post-test support. Of the 39 participants who engaged with PNs and provided post-test survey feedback, the majority were between 18-34 years old, self-identified from a key HIV population, and from large urban areas. Most participants (>80%) reported high levels of satisfaction with the I'm Ready, Talk platform, citing the knowledgeability of the PNs as a primary reason, and would use the platform again or recommend it to others.

Conclusion: Participants utilizing I'm Ready, Talk were satisfied with the platform and support received. Although peer navigator services were widely available, the program was underutilized. This may suggest that most participants reached so far felt comfortable with using an app to access self-testing and related resources and supports. More work is needed to determine who we may not be reaching who could benefit from peer navigator supports.

277 Pragmatic Research: A COVID Case Study with HIV Implications

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Background: Epidemic and pandemic infectious diseases, including HIV, are a distinct challenge for clinical research. Timely data generation are important to optimize consistently applied individual and population access, particularly when a clear standard of care does not exist or rapidly evolves. Traditional clinical trial design is slow and does not usually focus on programmatic treatment delivery, especially outside established trial centers. We describe design and implementation of the NS pragmatic, moderate-to-severe COVID treatment study (COVIC) to facilitate timely access and outcome delineation across all NS COVID care centers.

Methods: In March 2020, a provincial health systems' decision was made to provide all inpatient COVID therapeutics for patients with moderate-to-severe infection hospitalized at 6 defined academic and non-academic COVID treatment sites through a NSHA ethics approved pragmatic study using a hub-and-spoke model. Baseline clinical phenotype, laboratory data, and outcomes were collected as standard of care. A pragmatic implementation framework[1] was used to retrospectively identify successes, challenges, facilitators, implemented solutions, and unmet needs.

Results: 362 people have been enrolled in the study to date. Successes include: structured data collection supported by strong health authority and frontline provider buy in; timely ethics review (3 weeks); access equity and treatment consistency for rural and urban patients; and drug supply durability. Challenges include: large volume research documentation despite pragmatic approach using already approved medications and lack of hospital and community research embedded EMR to facilitate rapid data collection.

Conclusions: Embedding centralized, locally adapted clinical care into pragmatic research facilitated equitable and consistent geographic access to care, including new therapeutics, while clinical expertise was developed. For emerging and re-emerging infections, such as COVID and HIV, that are characterized by rapidly evolving information, this approach may provide better access to scarce resources and improve real world and health system information.

[1] Loudon K et al., BMJ 2015;350:h2147

137 PrEP referral programs and increased PrEP uptake coincident with decreased HIV diagnoses among men who have sex with men

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Background

Ottawa implemented a PrEP clinic and referral process by public health nurses (PrEP-RN) in 2018 in Ottawa, Canada. These efforts contributed to an increase in the number of persons using PrEP from 110 in 2016 to over 1000 persons in 2021, and a 6-fold increase in the PrEP-to-need ratio since 2017. This study examines if the increase of PrEP uptake in Ottawa is coincident with a decrease in new HIV diagnoses.

Methods

The following variables were extracted from HIV cases reported in Ottawa from January 1, 2017-December 31, 2022: demographics (age, ethnicity, sex, country of birth), risk factors (sex of partners, drug use, STIs) and prior HIV diagnosis and entered data into a RedCap database. Test positivity is calculated by dividing the number of diagnoses by the number of HIV tests in Ottawa (excluding prenatal tests). We analyzed trends in test positivity over time using a Cochran-Armitage test.

Results

Between PrEP-RN launch, August 5, 2018 and the end of this study period, 1901 persons were offered a PrEP referral, of which 44% (n=845) accepted and 96% (n=812) were MSM. Over the study time period, first-time HIV diagnoses in Ottawa (n=154) decreased across HIV risk categories, but was significant only among MSM ($p<0.05$). Analysis of test positivity showed a significant decreases for males ($p<0.05$) and MSM ($p<0.01$). While diagnoses by race, age and sex demographics were stable over time, there was an increase in the number of diagnoses among people born outside of Canada ($p<0.05$).

Conclusions

PrEP-RN implementation and broader PrEP uptake in Ottawa, Canada coincided with decreases in new HIV diagnoses among MSM, but no other groups. While these findings cannot causally link PrEP-RN or PrEP with this outcome, these changes in HIV epidemiology in Ottawa are coincident with PrEP uptake among MSM.

316 Public perspectives on sexual health services and emerging models of service delivery: Insights from the COVID-19 Pandemic

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Background

Amidst the COVID-19 pandemic and related public health service interruptions, there was an unprecedented need to understand public acceptability of virtual health and other service innovations while optimizing prevention of HIV and other sexually transmitted infections (STI). Fraser Health (FH), British Columbia's most populous Health Authority serving 1.9 million residents, supports clients across the region with Sexual Health Clinics for adults and youth.

Methods

In June of 2021, a cross-sectional online anonymous survey was launched using a multi-pronged recruitment strategy. It was administered using a FH public survey panel (Health Chat), via targeted social media advertisements and through promotion with partner agencies. The survey link was also sent via text message to over 600 previous clients. It used convenience and purposive sampling. Analysis included descriptive and bivariate statistics.

Results

Out of the 998 respondents (50% aged 45-74 years), 26% identified as males, 13% identified as sexual minorities, and 19.5% as ethnic minorities. Despite the majority reporting only one recent sexual partner (66%), there were positive responses regarding STI testing with 42% indicating they see STI testing as part of routine health care and staying healthy, and 28% had had an STI test in the past five years. Responses from those who had tested in the past five years (n=281) indicated that 32% had avoided/delayed accessing sexual health services due to service interruptions during COVID and 77% agreed that they were comfortable with in-person services, despite the ongoing pandemic. The vast majority of this sub-group (78%) reported being likely to use at-home self-collection kits and willingness to access other virtual services (including texting, phone, and video) ranged from 51%-69%.

Conclusions

Survey results indicate a desire for continuing with high quality in-person STI services and expansion of virtual service options. These findings will inform sexual health service redesign in FH.

283 The Future of PrEP is Now: Evaluating Webinars on Long-Acting PrEP for 2SGBQM Individuals

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Background: Two-Spirit, gay, bisexual, queer and other men who have sex with men, including trans men (2SGBQM), are disproportionately affected by HIV, representing half of newly diagnosed infections in Canada. Long-acting pre-exposure prophylaxis (LA-PrEP) options, including injectable cabotegravir (CAB-LA) hold substantial promise in addressing ongoing HIV transmission. However, there is a need to increase awareness among 2SGBQM communities.

Methods: We conducted three, free 1.5-hour webinars on PrEP between DEC 2021-JUN 2022 as part of launching 'The Future of PrEP is Now', a community-based study that aims to prepare Canada for the arrival of LA-PrEP. The first webinar described current PrEP options and regimens, barriers to access, and gaps in HIV prevention work. The second and third webinars (one in English, one in French) described future PrEP options, particularly CAB-LA for people not currently reached by oral PrEP. The webinars included presenters from clinical, academic, and community settings. We examined the post-webinar evaluation surveys, which asked about the overall effectiveness of the webinars.

Results: The three webinars were attended by 105, 244 and 25 participants, respectively. Of those who completed an evaluation (n=76), 100% thought the webinars were well presented and appropriate for them. Additionally, 99% indicated that the webinar presenter(s) was knowledgeable about the topic discussed and an equal proportion (99%) reported an increased knowledge of PrEP. The vast majority of participants also indicated intending to use the knowledge gained from the webinars.

Conclusion: A lack of knowledge about PrEP among 2SGBQM is a common PrEP access barrier. Results of this evaluation demonstrate the effectiveness of community-oriented didactic webinars as a way to increase health literacy among 2SGBQM. Our results show the value of incorporating community education webinars in community-based research and how knowledge translation and exchange can be enhanced by integrating KTE throughout a project's lifespan.

368 Cannabis use in people living with HIV four years after legalization: The Ontario Cannabis and HIV Survey.

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Background: Canada legalized cannabis for medical purposes in 2001 and for recreational purposes in 2018. Our aim was to produce a comprehensive profile of Ontarians living with HIV who use cannabis for medical or recreational purposes to document their post-legalization needs.

Methods: Participants were recruited from the Ontario HIV Treatment Network Cohort Study, a multi-site clinical cohort. At their annual interview, those who reported using cannabis in the past year were invited to self-complete the Ontario Cannabis and HIV Survey. Items included patterns of cannabis use in the past year, since legalization, and since the COVID pandemic. We present descriptive statistics for the first survey respondents (2022/08/17 to 2023/03/17); recruitment is ongoing.

Results: Among 117 respondents, 81% were male, 73% were white, and 40% were employed full-time. Respondents reported cannabis use in the past year for: recreational purposes only (51%), medical purposes only (11%), or both (38%) (Table). When asked how legalization impacted use, 34% used more frequently (11% less) and 28% used greater amounts (9% less) due to easier access to safer products and greater social acceptability. When asked how the COVID pandemic impacted use, 30% used more frequently (4% less) due to stress/anxiety, pleasure, boredom, and loneliness.

Conclusions: These preliminary findings provide a rare documentation of cannabis use among people living with HIV. Use patterns were broadly similar for medical and recreational purposes, although daily use was reported more for medical use and edibles and beverages were reported more for recreational purposes.

Supporting Document

Table. Cannabis use in the past year, Ontario Cannabis and HIV Survey participants, 2022-23

	Use for medical purposes (n=55)	Use for recreational purposes (n=104)
Daily use	62%	44%
Products most commonly used		
Smoked dried flower	71%	76%
Edibles	38%	62%
Vaped dried flower	35%	34%
Oil liquid drops	26%	21%
Oil liquid for vaping	22%	23%
Hash/Kief	11%	21%
Beverages	9%	21%
Cannabis purchased from legal sources	56%	53%
Healthcare provider authorization for medical use	42%	n/a
Insurance coverage for medical cannabis	18%	n/a
Reasons for medical use		
Feelings of anxiety	16%	n/a
Problems sleeping	15%	n/a
Feelings of depression	14%	n/a
Chronic non-cancer pain	12%	n/a
Acute pain	11%	n/a
Other	32%	n/a

n/a, not applicable

200 Cannabis-use and problematic use before and after legalization and COVID-19 among gay, bisexual and other men who have sex with men in Montreal, Toronto and Vancouver

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Introduction: Gay, bisexual and other men who have sex with men (GBM), particularly those living with HIV, commonly report using cannabis for recreational and medicinal purposes. We examined the impacts of the October 2018 Canadian cannabis legalization and the COVID-19 pandemic on cannabis-use and problematic cannabis-use among GBM in Montreal, Toronto and Vancouver.

Methods: Sexually active GBM, aged ≥ 16 years, were recruited through respondent-driven sampling beginning in February 2017. Participants completed a computer-assisted self-interview every 6-12 months until August 2022 which included the Alcohol, Smoking and Substance Involvement Screening Test (ASSIST). Cannabis-related ASSIST scores ≥ 27 indicate a high risk of dependence/actual dependence (termed "problematic use", hereafter). The analysis was restricted to participants recruited before November 2018 with ≥ 1 follow-up visits. We examined trends in cannabis-use in the previous six months (P6M) and problematic-use in six-month periods using logistic regression and frequency-of-use using ordinal regression. We conducted sub-analyses with time-periods further divided into before COVID-19 (February 2017-March 2020) and after (June 2020-August 2022).

Results: 950 participants in Montreal, 258 in Toronto, and 387 in Vancouver met our inclusion criteria. P6M cannabis-use at enrollment was 47.9% in Montreal, 61.6% in Toronto, and 55.7% in Vancouver ($p < 0.001$). Problematic-use ranged between 8.5-11.6% of users ($p = 0.187$). Across all cities, any cannabis-use P6M was unchanged from February 2017-March 2020 (Odds Ratio [OR] 1.03; 95% CI 0.98-1.09), but declined after March 2020 (OR=0.82; 95% CI 0.74- 0.91). More frequent consumption increased from February 2017-March 2020 (OR= 1.07; 95% CI 1.01 - 1.14), but remained unchanged thereafter (OR= 0.99; 95% CI 0.89- 1.11). Problematic-use was unchanged (OR= 0.94; 95% CI 0.88-1.01) over the entire study period, as well as before and after COVID-19.

Conclusion: We found limited impact of cannabis legalization in terms of cannabis-use and use decreased after COVID-19. Neither legalization nor COVID-19 appeared to have any impact on problematic-use.

356 Effect of depressive symptoms on memory functions in persons with HIV: A systematic review

Lujie Xu¹, Tarek Turk¹, Sandra Campbell¹, Esther Fujiwara¹
¹University Of Alberta

Introduction

Memory and other cognitive problems can persist in persons with HIV despite antiretroviral treatment. One of the most common comorbidities in PWH is depression, which itself has known effects on memory functions. Our objective was to conduct an up-to-date systematic review on memory functions in treated HIV, comparing PWH with or without comorbid depression. We also examined relationships between memory and depressive symptoms in cross-sectional and longitudinal HIV-studies. Our working hypothesis was that comorbid depression should be associated with lower memory performance in PWH.

Methods

The review was conducted following the PRISMA guidelines, with searches in eight databases. Outcomes were a) differences in memory performance in group designs (PWH vs. PWH and depression), b) relationships between depression severity and memory in PWH, c) longitudinal memory performance by ongoing or acute depressive symptoms in PWH. If reported, we also extracted normative memory performance.

Results

We identified 1611 papers. After removal of duplicates, title/abstract screening (996) and full text review (85), 27 studies were included. Of studies that compared memory between depressed and non-depressed PWH, 28% (4 of 14 studies) showed lower memory in depressed PWH. Correlations between depression severity and memory were negative in 37.5% (6 of 16) of the examined relationships. Of the longitudinal findings, 50% (3 of 6) showed worse memory over time with concurrent or ongoing depression in PWH. Interestingly, in 76.9% of the 13 studies reporting normative memory scores, memory was normal regardless of depression status.

Conclusion

About a quarter of cross-sectional findings point to memory reductions in PWH with, compared to without comorbid depressive symptoms. Longitudinal findings were scarce and extracted from partially overlapping cohorts, but thus far point to more a definitive role of depressive comorbidity in memory functions over time. Longitudinal studies from more diverse cohorts are required to solidify these findings.

Supporting Document

Effect of depressive symptoms on memory functions in persons with HIV: A systematic review

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Introduction

Memory and other cognitive problems can persist in persons with HIV despite antiretroviral treatment. One of the most common comorbidities in PWH is depression, which itself has known effects on memory functions. Our objective was to conduct an up-to-date systematic review on memory functions in treated HIV, comparing PWH with or without comorbid depression. We also examined relationships between memory and depressive symptoms in cross-sectional and longitudinal HIV-studies. Our working hypothesis was that comorbid depression should be associated with lower memory performance in PWH.

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342 Experiences of perceived everyday racial discrimination among women living with and without HIV: A descriptive analysis

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Introduction: Racial discrimination - unequal treatment because of race/ethnicity - can have deleterious effects on the health of those who experience it. A large proportion of women living with HIV (WLWH) in Canada are Indigenous; African, Caribbean and/or Black (ACB); or otherwise racialized. However, scarce literature has assessed the prevalence of racial discrimination among WLWH. Here, we estimated the prevalence of experiencing racial discrimination among women of different ethno-racial backgrounds, comparing WLWH and people without HIV (comparators).

Methods: WLWH and comparators (cis/trans inclusive) aged ≥ 16 years in BC and spoke English were included. Racial discrimination was measured using the 9-item Everyday Discrimination Scale-Racism (EDS-R) (Cronbach's $\alpha=0.96$) which captures self-reported frequency of racially discriminatory experiences in various everyday situations. Participants responded to each item from 'never'=1 to 'almost every day'=6, with higher scores representing more discrimination. Comparisons of EDS-R scores by HIV-status and ethno-racial group used t-tests and ANOVA.

Results: We included 153 (40.3%) WLWH and 225 (59.7%) comparators, (mean age 46.9, SD =14.0 years). Among them, 157 (41.3%) identified as White, 33 (8.7%) as ACB, 110 (28.9%) as Indigenous, 78 (20.5%) as mixed/other racialized. Prevalence of ever experiencing racial discrimination (EDS-R>9) was 97.0%, 90.0%, 88.5% and 47.1% among ACB, Indigenous, other racialized and White women respectively. These rates are much higher compared to findings from the 2019 Canadian Community Health Survey. ACB and Indigenous women reported the highest mean scores [SD] (30.0 [11.2] and 29.4 [13.4] respectively) followed by other racialized (22.4 [11.0]) and White (15.2 [9.1]) women, $F(3, 374)=41.91$, $p<0.001$. Mean scores among WLWH and comparators were similar (21.60 [13.0] and 22.67 [12.6]).

Conclusion: Experiences of racial discrimination are high among racialized WLWH, particularly ACB and Indigenous. Future analyses with larger samples are warranted to investigate the impact such racial discrimination may have on priority health areas for WLWH

366 Nânâtawihisōwin: “To bring about wellness for yourself.” Self-testing with dried blood spot and saliva samples: Guidance on acceptability and connection to care for Indigenous populations in Saskatchewan

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The HIV epidemic disproportionately affects Indigenous people in Canada, and individuals who use substances while experiencing homelessness are at a higher risk of infection. Traditional HIV testing methods can be stigmatizing and inaccessible for people with drug use and unstable housing experiences. Self-testing has emerged as a potentially effective way to increase testing uptake and reduce stigma. However, there is limited research exploring the feasibility and acceptability of self-testing methods in this population.

A community-based research project was conducted to assess the feasibility and acceptability of HIV self-testing among Indigenous people who experience substance use and unstable housing in inner-city Saskatoon. Participants were recruited through community outreach and provided the option to provide saliva and dried blood spot (DBS) samples for HIV testing. Participants completed a questionnaire regarding their experiences with self-testing.

All participants (n=56) self-identified as Indigenous. Of the 45 participants tested for HIV, 12.2% of saliva samples (n=41) tested positive for HIV, while none of the DBS samples (n=8) returned positive results. Only 61% of participants were previously aware of self-testing methods. Most (89%) participants indicated no reason not to choose self-testing over traditional testing methods. The primary reasons cited by the remainder to opt out of self-testing methods included stigma and anxiety over the results. Cultural facilitators played a critical role in providing support and creating a welcoming and safe space for the results to be shared, as well as answering questions about HIV and self-testing.

HIV self-testing is a feasible and acceptable option for Indigenous individuals with substance use and unstable housing experiences in inner-city Saskatoon. The use of cultural facilitators and community research associates may increase the uptake and acceptability of self-testing in this population. Future research should explore the scalability and sustainability of this approach to improve HIV testing and reduce HIV-related disparities.

71 STI and HIV Testing Behaviours Prior to HIV Diagnosis among People Living with HIV in Ontario

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Background: Patterns of STI and HIV testing among a cohort of people living with HIV (PLWH) prior to their HIV diagnosis can give insight into prevention and missed opportunities.

Methods: The Ontario HIV Treatment Network (OHTN) Cohort Study (OCS) is a longitudinal, 15-site clinical and questionnaire-based study. Analysis included participants diagnosed with HIV for the first time in Ontario between 2011 and 2021 interviewed from 2020-2021, with more detailed STI testing questions in 2021. Self-reported HIV and STI (Syphilis/Gonorrhea/Chlamydia) testing habits prior to HIV diagnosis were analyzed. Multinomial logistic regression was performed where the outcome was any HIV testing prior to HIV diagnosis (never, yes-once/twice, yes-routinely).

Results: Among participants (n=460), prior to their HIV diagnosis, HIV testing frequency occurred routinely (33.7%), once/twice (34.1%) and never (32.2%). Multinomial logistic regression showed compared to never testers: non-heterosexual males versus females were significantly more likely to be routine testers (adjusted odds ratio [aOR]:7.7,95%Confidence Interval:3.6-16.6) or once/twice testers (aOR:3.0,95%CI:1.5-5.8). Participants aged 36-49 years compared to those aged 50+ were significantly more likely to have tested routinely (aOR:3.0,95%CI:1.6-5.7) or once/twice (aOR:2.1,95%CI:1.2-3.8). Those more recently diagnosed (for every year more recently diagnosed) with HIV were more likely to test routinely (aOR:1.2,95%CI:1.1-1.3) or once/twice (aOR:1.2,95%CI:1.1-1.3). Race, income, age <36 versus 50+, or being a heterosexual male compared to female were not significantly associated with frequency of testing. Among gay/bisexual/queer men (n=52), 7.7% never tested for HIV or STIs prior to HIV diagnosis, 5.8% tested for STIs but not HIV, 13.5% tested for HIV but not STIs and 73.1% tested for both (p=0.03).

Discussion: Differential uptake of HIV and STI testing existed among OCS participants prior to their HIV diagnosis. Missed opportunities for HIV prevention interventions existed, especially for participants who did not test at all or tested for STIs but not HIV prior to their HIV diagnosis.

280 The Future of PrEP is Now: Findings from Focus Groups with 2SGBQM Individuals on Long-Acting PrEP's Potential in Addressing Access Barriers

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Background: Two-Spirit, gay, bisexual, queer and other men who have sex with men, including trans men (2SGBQM) are disproportionately affected by HIV, representing half of newly diagnosed infections in Canada. New long-acting pre-exposure prophylaxis (LA-PrEP) options, including injectable cabotegravir (CAB-LA) hold substantial promise in addressing ongoing HIV transmission.

Methods: The Future of PrEP is Now aims to prepare for the approval of "long-acting" (LA) PrEP in Canada by better understanding 2SGBQM community needs and preferences for accessing and taking LA-PrEP. As the first component, we conducted focus groups and interviews to understand 2SGBQM community perspectives regarding LA-PrEP. We prioritized 2SGBQM who are: Indigenous and Two-Spirit, African, Caribbean, and Black, persons of colour, transgender, non-binary, people living in remote/rural areas, and/or people who use substances. Participants were recruited via our and partner organizations' social media channels and prior study participants. We conducted a thematic analysis of focus group and interview transcripts.

Results: Participants (n=50) of focus groups and interviews faced barriers in accessing and taking oral PrEP, such as a lack of access to culturally-sensitive healthcare providers, adherence, cost, stigma, and insufficient information about PrEP. Most participants expressed their interest in CAB-LA and thought having the option would be beneficial for addressing some of these barriers such as adherence and stigma. However, many participants wanted to learn more about LA-PrEP such as price, how to take it, efficacy and safety, and mentioned that LA-PrEP would need to be accessible and affordable for everyone.

Conclusions: Our results were consistent with past studies regarding barriers to oral PrEP, particularly among marginalized populations within 2SGBQM communities, and suggested CAB-LA may help address some of these barriers. However, to maximize the benefits of CAB-LA, current fundamental access barriers for PrEP such as accessibility and affordability must not be recreated in the implementation of CAB-LA.

290 Assessing PrEP Uptake Inequities Reported by People Living with Disabilities Within a National Sample of Two-Spirit People, Gay, Bisexual and Transgender Men, and Queer and Non-Binary (2S/GBTQ+) people in Canada

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Background: No studies have examined PrEP access among people living with disabilities within Two-Spirit, Gay, Bisexual and Trans men, Queer and Non-Binary communities (2S/GBTQ+) in Canada, despite inequities and structural barriers to health. We investigated PrEP access barriers experienced by 2S/GBTQ+ people living with disabilities with increased likelihood for HIV acquisition, and associations with disability subgroup.

Method: Participants self-completed an online, community-based survey, including demographic, disability, and PrEP access barrier questions. Participants were recruited through 2S/GBTQ+-oriented sex-seeking apps, social media, and community-based organizations. Using bootstrapped multivariate logistic regression analyses (1000 iterations), we estimated differences in experiencing PrEP access barriers by disability subgroups presented as adjusted odds ratios (aOR) with 95% confidence intervals (95%CI).

Results: Of 1299 PrEP-naïve participants, most identified as cisgender men (88.26%), gay (78.06%) and non-Latino white (77.23%). 803 people (61.82%) reported living with at least one disability. Disabilities were grouped into visual (n=172; 21.42%), hearing (n=40; 4.98%), mobility (n=102; 12.70%), memory (n=284; 35.37%), emotional (n=564; 70.24%) or other disabilities (n=306; 38.11%). While participants living with disability and those not living with disability both reported high rates of any PrEP access barriers (95.39% vs. 95.85%; aOR=0.89; 95%CI [0.37-1.80]), patterns varied by disability subgroup and barrier. Participants with mobility disabilities were more likely to report cost barriers to PrEP (42.42% vs. 28.78%; aOR=2.08; 95%CI [1.12-3.80]) and have concerns about PrEP effectiveness (10.61% vs. 2.73%; aOR=4.08; 95%CI [1.22-9.54]). Participants with memory disabilities were also more likely to report testing requirements as a barrier (23.16% vs. 14.29%; aOR=1.58, 95%CI [1.02-2.42]).

Conclusion: PrEP-naïve 2S/GBTQ+ people living with disabilities have unique needs and experiences accessing PrEP that may relate to the nature of their disability/ies. To ensure equitable PrEP implementation, further investigation of PrEP access needs for people with disabilities is warranted to inform policy and health service delivery.

168 Psychosocial and Structural Factors Associated with Improvements in Quality of Life (QoL) Measures Among People Living With HIV (PLWH) in British Columbia (BC), Canada.

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Background: We examined psychosocial, clinical, and structural variables as determinants of QoL at baseline and over time in a cohort of PLWH in BC.

Methods: We recruited PLWH aged ≥ 19 years in BC between January 2016-September 2018 from the STOP HIV/AIDS Program Evaluation (SHAPE) study using purposive sampling. Participants completed surveys at enrollment and at two follow-up visits, approximately 18 months apart. We collected data regarding sociodemographics, past medical history, substance use, health service utilization, and QoL using the Short Form-6D. Social support was measured using the MOS-SSS and depressive symptoms with the CESD-10. With time between follow-up visits controlled, multivariate generalized linear mixed models analyzed which factors were associated with higher QoL at enrollment and improvements in QoL scores over time.

Results: Of the 644 participants enrolled, 71.6% identified as male and 51.9% were ≥ 50 years old. Participants with significant depressive symptoms ($\beta = -0.009$, $p < 0.001$) and a mental health disorder diagnosis ($\beta = -0.021$, $p = 0.027$) had lower QoL scores, while food security ($\beta = 0.041$, $p < 0.001$) and earning $> \$30,000/\text{year}$ ($\beta = 0.042$, $p < 0.001$) were associated with higher QoL scores at enrollment. Among the 494 participants with at least one follow-up visit before March 2020, increases in QoL scores were associated with lower depressive symptom scores at follow-up ($\beta = 0.048$, $p = 0.005$). Decreases in QoL scores from enrollment to follow-up were associated with higher MOS-SSS scores at enrollment ($\beta = -0.0004$, $p = 0.022$) and increased depression scores from enrollment to follow-up ($\beta = -0.019$, $p = 0.264$).

Conclusions: Our results highlight the importance of structural factors, such as food security and income, as well as mental health, as important determinants of QoL for PLWH. Our finding that higher social support was associated with lower QoL scores at enrollment warrants further investigation.

355 Improving the HCV Cascade of Care Among People Who Use Drugs: A Rapid Pilot Program Evaluation and Implications for Future Interventions

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Background:

Linkage-to-care and access to treatment for hepatitis C virus (HCV) remain important gaps in the cascade of care for people who use drugs (PWUD) and represent significant challenges for HCV elimination in Canada. This study provides preliminary results and lessons from a novel pilot project designed for PWUD attending a supervised consumption site (SCS) in Vancouver, British Columbia.

Methods:

The Hep C Connect pilot was launched in November 2021 to monitor progress across the HCV cascade of care amongst a cohort of SCS clients. Study participants are offered a point-of-care HCV test from a research nurse and an interviewer-administered survey. The survey captures data on healthcare utilization, drug-use history, HCV testing and treatment history, and HCV knowledge.

Results:

To date, 188 participants (median age of 42) have been surveyed, 59 (31%) of whom identify as women. Preliminary results show that 86% of the cohort do not view HCV as a health priority. Of this cohort, 111 (59%) participants had a reactive HCV antibody test (Ab+), 62 (33%) of whom chose to engage in RNA testing and 30 (16%) returned a positive HCV RNA result. A high proportion of participants (44%) chose not to engage in RNA testing following an HCV Ab+ result, signaling a need for better clinical follow-up for those most at risk for HCV. Importantly, over one-third (35%) of participants report not currently having a primary care provider and 27% report having not been to a doctor in over a year, suggesting a need for supportive linkage-to-care for PWUD.

Conclusion:

The relatively low uptake of follow-up testing and access to primary care suggests the need for patient-centered approaches in order to educate and enable PWUD and to improve linkage-to-care. This work will inform an implementation science project to improve the HCV cascade of care among PWUD.

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136 The Positive Leadership Development Institute (PLDI); assessing the cultural safety of online positive leadership training.

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Background: Cultural safety is a key element in the accessibility of programs and services for Indigenous and African-Caribbean-Black community. The participation of these communities is perhaps the most important area of action to better support a respectful, inclusive, and equitable initiative. (Riecken, Scott and Tanaka (2006))

This project aims to address truth and reconciliation meaningfully and proactively, and cultural barriers to accessing skills development for PLHIV to help fight stigma.

Methodology:

Based on a post-program-only method, six persons from Indigenous communities and six persons from ACB communities interested in completing the core positive leadership training will be recruited through ASOs. These participants will also act as cultural safety peer reviewers for the evaluation by compiling observations in an evaluation manual. Qualitative data will be analyzed in a collective session with all participants.

Peer reviewers will receive a short training on cultural safety, how to use the evaluation manual and assess the content of the training activities. Our peer reviewers will be compensated for the evaluation portion of the work.

Expected Results:

The results of the formative evaluation will be compiled and analyzed, with suggestions and improvements to training content identified by our peer reviewers to ensure greater cultural safety for indigenous and ACB participants. Peer reviewers will develop skills in the evaluation of cultural safety.

We should better understand what can be done to assure a more inclusive and culturally safer environment for Indigenous and ACB communities during PLDI's training. We also expect to learn if the Indigenous four (4 Rs) ways of knowing is applicable for ACB community.

Conclusion:

The applied expected results will contribute to culturally safer and more inclusive HIV leadership training for indigenous and ACB participants.

238 Réalités Financières» des personnes vivant avec le VIH au Québec

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Environ 1 personne canadienne sur 8 (12 %) vit sous le seuil de la pauvreté. Dans les communautés de personnes vivant avec le VIH (PVVIH), cette proportion passe de 12% à 45-65%, soit environ 1 PVVIH sur 2. On considère ainsi que la pauvreté au Canada représente à la fois un facteur de risque d'acquisition du VIH et une conséquence de l'infection.

Le Portail VIH-sida du Québec s'est donné pour objectif de «décrire, comprendre et analyser l'expérience de la précarité financière touchant les PVVIH au Québec». Un comité de recherche constitué de personnes concernées par le VIH s'est rencontré dans le but d'établir les priorités de la recherche. Un guide d'entretien qualitatif exploratoire a été co-construit avec le comité et les participant.es de la recherche; les entrevues ont ensuite été codées et analysées afin de dégager l'ensemble des thèmes soulevés pendant les entretiens. Les analyses ont été soumises à la révision de l'équipe de recherche et de la communauté.

Nos analyses permettent de mieux comprendre les effets du VIH sur les activités et sur la participation sociale des personnes. Ces effets varient en nombre et en intensité tout au long de la vie d'une PVVIH; les personnes rencontrées remarquent toutefois que leur expérience de vie leur permet de mettre en place des stratégies qui atténuent leurs impacts sur la santé. Ce cheminement peut être plus ou moins long, selon le contexte de vie et les caractéristiques individuelles d'une personne.

Cet aspect «épisodique» de l'incapacité liée au VIH n'est cependant pas reconnu par nos systèmes provinciaux. Les approches 'tout au rien' des définitions de l'invalidité des programmes et des milieux d'emploi ne permettent pas une conciliation santé-activités réaliste pour les personnes. Le système tel qu'il existe plonge et maintient en conséquence des personnes déjà souffrantes dans la pauvreté.

215 Journaling and other strategies for peer engagement with people living with HIV and neurocognitive difficulties in community-based research

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Background: Neurocognitive difficulties affect persons living with HIV (PHAs), especially those ageing with HIV. HEADS UP! 2 was a community-based research (CBR) study to understand the experiences of PHA when navigating care services for neurocognitive difficulties, and experiences of health care providers serving PHAs. Research shows that journaling may be a helpful tool for patient/peer participant engagement in research. We assessed this helpfulness with six (6) peer research associates (PRAs) who journaled for one year following prompts regarding their experience on this study.

Methods: Peer researchers and coordinators were invited to journal (written or audiovisual) about their experiences engaging in CBR and neurocognitive health. PRAs journaled individually and discussed their entries in ten in-person and online reflection meetings which included discussions about the phenomenology of remembering/forgetting, importance of physical rehabilitation, and ageing with HIV and social inclusion. PRAs also participated in seven capacity building workshops (e.g., use of dyadic interviews, coding, principles of knowledge mobilization). We reviewed our processes, discussions, and journals entries collaboratively to develop themes.

Results: Three key findings emerged: 1) COVID-19 delayed the study, including data gathering and analysis, and the PRA role as “data analysts” (contrasting with the seemingly more active role of “data gatherers”) caused frustration; 2) there was inconvenient access to the confidential storage of journal entries which created delays in participation in journaling; and 3) peers saw their lives reflected in the study participant interview transcripts; journaling provided a space for PRA voices and perspectives, but it was not until the team met in person that PRA felt safe to share these experiences and their journals entries.

Conclusion: Journaling is a potentially helpful tool for peer engagement but stirs up a great deal of lived experience. The role of peer coordinators became essential to navigate these challenges.

353 Oral presentation : Storying Experiences of Navigating the Triple Pandemics of HIV, COVID-19 and anti-Black Racism Through Cellphilm as Activist Scholarship: Bringing Intersectionality Theory to Life

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In the winter of 2022, we gathered a group of 9 Black women working in the health and social service sectors to create cellphlms that share what it has been like navigating the triple pandemics of HIV, COVID-19 and Racial Injustice. Cellphlms are short videos made on a mobile device in response to a research prompt. Following a participatory process, the participants' cellphlms were edited into a composite video that highlighted the research process, findings and key recommendations. Using clips from the composite video and drawing on Activist Scholarship principles and Intersectionality theory, we share the key themes emerging from their work: Living through the Triple Pandemics as a Black person; Grief and Loss; Mental Health; Taking Care of others as you are struggling; Resistance and Self-Care. Finally, we examine the possibilities for transformational change that were afforded through the process of making our cellphlms, stitching them into a composite and sharing our work. We propose a framework of accountability, reflexivity and reciprocity throughout the process in order to build intentionality into knowledge mobilisation efforts. We conclude that cellphilm method is a highly impactful way to meaningfully engage Black women (and other groups experiencing oppression and marginalization) in community-based HIV research.

19 HIV criminalisation and the construction of victims in Canadian news media

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There is a robust body of research that has documented the representational politics of news media of HIV-positive people charged for HIV non-disclosure. News media representations of HIV-negative sex partners in cases of HIV non-disclosure have received far less scholarly attention. Adopting a social constructionist perspective, this poster identifies how "victims" of HIV non-disclosure are constructed in news media. It is based on a dataset consisting of 341 news articles on HIV non-disclosure from 14 English Canadian newspapers across the political spectrum. Victims of HIV non-disclosure were constructed as: i) suffering horribly, ii) morally pure and virtuous, iii) vengeful, and iv) agentic and responsible for their situation. We consider how such constructions have been enmeshed within contemporary arguments that establish or reject HIV non-disclosure as a social problem. We then discuss the ways these constructions and the assumptions upon which they are based reflect broader discussions on the severity of HIV, the responsibility for HIV risk and exposure, and the very nature of the social problem of HIV. Constructions of victims that uphold HIV criminalisation relied on assumptions of HIV as a deadly disease, but de-emphasised personal responsibility for HIV risk and infection. By contrast, constructions of victims that, in effect, oppose HIV criminalisation tended to minimise the harms of HIV and invoke personal responsibility for HIV risk. We suggest that both proponents and opponents of HIV criminalisation have engaged in the ideology of victimhood and thus participate in and reinforce what Best (1997) termed, the victim industry.

74 “I’m protected against HIV and other than that, you can treat everything”: Perceived Additional Benefits of PrEP and Its Impacts on STI Perceptions among Ontario Gay, Bisexual, and Queer Men

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Background: In addition to being an effective HIV prevention modality, pre-exposure prophylaxis (PrEP) has other advantages on the sexual lives of gay, bisexual, and queer men (GBQM), including reduced anxiety, enhanced sexual pleasure, and increased comfort with sex partners living with HIV. We examined the benefits of PrEP to GBQM and how PrEP affected perceptions of sexually transmitted infections (STIs) other than HIV.

Methods: We conducted annual qualitative interviews between 2020-2022 with 17 current and former PrEP users in Ontario as part of PRIMP, a mixed-methods implementation science study. 47 interviews were completed across three rounds, transcribed verbatim and coded in NVivo using reflexive thematic analysis.

Results: We found four interrelated themes across participant accounts over the three-year time period. First, participants consistently reported reduced anxieties related to HIV, contributing to their perception of greater sexual freedom and sexual pleasure. Second, although participants reported a rise in STI diagnoses over time due to increased condomless sex, they perceived STIs as less concerning. This decreased worry about STIs was linked to the increased sexual health screenings as part of PrEP care, and the availability of treatments and vaccinations for some STIs. Third, a few participants expressed anxiety about being stigmatized due to a positive STI diagnosis but dissipated as they encountered more STIs over time. Finally, other participants voiced concerns about non-PrEP users who were not getting tested as frequently as PrEP users, especially during the COVID-19 pandemic when STI testing were limited.

Conclusion: The added benefits of PrEP identified in this study will inform PrEP messaging to encourage greater uptake and adherence. However, PrEP presents challenges for STI prevention for both PrEP and non-PrEP users. Providers need to address the perceived stigma linked to STIs with tailored counselling programs. Frequent sexual health testing for non-PrEP users should also be promoted.

12 A Narrative Inquiry into the Experiences Related to Pre-Exposure Prophylaxis (PrEP) Access Among Young Men Who Have Sex with Men (YMSM) in Canada

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A Narrative Inquiry into the Experiences Related to Pre-Exposure Prophylaxis (PrEP) Access Among Young Men Who Have Sex with Men (YMSM) in Canada

Young men who have sex with men (YMSM) in Canada and globally are disproportionately impacted by human immunodeficiency virus (HIV). Pre-exposure prophylaxis (PrEP) is an effective strategy for reducing transmission and acquisition of HIV infection among high-risk populations, including YMSM. However, there is low uptake of PrEP among Canadian YMSM. The purpose of this narrative inquiry study was to explore and understand the experiences of YMSM in Canada in relation to their PrEP access. In this research, I worked collaboratively with three Canadian YMSM between the ages of 21 and 24 over six months. With relational ethics at the center, the participants and I engaged in multiple conversations in person and virtually and collected field text and stories (data) that reflect time, place, and social contexts. The intensive and long-term researcher-participant relationships allowed us to compose and co-compose narrative accounts that reflected the participants' unique stories, especially those that shaped their overall PrEP access experiences. Through the continuous retelling of the participant's stories and by reflecting on and laying their narrative accounts side by side, I identified resonant threads that highlighted their experiences of accessing PrEP in relation to and in the context of life-making and identity-making. These narrative threads also illuminated and helped understand the different social, structural, behavioral, and clinical factors that influenced their experiences. The findings from this research can inform stakeholders and decision-makers responsible for advancing and promoting the sexual health of YMSM in Canada. The findings from this research can also advance practice guidelines and health policies that will improve PrEP access and potentially decrease the rate of new HIV infections among YMSM in Canada.

47 Barriers and Facilitators to Addressing the Psychosocial Sexual Problems of Gay, Bisexual and Other Men Who Have Sex with Men Living with HIV: A Rapid Scoping Review

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Psychosocial sexual problems among gay, bisexual, and other men who have sex with men (GBM) living with HIV are common after diagnosis. However, addressing these issues can be challenging. We conducted a rapid scoping review to identify the barriers and facilitators of interventions to address these among GBM living with HIV. Literature from high-income countries published in English since 2010 was used. Four databases (Medline, Embase, PsycINFO, Scopus) were searched using a search strategy designed with two academic librarians. Interventions were defined as treatments or procedures to improve health outcomes conducted in community-based or primary care settings. Barriers and facilitators were categorized according to the five domains of the Consolidated Framework for Implementation Research (CFIR): characteristics of the intervention and of the individuals involved, outer setting, inner setting, and the implementation process. Information was extracted from the retained documents with NVivo software for content analysis. Fifty-two documents were included in the synthesis, referring to 37 interventions. Forty-one mentioned barriers or facilitators. Among the characteristics of the interventions, facilitators (n=33;80%) were feasibility, acceptability, and cost-effectiveness in changing the target behaviour, while barriers (n=21;51%) were tied to cost, concerns about long-term effectiveness, and excessive duration. Facilitators (n=20;49%) related to the individuals were providers' expertise, friendliness, and trustworthiness, while barriers (n=18;44%) were insufficient provider expertise, difficulty addressing sexuality-related topics, and participant concerns about misunderstandings or stigmatization. Barriers and facilitators tied to the other three CFIR dimensions were less commonly reported, namely, the inner setting (barriers n=8;20%; facilitators n=7;17%), the outer setting (barriers n=5;12%; facilitators n=5;12%), and the process of implementation (facilitators: n=2;5%; no barriers were mentioned). These findings highlight the importance of financially feasible, effective, efficient, and acceptable interventions that receive patients in a supportive, non-stigmatizing environment, where their needs can be met by providers who are adequately trained on sexual health-related topics.

301 Donor intentions to return amid the removal of the gbMSM deferral: A survey among active blood donors in Québec

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Background

Héma-Québec has recently implemented a gender-neutral questionnaire for all types of blood donations, which allows gay, bisexual, and other men who have sex with men (gbMSM) to donate. This project assessed how this change may impact donor intentions to return.

Method

An online questionnaire was distributed to randomly selected donors who had donated blood or plasma ≤ 12 months. Participants were asked to rate, on a scale of 1 (“no intention at all”) to 7 (“strong intention”), their intention to return for a new donation amid the removal of the gbMSM deferral.

Results

In total, 1587 donors participated, including 738 plasma donors and 849 whole blood donors. Mean (\pm standard deviation) age was 49.4 (16.8) among plasma donors and 47.3 (16.1) among whole blood donors. Overall, 96.9% of plasma donors and 94.9% of whole blood donors were white. LGBTQ+ donors accounted for 10.3% of plasma donors and 11.0% of whole blood donors. A high proportion of plasma donors (89.3%) and whole blood donors (85.5%) rated as “strong” their intention to return amid recent changes in gbMSM eligibility; only 0.7% of plasma donors and 0.6% of whole blood donors reported having “no intention at all” to return. Using a univariable linear regression analysis adjusted for age, no personal characteristics or life experiences were associated with intention to return, except for cognitive ($\beta=0.290$) and affective ($\beta=0.364$) attitudes towards gbMSM, and knowing an LGBTQ+ person ($\beta=0.364$, all $p<0.001$).

Conclusion

The vast majority of active donors intend to continue donating blood amid the removal of the gbMSM deferral. Donor intentions did not seem to be influenced by personal characteristics or life experiences. However, cognitive and affective attitudes towards gbMSM, and knowing an LGBTQ+ person were associated with a stronger intention to return. These findings reinforce the importance of educating donors about blood product safety.

11 Harm Reduction and Health Promotion Opportunities among 2SGBQ+ men who use non-prescribed Anabolic/Androgenic Steroids (AAS): Results from a Canadian qualitative study

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Non-prescribed Anabolic/Androgenic Steroid (AAS) use among 2-Spirit, gay, bisexual, queer and other men who have sex with men (2SGBQ+) is a common and complex practice influenced by social and cultural norms within and outside of queer men's communities. AAS use among 2SGBQ+ men has also been linked to a range of health risk factors and outcomes, including illicit substance use, sexual risk taking practices and increases in ST/BBIs, including HIV. This presentation will focus on results from a qualitative study that explored the world of AAS use among 2SGBQ+ men in Manitoba with a specific focus on the harm reduction opportunities and challenges embedded within the culture of AAS use for this population. Concrete recommendations to implement harm reduction strategies will be shared for public health and social service providers.

53 Identity development, attraction, and behaviour of heterosexually identified men who have sex with men: Scoping review

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Background: Heterosexually identified men who have sex with men (H-MSM) experience discordance between their sexual identity and behaviours, and are at elevated risk for HIV transmission. Understanding and accepting H-MSM as they self-identify may be necessary to implement effective public health and psychosocial interventions. There is no known knowledge synthesis of H-MSM.

Methods: A scoping review synthesized primary studies about H-MSM identity development, attraction, and behaviour. Key search terms included 'heterosexual MSM', and 'sexual identity-behaviour discordance'. Using Covidence software, 13 databases were searched and two independent reviewers screened 3,617 titles and abstracts and 269 full-texts to arrive at 164 articles meeting entry criteria. These 164 articles were then divided into papers that only reported the number or percentage of H-MSM in larger samples (n=34) and articles for full-team review (n=130) amongst 9 independent reviewers for thematic content analysis.

Results: H-MSM frequently either expressed sexual identity uncertainty, or justified maintaining heterosexual identity, often due to fear of discrimination and stigma and little or no social support. H-MSM compartmentalize sexual behaviors as isolated events unrepresentative of their sexual identity. H-MSM further minimized same-sex behaviors to infrequent, recreational/sport, or economic coincidences with little partner communication regarding HIV and sexual health. Many H-MSM would depersonalize male sex partners, deny same-sex attraction, and avoid gay-identified venues. Reviewed articles further reported H-MSM had negative emotional responses to sex with men (e.g., guilt, shame, disgust, unclean). Findings also suggest H-MSM are mislabelled in sexual health screening. The proportion of H-MSM in large, mixed samples supports estimates that H-MSM may comprise ~8% of North America's sexually active male population.

Conclusion: H-MSM are unlike other heterosexual men and other MSM, and require unique considerations and approaches to sexual and mental health care. This presentation will discuss implications for Canadian HIV prevention research and practice with H-MSM.

252 Qualifying Blood Donors Using a Gender-Neutral Approach to Target At-Risk Sexual Behaviours: What Do GbMSM, Plasma Product Recipients and Current Donors Think of it?

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Background:

Since Canada's tainted blood tragedy, sexually active gbMSM have been excluded from blood donation. In late 2022, Héma-Québec implemented a gender-neutral qualification questionnaire allowing the inclusion of gbMSM as potential donors. New questions target at-risk sexual behaviours: having had more than one sexual partner OR a new sexual partner in the past 3 months, AND if so, having had anal sex. Our objective is to document the acceptability and feasibility of such a change among gbMSM, plasma product recipients and current donors.

Methods:

In 2021 and 2022, three waves of data collection took place at different times during the qualification change process: 1) qualitative interviews with gbMSM (N=28), 2) qualitative interviews with 18 plasma product recipients, and 3) an online questionnaire completed by 1788 current donors.

Results:

GbMSM perceived gender-neutral questions as more inclusive and equitable. Asking about anal sex was perceived as indirectly targeting gbMSM, therefore discriminating and stigmatizing. GbMSM regretted that protective behaviours were not considered and felt these new criteria would exclude many gbMSM and people in non-traditional relationship configurations. Plasma product recipients considered gender-neutral questions as more inclusive and safer because they exclude all people having risky behaviours, regardless of gender or sexual orientation. Recipients feared that the new criteria would lead to donor loss and were disappointed that questions did not include all at-risk sexual behaviours. On a scale of 1 to 7, current donors perceived gender-neutral questions as acceptable (6.1), legitimate (6.2) and safe (6.1), and were very comfortable answering them (6.3). However, they rated them as moderately embarrassing (3).

Conclusion:

The populations affected by this qualification change show high acceptance of gender-neutral questions, which they perceive as more inclusive. However, issues such as perception of discrimination, loss of donors, and embarrassment are raised and deserve to be addressed.

256 Qualitative Exploration of Social Support, Community Connectedness, and Identity in a Sample of Gay, Bisexual, Transgender, and Other Men Who Have Sex With Men (GBTMSM) in Southwestern Ontario, Canada

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Background: Gay, bisexual, trans, and other men who have sex with men (GBTMSM) remain disproportionately affected by HIV/AIDS in Canada, including regionally in Southwestern Ontario. Canadian population-based studies suggest higher prevalence of adverse mental health outcomes among sexual orientation and gender identity/expression minority groups than in heterosexuals/cisgender ones. Previous literature has identified social support, and connection to 2-Spirit, lesbian, gay, bisexual, transgender, and queer (2SLGBTQ+) communities (including GBTMSM communities) as facilitating dissemination of information related to HIV-prevention, testing, and access to HIV care. These factors also mitigate impacts of stressors (i.e., stigma), improve and promote health, and influence additional health behaviors. These factors vary significantly across research conducted on broad geographic scales, necessitating exploration within heterogeneous regions.

Methods: Between November 2021 and March 2022, semi-structured one-on-one online interviews were conducted with GBTMSM over 18 years old who resided in Southwestern Ontario, from within six AIDS Service Organization catchment areas. Interview topics included participants' connections and experiences in identifying with local 2SLGBTQ+ communities; where participants meet other GBTMSM; and how they received social support within their region. Interviews were transcribed verbatim, de-identified, anonymized, and thematically analyzed.

Results: Connectedness to broader 2SLGBTQ+/GBTMSM community were described by participants in two domains: online and/or in-person. Emergent themes included: difficulty to connect due to perceived fragmentation and continually changing community; abundance of online spaces, but a dearth of physical spaces to connect in; a desire for physical spaces that were characteristically communal (e.g., community centers); and feelings of unwelcome based on sociodemographic identities (e.g., racialization, age).

Conclusion: Findings highlight the composition and function of social support networks and community connections among GBTMSM in Southwestern Ontario for health promotion. Careful consideration of prevalence of supports and connections can help contribute to evidence-based HIV prevention, HIV incidence reduction, and connections to care.

46 Rapid Scoping Review of Interventions to Address the Sexual Problems of Men Who Have Sex with Men Living with HIV: Have We Moved Beyond Focussing on Sexual Risk and Infections?

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Psychosocial sexual problems are common among gay, bisexual, and other men who have sex with men (GBM) following an HIV diagnosis. However, these problems are often overlooked in care, where sexual risk reduction and biomedical aspects of sexual health dominate. We conducted a rapid scoping review to investigate how psychosocial sexual health problems of GBM with HIV are addressed. Literature from high-income countries published in English since 2010 was reviewed. Medline, Embase, PsycINFO, and Scopus databases were searched using a search strategy designed with two academic librarians. Sexual health problems were categorized according to the ten categories of Robinson's (2002) model. "Safer sex" interventions were included only if they addressed at least one other sexual health dimension. Fifty-two documents were included, referring to 37 interventions. Most interventions took place in the United States (78%; n=29/37), were group-based (41%), and used counselling techniques (62%; e.g., motivational interviewing, cognitive-behavioural therapy). Their settings were mostly primary care (40%) or community-based (43%). The most commonly targeted sexual health dimension was "Safer Sex/Sexual Health Care" (70%), which concerned sexual risk reduction. "Challenges" (62%), the second most commonly addressed dimension, included substance use (19%), sexual compulsivity (16%), sexual abuse (16%), and intimate partner violence (IPV) (11%). Thirdly, were interventions targeting "Talking about Sex" (59%) which concerned HIV disclosure and communication/negotiation with sex partners, often combined with a focus on "Safer Sex". About a third of interventions addressed "Culture/Sexual identity" (38%), Intimacy/Relationships (33%), and "Positive sexuality" (30%). Few interventions targeted "Body Image" (11%), Spirituality (8%), "Sexual functioning" (5%) or "Masturbation/Fantasy" (3%). Most interventions incorporated a focus on risk reduction. Given the high rates of IPV, erectile dysfunction, and body image dissatisfaction among GBM with HIV, these findings suggest more attention could be given to these issues both within clinical care and at the community level.

191 Disclosure, Comfort and Experiences with HIV Care Providers Among Transgender Women with HIV in Canada

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Background: Trans women with HIV often face barriers, such as stigma, discrimination, and providers' lack of appropriate training, to accessing inclusive and comprehensive primary and HIV care. We aimed to: (1) describe differences in trans women's disclosure of their trans identity to family physicians vs. HIV physicians, (2) compare trans women's comfort discussing trans-specific health care needs with family physicians vs. HIV physicians, and (3) report prevalence of negative trans-specific experiences with HIV physicians.

Methods: Data of trans women with HIV in the Canadian HIV Women's Sexual and Reproductive Health Cohort Study (CHIWOS) were analyzed across three waves (2013-2018). Descriptive statistics were used to explore disclosure of trans identity and comfort discussing trans-specific health care needs with family physicians vs. HIV physicians. The prevalence of reported negative experiences with HIV physicians was measured through the question: "Has your HIV doctor ever...?", where participants could select from a list of potential experiences.

Results: At baseline, of 54 trans women, 39 (72.2%) had a primary HIV care physician, 94.9% of those had disclosed their trans identity, and 82.1% were comfortable discussing trans-specific health care needs with this physician. Of the 27 (50.0%) who reported having a regular family physician other than their HIV care provider, 92.6% had disclosed their trans identity and 88.9% were comfortable discussing trans-specific health care needs. The most common negative trans-specific experiences with HIV physicians at baseline were being told by the HIV physician that they did not know enough about trans-related care to provide care (12.8%) and that the HIV physician thought the gender listed on their ID/forms was a mistake (10.3%).

Conclusion: Our findings suggest trans women have similar comfort discussing trans-specific health care needs with their family and HIV physicians; however, reported negative experiences indicate the need for gender-affirming, trans-specific training for HIV care providers.

365 Acceptability of HIV Self-testing among Sexual Health Service Providers and Gay, Bisexual, and Queer Men in Ontario, Canada

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Background: In 2020, Health Canada approved the INSTI HIV self-test using finger-prick blood. Wide adoption and distribution of novel HIV testing interventions, like self-testing technologies, will be essential in meeting the UN 95-95-95 goals through early detection and treatment. Our objective was to explore the acceptability of HIV self-testing among sexual health service providers and gay, bisexual, queer, and other men who have sex with men (GBQM) in Ontario, Canada.

Methods: Between June 2020-December 2021, we conducted virtual focus groups and interviews with service providers (n=18) and diverse GBQM (n=39) across Ontario. Data was transcribed verbatim and analysed using NVivo following thematic analysis. Four peer researchers conducted recruitment, data collection, and analysis in consultation with the research team and a Community Advisory Board.

Results: Providers and GBQM reported strong support for HIV self-testing. The two groups identified: increased testing accessibility and more privacy and control for sexual health clients as benefits. Providers also identified lower administrative burden for clinics and client empowerment as other perceived benefits. Meanwhile, GBQM emphasized increased time convenience as key factor influencing their decision to self-test for HIV. However, some GBQM also expressed hesitancy for self-testing due to concerns regarding accuracy and reliability of results and fear of needles/blood. Providers and GBQM recognized these concerns for self-testing: missed connections to counselling, resources, and treatment and potential for self-harm/suicide ideation when receiving a positive result. Both groups suggested that first-time testers may be better suited for clinic-based testing compared to experienced testers who may benefit from self-testing. Participants expressed that self-tests should be widely available for free, or for a modest fee around \$20.

Conclusion: HIV self-testing is acceptable among service providers and GBQM, particularly when self-administered by experienced testers. Clinic-based testing options remain important for many people, including first-time testers and GBQM with concerns regarding self-testing.

58 Access, Reach and Engagement of Virtual STBBI Continuing Medical Education in Saskatchewan: What the Registration and Participation Data is Telling Us

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Objective: Deliver accredited STBBI continuing medical education to enhance the ability of healthcare providers (HCPs) to treat and prevent HIV, Hepatitis C (HCV), and syphilis in response to Saskatchewan leading the country with record high incidence rates.

Approach:

Between September and November 2022, the STBBI Treatment Education Program for Saskatchewan (STEPS) delivered a series of 7 live virtual presentations (1 HCV, 2 syphilis, 4 HIV). Presentations featured local medical experts who discussed clinical treatment, highlighted provincial resources, and provided an opportunity to ask questions. Recordings were provided to all registrants. Physicians and nurse practitioners who participated could request to be added as a Designated HIV and/or HCV Treatment Prescriber for Saskatchewan.

Methods: Registration data collected learners' professions, locations, and number of patients seen in the last 12 months with the STBBI being discussed. Program data tracked live attendance and the number of presentations each learner registered for.

Results: In total, STEPS received 1454 registrations across 434 unique HCP learners with varying experience treating STBBIs. 98% (426/434) of registrants were from Saskatchewan, with the program reaching HCPs in over 56 communities across the province. On average, participants registered for 3 of the 7 presentations. The 687 live attendees across the 7 presentations showed engagement of 297 unique learners. Live participation for individual presentations ranged from 76% (136/179) to 34% (76/219). 24% (53/219) of the HIV series registrants attended all 4 HIV presentations live. STEPS enrolled 9 new HIV and 5 new HCV Designated Treatment Prescribers for Saskatchewan during this period.

Conclusion: There is a demand for live virtual STBBI Medical Education by HCPs in Saskatchewan. The range of communities and experience alongside the number of attending and returning learners suggests that this program is able to achieve access, reach and engagement towards meeting the STBBI educational needs of HCPs.

148 Barriers and Facilitators to HIV Care for Persons Living with HIV in Manitoba Diagnosed between 2018 and 2021

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Background: Manitoba reported increased HIV diagnoses and newly-diagnosed people not linked to care, with an overrepresentation of Persons Living with HIV (PLHIV) experiencing homelessness, substance use, and mental health conditions disproportionately affecting young women. This study aims to understand experiences, barriers, and facilitators to HIV care for PLHIV in Manitoba diagnosed between 2018-2021.

Methods: Informed by participatory action research, health equity, and the expertise of people with lived experience, this qualitative study draws upon in-depth semi-structured face-to-face interviews. We interviewed PLHIV who are and are not engaged in care to explore their experiences with HIV services, life changes due to Covid-19, trauma, and substance use.

Results: Most participants highlighted how trusting and empathetic relationships with HIV frontline care providers and family members were key facilitators in connecting with and continuing care. New immigrants appreciated HIV care providers facilitating their transition into HIV care in Manitoba, especially navigating start of care and paying for medications. PLHIV noted the importance of HIV care providers offering more options and accommodating to needs in maintaining medical appointments and medication adherence during COVID-19 service disruptions. Participants discussed various barriers to care, noting uncomfortable experiences with some healthcare providers at diagnosis and perceived stigma and discrimination in home communities that have negatively affected their care. Some PLHIV reported feeling isolated in their home communities as they cannot share their status due to fear of discrimination from community members. Participants voiced a desire for satellite HIV-specific services, universal ART coverage, and opportunities for connection and support with other PLHIV.

Conclusions: This is the first study exploring what facilitates/hinders care for PLHIV in Manitoba. Our results highlight the need to work with communities towards eliminating HIV-related stigma and discrimination in community and health care settings as well as to educate/expand primary care HIV services into community health settings.

73 Prevalence and predictors of HIV treatment non-adherence among people living with HIV in Cameroon: a cross-sectional study

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Background: HIV care decentralization is a national policy in Cameroon, but follow-up of people living with HIV (PLWH) is provider-driven, with little patient education and participation in clinical surveillance. The objective of this study was to assess the prevalence and predictors of ART non-adherence among PLWH in Cameroon.

Methods: Cross-sectional study of PLWH in HIV treatment centres was conducted. Data were collected using structured questionnaires and analyzed using STATA.

Results: There were 451 participants in this study, 33.48% were from the Southwest region. Their mean age was 43.42 years (SD: 10.42), majority (68.89%) were females. Overall proportion of ART non-adherence among participants was 37.78%, 35.88% missed taking ART twice a month. Reasons for missing ART included forgetfulness, business and traveling without drugs. Over half of participants (54.67%) know ART is life-long, 53.88% have missed ART service appointments, 7.32% disbelieve ART benefits, 28.60% think taking ART gives unwanted HIV Status reminder and 2.00% experienced discrimination seeking ART services. In multivariate analysis, odds of ART non-adherence in participants aged 41+ was 0.35 times (95%CI: 0.14, 0.85) that in participants aged 21-30, odds of ART non-adherence comparing participants who attained only primary education to those with higher than secondary education was 0.57 times (95%CI: 0.33, 0.97) and odds of ART non-adherence in participants who are non-alcohol consumers was 0.62 times (95%CI: 0.39, 0.98) that in alcohol consumers.

Conclusion: ART non-adherent was high and reasons for missing ART are masked in participants' limited knowledge in taking ART, disbelief in ART benefits, feelings that ART gives unwanted HIV status reminder and experiencing discrimination when seeking ART services. These underscores need to improve staff attitudes, staff-patient-communication, and proper ART prior initiation counseling of patients. Future studies need to focus on assessing long-term ART non-adherence trends and predictors using larger samples in many treatment centres and regions.

117 Rules used to construct the hospitalization experience of People Living with HIV who use drugs.

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Background: People living with HIV (PLWH) who use drugs in harmful amounts, types and/or modes of consumption experience barriers to accessing hospital healthcare services. A lack of equity experienced by PLWH who use drugs when admitted to hospital directly influences treatment engagement/retention. Hospital healthcare providers (HPs) can shape the experiences of PLWH who use drugs by virtue of direct practice. However, little discussion in the research literature articulates the self-reported experiences of PLWH who use drugs specific to their time spent in hospital. **Methods:** Semi-structured interviews were conducted with participants in Toronto and Ottawa, Canada, who: i) self-reported HIV ii) had a hospital admission in the past year; and iii) used drugs at time of admission. A structuration theory-guided thematic analysis was used to understand the beliefs and practices identified by participants that affect their hospital admission experience.

Results: Participants (n=22) identified two sets of rules that influence their hospital admission; personal rules (“i.e., “my rules”) used for navigating the admission, and hospital rules (i.e., “their rules”). Participants indicated that the HPs’ use of a constructed difficult patient identity shaped their experiences while admitted to hospital and further reinforced their need to rely on personal rules to navigate their admission. **Conclusion:** Healthcare equity is not possible when all people are treated the same; social practices occurring during a hospital admission privilege some (e.g., HPs) and not others (e.g., PLWH who use drugs) and will continue to dictate the hospital admission experience of PLWH who use drugs. Hospitalized PLWH who use drugs are expected, by virtue of the experience of “their rules”, to change their actions, but that change sits within a belief of abstinence on the part of HPs. Barriers experienced by PLWH who use drugs limit the degree to which they can implement self-identified positive changes while hospitalized.

295 Plans for Future Pandemics: How the Covid-19 Pandemic Impacted HIV Care services for African, Caribbean and Black Women Living with HIV in British Columbia, Canada

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Background: The Covid-19 pandemic changed the method and delivery of HIV care services. Many care services switched to virtual or telephone format, and some support services disappeared altogether. African, Caribbean, and Black women living with HIV (ACB WLWH) face structural barriers to accessing, utilizing and affording HIV care services and the addition of virtual services further decreased the motivation to engage for many.

Methods: Purposive and snowballing techniques were used to recruit participants from women's health facilities, HIV and ACB organizations in British Columbia, who were 16 and older, identified as ACB WLWH, and diagnosed with HIV at least 3 months before the COVID-19 outbreak in January 2020. We conducted a descriptive, qualitative study using in-depth interviews. Data was analyzed using a thematic content analysis and validated by participants at a member checking event.

Results: Barriers to accessing HIV care services primarily pertained to the alienated virtual delivery of care services. Barriers to utilization of HIV care services were reports of feeling dismissed, and/or symptom stigmatization by providers. Facilitators of HIV care utilization were improved medication delivery systems. The affordability of HIV care services was not impacted by the pandemic. However, the impact of inflation and increased cost of living negatively influenced participants and their ability to engage with HIV services. Participants listed fear as the primary deterrent to their motivation to seek care.

Conclusion: Participants indicated that access to care can be improved through increased funding and availability of support groups. Hybrid models of care were cited as improving utilization for those who preferred in-person care services. Affordability of care services can be improved by providing extended coverage for supplements and related health expenses. Thus, improving the barriers to accessing, utilizing, and affording HIV care services will reasonably improve motivation to engage with HIV care services.

149 I'm Ready, Test: Leveraging a mobile health app and program to reduce barriers and facilitate access to HIV self-testing in Canada to reach the undiagnosed

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Digital health technologies can improve access to HIV testing; however, evidence on effectiveness and scalability in real-world settings is limited. This national study, the first of its kind in Canada, aims to assess the impact of I'm Ready, Test, a digital health app that provides access to free HIV self-test kits and care pathways, and examine the facilitators and barriers to HIV self-testing (HIVST) that participants encounter. A total of 7,221 active participants completed a pre-test survey via the I'm Ready, Test app between June 2021 to December 2022. Of these participants, 1,269 completed an optional post-test survey after uploading a test result to the app. These surveys were designed to collect participant demographics, the perceived benefits of the app, and the barriers to HIVST such as healthcare access and COVID-19 restrictions. Participants listed the greatest benefit of using the I'm Ready, Test app as its privacy (73%) and convenience (77%); however, the main drawback was a lack of knowledge of what to do with the HIV test result (11%). Despite the availability of the HIV self-tests, 34% of participants still reported feeling uncomfortable discussing HIV testing results with their healthcare providers. Many participants also reported not having access to a primary care provider (24%) or community health clinic (13%). Participants in rural areas reported a greater benefit from using the app due to difficulties in accessing healthcare services than those in urban areas ($p < 0.05$). Additionally, 57% of participants who completed the pre-test survey reported reduced access to HIV testing due to the COVID-19 pandemic. These findings suggest that the I'm Ready, Test app is broadly acceptable, convenient and offers privacy in accessing HIV self-testing. Significant systemic barriers still exist in Canada for health care provider access and support when people test for HIV and their connections to care.

219 Implementation of a Pharmacy-based Testing Model in Canadian Provinces – The APPROACH 2.0 Study

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BACKGROUND: The APPROACH 2.0 study will implement testing for HIV, Hepatitis C and Syphilis in pharmacies in 3 provinces. The goal: to implement a sustainable, scalable Pharmacy-based STBBI Testing Model (PbSTM) to increase testing, find new diagnoses and link people with care.

Purpose: To describe our planning process for the implementation of the PbSTM.

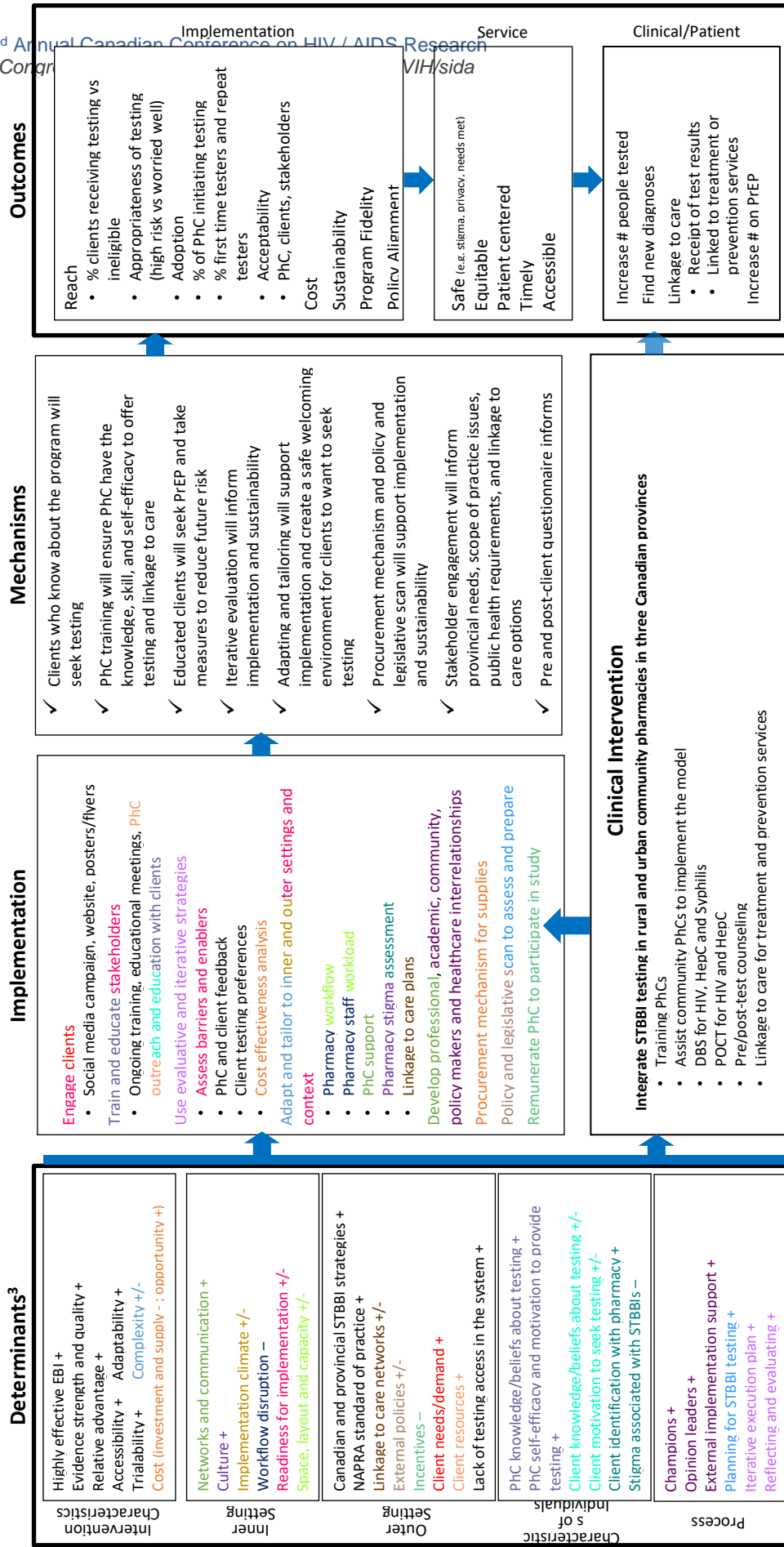
METHODS: We used the Implementation Research Logic Model (IRLM) as an organizing tool to identify multi-faceted, complex and contextual connections influencing the PbSTM. Key determinants included characteristics of the intervention, inner setting (pharmacy) and outer setting (healthcare system and community), individual characteristics (pharmacist and patient), processes, and intervention features. Implementation outcomes were then defined for intervention, service and clinical outcomes; followed by stating Implementation strategies and related Mechanisms of change to counter barriers (-) and complement facilitators (+).

RESULTS: Figure 1 depicts the logic model describing the PbSTM. Implementation strategies were colour-coded to describe related determinants and intervention strategies. Mechanisms were postulated based on our intent for use of each strategy and will be examined further at the end of the study.

CONCLUSION: The PbSTM is a complex intervention that will be integrated into existing healthcare and community systems. This planning process will facilitate examination of strategies to determine which were effective, critical, or unnecessary to inform how the PbSTM can be scaled elsewhere.

Supporting Document

Figure 1: Logic Model* for a Pharmacy Based STBBI Testing Program - APPROACH 2.0



*Adapted from "IRLM with Clinical Intervention" template. Copyright Smith, J.D., Li, D., & Rafferty (2020)

Abbreviations: DBS- Dried Blood Spot; EBI- Evidence Based Interventions; HepC- Hepatitis C; HIV- Human Immunodeficiency Virus; NAPRA-National Association of Pharmacy Regulatory Authorities; PhC – Pharmacists;

POCT- Point of Care Testing; PrEP- Pre-exposure Prophylaxis; STBBI- Sexually Transmissible and Blood-borne Infections

Note: Colours indicate related determinants and interventions

¹ APPROACH = Adaptation of Point of Care Testing (POCT) for Pharmacies to Reduce risk and Optimize Access to Care in HIV, Hepatitis C, and Syphilis

² <https://hivimpcsi.northwestern.edu/implementation-research-logic-model/>; <https://implementationscience.biomedcentral.com/articles/10.1186/s13012-020-01041-8>

³ Damschroder et al. (2009)

340 National implementation and scale-up of HIV self-testing to reach the undiagnosed in Canada – A coordinated community-based response to reach all key populations

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Over 6,500 Canadians have HIV but are unaware of their status. On August 1, 2022 the Government of Canada announced 8 million dollars in funding to improve access to HIV self-testing (HIVST) in Canada. A national program was created and implemented on November 21, 2022 to distribute 200,000 free HIV self-test kits through community-based organizations (CBOs) to reach all key populations.

REACH Nexus built a national inventory and evaluation platform in “real time” to support the distribution and effectiveness of the program. As of January 9, 2023, we have distributed 27,135 HIVST kits to CBOs in all provinces and the Yukon, with HIVST accessed by 1,428 people across Canada. A short anonymous survey (8 items) was administered at the time of HIVST access. Participants could choose multiple intersecting identities. Participants could access 1-5 kits per interaction and secondary distribution of HIVST was encouraged.

In the first 6 weeks of the program, HIVST were accessed by all key populations: 28% gbMSM, 24% women, 17% African, Caribbean or Black, 7% youth, 6% Indigenous Peoples, 4% Sex Workers, and 3% people who use drugs. Demographics: Age: 69% under the age of 40; gender: 30% heterosexual, 23% gay, 11% queer, 10% bisexual; 10% other; sexual orientation: 40% cis man, 35% cis woman, 5% genderqueer, 5% non-binary, 2% trans man or woman, 0.5% two-spirit. Approximately 10-12% preferred not to answer the survey. 34% of people indicated first time testing for HIV. For those who received 2+ kits, 60% indicated that they would share these kits with family, friends or sexual partners.

Preliminary 6 weeks results are encouraging. Presentation at CAHR will report on the 1st six months of this National program to support the community-based response to provide low barrier access to HIVST to reach and support all key populations and the undiagnosed with HIV.

195 “Because of Covid...”: The impacts of Covid-19 on First Nation people accessing the HIV cascade of care in Manitoba, Canada.

Linda Larcombe¹, Matthew Singer, Laurie Ringaert, Albert McLeod, Gayle Restall, Agnes Denechezhe, Michael Payne, Rusty Souleymanov, Elizabeth Hydesmith, Ann Favel, Melissa Morris, Kelly MacDonald, Yoav Keynan, Pamela Orr
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Background: The effects of Covid-19 on health system services for northern First Nation people living with HIV have not been described. First Nation people in Manitoba, Canada with lived HIV experience have challenges for living well with HIV. We hypothesized that the Covid-19 public health orders would have unanticipated impacts for people with lived experience.

Methods: Health care providers and people with lived experience were recruited and enrolled with informed consent and interviewed virtually using a semi-structured questionnaire. Qualitative data were analyzed through thematic analysis.

Results: Three key overarching themes that emerged from analysis of the data: 1) disruptions to the health care (cascade of care) process; 2) disruption to overall well-being due to intersectional stigma; and 3) innovative ways to provide care.

Conclusions: A key finding was that the cancellation of in-person programs and services during the Covid-19 lockdown impacted important relationships established between health care providers and people with lived experience. Lessons learned from the Covid-19 pandemic can be used to improve the health system HIV cascade of care for First Nations people with lived experience and others living in rural and remote regions.

239 A Journey of Gathering Wisdoms: Sharing the Stories of Indigenous Women through the CHIWOS Data

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Context: Doing Indigenous re-search in a good way honours Indigenous Women living with HIV as more than just re-search participants or numbers.

Background: The Canadian HIV Women's Sexual and Reproductive Health Cohort Study (CHIWOS) collected data from 1,422 women living with HIV/AIDS across Canada between 2013-2018 to better understand the role of Women-Centered HIV Care in the uptake of HIV services and care. Of the 1,422 women, 315 of them identified as Indigenous. As this re-search was grounded in the principles of Community-Based Research (CBR – participatory research that is driven by and equitably involves community members at all phases of the process and contributes to positive changes), Indigenous Community Researchers (ICRs) were responsible for collecting all data from the Indigenous Women who took part in CHIWOS. This re-search journey is not over...the ICRs have been working with the data for over a year to honour the wisdom and stories behind the numbers.

Discussion: Epidemiological research with Indigenous Peoples recognizes that behind (and within) each statistic and each number, there is a lived reality, a story to be shared.

Lessons Learned: This re-search journey of gathering Indigenous Women's stories and wisdoms has been a long and enriching one. Grounded in Indigenous Ways of Knowing and Doing (IWKD), ICRs worked closely with allied researchers to analyze the Indigenous Women's data from CHIWOS and story the data. Using quotes from Indigenous Women living with HIV/AIDS who contributed to CHIWOS, and linking these to the numbers, stories have emerged that are now being shared with the broader community through the ICRs. This is how re-search, and more specifically knowledge translation can truly honor the people who take part in re-search. When re-search data concerning Indigenous women is analyzed and shared from their perspective, we truly honour the stories and wisdoms within the numbers.

285 Community-Driven, Indigenous-Led, Global Collaboration: Establishing Culturally Relevant Sexual and Reproductive Health and Rights Metrics for Indigenous Women and Girls

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¹CAAN-Communities, Alliances & Networks, ²Coalition des organismes québécois de lutte contre le VIH (COCQ-SIDA), ³Ka Ni Kanichik Inc, ⁴British Columbia Centre for Excellence in HIV/AIDS

Background: The health and wellness of global self-identifying Indigenous Women populations (inclusive of feminine identifying non-binary people) living with, or impacted by, HIV or other STBBI, must be informed by evidence-based, culturally relevant Sexual and Reproductive Health and Rights (SRHR) metrics. Gender-based analysis further informs a robust response, including the roles and rights of Indigenous men and boys (inclusive of masculine identifying non-binary people) as advocates for change. Engaging Elders and People with living experience contribute to the value and relevance of research.

This research brings together Indigenous researchers from: Canada, New Zealand, Peru, Guatemala, Nigeria, Nepal and India. Each team is investigating culturally relevant SRHR metrics for Indigenous Women and girls at the local level and collaboratively working towards a shared global understanding.

Methods: This research uses Indigenous methodologies and celebrates the distinct Indigenous epistemologies of the global team. Each country is undertaking a scoping review which will inform a global collective statement. Focus group discussions will further explore key themes from the literature and a large-scale survey will gather diverse perspectives in each country.

Discussion: Project implementation began with representatives from each country (research coordinator, Person living with HIV and an Elder) meeting in Nepal in June 2022. While touring Nepal, team members shared their respective customs, ceremonies, community contexts and cultures. This land-based, cross-cultural sharing and relationship building created a foundation of respect and understanding for the research to proceed.

Next steps: By implementing multiple and collaboratively developed data gathering sources and sharing analysis, findings will address local and global SRHR contexts. The development of accessible, evidence-based and culturally relevant KT resources by and for Indigenous Peoples will respond to local and global community needs. This research will have far-reaching global impacts on understanding SRHR of Indigenous Women living with, or impacted by, HIV or other STBBI.

120 COVID-19 and Resilience of Indigenous People Living with HIV in Manitoba and Saskatchewan

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Background: Very little is known about the protective factors, strengths, resiliencies, and coping strategies that supported Indigenous people living with HIV (IPHA) in Manitoba and Saskatchewan in managing and responding to the COVID-19 pandemic.

Method: Data were drawn from a community-based study (conducted in 2022) which focused on the health of IPHA during the COVID-19 pandemic. Interviews focused on resiliencies, protective factors, strengths, and coping strategies supported IPHA during the COVID-19 pandemic.

Results: Five key themes emerged: a) the value of social support from family, friends, peers, and networks; b) the positive role of service systems that remained operating during COVID-19; c) the importance of ceremony and spirituality in resilience; d) coping within the context of health inequities; and e) coping and COVID-19 restrictions. Participants shared many challenges that were prevalent during the COVID-19 pandemic, and the ways they coped. Indigenous worldviews of social networks and relationality were a focus of their stories, as well as the importance of prayer, ceremony (personal and communal) and traditional practices. Participants demonstrate resilience through methods of adapting to COVID-19 restrictions, which were barriers to IPHA service provision during this time, as well as through communal gathering and ceremony. The importance of services remaining available during the pandemic, and methods of coping through substances, harm-reduction methods and medical support are discussed.

Conclusion: The findings from this study countered the Western medical model that often creates a pathologizing picture of Indigenous health and supplemented a gap in knowledge concerning resilience among Indigenous people living with HIV in two Canadian provinces. Service providers who work with Indigenous people must not focus solely on challenges but understand resilience and coping strategies employed by Indigenous IPHA's to inform services and remove barriers that create further inequity.

196 Northern HIV Journey Mapping: First Nation Community Readiness

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¹University Of Manitoba

Sexually transmitted blood borne infections and HIV new infections are increasing as a consequence of syndemics driven by structural and social barriers. COVID pandemic public health precautions created additional barriers for HIV testing, care and for assessing existing HIV programs, interventions and knowledge sharing. It also brought opportunities for implementing change.

Community readiness assessment is a method of community change that integrates the community's culture, resources and level of readiness to more effectively address an issue. It can bring the community together, build cooperation and increase the capacity for prevention, intervention and knowledge sharing. In northern Manitoba, First Nation communities identified the need for change with regards to HIV testing, linkage to care and for living with HIV. However, not all programs, interventions and/or knowledge sharing methods are appropriate for every First Nation community. The Canadian Aboriginal Aids Networks (formerly Canadian Aboriginal Alliances Networks) (CAAN) worked to create change in response to the rising rates of HIV with a community readiness assessment manual (2012). Our multidisciplinary, community-based research team piloted the manual with a Northern community and have now created a self-directed workbook building on the previous CAAN work.

Effective change needs to be culturally informed and respect First Nation communities' own strengths and existing efforts for HIV testing, treatment and care. We created a step-by-step workbook that easy to follow and is available digitally and in hard copies for First Nation communities. An Indigenous graphic design company made it functional and visually appealing. They chose design elements including the wolf (qualities of teamwork/kinship, protection, endurance), scenes from northern Manitoba and stylized maps to represent the HIV journey in Manitoba. This presentation describes how the workbook can be used by small community groups to ask questions, gain insights and strategize next steps for responding to HIV.

107 Resurgence of Our Relatives: Scaling-Up of Indigenous HIV Doula Work in Manitoba, Canada

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Background: The Indigenous HIV Doula study explored the role of Indigenous doulas in HIV care cascade and system navigation in Manitoba, with a particular focus on increasing engagement among Indigenous women and 2SLGBTQIA+ people who are living with or at risk of HIV in HIV prevention, care, and treatment.

Method: Data were drawn from community-based participatory research (conducted in 2022) that focused on the role of Indigenous doulas in HIV care continuum in Manitoba. Participants (n=9) were recruited using word of mouth, peer networks, and a community agency serving Indigenous people (Ka Ni Kanichihk Inc). Data were analyzed using thematic analyses.

Results: Four key themes have emerged: 1) the role and function of HIV doulas, 2) benefits of HIV doula work, 3) knowledge and skills necessary to perform HIV doula work, 4) integration of HIV doula work within existing agencies. Interviews revealed the important role of doulas in HIV prevention and care, sexual health management, reproductive health, pregnancy and childbirth, service navigation, and Indigenous cultural practices that are essential to revitalizing the strong cultural connection and spiritual path for Indigenous women and 2SLGBTQIA+ people. Additional benefits of HIV doulas work included lessening of stigma surrounding HIV and culturally appropriate outreach. Respondents pointed out the need for all doulas to be trained in HIV prevention and care, system navigation/linkage to care, trauma-informed care, as well as strong communication skills. Participants also discussed ways that an HIV doula position can be integrated within existing community-based organizations that serve Indigenous people in Manitoba.

Conclusion: The findings highlight how HIV doulas can be an integral component of healthcare teams and HIV care continuum for Indigenous women and 2SLGBTQIA+ people living with or at risk of HIV. Future service implementation initiatives can focus on ways to scale-up the Indigenous HIV doula program in Manitoba.

104 The Impacts of COVID-19 on Health and Wellbeing of Indigenous People Living with HIV in Manitoba and Saskatchewan: Gijii-Bapiimin Study Findings

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¹University Of Manitoba, ²Manitoba HIV-STBBI Collective Impact Network, ³Two-Spirit Consultants of Manitoba, ⁴Ka Ni Kanichihk Inc., ⁵University of Saskatchewan, ⁶Communities, Alliances, and Networks, ⁷School of Social Work, McMaster University, ⁸Nine Circles Community Health Centre, ⁹All Nations Hope Network

Background: The Gijii-Bapiimin study examined the impacts of the COVID-19 pandemic on the health and wellbeing of First Nations, Inuit, and Métis people living with HIV in Manitoba and Saskatchewan.

Method: Data were drawn from community-based participatory research (conducted in 2021-2022) which was grounded in an Indigenized ethical space and Two-Eyed Seeing. Participants were recruited across Manitoba (n=24) and Saskatchewan (n=21) using flyers, community agencies, peers, and social media. Interviews focused on pandemic's impacts on health and access to services and ceremony. Data were analyzed using inductive thematic analysis.

Results: Four key themes emerged: a) negative impacts on physical, emotional, spiritual, and mental health and wellbeing; b) restricted access to health services, HIV care, and harm reduction supports; c) reduced access to Indigenous ceremonies, land-based activities, and medicines, d) coping and resilience. Participants identified how socio-physical distancing, isolation, and loss of social and community supports deleteriously impacted them. Issues related to mental health, substance use, homelessness, and intimate partner violence have intensified during the pandemic. Impacts were compounded by exacerbated poverty and economic stress, distress over inadvertent disclosure of HIV status and experiences of anti-Indigenous racism in health and social care contexts. Participants also spoke of the ways they mitigated the negative impacts of the pandemic by relying on Indigenous knowledges, ceremonies, and resilience within their communities.

Conclusion: Service providers must be prepared to respond to the unique impacts of COVID-19 on Indigenous people living with HIV, and their access to health services, HIV care, harm reduction, and ceremony. Interventions to improve access to economic and social resources may also be required to improve this community's health and wellbeing. Our findings call for building a more just public health and social service safety net that meets the needs of Indigenous people living with HIV at the intersection of multiple vulnerabilities.

183 The Canadian HIV and Disability Project (CaNHDiS): An environmental scan of HIV resources and services tailored for people living with disabilities in Canada

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¹Realize, ²Realize, ³University of Toronto Dalla Lana School of Public Health, ⁴Centre for Independent Living in Toronto

Background: People living with HIV and people with disabilities face barriers to employment, health, social services, and community inclusion. Healthcare professionals who diagnose and treat HIV across Canada have few resources to support their care of people living with HIV who also live with disabilities.

Methods: Realize conducted the first national scan of HIV prevention, testing, treatment, and care resources, programs and/or services in Canada that support people living with HIV who also live with disabilities. A preliminary search identified community-based HIV organizations (CBHO) and disability service organizations (DSO) across Canada. Keyword searches were conducted and documented on each organization's website (terms included: disabilit*, access*, HIV, AIDS, sex, sexual health) to identify programming or resources. Access points for people who are visually impaired and/or D/deaf or hard of hearing were also tracked. To augment the scan, ten key-informant interviews were conducted with stakeholders in HIV and disability communities, notes were taken.

Findings: 150 CBHO and 130 DSO were identified in a preliminary search. Based on inclusion criteria, the websites of 137 CBHO and 92 DSO were examined in more detail. Nearly three quarters (72.5%, n=99) of CBHO sites did not mention disability, 20% (n= 27) included accessibility information. Similarly, 75% (n=69) of DSO websites did not address HIV/AIDS or sexual/reproductive health. DSO focused on support for adults, or those with physical disabilities (13%, n=12) were more likely to include sexual health information. Key themes identified were: 1) linkage to HIV-related resources from the disability community is rare; 2) access to sexual/reproductive health information is limited, including on government websites where it is housed under 2SLGBTQIA+ programs, but not disability programs.

Recommendations: Meaningful, on-going consultation with HIV and Disability communities would increase access to comprehensive sexual education for people of all abilities, and builds the evidence base on HIV and disability.

317 Access to Primary Care as a critical strategy to reduce HIV Vulnerability among Heterosexual Black men in Ontario

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Background. Culturally safe and racially inclusive primary care spaces (PCS) can be trusted sources of information on HIV prevention among heterosexual Black men (HBM). Yet in Ontario, HBM including the Black population accounts for 25% of new HIV cases annually. Hence, we estimated the effects of access to PCS on HIV vulnerability (HV) among HBM in Ontario.

Methods. The analysis is based on quantitative datasets from a mixed methods study (2016 -2021). The effective sample size was 866 from four cities in Ontario: Ottawa (n=210), Toronto (n=343), London (n= 157), and Windsor (n=156). We calculated HV as aggregate scores (Maximum =90) from four sub-scales; i) HIV misconceptions (items =18, $\alpha = .69$) ii) negative condom attitudes (items =9, $\alpha =.64$), iii) lacked support (items=4, $\alpha = .93$) iv) discrimination (items=5, $\alpha =.88$). We measured PCS with linkage to a family doctor or a nurse practitioner/consultation visit in the previous year. We determined the association of HV with PCS in hierarchical linear regression model (Adjusted R² =.20, F = 10.01, $p <.001$). We adjusted for sociodemographic and psychosocial variables selected by a stepwise and forward method.

Results. Mean HV was 55.89 (SD =10.6), and the difference in HV across the four cities HV was not significant. Access to Primary Care correlated with reduced HIV vulnerability ($\beta = -4.6$, $p <.001$, CI= -6, -3.2). Also, the following control variables correlated with reduced HV: born in Canada, 60 years of age or older, greater than elementary school education, and delayed sexual debut. Hegemonic masculinity HBM correlated with increased HV.

Conclusion. Access to primary care can reduce HIV vulnerabilities among HBM in Ontario. Interventions promoting Black men's linkage to family physicians and nurse practitioners should be prioritized. Strengthening the cultural competence of primary care professionals would better serve the HIV care needs of HBM and their communities.

132 From research to intervention: Implementing psychosocial programming at Clinique L'Actuel

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At the onset of the COVID-19 pandemic, L'Actuel continued seeing patients in person. Medical staff were quickly struck by the gravity of psychosocial issues that were going unaddressed in a context where our systems, including local community organizations, were either overwhelmed or facing service interruptions.

Over the following years, L'Actuel put together a patchwork of small research projects to evaluate the needs of its patients with the clear intent of combining research and intervention. The clinic now boasts a psychosocial support team of five, with roughly half their caseload being people recovering from crystal meth addiction. Over the last year only, close to 500 patients have received support from the team.

This presentation will provide data highlights from the different projects that underpinned the development of the psychosocial support team. These include a project to assess the mental health of our older patients living with HIV through phone interviews (N=173); another to examine the potential connection between PnP (chemsex) and hepatitis C rates in our patient base (N=140); and a project to evaluate the impact of psychosocial support on mental health, sexual risk-taking, and sexual self-efficacy (N=125, ongoing). Close to 75% of the patients indicate mental health issues; among those who practice PnP close to 50% are HIV+ and 26% of the HIV- ones take PrEP. Those are crucial information in terms of prevention and public health and converge towards the same observation: the importance of integrating a psychosocial dimension into patient care.

The presentation will also include an overview of the challenges and lessons learned from implementing an intervention team in the thick of a pandemic, along with the tools the team had to create to support their patients in a context where harm reduction as practised for more than 30 years is no longer adapted to these new realities.

336 Future Considerations for Three Sexual Orientation Disclosure Interventions from gbMSM in Primary Care: A Qualitative Content Analysis

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Background: Sexual orientation disclosure is a barrier to gay, bisexual and other men who have sex with men (gbMSM) accessing primary care. Our aim was to ascertain the acceptability interventions that could support disclosure to providers.

Methods: We conducted a cross-sectional survey in 2021 among Ontario gbMSM. We recruited participants (18+ years) from sexual networking applications and community-based organizations. For each of 10 interventions, we asked participants why they found it acceptable or unacceptable in open-ended textboxes. Two authors coded responses independently and used content analysis to generate types of responses (positive opinions, negative opinions, suggestions for implementation and unrelated) and themes. We report themes from the three most acceptable interventions.

Results: Of 404 gbMSM included, most were White (59%), gay (82%), and the mean age was 39 (SD=12) years. 118 unique codes were generated from 486 responses for all three interventions. The three most acceptable interventions were: 1) a directory of LGBTQ2S+ friendly providers, 2) continuing professional development with LGBTQ2S+ specific curricula, and 3) a program that increases LGBTQ2S+ visibility in clinics. The intervention with the most positive opinions was the resource directory (n=170) because participants believed it a) could address prejudice (n=12), b) could have adverted previous bad experiences (n=9), or c) encourages open discussion of healthcare needs (n=6). Although it was acceptable, there were negative opinions regarding LGBTQ2S+ visibility (n=12) because participants a) believed it is performative (n=2), b) thought it could deter closeted people (n=2), or c) were skeptical of the provider's LGBTQ2S+ friendliness (n=2). Common implementation suggestions were ensuring the directory checked for providers' competency (n=6), mandating LGBTQ2S+ provider education (n=10), and ensuring providers promoting LGBTQ2S+ visibility have specific competency (e.g., PrEP knowledge, n=3).

Conclusion: Future implementation of these interventions should incorporate gbMSM's lived experiences to overcome potential barriers in seeking care and coming out.

236 HEADSUP!2: Exploring Day-to-Day and Health Services Experiences of People Living with HIV and Neurocognitive Concerns

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Background: Although up to 25-50% of people living with HIV will develop neurocognitive impairments during their lifetime and many people living with HIV are concerned about their neurocognitive wellbeing, there are limited resources, clinical or otherwise, for those with neurocognitive concerns who are living with HIV. HEADSUP!2 is a community-based research (CBR) study which aims to a) better understand the experiences of people living with HIV when navigating care services for neurocognitive difficulties/concerns, including HIV-Associated Neurological Disorders (HAND) and b) describe the professional experience of health care providers serving people living with HIV. In this analysis, we focus on the day-to-day experiences and service seeking/usage of people living with HIV and neurocognitive concerns.

Methods: Using a CBR approach with involvement of a peer team at all stages, people living with HIV and experiencing neurocognitive concerns in Vancouver, Montreal, and Toronto, were recruited through community networks to participate in a qualitative interview. Interview transcripts were analyzed using a team approach for themes related to their day-to-day experiences and experiences with health services.

Results: 20 diverse people living with HIV participated in qualitative interviews in French or English. Themes (and subthemes) included the impact of neurocognitive health concerns (social, occupational), self-management of neurocognitive impairments/symptoms (coping, cognitive strategies, occupational strategies), clinical presentation for health services (triaging of health issues, aging), and experiences of clinical management of neurocognitive impairments/concerns (clinical care, self-advocacy, accessibility).

Conclusion: This study highlights the challenges and resilience of people living with HIV who experience neurocognitive challenges in their daily life, as well as when considering and seeking health care and support services. These findings can be used to develop resources for people living with HIV and neurocognitive concerns, improve awareness among health care professionals about HIV neurocognitive issues and HAND, and improve neurocognitive services for people living with HIV.

264 Application of OCAP® in Qualitative HIV Research: Lessons from the CARE Study

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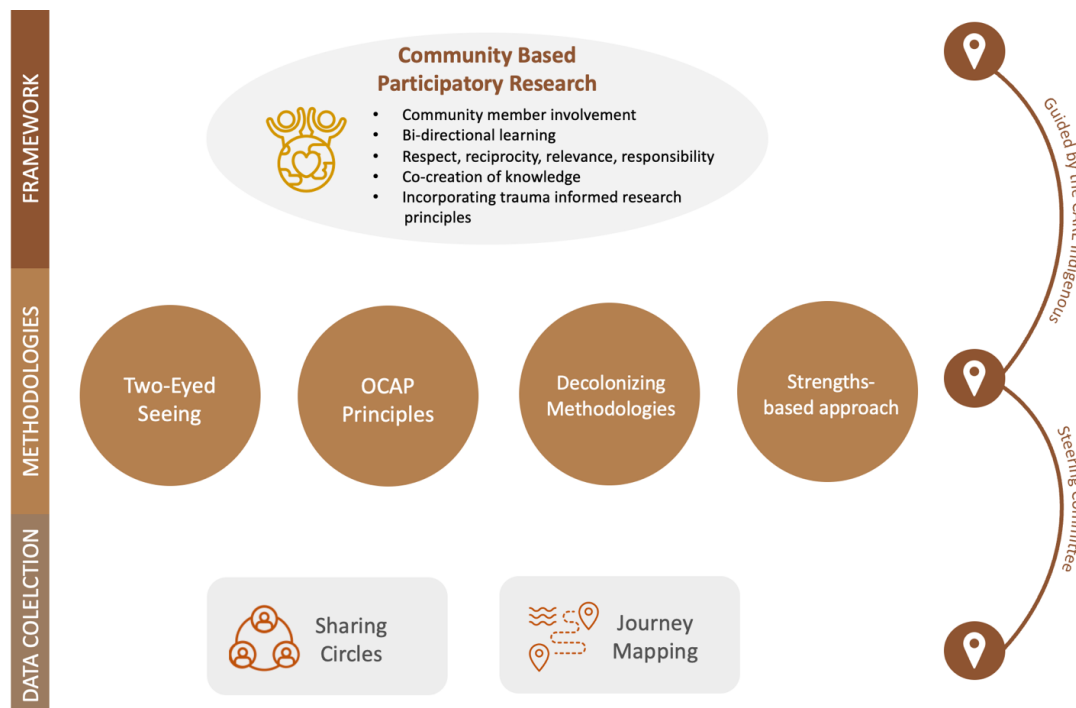
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Background: The Community, Aboriginal, Relationships, Experiences (CARE) study is a CIHR-funded project which aims to explore the pathways and obstacles to care being experienced by a diverse group of Indigenous People living with HIV in British Columbia. There is a unique opportunity to share learnings from the CARE study regarding the application of the OCAP® Principles and Indigenous methodologies in applied HIV research.

Approach: Key learnings and teachings on the operationalization of OCAP® principles included the formation of ethical research guidelines, data stewardship agreements, and prioritizing Indigenous methodologies and community-engaged approaches. From the start, the CARE Steering Committee, inclusive of Elders, researchers, community experts, and health authority representatives, have consulted and guided the research team as formal collaborators and partners. In order to follow the Principles of OCAP® to collect and use the data in a good way, it was determined that the Steering Committee would be best suited to act as the governing body and data stewards for the study. A data stewardship agreement was established between Steering Committee members and the research team, focusing on relational accountability and engagement in culturally appropriate and reciprocal work. The stewardship agreement places the members of the Steering Committee as stewards of the collected data, advocating for participant’s data rights and guiding how the data will be collected, used and shared.

Potential impact: This strategy and approach have set a path to engage in respectful and reciprocal research involving Indigenous People by applying the Principles of OCAP® in a unique way.

Supporting Document



267 Building New Fires: Developing a Realist Evaluation Survey Using Indigenous Ways of Knowing and Doing

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Background: Making It Work is an Indigenous-focused, community-based research project that utilizes an Indigenized 'realist evaluation' approach. The study aims to understand why, when, how, and for whom community-based services work well for people living with HIV, hepatitis C, and/or challenges with mental health and/or substance use, with a particular focus on case management and community development programs/services using Indigenous service delivery models. The study has used qualitative methods (interviews and virtual focus groups with service users and providers, and team discussions) to develop a program theory. The purpose of this component was to develop a survey to build and confirm our program theory.

Methods: The realist evaluation approach recommends using multi-method data collection. Thus, our study team decided to develop and use a survey instrument to more systematically ask service users and providers about service provision, while being mindful of Indigenous research methodologies. We explored the literature to determine if there were examples of similar realist evaluation survey design that engaged Indigenous methodologies, and worked as a team to develop a survey.

Results: The literature review indicated that we were working in new methodological territory. Our team discussed what needed to be included in the survey in relation to our program theory, drawing upon Indigenous ways of knowing. Through drafts, discussions of competing methods concerns, and pre-testing among team members, the final online survey tool included narrated stories and images for participants to reflect on. Survey results provide additional insights into the ways participants engaged with the survey tool.

Discussion: Our survey was designed to answer realist evaluation questions and work within an Indigenous way of Knowing and Doing. Tensions between survey methods and Indigenous methodologies were reconciled to some degree through incorporation of narrative and interactive elements.

202 Lean In and Listen: Women's Stories of Living with HIV Through Art

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Women's stories are important lenses to understanding life with HIV, both in popular culture and academia, but they are often missed or mired in social stigma. Nationally, women make up almost ¼ of the population infected with HIV and this percentage is higher in certain communities. In response, a collective of women living with HIV collaborated in an arts-based workshop and presented a public art installation, entitled Poz Women Show Off, on the traditional and unceded territories of the Songhees, Esquimalt, and WSÁNEĆ peoples (colonially known as Victoria, British Columbia). We use the term women broadly since we are a group that includes and welcomes cisgender women, Two-Spirit individuals, trans people, and non-binary folks. Co-led by HIV activist/artist, Peggy Frank, and arts-based researcher, Dr. Leah Tidey, participating women explored various art forms as methods of self-expression and knowledge sharing relating to the impact of HIV on their lives. Artistic pieces from each collaborator were then curated into an interactive art installation open to the public, both in-person and online.

The installation and workshop built upon 21 women's oral histories from the "HIV In My Day" Archive, a collaboration between academic researchers and community partners that has produced a digital archive of 117 oral history interviews conducted in B.C. with long-term survivors of HIV and their caregivers.

We invite conference attendees to participate in an arts-based, interactive workshop that shares a 10-minute video of women's stories and art, and a group poem entitled HIV Taught Me To Fly, created by Charlene, Dawn, Denise, Kath, Kecia, Levi, Penny, and Peggy. Using a reflective process, we will then engage participants in creating their own group poem. Finally, as a group we will reflect on how the use of arts-based practices in sharing HIV research resonates on both a cognitive and emotional level.

63 Short-Form HIV Disability Questionnaire Sensibility, Utility and Implementation Considerations in Community-Based Settings: A Mixed Methods Study

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PURPOSE: The Short-Form HIV Disability Questionnaire (SF-HDQ) measures the presence, severity and episodic nature of health challenges among adults living with HIV. Our aim was to assess the sensibility, utility and implementation considerations of the SF-HDQ in community-based settings.

METHODS: We conducted a mixed methods study with adults living with HIV and community health providers at seven community sites across Canada (5 community-based organizations and 2 community health centres). We electronically administered the 35-item SF-HDQ followed by a sensibility questionnaire (face and content validity, ease of usage, format) and conducted semi-structured interviews to explore potential utility and implementation in community settings. The SF-HDQ was considered sensible if median scores on the sensibility questionnaire were $\geq 5/7$ for adults living with HIV and $\geq 4/7$ for community health providers for $\geq 80\%$ of the items. Interview data were analyzed using a team-based content analysis.

RESULTS: Median sensibility scores were ≥ 5 for adults living with HIV ($n=44$) for 95% of items (18/19 items) and ≥ 4 for community providers ($n=10$) for 100% of items. Interview data indicated that the SF-HDQ is comprehensive, represented the health-related challenges (disability) living with HIV; captured the episodic nature of disability; and was easy to complete. Community potential utility of the SF-HDQ included i) facilitating communication and fostering engagement with community; ii) taking a snap shot of disability and tracking changes over time; iii) guiding referrals to services and supports; and iv) informing community organization programs and planning. Implementation considerations included the importance of person-centered approaches for tailoring the mode of administration, offering flexibility for administration, mitigating burden of administration, the importance of community buy-in to utilize the tool, and communicating scores based on personal preferences among persons living with HIV and community providers.

CONCLUSION: The SF-HDQ possesses sensibility and utility for use in community-based settings with adults living with HIV and community health providers in Canada.

138 Social Structural Determinants of Health of Sub-Saharan African Women Migrants Living With HIV In British Columbia: The Process of Participatory Photographic Group Discussions

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Background: Our academic-community partnership aims to reinvigorate current HIV prevention efforts by examining social structural determinants of health based on reflections, actions, and experiences of a diverse disprivileged community of sub-Saharan African women living with HIV in British Columbia, Canada. We describe the core process attributes we observed in our community-based participatory photography project with this population.

Methods: Using a community-based approach, we engaged and recruited our photo-voice participants (11 cisgender women, 1 trans woman), who had a mean age of 49 years, had been living with HIV for an average of 14 years, and migrated from the sub-Saharan African region. Using a hybrid group-based setting employing cultural values of meal sharing, we explored participants' social structural determinants of health. During each of the six group discussions, the participants took and shared photographs. Our research team reflected on the process of conducting this study.

Results: Three core attributes stood out. First, the relational approach between researcher(s) and participants enhanced power equity through shared process control during data collection. Our two community peer researchers were critical for recruitment success, facilitation, and translation. Second, each phase in the data collection process allowed for flexible, individualized consent. This was necessary given participants' numerous job and life obligations created challenge for scheduling and on-going participation challenging our research work. Third, the iterative nature of photo voice process, including multiple sessions of taking and sharing photos, strengthened and bridged the capacity of the participants and researchers, and created opportunity for participant self-determination and empowerment.

Conclusions: Culturally responsive arts-based photo-voice methodology reflects principles of community-based participatory research. Applying community-based research principles with participatory photographic visual methodologies provide an opportunity that promoted participants and researchers' growth and change.

190 The art of knowledge translation: using art to connect women living with HIV to research findings

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¹Experimental Medicine, University of British Columbia, ²Women's Health Research Institute, ³Faculty of Health Sciences, Simon Fraser University, ⁴Faculty of Science, University of British Columbia, ⁵BC Centre for Excellence in HIV/AIDS, ⁶AIDS Vancouver, ⁷Oak Tree Clinic, BC Women's Hospital and Health Centre, ⁸Department of Pathology and Laboratory Medicine, University of British Columbia, ⁹Centre for Blood Research, University of British Columbia, ¹⁰Edwin S.H. Leong Healthy Aging Program, ¹¹Department of Medicine

Background: Women living with HIV in British Columbia, and across Canada, deeply feel the loss of women-centred spaces for connection, peer support, and meaningful knowledge translation and exchange (KTE). We therefore developed a series of arts-based KTE events for women to share information on healthy aging research.

Methods: KTE is integral to the BCC3 study. Our KTE team includes women living with HIV, a provincial HIV/AIDS Service Organization (AIDS Vancouver), Community Research Associates (CRAs), trainees, and researchers. Events consisted of a lay-language presentation by a CRA about actionable research findings, brainstorming sessions around managing health in relation to the theme, an art activity, a shared meal, and a gift bag containing health-promoting items customized to the theme. To gauge their value and efficacy, participants were asked to complete evaluation forms.

Results: Four events have been held thus far, three in Vancouver and one in Prince George, with 14-19 attendees/event. Event themes included cortisol and stress management, menopause, and chronic pain. Each event used a different art medium, including canvas painting, body mapping, and stencil drawing on t-shirts and pillowcases. Thirty feedback forms were received from three events (response rate = 30/48, 62.5%)(Table 1). Participants emphasized the accessibility of the research presentations, facilitated through CRA leadership.

Conclusion: The positive reception and high attendance at these events aligns with national calls to action by women living with HIV to create women-centred spaces. Our results emphasize the value of such events for connection, art, and learning by and with women living with HIV.

Supporting Document

The art of knowledge translation: using art to connect women living with HIV to research findings

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11. Department of Medicine, University of British Columbia Faculty of Medicine, Vancouver, British Columbia, Canada

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Table 1. Participant responses to feedback forms

<u>Question</u>	<u>Responded “strongly agree/agree/ somewhat agree” (%)</u>
The topics discussed today were important to me	100
I felt safe and supported attending this event	100
I had fun at this event	93.3
There was a good balance between learning and activities	92.0
I would recommend this event to a friend	100
The art activities helped me to interact with the knowledge that was shared today	92.6
I know more about (<i>topic</i>)* than I did before attending this event * “menopause”, “chronic pain”, or “stress management”	92.6
<u>Select written feedback</u>	
“Thanks we really get lifted up with connection at this level!”	
“Thanks for the workshop. I look forward to more!”	
“Thank you for making me feel real.”	
“I love this group. All the ladies are amazing.”	
“You guys are amazing really enjoy the groups.”	
“Great presentations – learned a lot!!”	

210 Discrimination, HIV stigma and interpersonal violence: Key barriers to mental health services access among women living with HIV in Metro Vancouver, Canada

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Objective: Despite high levels of mental health conditions and gendered social and systemic inequities among people living with HIV (PLWH), there is a notable scarcity of studies focusing on the barriers to mental health service access among PLWH, and even fewer with women living with HIV (WLWH). This study, therefore, examined the prevalence and social and structural factors associated with being unable to access mental healthcare services among WLWH in Metro Vancouver, Canada.

Methods: Data were drawn from the Sexual Health & HIV/AIDS: Longitudinal Women's Needs Assessment (SHAWNA) study, an open longitudinal community-based research project with WLWH in Metro Vancouver (2014-present). Our primary outcome variable was unmet needs for mental health services (reporting "being unable to access mental healthcare when needing these services, in the last six months"). Bivariate and multivariable logistic regression using generalized estimation equations were used to examine the associations between social and structural factors and the unmet needs for mental health services. Adjusted odds ratios (AOR) and 95% confidence intervals (CI) were reported.

Results: Among the 281 WLWH included in the study sample, there were 1249 observations over 4 years (2015-2019). Of the study sample, 56.6% were Indigenous participants, 34.5% were White and 8.9% were African, Black, South Asian, or other racialized/women of colour, and 6.8% reported transgender identity. Gender-based physical and/or sexual violence (AOR=2.25; CI=1.46-3.45), HIV-related stigma (AOR=1.07, CI=1.04-1.10), and barriers to primary healthcare access (AOR=1.68, CI=1.11-2.55), all in the last six months, were significantly associated with unmet needs for mental health services.

Conclusion: Addressing intersecting mental health and HIV stigma in primary care could help support safe disclosures of mental health conditions and facilitate referrals to care. Long-term, sustainable strategies to address ongoing shortages of primary care and affordable, trauma-informed mental health care services among WLWH in BC and nationally are needed.

258 Examining the impact of social determinants of health on rates of HIV stigma: Results from the People Living with HIV Stigma Index in Atlantic Canada

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HIV stigma is still pervasive in Canada, undermining HIV treatment and efforts as well as negatively impacting the health and wellbeing of people living with HIV. However, less is known about how social determinants of health drive levels of different types of stigma, especially in Atlantic Canada. This study aims to quantitatively examine how these social determinants impact rates of internalized, enacted, and anticipated stigma in a sample of people with HIV from across Atlantic Canada.

Peer research associates recruited 81 people living with HIV from across Atlantic Canada (mean age=40 years, 68%male) to complete the People Living with HIV Stigma Index – a global survey tool developed by and for people with HIV to measure nuanced changes in different forms of stigma. Bivariate binary logistics regression was used to examine the impact of social determinants of health (key population, gender, sexual orientation, ethnicity, education, employment, basic needs) on rates of internalized, enacted, and anticipated stigma.

Rates of significant stigma were high in our sample with internalized stigma at 58% and enacted and anticipated stigma at 84% and 85%, respectively. Bivariate binary logistic regression showed that the African/Caribbean/Black participants had significantly greater internalized stigma (OR=15.8, $p<0.01$) and anticipated stigma (OR=15.9, $p=0.01$) than the Caucasian reference group. Those who lacked basic needs had significantly greater enacted stigma (OR=21.5, $p<0.01$) and anticipated stigma (OR=8.1, $p=0.01$) than those whose basic needs were met.

There is a high rate and burden of HIV stigma experienced by people living with HIV in Atlantic Canada that significantly affects their health and wellbeing, particularly in those who identify as African, Caribbean, or Black, and those who have challenges with basic needs such as housing and food security. Targeted anti-stigma interventions are critically needed that consider the contexts of poverty and an anti-racism framework.

287 Implementing a National Action Plan to Advance the Sexual and Reproductive Health and Rights of Women Living with HIV in Canada

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Background: In 2017, the World Health Organization released the Global Consolidated Guideline on Sexual and Reproductive Health and Rights (SRHR) of Women Living with HIV (WLWH), challenging countries to develop national action plans by centering women, gender equity, and human rights in evidence-based recommendations and best practice guidelines.

A Canadian community-academic partnership team (WLWH, researchers, service providers, policy-makers, clinicians) engaged in a four-year process identifying priorities for a national action plan to advance the SRHR of WLWH. Efforts included a national webinar series, World Café event at CAHR 2018, and online consultation, leading to a publication detailing five key recommendations with suggestions for implementation.

Here we share our co-creation and implementation of a Knowledge Mobilization (KM) strategy to support uptake of the recommendations into policy, programming, and research across Canada.

Methods: Key activities of the KM strategy through 2022 included:

- April-Nov: Developing a printable poster and implementation booklet to support organizations' implementation.
- Jul-Dec: Compiling a nation-wide list of stakeholders in the SRHR of WLWH.
- Sept-Dec: Creating a website including a public endorsement of and commitment to the recommendations for stakeholders to sign.
- Dec 1-Ongoing: Launching an email/social media campaign sharing the recommendations and an invitation to sign the endorsement.

Results: In month one, 245 organizations were contacted through email, the website had 292 visits, and tweets had 1,662 views (9% engagement rate). Fifteen organizations and 24 individuals signed the endorsement, including leaders in HIV service, clinical provision, and research. Notably missing are government organizations, funders, and non-HIV-specialized service and clinical providers.

Discussion: Next steps include developing additional community-facing KM products, continued outreach to potential signees, and convening stakeholders at a CAHR 2023 ancillary event to co-create an accountability plan for signees. Ongoing action and commitment are needed to tangibly advance the SRHR of WLWH in Canada.