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Breaking Barriers, Building Bridges: Research to Action in HIV

Éliminer les obstacles et jeter des ponts : De la recherche à l'action

CAHR L'ACRV 2024

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Basic Sciences Oral Abstract Session #1 / Sciences fondamentales présentation orale d'abrégés #1

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The replication-competent HIV reservoir is a genetically restricted, younger subset of the overall pool of HIV proviruses persisting during therapy, which is highly genetically stable over time

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Background: Within-host HIV populations continually diversify during untreated infection, and this diversity persists within infected cell reservoirs during antiretroviral therapy (ART). Achieving a better understanding of on-ART proviral evolutionary dynamics, and a better appreciation of how the overall persisting pool of (largely genetically defective) proviruses differs from the much smaller replication-competent HIV reservoir, is critical to HIV cure efforts.

Methods: We inferred within-host HIV evolutionary histories in blood from seven participants of the Women's Interagency HIV Study who experienced HIV seroconversion. env-gp120 was single-genome amplified from a median 9 plasma samples/participant collected pre-ART, and a median 3 proviral samples/participant collected on-ART. To mitigate uncertainty in within-host phylogenetic reconstruction, a median 3842 phylogenies were inferred/participant using Bayesian approaches. We characterized diversity, lineage origins and ages of proviruses, where ages were estimated phylogenetically. We used the same techniques to study reservoir-origin HIV in two participants.

Results: Results suggested that proviral clonality generally increased over time on ART, with clones frequently persisting across multiple timepoints. Integration dates of proviruses persisting on ART generally spanned duration of untreated infection (though were often skewed towards years immediately pre-ART), while in contrast, reservoir-origin viremia emerging in plasma was exclusively "younger" (i.e., dated to years immediately pre-ART). The genetic and age distributions of distinct proviruses remained stable during ART in all but one participant, in whom there was evidence that younger proviruses had been preferentially eliminated after 12 years on ART. Analysis of within-host recombinant proviruses also suggested that HIV reservoirs can be superinfected with virus reactivated from an older era, yielding infectious HIV with mosaic genomes with different ages.

Conclusion: Overall, these results underscore the remarkable genetic stability of distinct proviruses that persist on ART, yet suggest that replication-competent HIV reservoir represents a genetically-restricted and overall "younger" subset of the overall persisting proviral pool in blood.

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A role for SR proteins in the maintenance of HIV-1 latency

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Reversal of HIV-1 latency remains a significant barrier to achieving a cure for this infection and recent studies have highlighted issues in viral RNA processing as one component of the latency barrier. Key to regulating RNA processing are the host SR (serine-arginine rich splicing factors) proteins. As part of our effort to understand the role that individual SR proteins play in regulating HIV-1 replication, we examined their interaction with HIV-1 RNA and the effect of their depletion on viral gene expression. eCLIP analysis determined that these factors had extensive overlap in their binding sites on the viral RNA. Despite similar binding profiles, of the eight SR proteins (SRSF1-7, 9) tested, depletion of only SRSF3, 5, and 9 yielded marked increases in HIV-1 protein expression and viral RNA accumulation in two T cell lines examined (JLat 10.6, CEM-T4). While SRSF3 & 5 depletion increased HIV-1 promoter function, loss of SRSF9 affected post-initiation events. In the context of CEMT4 cells, increased HIV-1 gene expression was predominately due to a >14-20 fold increase in the percentage of cells expressing Gag upon SRSF3 or SRSF9 depletion, an effect that could be further augmented by addition of various latency reversing agents. Effects on promoter function were not unique to HIV-1 as subsequent analyses determined that SRSF3 or 9 depletion also modulated promoter function of multiple host genes. Together, these observations highlight an unexpected role for SRSF3, 5, and 9 in the regulation of HIV-1 latency through affects on viral promoter function.

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Adapting the Intact Proviral DNA Assay for the HIV-1 Subtypes Circulating in a Ugandan Cohort.

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Background. The primary barrier to an HIV cure is the latent vial reservoir (LVR), a product of HIV's integration into the host DNA of long-lived immune cells, predominantly resting CD4+ (rCD4) T cells. Continuous adherence to antiretroviral therapy (ART) is necessary as these cells can produce infectious virus if immunologically reactivated. Currently, one of the standard assays for LVR quantification is the Intact Proviral DNA Assay, designed based on HIV subtype B sequences circulating in the United States (IPDA-B). However, globally, most PWH have non-B subtypes, which the IPDA-B often fails to detect due to their high sequence diversity. As HIV subtypes can differ in viral pathogenesis, genetics, and reservoir size, subtype-specific strategies for LVR quantification are urgently needed to advance cure research for all.

Methods. We used subtype A1, D, and recombinant near-full-length proviral sequences (n=607), previously generated by our group, to adapt existing IPDA-B primers and probes for the sequence diversity observed in a Ugandan cohort (IPDA-A1D). Degenerate nucleotide bases were incorporated at locations with high sequence diversity.

Results. The IPDA-B regions could correctly identify 97.3% of proviruses with large deletions in the Ugandan cohort (n=495) in silico. The adapted IPDA-A1D returned highly comparable intact reservoir measurements to the original IPDA-B when quantifying samples whose sequences were compatible with both assays ($\rho=1$, $p<0.0001$). Furthermore, the IPDA-A1D rescued intact provirus detection in HIV non-B subtype samples for which the IPDA-B failed. Additionally, the unlabelled hypermutation discrimination probe successfully competed with the labelled probe for binding to hypermutated, but not intact, subtype A1 and D genomes.

Significance. Adaption of the IPDA to quantify non-B subtypes within the LVR will enhance HIV reservoir and cure research across Africa.

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Interactions Between HIV Integrase Strand Transfer Inhibitors and Folate Transporters and Receptor in Human Placenta

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Background: In 2018, the Botswana Tsepamo study reported a concerning increased risk of neural-tube defects (NTDs) in fetuses exposed to the HIV integrase strand transfer inhibitor (INSTI) dolutegravir from the time of conception. Additionally, folate deficiency in fetal development has been associated with NTDs. Annually over 1 million people with HIV taking antiretroviral drugs become pregnant, thus it is critical to investigate the potential interactions between INSTIs such as dolutegravir and folate transport pathways in the developing fetus. We investigated the effect of in utero exposure to INSTIs on the expression of placental proteins that are critical for fetal folate delivery.

Methodology: HTR8/SVneo and BeWo human placental cell lines representative of the first and third trimester respectively, were treated with clinically relevant doses of dolutegravir, bictegravir, cabotegravir or DMSO control for a period of 3, 6, 24, or 48 hours. mRNA and protein expressions of folate receptor-α (FRα), and transporters, reduced folate carrier (RFC) and proton-coupled folate transporter (PCFT), were assessed by qPCR and immunoblotting respectively.

Results: We observed a significant downregulation of the mRNA expression of: i) FOLR1 and RFC in cabotegravir treated cells, ii) FOLR1 and PCFT in dolutegravir treated cells, and iii) FOLR1, RFC, and PCFT in bictegravir treated cells. Protein expression showed similar patterns of dysregulation in BeWo cells in which there was a significant downregulation of RFC in cabotegravir treated cells and RFC/ PCFT proteins in dolutegravir treated cells.

Conclusion: Our findings suggest that the observed dysregulation of folate transporters in the placenta caused by INSTIs treatment could potentially result in an in utero folate deficient state that could place the fetus at increased risk for adverse birth outcomes. Future studies will characterize the activity of the folate transport pathways and further examine, in vivo, fetal folate levels/toxicity. (Supported by OHTN and CIHR).

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Microbe-Binding Antibodies in the Female Genital Tract: Associations with the Vaginal Microbiome and Genital Immune Correlates of HIV Acquisition.

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Background: Mucosal antibodies in the gut maintain homeostasis between the host and the local microbiome through the clearance of pathogenic bacteria and the development of immune tolerance to inflammatory bacteria. Bacterial vaginosis (BV) is associated with elevated HIV risk, in part by eliciting genital inflammation. However, little is known regarding the role of microbe-binding antibodies in the vagina nor whether similar bacteria-immunoglobulin interactions modulate bacteria-induced cervicovaginal inflammation and/or bacterial colonization.

Methods: We used a flow cytometry-based assay to quantify microbe-binding IgA and IgG from cervicovaginal secretions in a cross-sectional cohort of 200 HIV-uninfected women from Nairobi, Kenya that were enriched for BV and evaluated the associations of cervicovaginal IgA and IgG with the vaginal microbiome composition and local soluble immune factors.

Results: Cervicovaginal IgA and IgG are abundant and bind key vaginal bacteria ex vivo (Gardnerella vaginalis, Prevotella bivia, Lactobacillus iners, and Lactobacillus crispatus). Microbe-binding IgA and IgG were not associated with the detectability of the specific corresponding bacteria in the vaginal microbiome. The total bacteria abundance in the vaginal is inversely correlated with total and microbe-binding IgA and IgG and BV is associated with reduced total and microbe-binding IgA and IgG. Total and microbe-binding IgA and IgG were positively correlated with increased levels of multiple inflammatory cytokines (IL-6, TNF) and chemokines (IP-10, MIG, MIP-1α, MIP-1β, MIP-3α, MCP-1, IL-8) independently of total bacterial abundance.

Conclusions: Both total and microbe-binding IgA and IgG in the female genital tract are independently correlated with multiple correlates of reproductive health and HIV susceptibility. IgA and IgG inversely correlate with bacterial abundance and positively correlated with several cytokines and chemokines previously linked to HIV acquisition. This assay provides a platform to investigate the interactions between the microbiota, inflammation and cervicovaginal antibodies in human observational and interventional studies.

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Incidence and Contributing Factors of Dementia among People Living With HIV in British Columbia, Canada, from 2002 to 2016: a Retrospective Cohort Study

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Introduction
Dementia disproportionately affects people living with HIV (PLWH) with a significantly earlier onset age than HIV-negative counterparts. This age-associated illness is associated with morbidity, mortality and higher healthcare costs. We estimated the incidence and prevalence of dementia and identified its key risk factors in a cohort of PLWH in British Columbia (BC), Canada.

Methods
This retrospective cohort study utilized data from the STOP HIV/AIDS study. Eligible individuals were diagnosed with HIV, ≥40 years of age, naïve to antiretroviral therapy (ART), had no dementia at the index date and were followed for ≥1 year during 2002-2016. Our outcome of interest was incident dementia. We examined the effect of sociodemographic and clinical covariates on the incidence of dementia using a cause-specific hazard (CSH) model, with all-cause mortality as a competing risk event. Clinical covariates included the diagnosis of chronic comorbidities associated with dementia within the general population.

Results
Among 5,121 eligible PLWH, 108 (2%) developed dementia. The crude 15-year prevalence of dementia was 2.1%, and the age-sex standardized incidence rate of dementia was 4.3 (95% CI: 4.2-4.4) per 1000 PYs. Among the adjusted covariates, CD4 cell count <50 cells/mm³ (aCSH 8.61, 95% CI: 4.75-15.60), uncontrolled viremia (aCSH 1.95, 95% CI 1.20-3.17), 10-year increase in age (aCSH 2.41, 95% CI 1.89-3.07), schizophrenia (aCSH 2.85, 95% CI:1.69-4.80), traumatic brain injury (aCSH 2.43, 95% CI 1.59-3.71), delirium (aCSH 2.27, 95% CI 1.45-3.55), substance use disorders (aCSH 1.94, 95% CI:1.18-3.21), and mood/anxiety disorders (aCSH 1.80, 95% CI:1.13-2.86) were associated with an increased hazard for dementia.

Conclusion
Our findings demonstrate the adverse impacts of mental health and substance use disorders on the risk of dementia and call for enhanced integration of HIV care with health care services provided for mental health, substance use disorder, and other risk-inducing comorbidities to lower the risk of dementia among PLWH.

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Prevalence and Correlates of Frailty Among Older Adults Living with HIV

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Background
Advancements in treatment have resulted in improved survival among people living with HIV, who now have a life expectancy approaching that of the general population. However, due to multiple factors, including comorbidities, frailty tends to develop at a younger age among people living with HIV. We set out to examine the prevalence of frailty and its correlates among older adults living with HIV in Canada, with a primary interest in nadir CD4 cell count.

Methods
We performed a cross-sectional analysis of the Correlates of Healthy Aging in Geriatric HIV (CHANGE HIV) study, a Canadian cohort of people living with HIV age >65. Participants meeting at least 3/5 Fried Frailty Phenotype criteria (unintentional weight loss, self-reported exhaustion, weakness, slow walking speed, low physical activity) at cohort entry were characterized as frail. We used logistic regression to estimate the association between nadir CD4 count and frailty, as well as the following a priori selected variables: age, gender, time since HIV diagnosis, number of comorbidities, marital status, and loneliness (measured using UCLA loneliness scale, higher scores indicate more loneliness).

Results
Among 439 cohort participants (median age 69 years, 90% men, all on antiretrovirals, 99.5% viral load <200 copies/mL), 73 were frail (prevalence 16.6%). Frailty was not associated with nadir CD4 count (median CD4 count 222 in frail vs. 198 cells/mm3 in non-frail participants). Not being in a relationship (adjusted odds ratio [aOR] 2.22, 95% confidence interval [CI] 1.00-5.00) and greater degree of loneliness (aOR 1.33 per 10-point increase, 95% CI 1.07-1.66) were associated with frailty.

Conclusions
Frailty occurred in approximately 1 in 6 older, mainly male, adults living with HIV in this cohort. While nadir CD4 count did not correlate with frailty, being single and lonely did, highlighting the importance of recognizing and addressing these social vulnerabilities among people aging with HIV.

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Disability and Physical Activity among Adults Living with HIV in Canada: A Web-Based Survey from the HIV in Motion Study

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Objectives: To describe engagement in physical activity and experiences of disability among adults living with HIV in Canada.

Methods: We conducted a cross-sectional web-based survey with adults living with HIV in Canada. Community-based organizations and clinics recruited participants online (email) and in-person (on site). Participants completed a 40-minute online questionnaire about physical activity (Canadian Physical Activity Guidelines (CPAG)), disability (Episodic Disability Questionnaire (EDQ)), and HIV and personal characteristics. We calculated descriptive statistics. The CPAG recommend completing ≥150mins of moderate-intensity aerobic physical activity (or equivalent) weekly. We calculated EDQ presence, severity and episodic scores (range 0-100; higher scores indicate more disability). We examined differences between mean EDQ domain severity scores among participants who did versus did not meet the CPAG for aerobic physical activity using the Mann-Whitney U test.

Results: Of 238 respondents, most were from Ontario (64%), men (71%), median age 53 years (25th,75th percentile:39,61), and had a median of 5 (2,9) concurrent health conditions. Highest EDQ scores for presence (78(54,100)) and severity (45(30,55)) of disability were in the uncertainty domain. Highest EDQ scores for episodic nature of disability (10(0,40)) were in the physical domain. In the past week, 99 (42%) respondents reported meeting the CPAG for aerobic physical activity. Among participants who met the CPAG for aerobic physical activity versus those who did not, mean EDQ severity scores were lower for physical (z=-2.247; 95% Confidence Interval(CI):0,10), cognitive (z=-2.680; 95%CI:0,13)), mental-emotional (z=-3.424; 95%CI:5,16), uncertainty (z=-3.802; 95%CI:5,15), difficulty with day-to-day activities (z=-3.861; 95% CI:5,17), and social inclusion (z=-3.644: 95%CI:3,12) domains ($p<0.05$).

Conclusions: Fewer than half of respondents reported meeting the CPAG in the past week. Meeting the CPAG for aerobic physical activity was associated with lower disability scores across all domains. Future research should explore strategies to enhance physical activity engagement to reduce severity of disability among adults living with HIV.

Clinical Sciences Oral Abstract Session #1 / Sciences cliniques présentation orale d'abrégés #1

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Severe metabolic dysfunction-associated steatotic liver disease is associated with gut dysbiosis and shift in the metabolic function of the gut microbiota in people with HIV

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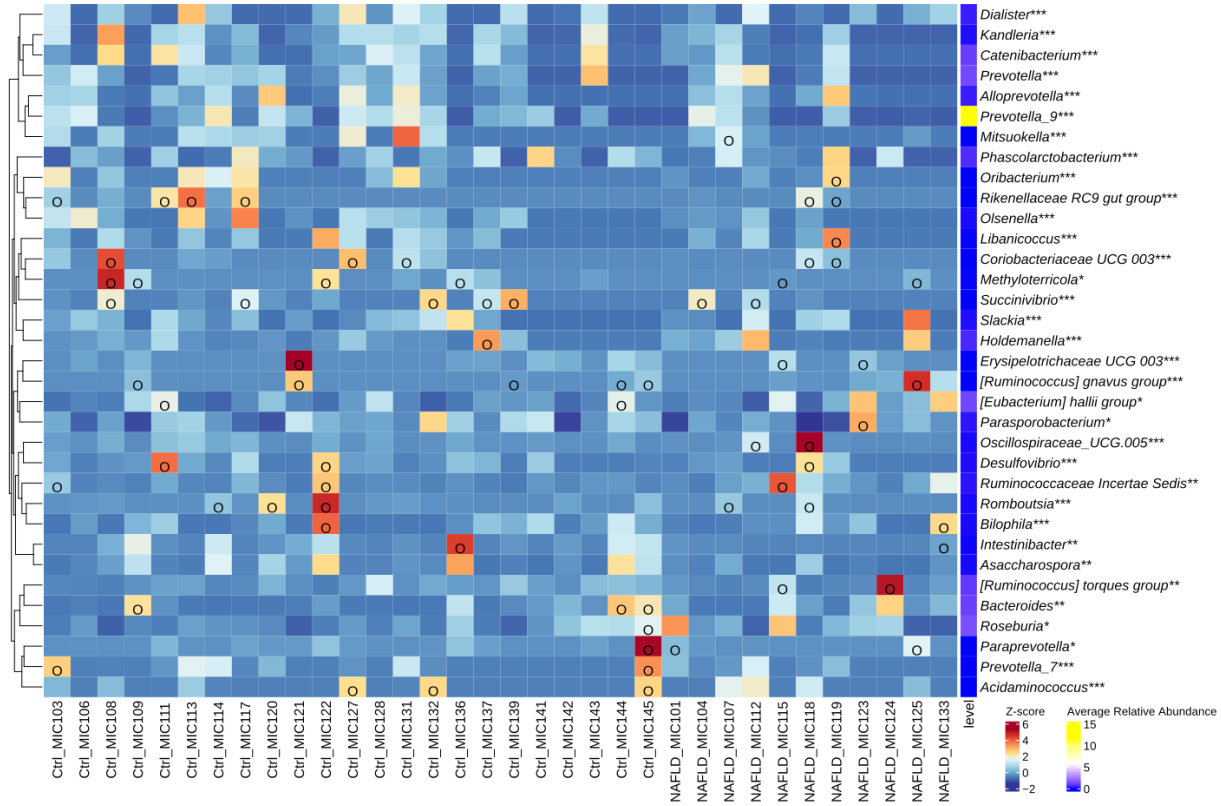
Background: People with HIV (PWH) are at risk for metabolic dysfunction-associated steatotic liver disease (MASLD) and its severe forms, including metabolic dysfunction-associated steatohepatitis (MASH) and liver fibrosis. While recent studies have implicated gut microbial dysbiosis in the MASLD pathogenesis, but its specific role in PWH remains unclear.

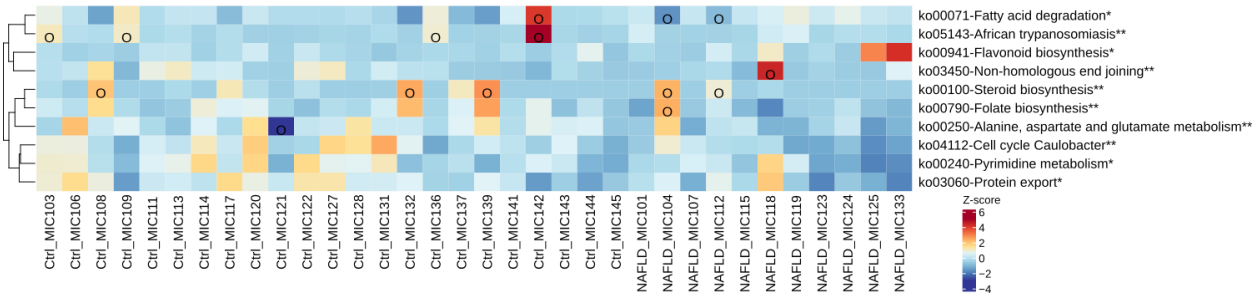
Methods: We included PWH with a diagnosis of MASLD, defined as controlled attenuation parameter >238 dB/m by Fibroscan without viral hepatitis coinfection or alcohol abuse. Severe MASLD was defined as presence of MASH (serum cytokeratin-18 >130.5 U/L) and/or significant liver fibrosis (liver stiffness measurement >7.1 kPa). Taxonomic composition of gut microbiota was determined using 16S ribosomal RNA gene sequencing of stool samples. PICRUSt-based functional prediction was employed. Bacterial and functional differences were assessed using an adjusted generalized linear model using a negative binomial distribution.

Results: 34 PWH with MASLD were enrolled (mean age 52 years, 15% females). Among them, 32% had severe MASLD. After adjusting for age and sex, severe MASLD explained seven percentage of the overall variation (r2 = 0.07, p = 0.09) in bacterial composition. Among others, participants with severe MASLD had increases of genera Eubacterium, Bacteroides, Ruminococcsu, Roseburia and decreases of Prevotella, Olsenella, Oribacterium, Dialister (Figure). In severe MASLD, functional analysis revealed increases in fatty acid degradation and flavonoid biosynthesis, and decreases in steroid biosynthesis, folate biosynthesis, and alanine, aspartate metabolism.

Conclusion: In PWH, gut dysbiosis and altered gut microbiota metabolism correlate with MASLD severity. This analysis complements traditional predictors and identifies potential novel metabolic targets for pre-/probiotics therapies.

Supporting Document





Clinical Sciences Oral Abstract Session #1 / Sciences cliniques présentation orale d'abrégés #1

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Resilient Coping and Social Support moderate the negative impacts of Adverse Childhood Experiences on depressive symptoms among people with HIV: Findings from the Ontario HIV Treatment Network Cohort Study

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Background: People living with HIV (PLWH) have higher prevalence of Adverse Childhood Experiences (ACEs). ACEs, in turn, have been linked with adverse physical and mental health outcomes. We examined whether resilience coping and social support moderate the negative effect of ACEs on depressive symptoms among PLWH.

Methods: Data for the current study come from participants of the OHTN Cohort Study (OCS) who completed the annual questionnaire (2021-2022). OCS is a longitudinal cohort of PLWH receiving care in 15 clinics across Ontario. Exposure to ACEs, depressive symptoms, social support, and resilient coping were assessed using the ACE-10 scale, PHQ-9 survey, the MOS-SS scale, and the BRCS scale, respectively. Linear regression methods were used to assess the moderating effect of resilience coping and social support on the relationship between ACEs and depressive symptoms.

Results: Participants (N=2,556) were predominantly gay/bisexual men (64.8%), 50 years or older (64.3%), single (61.4%), White (59.2%) and had an income of <$40K/year (54.4%). Nearly two-thirds (71.4%) reported exposure to ≥1 ACEs and higher number of ACEs was associated with greater depression symptomatology (B= 0.71, p<0.001). In multivariable regression analyses, we found that both social support (B= 0.43, p=0.011) and resilient coping (B= 0.46, p=0.011) buffered against the impact of ACEs on depressive symptomatology. Further, we found an interaction effect between social support and resilient coping (B= 0.70, p<0.001) as well as a three-way interaction effect between ACEs, social support, and resilient coping (B= -0.14, p=0.003). This suggests that while social support provided protective effect against depressive symptomatology, this effect is further magnified with higher levels of resilient coping.

Conclusions: Social support and resilient coping moderated the impact of ACEs on burden of depressive symptomatology. Interventions that boost social support and resilience coping skills may contribute to improved mental health among PLWH.

Clinical Sciences Oral Abstract Session #1 / Sciences cliniques présentation orale d'abrégés #1

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Material Deprivation is Associated with Liver Stiffness and Liver-Related Events in People with HIV

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Background: Socioeconomic status drives health disparities. People with HIV (PWH) are at risk for chronic liver diseases. The association between material deprivation and hepatic outcomes in PWH has not been evaluated.

Purpose: To evaluate the association between material deprivation and liver fibrosis, metabolic dysfunction-associated steatotic liver disease (MASLD) and clinical outcomes in PWH.

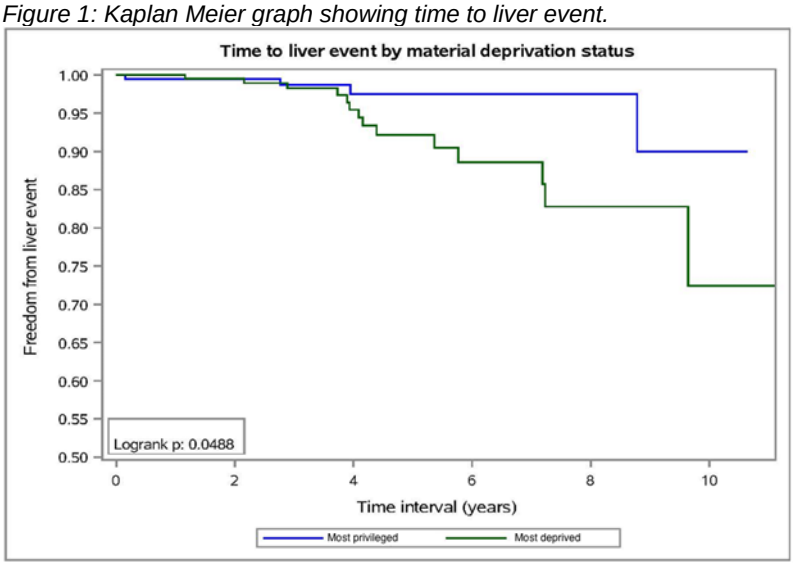
Method: We included PWH from the LIVEr disease in HIV cohort. MASLD was defined as hepatic steatosis (controlled attenuation parameter >248 dB/m) plus BMI>25 Kg/m2, type 2 diabetes, hypertension, or dyslipidemia. Liver fibrosis was defined as liver stiffness measurement >8. Socioeconomic status was assessed using the Pamplon Material Deprivation Index by linking patient postal code to the 2016 Canadian census. PWH were classified as materially "deprived" or "privileged". Multivariable linear regression and Kaplan Meier analyses were completed.

Results: Among 768 PWH included, 305 (40%) were materially privileged and 359 (47%) were materially deprived. Materially deprived PWH were more frequently female, of Black ethnicity, and had metabolic comorbidities. After adjustments, material deprivation was associated with increased liver fibrosis (β=1.858, 95% CI 0.53-3.17; p=0.006) but not with steatosis (β=6.469, 95% CI -5.55-18.49; p=0.291). During a median follow-up of 3.8 years, incidence of liver-related events was 14.6 (10.3–20.7) per 1000 person years. Incidence of liver-related events was higher in materially deprived compared to privileged PWH while there was no difference in extrahepatic events or mortality.

Conclusions: Material deprivation is associated with liver fibrosis and liver-related events in PWH. Future strategies should assess whether improved material security improves liver outcomes.

Supporting Document

Figure 1: Kaplan Meier graph showing time to liver event.



Epidemiology and Public Health Oral Abstract Session #1 / Épidémiologie et sciences de la santé publique présentation orale d'abrégés #1

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Measuring Experiences of Racism Among Women Living With and Without HIV: A Psychometric Analysis of the Everyday Discrimination Scale

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Introduction: Everyday Racial Discrimination–the indignities racial/ethnic minorities experience daily–can deleteriously affect health. The Everyday Discrimination Scale (EDS) is widely used in HIV research to measure racial discrimination and assess health impacts from this mistreatment. However, no studies have examined whether the EDS provides estimates of racial discrimination that are objectively comparable across race/ethnicity or HIV-status in Canada.

Methods: We analyzed EDS data from self-identifying women ≥16 years enrolled in the BCC3 study. We conducted Confirmatory Factor Analysis (CFA) by race (African/Caribbean/Black [ACB]; Indigenous; Other Racialized; White) and HIV-status to assess baseline model fit. Next, we ran multigroup-CFA (mCFA) assessing measurement invariance of the EDS across race/ethnicity and HIV-status to assess whether EDS measures the same construct by the same extent across groups.

Results: Of 504 participants, 62 were ACB, 152 Indigenous, 90 other racialized, and 200 white. 202 were living with HIV and 302 were not. CFA revealed adequate fit within race/ethnicity and HIV-status groups – all Cronbach's alpha >0.9, factor loadings >0.6 and acceptable fit indices, except for Root Mean Square Error of Approximation. Residual correlations >0.4 suggested redundancy between some item pairs. In the mCFA, configural, metric and scalar equivalence was achieved across groups (Table 1).

Conclusion: In BCC3, the EDS provides racial discrimination estimates that are meaningfully comparable across race/ethnicity and HIV-status groups. Potential redundancy between item pairs warrants EDS refinement. Nonetheless, the EDS can be included in survey instruments that aim to examine and compare prevalence and impact of racial discrimination among diverse women in Canada.

Supporting Document

Table 1. Measurement equivalence of the Everyday Discrimination Scale by Multigroup Confirmatory Factor Analysis

Level of measurement equivalence	Model parameters/Fit Index						p for comparison of models	
	χ^2	df†	p	RMSEA‡	CFI§	TLI¶	Metric against Configural	Scalar against Metric
Race/Ethnicity*								
Configural	179.02	74	<0.001	0.118	0.994	0.991	-	-
Metric	189.94	90	<0.001	0.105	0.994	0.993	0.691	-

Scalar	292.21	160	<0.001	0.090	0.993	0.995	-	0.000
HIV-Status								
Configural	145.34	48	0.000	0.090	0.998	0.997	-	-
Metric	148.53	56	0.000	0.081	0.998	0.997	0.877	-
Scalar	151.93	91	0.000	0.052	0.999	0.999	-	0.344

*Analysis excluded white respondents because low endorsement of the scale among this group (<45% reported experiences of ERD) resulted in non-convergence in the model. Thus n=304 for this model

† Degrees of freedom

‡Root Mean Square Error of Approximation. Reduction of ≤0.02 to establish equivalence

§Comparative Fit Index

¶Tucker Lewis Index

Epidemiology and Public Health Oral Abstract Session #1 / Épidémiologie et sciences de la santé publique présentation orale d'abrégés #1

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Inequities in HIV prevention program coverage for criminalized populations in twelve Nigerian states: Findings from the 2020 Integrated Biological and Behavioural Surveillance Survey

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Epidemiology and Public Health Oral Abstract Session #1, April 26, 2024, 11:00 AM – 12:30 PM

Introduction: Nigeria must achieve effective HIV program coverage to reach its goal of ending the epidemic by 2030, but evidence suggests several gaps in service coverage and utilization across the country. The Effective Program Coverage (EPC) framework is a novel Program Science tool to examine coverage gaps through program-embedded research, learning, and monitoring. We apply the EPC framework using 2020 integrated biological and behavioural surveillance survey (IBBSS) data from Nigeria to examine inequities in coverage of condoms, HIV testing, PrEP, and needle and syringe programs (NSP) among female sex workers (FSW), men who have sex with men (MSM), people who inject drugs (PWID), and transgender people.

Methods: Weighted IBBSS data were used to generate coverage cascades that identify and quantify program coverage gaps and equiplots that illustrate inequalities in coverage across population groups and by key equity variables. Required coverage targets were aligned with Nigeria's HIV/AIDS Strategic Framework. Availability-, contact-, and utilization coverage proxy indicators were defined using variables from IBBSS data collection tools.

Findings: All coverage targets were missed for HIV testing, PrEP, and NSP among all groups. Contact coverage is <40% for all groups—well below targets. Crude inequalities in utilization coverage between groups are stark: PrEP ranged from 2.7% (PWID) to 11.5% (MSM), HIV testing from 35.6% (PWID) to 77.3% (FSW), condoms from 25.1% (PWID) to 94.1% (FSW). Additional, ongoing analyses will be presented to disaggregate inequalities by key equity variables (age, geography, years identifying as key population, typology).

Conclusions: Our findings identify critical gaps, and meaningful inequalities in those gaps, in HIV prevention program coverage for criminalized populations in Nigeria. Innovative solutions to optimize coverage of prevention services are needed. Program-embedded research is required to better understand how criminalized populations in Nigeria access and use HIV prevention services to optimize programs, policies, and resource allocation decisions for effective program coverage, and achieve population-level impact.

Epidemiology and Public Health Oral Abstract Session #1 / Épidémiologie et sciences de la santé publique présentation orale d'abrégés #1

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The relationship between eviction and syndemics outcomes among women living with HIV in Vancouver, Canada

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[1]Center For Gender and Sexual Health Equity, Vancouver, Canada, [2]Faculty of Medicine, UBC, Vancouver, Canada, [3]Human Early Learning Partnership, UBC, Vancouver, Canada, [4]Centre for Advancing Health Outcomes, Providence Health Care Research Institute, Vancouver, Canada, [5]School of Population and Public Health, UBC, Vancouver, Canada

Background: Substance use, violence, food insecurity, and mental health are positioned as syndemic factors as they interact synergistically to influence the health outcomes of women living with HIV (WLWH), including HIV treatment and care. Limited research has identified relationships between housing instability and syndemics factors, despite high prevalence of housing instability among WLWH. This study therefore examined associations between eviction, a severe form of housing instability, and syndemics outcomes among WLWH.

Methods: We drew on data from the Sexual Health & HIV/AIDS: Longitudinal Needs Assessment (SHAWNA), an ongoing longitudinal cohort study of WLWH in Metro Vancouver (2014-2022). We used bivariate and multivariable logistic regression, with generalized estimating equations (GEE) for repeated measures over time, to examine associations between eviction and syndemics outcomes: opioid and/or stimulant use frequency (none, less than daily, daily), sexual and/or physical violence by any perpetrator, food access insecurity and diagnosis, treatment, and/or counselling for depression, all self-reported in the last six months. Ordinal logistic regression was used for the ordered outcomes of substance use frequency. Adjusted odds ratios (AORs) and 95% confidence intervals were reported at the $p<0.05$ level.

Results: Overall, 2309 observations were recorded from 344 women. In adjusted multivariable logistic regression with GEE, eviction remained significantly associated with depression (AOR:2.00[1.09-3.68]). For women who were evicted, the AOR of using stimulant drugs daily was 3.18-times that of women who were not evicted[95%CI:1.60-6.34] and 2.39-times that for opioid use[95%CI:1.17-4.88]. Eviction was non-significantly associated with violence (AOR:1.71[0.81-3.59]) and food access insecurity(AOR:1.54[0.93-2.57].

Conclusions: Supportive, affordable, and low-barrier housing tailored to the needs of WLWH is needed to address eviction amongst WLWH. Policymakers should also focus on initiatives to keep WLWH in their homes, such as through increased housing stipends in social security allowances, laws preventing no-fault eviction, and low-barrier, free legal support for people who receive eviction notices.

Epidemiology and Public Health Oral Abstract Session #1 / Épidémiologie et sciences de la santé publique présentation orale d'abrégés #1

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Applying an Index of Vulnerability Approach to Understand Social-Ecological Determinants of HIV Vulnerability among Northern and Indigenous Adolescents in the Northwest Territories, Canada

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Background: Northern and Indigenous youth in the Northwest Territories (NWT) experience socially and structurally produced vulnerabilities to sexually transmitted infections (STI), including HIV. Yet few studies with this population have examined how being at risk across multiple life domains may be linked with HIV vulnerabilities. In this study we examined associations between an Index of Vulnerability (IoV) comprised of social-ecological stressors with HIV prevention outcomes among Northern and Indigenous youth in the NWT.

Method: We conducted a cross-sectional survey with youth participants aged 12-19 in Fostering Open eXpression among Youth (FOXY) and Strengths, Masculinities, and Sexual Health (SMASH) arts-based sexual health workshops in schools in 17 NWT communities. The IoV included 5 domains that span structural (food insecurity), interpersonal (recent intimate partner violence [IPV]), and intrapersonal (alcohol misuse, HIV and STI awareness) levels. IoV indicators were summed to calculate an IoV score. To assess associations between IoV score and HIV prevention outcomes (safer sex self-efficacy [SSSE], HIV knowledge) we conducted adjusted and unadjusted multivariate linear regression analyses. We also conducted separate models to compare IoV and its constituent parts on the HIV prevention outcomes.

Results: Participants (n=296, mean age: 13.5 years, standard deviation [SD]=1.4; cisgender men: 55.3%; cisgender women: 40.2%; transgender/non-binary persons: 4.5%) included three-quarters Indigenous youth (73.3%). Cisgender women (1.77, SD=0.90) reported higher IoV scores compared with cisgender men (1.60, SD=1.00; p=0.0089). In adjusted analyses, higher IoV scores were associated with lower safer sex self-efficacy (aβ = -0.81, 95% CI: -1.45, -0.17, p=0.013) and lower STI/HIV knowledge (aβ =-0.79, 95% CI: -1.46, -0.12, p=0.021). The IoV scores accounted for more variance in both HIV prevention outcomes than any single indicator.

Conclusion: Future research and interventions can explore strategies to address food insecurity, IPV, and other social-ecological stressors to advance HIV prevention with Northern and Indigenous youth in the NWT.

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Characterizing incidence and therapeutic management of psychosis-related disorder among people living with HIV: A retrospective analysis in British Columbia, Canada

Grace Sykes[1], Kate Salters[1,2], Cassidy Tam[1], Lu Wang[1], Scott Emerson[1], Amanda Yonkman[1], Pouya Azar[3,4], Martha Ignaszewski[3,4], Jason Trigg[1], Viviane Dias Lima[1,4], Kiana Yazdani[4], Randall White[3,4], Rolando Barrios[1,4], Julio SG Montaner[1,4]
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Background: Antipsychotic medication is an essential part of treatment for psychosis among people living with HIV (PLWH), yet antipsychotic treatment uptake among this population is poorly understood. This study describes incident cases of psychosis-related disorder post-HIV diagnosis, as well as antipsychotic medication uptake among PLWH in British Columbia (BC), Canada.

Methods: We utilized data from the Seek and Treat for Optimal Prevention of HIV/AIDS (STOP HIV/AIDS) cohort of PLWH in BC. Our analytic sample included PLWH (aged ≥19) between April 1996 and March 2020 with at least one year of follow-up. Incident cases of psychosis-related disorder were identified by applying a case-finding algorithm and a 2-year lookback window prior to HIV baseline (defined as the latest of: April 1,1996 or earliest HIV-related record) to exclude baseline prevalent cases.

Results: After excluding baseline prevalent cases and individuals with insufficient lookback time, we identified 644/6441 (10%) incident cases of psychosis-related disorder in our sample. Median age at diagnosis was 43 (Q1, Q3: 36, 51) and 273 (42.4%) of cases were diagnosed in hospital. 90.4% (n=582/644) of incident cases were people who use drugs (PWUD), 26.1% (n=168/644) were women, and 59.6% (n=384/644) were ever diagnosed with hepatitis C. 65.8% (n=424/644) of incident cases received an antipsychotic dispensation, a median of 26 days from diagnosis. 55.9% (n=237/424) received 2nd line antipsychotic therapy, 57.8% (n=137/237) 3rd line, and 57.7% (n=79/137) 4th line. <5 of the patients with a 3rd line antipsychotic therapy received Clozapine, recommended for treatment-resistant psychosis.

Conclusion: Our analysis revealed high incident rates of psychosis-related disorder among PLWH in BC, particularly among PWUD, women, and those ever diagnosed with hepatitis C. Multiple lines of treatment among some patients and few dispensations of Clozapine by 3rd and 4th line therapy suggest unmet treatment needs in this population.

Epidemiology and Public Health Oral Abstract Session #1 / Épidémiologie et sciences de la santé publique présentation orale d'abrégés #1

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Changes in Cannabis Use Associated with Legalization in Ontarians Living with HIV (2008-2021)

Sergio Rueda[1], Marcos Sanches[1], Tanya Lazor[1], Ann Natalie Burchell[2], Jeffrey Wardell[3], Shari Margolese[4], Enrico Mandarino[4], Hayley Hamilton[1], Sameer Imtiaz[1], Tara Elton-Marshall[5], Yeshambel Nigatu[1], Mina Tadrous[6], Abigail Kroch[7]
[1]Centre for Addiction and Mental Health, Toronto, Canada, [2]Unity Health Toronto, Toronto, Canada, [3]York University, Toronto, Canada, [4]Independent Community Consultant, Toronto, Canada, [5]University of Ottawa, Ottawa, Canada, [6]University of Toronto, Toronto, Canada, [7]Ontario HIV Treatment Network, Toronto, Canada

Background: People living with HIV use cannabis for medicinal and recreational reasons at 2-3 times the rates of the general population. Cannabis legalization in Canada has evolved over phases with increasing access to legal cannabis since 2001 when cannabis became legal for medicinal purposes under the Marihuana Medical Access Regulations.

Objectives: To describe changes in cannabis use frequency and predictors among people with HIV across four major phases of legalization in Ontario.

Methods: In the Ontario HIV Treatment Network Cohort Study, a community-governed longitudinal HIV clinical cohort, we measured cannabis use frequency annually and conducted a segmented regression using Generalized Estimating Equations with logit link to assess the effect of three policy interventions: Marihuana for Medical Purposes Regulations (2014), Access to Cannabis for Medical Purposes Regulations (2016) and Recreational Legalization (2018).

Results: Of 4,736 participants, most identified as male (79%) and white (58%) with 15% using cannabis daily and 30% in the past month. From 2008 to 2021 and over 19,113 person-years of follow-up, there was an 80% increase in the odds of daily use (OR 1.80, SE=0.19; p<0.001; prevalence increased from 11% to 19%) and a 52% increase in the odds of past-month use (OR 1.52, SE=0.11; p=<0.001; prevalence increased from 27% to 34%). We observed a significant negative effect of recreational legalization on daily (OR 0.51, SE=0.05; p<0.001; prevalence dropped from 18% to 10%) and past-month use (OR 0.66, SE=0.06; p<0.001; prevalence dropped from 35% to 26%) but no significant changes in the other phases. No demographic variables moderated this effect.

Conclusions: Cannabis use increased significantly among people living with HIV over the study period. A drop in cannabis use at the time of recreational legalization was likely due to delays in the implementation of retail access when cannabis was legal but not yet commercialized.

Social Sciences Oral Abstract Session #1/ Sciences sociales présentation orale d'abrégés #1

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"They should support us like we are women, and as women, we want certain things": A qualitative analysis of the healthcare desires of women living with HIV

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Social Sciences Oral Abstract Session #1, April 26, 2024, 11:00 AM - 12:30 PM

Background: Structurally-based gender inequities undermine women's wellbeing and care access. The Women-Centred HIV Care (WCHC) Model was designed to guide the provision of holistic care addressing these inequities. This study aimed to explore the healthcare desires and priorities of women with HIV in relation to the WCHC Model.

Methods: Women with HIV in Ontario were recruited from HIV organizations and health centres to participate in focus groups (FGs). Participants completed a demographic survey, watched a WCHC Model presentation or video, and engaged in one of four semi-structured FGs (3 in person, 1 virtual), which were recorded, transcribed, and analyzed using descriptive content analysis.

Results: Twenty-two women (aged 24 – 70, living with HIV for 4 – 31 years) participated in FGs of four to seven women each. All participants had a care provider, most of whom specialized in HIV. We constructed four themes through FG transcript analysis: 1) Promotion of social connections represented participants' desire for support in building and maintaining healthy relationships – with friends, family, and peers – to enhance wellbeing and healthcare system navigation; 2) Sex, sexuality, and desirability underscored the need for person-centred sexual health care extending beyond reproductive health (e.g., sexual pleasure, changing medications to reduce undesirable physical side effects); 3) Aging, death, and dying emerged as stressors, prompting reflections on HIV in later-life and end-of-life contexts, along with family implications; and 4) Ideal patient-provider relationships were characterized by providers understanding women's circumstances, engaging them in decision-making, and advocating for their well-being.

Conclusions: The WCHC Model aligns with the healthcare desires and priorities of women with HIV. Emphasizing the significance of social support, sexuality, aging considerations, and patient-provider relationships, the findings underscore the necessity for integrating these insights into any WCHC Model rollout plans to enhance the overall health and well-being of women with HIV.

Social Sciences Oral Abstract Session #1 / Sciences sociales présentation orale d'abrégés #1

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Exploring service use and access for people aging with HIV and neurocognitive concerns using the candidacy framework

Rachel Landy[1], Francisco Ibáñez-Carrasco[2], Soo Chan Carusone[3], HEADSUP!2 Peer Research Team, Catherine Worthington[4], on behalf of the HEADSUP!2 study team
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Objectives: 50% of people living with HIV and 20% of new infections in Canada are in people over 50 years old; 25-50% will develop neurocognitive impairments during their lifetime. To better understand experiences of people living with HIV when navigating healthcare services for neurocognitive concerns, the HEADSUP!2 study applied the candidacy framework to explore how people living with HIV appraise their eligibility for healthcare.

Methods: Using a community-based research approach and engaging a peer researcher team throughout the research process, people aging with HIV and experiencing neurocognitive concerns in Montreal, Vancouver, Calgary, and Toronto were recruited through community networks to participate in a qualitative interview. Potential participants were offered an opportunity to be interviewed by a peer interviewer and the option of being interviewed with a "trusted other". The team employed a participatory approach to analyze interview transcripts for themes related to candidacy for healthcare services including access and usage of services from identification of a need to receipt of treatment.

Results: 34 people living with HIV participated in qualitative interviews in French or English (8 Montreal, 9 Vancouver, 8 Calgary, and 9 Toronto). Participants self-reported an average age of ~58 years; 22 (64.7%) identified as male, 16 (47.1%) as straight; 7 (20.6%) participants attended with a trusted other. Findings suggest participants experienced barriers to healthcare services at each level of candidacy Themes included fear of cognitive diagnosis (e.g. dementia), concerns with overburdening professionals, dismissal of symptoms by professionals (e.g. "aging", previous drug use), prioritizing co-existing health issues, professional lack of knowledge of treatment options, and lack of services for cognitive concerns.

Conclusion: This study identified barriers in every dimension of candidacy that limit care for people living with HIV who experience cognitive concerns. These findings can inform resources and healthcare services for people living with HIV and neurocognitive concerns.

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Exploring Structural Violence and Necropolitical Care Politics among Indigenous Peoples Living with HIV during the COVID-19 Pandemic

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Background: Within Manitoba and Saskatchewan, pre-existing health inequities amongst Indigenous groups were intensified during the COVID-19 pandemic. Service disruptions in the health and social service sector—combined with the effects of intersectional stigma—disproportionately impacted Indigenous peoples living with HIV (IPLH). IPLH experience structural violence and necropolitical exclusion through systemic forms of stigma situated within Canada's expansive colonial history. Utilizing the theoretical foundations of structural violence and necropolitics, this qualitative study examines how the COVID-19 pandemic amplified preceding states of inequity for IPLH.

Methods: Semi-structured interviews were conducted with 60 participants. The sample comprised of those with lived experience (n=45) as well as those who provided services for IPLH (n=15). Indigenous Storywork guided the data collection and analysis process. Topics explored within each interview included access to health and social services, harm reduction, substance use, and experiences in providing services during COVID-19 pandemic. Thematic analysis was used to identify common themes throughout each story.

Results: Our results indicate that the COVID-19 pandemic exposed and amplified pre-existing forms of structural violence and necropolitical logics for IPLH within Manitoba and Saskatchewan. Specifically, we describe how structural violence and necropolitics are manifested via three main avenues— (i) restrictions and removal of care, (ii) bureaucracy and institutional care politics, and (iii) discrimination and systemic racism within the Canadian healthcare system.

Conclusion: The COVID-19 pandemic within Manitoba and Saskatchewan sparked massive changes in service provision within settler-colonial and neoliberal institutions of care. For those services that remained open to IPLH, masking requirements, questionnaire requirements, scheduling requirements, and a lack of in-person services acted as only some of the barriers described by community members as detrimental to care access. Increased experiences of discrimination in health care on the basis of substance use or HIV status further limited access to needed services.

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Evidence informed wise practices to facilitate effective linkage, adherence and retention in care for non-insured people with HIV in Toronto, Ontario

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Issues:
Diverse groups of Ontario residents living with HIV, including international students, migrant workers, visitors and newcomers awaiting status approval, have precarious or no health insurance coverage, making them vulnerable to worse health outcomes due to treatment access barriers and intersectional challenges related to their social locations. In response, 11 agencies in Toronto set up the Blue Door Clinic (BDC) in 2019 to provide comprehensive health care to non-insured populations with HIV in the Greater Toronto Area. Since inception the clinic has served close to 300 clients.

Description:
Beyond Blue Door is an intervention study to evaluate the effectiveness of the Blue Door Clinic in improving HIV care linkage, adherence and retention for our target communities. We engaged 62 precariously insured PHAs and 56 service providers/policy makers through focus groups and individual interviews. We also collected quantitative client service data amongst 159 service users including demographics, intake and referral to long-term primary care, participants' access to social determinants, and health outcome indicators such as CD4, viral load and comorbidities.

Results:
Quantitative data showed that BDC provided timely access to initiate treatment for the newly diagnosed clients and successfully prevented 100% service users from treatment interruption; 88% of service users attained undetectable viral load prior to discharge or referral to long-term primary care services. Qualitative data identified key wise practices of clinical effectiveness: (1) multi-disciplinary team provides holistic person-centered, affirming care in a one-step setting; (2) peer-driven linguistic and culturally relevant care promotes self-health management capacity and community connections; (3) clinical EMR tools and practice adaptations informed by service evaluation data enhance continuity of care; (4) extensive community partnerships address intersectionality and promote access to social determinants.

Implications:
BBD results demonstrated the positive impact of multi-sector collaborative care approach and identified wise practices transferrable to care of other marginalized populations.

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Meaningful Engagement as a Cornerstone for Implementing the Key Recommendations to Advance the Sexual and Reproductive Health and Rights of Women Living with HIV across Policy, Practice, and Research

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In 2017, the World Health Organization published the Consolidated guideline on sexual and reproductive health and rights of women living with HIV, providing the foundation for national stakeholders to create locally tailored action plans. The guideline prioritizes addressing environmental and systemic barriers over individual behaviours. To guide Canadian-specific implementation, a team of women living with HIV, researchers, community advocates, global program managers and policymakers, clinicians, and social service providers developed five key recommendations for a national action plan to advance the sexual and reproductive health and rights of women living with HIV, published 2022.

To operationalize the national action plan, the team convened a community gathering in 2023. Goals of the event included to co-creating an implementation strategy and an accountability plan. An overarching theme in discussion emerged highlighting that meaningful engagement of women living with HIV (recommendation 1 of the national action plan) underpins implementation of each of the other recommendations. To facilitate the development of this implementation strategy, we defined the following principles as foundational tools for implementing meaningful engagement:

1. Acknowledge and actively dismantle power differentials,

2. Commit to meaningful engagement as an on-going, iterative process,

3. Learn about the epidemiology and socio-structural forces that create and sustain HIV risk among women in your setting,

4. Invest in creating supportive infrastructure, transparent policies, and leadership opportunities for meaningful engagement, and

5. Integrate Equity, Diversity, and Inclusion principles to ensure that diverse groups, voices, and priorities are called into the conversation.

Considerations for co-creating an accountability plan include calling more people into this work, establishing intentional check-in times for implementation progress, and identifying opportunities for accountability mechanisms at the policy and regulatory level. Next steps require ongoing outreach to promote the key recommendations among new groups and uptake into federal policies.

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Systemic and Structural Barriers to HIV Testing and Healthcare Access Among African, Caribbean, and Black Communities in Manitoba

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Background: This study investigated systemic and structural barriers to HIV testing and healthcare access among African, Caribbean, and Black (ACB) communities in Manitoba, Canada.

Methods: A total of 33 ACB participants (mean age: 34; 20 self-identified as women, 13 as men, 25 self-identified as heterosexual, and 8 as LGBTQIA+) were recruited through flyers, peer networks, and social media. One-hour individual, semi-structured interviews were conducted, focusing on participants' perspectives and experiences with HIV testing, including access challenges, to understand the factors that affect HIV testing utilization. Participants were compensated $40 for their time. Iterative inductive data analysis was applied to the data using MAXQDA.

Results: The analysis revealed that barriers to HIV testing extend beyond individual behavior or choice, highlighting systemic racism, economic disparities, healthcare infrastructure inadequacies, and limited testing opportunities as key obstacles. HIV stigma emerged as a significant barrier. Trust issues with healthcare providers were underscored by the historical exploitation of Black communities in medical research. Participants also stressed the importance of communal values such as interconnectedness and collective unity in combating HIV within ACB communities.

Conclusions: The study provides a nuanced understanding of the structural barriers to HIV testing, rooted in systemic racism and historical socio-structural inequities. It emphasizes the need for culturally safe HIV services and education tailored to ACB communities. These findings are pivotal in designing interventions that address the unique needs and experiences of ACB communities in Manitoba, advocating for a shift beyond individual-focused strategies to a more inclusive, community-centered approach to combating HIV.

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The Regulation of the Checkpoint Receptor Tim-3 by the HIV-1 Accessory Protein Vpu

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The T cell immunoglobulin and mucin domain-containing protein 3 (Tim-3) is expressed on exhausted T cells and is upregulated at the cell surface upon infection by Human Immunodeficiency Virus Type 1 (HIV-1). Recently, Tim-3 has also been described as a key inhibitor of HIV-1 egress. Previously, our studies have demonstrated that the HIV-1 accessory protein Vpu downregulates Tim-3; however, the mechanisms of Tim-3 regulation by Vpu have yet to be determined. Herein, we have identified a novel motif in the cytosolic domain of Vpu (QEELSKLM) that is required for optimal Tim-3 downregulation in HIV-1 infected primary CD4+ T cells but is dispensible for downregulation of the restriction factor tetherin. To further determine if HIV-1 infection modulates Tim-3 levels in diverse cell types, we demonstrated that Tim-3 is additionally upregulated on the surface of PMA-differentiated THP-1 macrophages. However, unlike in T cells, Vpu does not downregulate Tim-3 from the surface of macrophages. Taken together, these studies demonstrate a cell type specific modulation of Tim-3 via the accessory protein Vpu. Future studies are currently being optimized to determine how Vpu-mediated Tim-3 downregulation affects virion release, thereby contributing to the modulation of viral egress. Taken together, our studies suggest that the viral regulation of Tim-3 may be a novel therapeutic target to improve the prognosis of individuals infected with HIV-1.

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Virion-incorporated CD14 Facilities LPS Binding and Inflammatory Signaling by HIV-1.

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HIV-1 acquires its lipid envelope as it egresses through cellular membranes of infected cells, and it can acquire selective cellular proteins present at the sites of budding. This incorporation of host cell proteins can impart new functions and phenotypes onto virions and impact viral spread and disease. Recent work in our lab has focused on the presence of the myeloid antigen CD14 in the HIV envelope. The interplay between HIV-1 and the myeloid cell compartment is a key contributor to pathogenesis, due to the inflammatory roles these cells play.

Using in vitro models, we show that HIV-1 can incorporate CD14 into the virus envelope by flow virometry, virion capture assay and western blot. Additionally, the virion-incorporated CD14 remained biologically active, as demonstrated by flow virometry and immunoprecipitation of HIV-1 pseudovirus with immobilized bacterial LPS, the ligand of CD14. Using a TLR4 reporter cell line, we also demonstrated for the first time that virions with bound LPS can activate immune cells, leading to the secretion of pro-inflammatory cytokines.

Persistent inflammation, particularly in the gut mucosae is a hallmark of chronic HIV infection, driven by a combination of activated immune cells and soluble cytokines. Contributing to this effect is the aberrant translocation of microbes across the gut mucosa, resulting from viral-induced damage to the epithelium that normally serves as an effective barrier to block microbial translocation. Our data provides proof-of-principle that virion-incorporated CD14 could be a novel mechanism through which HIV-1 can drive chronic inflammation, facilitated by HIV particles binding bacterial LPS and initiating inflammatory signaling in TLR4-expressing cells.

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Plasma endocannabinoidome lipids and fecal microbiota composition in people with HIV (PWH) under antiretroviral therapy with diagnosed subclinical coronary artery disease: results of the Canadian HIV and Aging Cohort Study

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Background. HIV infection is associated with accelerated coronary artery disease (CAD) due to chronic inflammation. Lipid mediators from the expanded endocannabinoid system (endocannabinoidome; eCBome) and gut microbiota modulate each other and are key regulators of cardiovascular functions and inflammation. We thus investigated the plasma eCBome and gut microbiota in PWH with subclinical CAD.

Methods. ART-treated HIV+CAD+ (n=87), HIV+CAD- (n=69), HIV-CAD+ (n=22) and HIV-CAD- (n=30) individuals were enrolled. CAD was assessed using cardiac computed tomography angiography. Plasmatic levels of endocannabinoids and their congeners were quantified using liquid chromatography coupled to tandem mass spectrometry. Bacterial composition of stools from n=107 participants was assessed by 16S rDNA sequencing and amplicon sequence variants identified to determine relative abundances of bacterial taxa and community diversity.

Results. The endocannabinoid N-arachidonoylethanolamine (AEA), and its N-acylethanolamine (NAE) congeners, N-eicosapentaenoylethanolamine (EPEA), N-linoleoylethanolamine (LEA), N-docosahexaenoylethanolamine (DHEA), and N-docosapentaenoylethanolamine (DPEA (n-6)), were significantly lower in PWH compared to HIV- participants. EPEA, DHEA and N-palmitoylethanolamine (PEA) were significantly reduced in HIV+CAD+ compared to HIV+CAD- individuals, while HIV-CAD- individuals had higher plasma levels of AEA, EPEA, LEA, DHEA, and DPEA(n-6) than HIV+CAD+. Plasma levels of monoacylglycerols (MAGs), including 2-eicosapentaenoylglycerol, 2-linoleoylglycerol, 2-docosapentaenoylglycerol, and 2-oleoylglycerol (2-OG), were significantly elevated in PWH compared to HIV- controls. Moreover, the endocannabinoid 2-arachidonoylglycerol, and 2-docosahexaenoylglycerol, were increased in PWH compared to uninfected controls. While trends for increased abundance for several bacterial families in the stools of HIV-CAD+ versus controls were observed, only Marinifilacea were significantly increased, however no such changes were observed in PWH. Likewise, CAD+ associated alterations in genera abundances were observed in HIV-, but not in PWH.

Conclusions. HIV infection results in perturbed plasma eCBome. Inverse associations between the CAD/HIV infection status with NAEs or MAGs point to these mediators as biomarkers of CAD in PWH. CAD-associated taxonomic alterations in faecal bacterial were not found in PWH.

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Vaginal IL-32γ may contribute to enhanced antiviral capacity at vaginal mucosa in HIV exposed seronegative (HESN) commercial sex workers from Nairobi, Kenya

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Interleukin-32 (IL-32) consists of several isoforms (α, β, δ, ε, φ, γ). IL-32γ, but not IL-32α or IL-32β, induced HIV-1 production in latently infected CD4+ T-cells isolated from people living with HIV (PLWH). IL-32α, however, plays an anti-inflammatory role by inducing IL-10. Pre-treatment of HIV-negative PBMC with siRNA to IL-32 was shown to augmented HIV-1 replication by >4-fold. It suggests that increased non- IL-32γ in HIV-negative cells may be protective against HIV-1. We further hypothesized that HIV-exposed, sero-negative (HESN) people or delayed sero-converters have higher level of non- IL-32γ. Using qRT-PCR to investigate the RNA transcripts in the PBMC of HESN female sex workers (FSW) (n=17) or newly enrolled HIV-negative non-HESN controls (n=15), we observed no difference in the levels of IL-32 isoform transcripts between the two groups (p=0.07). However, we found reduced expression of IL6ST, which mediates inflammation and increased CCR4, CCR7, CD28, ICOS, IL4R, ITK, and MAP3K1 transcripts, which are associated with the activation of T cells in the HESN PBMC. Cervical-vaginal mucosa forms the first line of defense against heterosexual transmission of HIV-1. We hence, examined IL-32 expression in the transcriptome of cervical cells (CMC) from HESN FSW (n=6) and controls (n=4). Unexpectedly, IL-32γ transcripts were significantly elevated in the HESN group ($p< 10-6$) with a trending increase in IL-32α by 16% ($p<0.01$). This was confirmed using qRT-PCR (HESN, n=12, control, n=11). When stimulated with IFN-γ, IL-32γ response was robust but transient in the HESN CMC but the IL-32α responses were not different between the two groups. Together, the data suggest that IL-32γ's fast but transient anti-viral response at the cervicovaginal mucosa, without inducing a prolonged inflammation may contribute to the protection against HIV-1, observed in the HESN.

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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 full-length HIV RNA genome containing multiple PTCs that should be recognized by the NMD pathway, many transcripts are instead preferentially packaged into nascent virions. The Arts laboratory has identified a critical secondary structure 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 downstream UPF1 displacement and subsequent NMD evasion. We hypothesize Gag-Pol translation designates these heterogeneous nuclear RNAs as genomic RNA for progeny virions. To confirm this hypothesis, an HIV backbone was modified with luciferase reporters and an inducible promoter to quantitatively measure frameshifting frequency and RNA decay rates, respectively. Frameshifting frequencies were compared to RNA decay rates of wildtype and mutant vectors. Mutants with increased frameshifting frequencies display increased RNA protection with longer RNA half-lives. Overall, these results indicate full length viral translation may serve as a mechanism of NMD evasion, but additional experiments are required to confirm this. Understanding the mechanism behind HIV NMD evasion can greatly increase lentiviral gene transduction efficiencies as all currently-used lentiviral transduction systems do not harbour a GRPE. Preliminary GRPE incorporation increased gene transduction 4-fold as a direct effect of increased packaging, increasing the plausibility of lentiviral gene transduction to help in the cure of many genetic diseases such as β-thalassaemia.

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Importance of IFN-alpha14 modulated restriction factors on potent control of HIV-1

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Antiviral restriction factors are the initial line of defense against many viruses including HIV-1. Interferons induce the expression of anti-viral restriction factors that can interfere with multiple steps of the viral replication cycle. Interferon-alpha (IFN-α) induces many restriction factors that have the potential to restrict HIV-1. Humans have 13 IFN-α genes which encode 12 different functional IFN-α subtypes. Our previous studies with IFN-α14 showed a greater reduction of viral load than the clinically approved IFN-α2 subtype in HIV-1 infected humanized mice. However, the mechanisms behind the more potent control of HIV-1 by IFN-α14 are unknown. Analysis of cells harvested from IFN-α14 treated humanized mice using RNA-seq indicated upregulation of restriction factors like MX2, ISG15, APOBEC3A compared to IFN-α2. We have also previously observed that IFN-α14 increases the deamination activity of APOBEC3G compared to IFN-α2. To study the importance of each IFN-α14 modulated restriction factor in the more potent control of HIV-1 and to investigate if they are independent or interdependent, we used a CRISPR-Cas9 lentivirus system to create stable restriction factor knockouts in the MT4C5 cell line. MT4C5 cells are a CD4+ T cell line that is susceptible to both X4- and R5-tropic HIV-1 strains and do not produce measurable amounts of endogenous IFN-α. Wildtype MT4C5 cells treated with IFN-α14 HIV-1 produced higher levels of Mx2 and had a significantly lower viral load and produced fewer infectious particles compared to IFN-α2 and untreated cells. We have successfully produced Mx2 knockout MT4C5 cells and are currently assessing the effect of IFN-α14 on viral load compared to IFN-α2. The generation of ISG15 and APOBEC3G knockouts will also be tested for their effect on HIV-1 viral replication and infectivity, respectively. We further plan to knockout IFN-α14 modulated restriction factors simultaneously to study potential synergistic effects on the potent control of HIV-1 by IFN-α14.

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

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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 establishes the new infection, creating a transmission bottleneck for the virus. The viral clone that establishes infection is called the transmitted/founder (T/F) virus. This phenomenon is especially prevalent in HET and MSM transmission while less stringent in transmission from blood contact (PWID and CBT). Specific traits that permit successful transmission have not been well characterized.

This project aims to assess transmission fitness between T/F viruses from different transmission routes by ex vivo competition assays. Subsequently, phenotypic assays were employed to investigate the roles of selected factors in transmission fitness. In the competitions on cervical tissues, we found that T/F viruses from the PWID group exhibit limited replication capacity, thus diminishing their chances of transmission to T helper type 1 (Th1) and Th17 cells. This reduced transmission fitness effect of the PWID group is not observed when infecting Th1 and Th17 cells directly, bypassing cervical tissues. Additionally, T/F viruses display distinct phenotypic characteristics in comparison to chronic viruses. The PWID group required the least stringent cellular co-receptor conformations to enter susceptible cells compared to other T/F viruses. Furthermore, T/F viruses across all transmission modes exhibited lower envelope expression levels than chronic viruses. However, there is no significant difference in cellular entry speed or receptor/co-receptor usage efficiency both within the T/F viruses and between T/F and chronic viruses. These suggest the disparity of transmission fitness in cervical tissue competitions is more likely caused by the 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 the antiretroviral therapy strategy.

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Proteolytic Activity of the Vaginal Microbiome as a Biological Mechanism of Increased Susceptibility to Cervicovaginal HIV Infection

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Epidemiological links between the vaginal microbiome and risk of HIV infection are well established, but the underlying mechanisms remain poorly understood. In reproductive age women, a healthy vaginal microbiome is dominated by a single Lactobacillus species that protects the niche through the production of lactic acid and other antimicrobial compounds. However, Lactobacillus dominance commonly gives way to an alternate state characterized by the overgrowth of anaerobic bacteria. Known clinically as bacterial vaginosis (BV), anaerobic vaginal dysbiosis exhibits a population point prevalence of 10–30% worldwide and makes a woman 2–3x more susceptible to HIV infection. Proteolytic activity is elevated during BV and has been attributed to increased human matrix metalloproteinase (MMP) expression and activity, which is in turn linked with HIV acquisition. We recently discovered that select vaginal anaerobes, including several prevalent Prevotella species, secrete proteases that cleave reporter substrates commonly used to detect MMP activity in human samples and infection models, suggesting the contributions of microbiome proteases could have been mistakenly ascribed to MMPs in published experiments. Culture-based studies and proteomic analyses of human vaginal fluid demonstrated Prevotella proteases degrade cervical barrier proteins, including collagens and elastin. Collagen zymography and proteomics studies revealed that Prevotella proteases also target MMPs, including the HIV-associated enzymes MMP-8 and MMP-9, for activation and degradation. In a polarized endocervical cell culture model, MMP-reporter activity was significantly higher with exposure to proteolytic Prevotella species than with exposure to non-proteolytic anaerobic bacteria that similarly induced MMP expression. Our experiments further revealed that P. bivia exhibits a unique signature of barrier protein cleavage and was able to traverse across the endocervical epithelium. In summary, our findings suggest a new mechanism whereby proteolytic Prevotella species directly degrade structural cervical barrier proteins, while amplifying their effects via MMP activation and mimicry to potentially increase endocervical susceptibility to HIV.

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Bacteria Associated with HIV Seroconversion and Immune Cells Alter Epithelial Junctions and Increase Keratinocyte Proliferation

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Background: Specific anaerobic taxa within the penile microbiome are associated with HIV-1 seroconversion, inflammation, and a higher density of HIV-susceptible immune cells in the inner foreskin. The effect of these bacteria (referred to as BASIC species) on epithelial barrier integrity, however, has not been described.

Methods: Using foreskin tissues and penile swabs from n=116 adult HIV-negative males undergoing voluntary medical male circumcision in Entebbe, Uganda, we assessed the relationship between BASIC species abundance (16S rRNA gene analysis) and metrics of foreskin epithelial integrity including epithelial junction protein expression, epithelial thickness, and cellular proliferation (quantitative immunofluorescence).

Results: Tissues from participants with high BASIC species density (n=21) showed reduced E-cadherin (59.22 vs. 63.31% area, $p<0.05$) and claudin-1 (56.92 vs. 62.43% area, $p<0.05$) expression, and increased desmoglein-1 (64.58 vs. 58.17% area, $p<0.05$) expression compared to participants without BASIC species (n=25). Reduced tissue E-cadherin was associated with increased soluble E-cadherin on the foreskin surface ($\rho=-0.26$, $p=0.005$), suggesting proteolytic cleavage. BASIC species were associated with increased thickness of the nucleated cell layers (77.10 vs. 62.07µm, $p<0.001$) and increased keratinocyte proliferation (15.19 vs. 6.64% Ki-67+ cells, $p<0.001$), but no difference in stratum corneum (keratin) thickness.

Discussion: These results indicate that BASIC species may enhance HIV susceptibility in uncircumcised males through alterations to foreskin epithelial structure, in addition to previously described effects on penile immunology.

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Forced Vaginal Sex Is Associated with Short-Term Genital Inflammation That May Enhance HIV Susceptibility for at Least Seven Days

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Background: HIV risk is higher among women who have been exposed to forced vaginal sex, both in the short- and long-term, and several epidemiological pathways exist between forced sex and HIV infection. However, genital inflammation is a key biological determinant of HIV susceptibility, and might be induced by epithelial trauma in this context. Here we explore cervicovaginal inflammation and epithelial barrier disruption as potential biological mediators of HIV risk after forced vaginal sex.

Methods: Levels of proinflammatory cytokines and soluble E-cadherin (sE-cad), a biomarker of epithelial barrier disruption, were measured in cervicovaginal secretion samples from a prospective cohort of 746 HIV-uninfected female sex workers (FSWs) in Nairobi, Kenya by multiplex immunoassay. Sociodemographic factors were compared between participants who were physically forced to have sex in the 7 days preceding the study visit and those not recently exposed to forced sex. Genital inflammation was defined using a composite score of inflammatory cytokines previously associated with HIV acquisition. The presence of inflammation was compared between groups using mixed-effects logistic regression models to control for potential confounders.

Results: 44 (6%) of 746 participants reported forced sex during the prior week at baseline, and 42 (95%) of these women continued to have sex with other clients during this time (median = 4 clients in the past week). Recent forced sex was strongly associated with increased genital inflammation (aOR = 2.74; 95% CI: 1.33 – 5.68; $p < 0.01$) independent of previously-defined biological confounders such as bacterial vaginosis. There was no difference in sE-cad concentrations ($p = 0.56$).

Conclusions: Cervicovaginal inflammation is increased for at least a week in FSWs exposed to forced vaginal sex, who have no option but to continue sex work during this time. This has important implications for HIV prevention programs providing care to women experiencing gender-based violence and survival sex.

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Systematic Review of PEP Clinical Trials & Cohort Studies to Inform Updated Canadian Guidelines

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Background: We conducted a systematic review of PEP clinical trials and cohort studies on HIV post-exposure prophylaxis (PEP) to inform forthcoming updated Canadian guidelines.

Methods: We searched Medline and Embase (July 2017-September 2023) for studies reporting on: PEP completion, adverse events (AEs) leading to discontinuation, and/or HIV acquisition. Two reviewers independently screened abstracts and publications and extracted data from eligible articles.

Results: Of 5451 references, 604 duplicates were removed, 4847 abstracts screened, 78 full-text articles reviewed, and 22 eligible included. Median study size: 156 (range=30-29060) participants. Studies included 9 (41%) retrospective cohorts, 8 (36%) prospective cohorts, 3 (14%) non-randomized trials and 2 (9%) randomized trials. The studies examined heterogeneous populations (n=14, 64%), healthcare workers (n=4, 14%), gay, bisexual, and other men who have sex with men (n=2, 9%) and sexual assault survivors (n=2, 9%). Most studies were conducted in Europe (n=12, 55%) with remainder in Asia, Africa, North America, and Australia. Regimens included TDF/FTC/DTG (n=5, 23%), TDF/FTC/EVG/c (n=5, 23%), TAF/FTC/EVG/c (n=4, 18%), TDF/FTC/RPV (n=2, 9%), TAF/FTC/BIC (n=2, 9%), TDF/FTC/MVC (n=1, 5%), TDF/FTC/RAL(n=1, 5%) and one (5%) with the injectable fusion inhibitor albuvirtide; several studies included multiple regimens (n=11, 50%). Amongst studies examining PEP completion rates (n=19, 86%), cumulative completion rate was 78% (18,094/23,335) and appeared highest for BIC/FTC/TAF at 95% (155/164). PEP tolerability was good, with few discontinuations due to adverse events; where data were available this was 5/130 (3.8%) for TAF/FTC/EVG/c, 8/219(3.6%) for TDF/FTC/EVG/c, 4/148 (2.7%) for TDF/FTC/RPV, 1/38(2.6%) for TDF/FTC/LPV/r, 2/143(1.4%) for TDF/FTC/RAL and 9/255(1.9%) for TDF/FTC/DOR. HIV seroconversions were extremely rare regardless of regimen (n=7/10784), and often related to premature PEP discontinuation or repeated exposures.

Conclusions: Multiple PEP regimens have been associated with high completion, good tolerability, and rare seroconversion and warrant consideration in forthcoming Canadian guidelines.

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Reported Side Effects and Adherence of Daily HIV PrEP Users in Ontario, Canada: An Analysis of the Ontario PrEP Cohort Study

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Side effects are a common concern of potential HIV pre-exposure prophylaxis (PrEP) users, and may cause current users to miss doses.

We examined the relationship between reported side effects and adherence in the Ontario PrEP Cohort Study (ON-PrEP). Participants completed questionnaires assessing the presence and severity of five side effect categories (nausea, diarrhea, headache, abdominal pain, and "other") and adherence to daily PrEP (any missed doses in the previous four days). We characterized users experiencing side effects, and assessed for trends in reported side effects with duration of PrEP use. We then performed mixed-effects logistic regression testing for differences in odds of reporting perfect adherence as functions of three side effects measures (any side effects, number of categories reported, and sum of severity ratings).

Of 600 participants, 175 (29%) ever reported experiencing any side effects: most commonly diarrhea (7.5% of study visits), followed by abdominal pain (5.3%), headache (5.1%), nausea (3.9%), and "other" (2.6%), and most were of mild severity. The odds of reporting any side effects decreased by a factor of 0.44 (95% CI 0.25-0.80) with each additional year of PrEP use, however one in ten participants still reported side effects at visits after one year. Lower incomes (p=0.01), identifying as bisexual (p=0.04), and expressing baseline concern about side effects (p<0.001) were significantly associated with ever reporting side effects. Odds of reporting perfect adherence were 0.48 (0.28-0.83) times lower for participants reporting any side effects, 0.67 (0.51-0.89) times lower per additional side effect category reported, and 0.78 (0.65-0.97) times lower for each incremental increase in side effect severity. We found some evidence that these relationships were stronger for participants who had been taking PrEP longer.

Clinicians should make efforts to ascertain patients' experience of side effects and consider risk counseling and alternative regimens to promote adherence among these users.

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Pharmacist Prescribing for Human Immunodeficiency Virus Pre-Exposure Prophylaxis in Nova Scotia (PrEP-Rx Study)

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Background: Human immunodeficiency virus (HIV) pre-exposure prophylaxis (PrEP) is a powerful preventative strategy to reduce HIV transmission and promote health. Individuals on PrEP are regularly screened for HIV, other sexually transmitted infections (STIs), and adverse effects which promote routine connections with healthcare. Despite significant personal and public health benefits, access to HIV PrEP prescribers in the context of a primary healthcare provider shortage is a challenge. In Nova Scotia (NS), some pharmacists have expressed a willingness to address this care gap, and target users have shown interest in pharmacist-prescribed HIV PrEP. The objective of PrEP-Rx is to evaluate the feasibility and acceptability of pharmacist prescribing for HIV PrEP.

Methods: Participating pharmacists in NS were enabled to prescribe once-daily HIV PrEP (tenofovir disoproxil fumarate and emtricitabine) using a research protocol. Participants had appointments with a pharmacist for eligibility assessment, initial prescribing, follow-up, and referral appointments. Pharmacists provided participants with laboratory requisitions for bloodwork and STI monitoring and verified the results before prescribing or releasing medication refills. Participants were invited to complete an electronic questionnaire to collect demographic and satisfaction data. Descriptive statistics were used to analyze results.

Results: Ten pharmacies participated in an HIV PrEP prescribing demonstration project from February to October 2023. All 45 participants who attended the eligibility appointment met HIV PrEP criteria based on sexual risk factors; 51% of participants had never used PrEP before. All participants remained HIV-negative while enrolled in the study. Four co-infections, hepatitis B, syphilis, chlamydia, and gonorrhea, were identified through pharmacist monitoring and linked to care. All respondents believed PrEP prescribing should always be available in pharmacies, and 97% felt comfortable seeing the pharmacist and found the pharmacy accessible.

Conclusions: Pharmacists prescribing for HIV PrEP was successfully piloted in community pharmacies in NS. Participants reported positive experiences with the prescribing pharmacist.

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Systematic Review of PrEP Clinical Trials & Cohort Studies to Inform Updated Canadian Guidelines

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Background: We conducted a systematic review of clinical trials and cohort studies on HIV pre-exposure prophylaxis (PrEP) to inform forthcoming updated Canadian guidelines.

Methods: Using PRISMA, we searched Medline and Embase (July 2017-July 2022) 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 full articles, and extracted data from eligible articles.

Results: Of 5531 citations, we removed 397 duplicates, screened 5134 abstracts, reviewed 240 full-text articles, and included 79 articles. Studies included 39 (49%) prospective cohorts, 23 (29%) retrospective cohorts, 14 (18%) randomized trials and 3 (4%) non-randomized trials. Examined regimens included tenofovir disoproxil fumarate/emtricitabine (n=70 studies, 87%), cabotegravir (n=3, 4%), tenofovir alafenamide/emtricitabine (n=3, 4%), tenofovir gel (n=2, 3%), maraviroc (n=2, 3%) and dapivirine (n=1, 1%). HIV acquisition with daily TDF/FTC was the most reported outcome (n=53, 67%). HIV incidence was low with event-driven TDF/FTC and did not differ from daily TDF/FTC (n=9, 90%). Long-acting injectable cabotegravir had superior prevention efficacy to TDF/FTC in two studies in gay and bisexual men, and cis-gender women. TAF/FTC was non-inferior to TDF/FTC in two articles on the DISCOVER trial. MVC-containing regimens were non-inferior to TDF-containing regimens in a phase 2 trial in cisgender women. Higher adherence was associated with optimal prevention. Older age (n=5), white race (n=2), recent PrEP start (n=5), and higher socioeconomic class were associated with PrEP adherence while younger age (n=4) and Black/African American race (n=3) were associated with lower adherence. The most examined adverse event was renal toxicity (n=20, 95%), with 15 studies (75%) reporting declines in creatinine clearance with TDF/FTC. DISCOVER found that TAF/FTC was superior to TDF/FTC in bone and renal safety.

Conclusion: Several PrEP regimens were effective in preventing HIV acquisition in diverse populations and will inform upcoming Canadian guidelines.

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Barriers and facilitators to improving the cascade of HIV care in Ontario: a mixed methods study

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Background:

Engagement in care is important for people living with HIV (PLH) to achieve optimal outcomes. Several strategies have been developed to improve client flow through the HIV care cascade, specifically targeting initiation of treatment, adherence to antiretroviral therapy (ART), retention in care, and engagement in care. We have previously identified effective care cascade strategies in a systematic review. The aim of this mixed methods study was to investigate barriers and facilitators to implementing effective interventions in HIV clinics in Ontario, Canada.

Methods:

We conducted a sequential explanatory mixed methods study. In the quantitative strand, we administered a survey to health workers who provide care to PLH to identify barriers and facilitators. In the qualitative strand, we conducted semi-structured interviews informed by the theoretical domains framework (TDF) with health workers and with PLH to explain our quantitative findings. Qualitative and quantitative data were merged to create meta-inferences.

Results:

Twenty health workers from 8 clinics in 9 cities in Ontario took the survey. Nine PLH and 10 health workers participated in the qualitative interviews. Clinics in Ontario implemented all the effective interventions identified from the literature for initiation of treatment, adherence to ART, and retention in care despite concerns about resources. Barriers to physical and financial access to care, the workload for tailored care, and expertise were identified by both health workers and PLH. Key facilitators were virtual care and client preparedness through education and peer support.

Conclusion:

Clinics in Ontario appear to implement several evidence-based strategies to improve PLH engagement. There is a need for more health workers with skills to address unique PLH needs. Virtual care is beneficial to both health workers and PLH.

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Factors Associated With Reported Use of Needles/syringes already Used by Someone else among People Who Inject Drugs (PWID) in the SurvUDI network, February 2011 to March 2020

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Objective: To examine the correlates of reported use of needles/syringes already used by someone else (NSS) among PWID in the SurvUDI network.

Methods: From February 2011 to March 2020, participants (having injected in the past six months) were recruited mainly through harm reduction programs across the Province of Quebec and in Ottawa. Multiple participations were allowed (at least six months apart), with an interviewer-administered questionnaire completed each time. Questions about behaviours referred to the past 6 months unless stated otherwise. Regression analyses were performed using generalized estimating equations taking into account multiple participations, excluding missing values in univariate and multivariate models (8.6% questionnaires excluded). Variables, entered in the model based on a literature review, were retained if their p-value was <0.1 in univariate models. Significant variables (p-value <0.05) were retained in the multivariate model.

Results: Data from 4,077 participants (7,353 visits) were included. At their most recent visit, their mean age was 40.5 years (standard deviation=11.2 years) and the prevalence of NSS was 16.2%. Table 1 shows factors significantly associated with NSS.

Conclusion: Prevalence of NSS is relatively higher among PWID who were female at birth, are younger, live in semi-urban/rural sites, report "sex work", inject frequently, use crack other than by injection or report difficulties accessing needles/syringes programs. These analyses are based on a convenience sample (prone to biases) and the observed associations might not be causal. However, they suggest a need for targeted interventions for these subgroups to increase the availability of sterile needles/syringes and for tailored counselling.

Supporting Document

Table 1: Correlates of reported use of needles/syringes already used by someone else (NSS) among 4,077 PWID in the SurvUDI network, February 2011 to March 2020.

Variables		Adjusted prevalence ratio	95% confidence intervals
Female sex at birth		1.17	1.02-1.34
Age	< 25 years old	1.00	
	25-29 years old	0.85	0.70-1.04
	30-34 years old	0.76	0.62-0.93
	35-39 years old	0.70	0.56-0.87
	≥ 40 years old	0.63	0.52-0.75

Year of recruitment	0.96	0.94-0.98
Recruitment region: Ottawa/Outaouais	1.00	
Montreal/southshore	1.07	0.91-1.27
Quebec	1.25	1.00-1.58
Semi-urban/rural	1.48	1.19-1.85
Reported client sex partners, “sex work”	1.28	1.08-1.51
Most often injected in its own residence or in supervised injection sites	1.00	
Most often injected in public places	1.20	1.04-1.38
Most often injected in “shared” places	1.08	0.92-1.26
Injected 100 times or more (last month)	1.45	1.28-1.64
Most often injected with known persons	1.00	
Most often injected with strangers	1.03	0.89-1.19
Always injected alone	0.21	0.17-0.26
Frequent access to syringe access program (weekly to daily vs. sometimes or never)	1.22	1.07-1.39
Very easy access to sterile syringes (vs. somewhat easy to very difficult)	0.75	0.66-0.85
Crack/freebase use other than by injection	1.23	1.08-1.40
Most often injected drug: Opioid medication	1.00	
Cocaine	1.16	1.01-1.33
Heroine	0.97	0.80-1.17
Other drugs	1.16	0.93-1.45
Opioid agonist treatment	1.14	1.00-1.29

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Omicron-associated COVID-19 Outcomes in Matched Cohorts of People Living with HIV and HIV-negative Individuals in Ontario

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Background: HIV-mediated immunosuppression may increase the severity of SARS-CoV-2 infections and impair immune responses to COVID-19 vaccines, particularly for those with low CD4 counts or unsuppressed viral loads. We estimated rates of Omicron-associated COVID-19 outcomes in matched cohorts of people living with HIV and HIV-negative individuals and determined if these rates differed by COVID-19 vaccination status.

Methods: Using administrative databases, we conducted a retrospective, population-based cohort study of people living with HIV aged ≥19 years in Ontario from January 2, 2022 to March 31, 2023. We matched this cohort 1:1 to HIV-negative individuals based on age, sex, residential census tract, and country of origin. We used a Poisson generalized estimating equation clustered by matched pair to derive rate ratios (RR) and 95% confidence intervals (CI) for the first episode of SARS-CoV-2 testing, RT-PCR-confirmed infection, and COVID-19-related hospitalization/death.

Results: Overall 20,978 out of 21,183 (99.0%) people living with HIV were matched. At baseline, the cohorts were identical on matched factors: age (mean=50.5 years), sex (21.9% female), geographic region, and country of origin (72.3% non-immigrant); however, more people living with HIV had received ≥3 doses of COVID-19 vaccines (31.5% vs. 23.9%). People living with HIV had higher incidence rates of testing (182.9 vs. 117.1 per 1000 person-years; RR=1.56, 95%CI=1.46-1.67), infection (51.1 vs. 34.8 per 1000 person-years; RR=1.47, 95%CI=1.34-1.62), and hospitalization/death (8.4 vs. 3.9 per 1000 person-years; RR=2.16, 95%CI=1.70-2.74) compared with matched HIV-negative individuals. These differences persisted independent of COVID-19 vaccination status at baseline (Figure).

Conclusions: During the initial Omicron period, SARS-CoV-2 testing and infection rates were more than 50% higher in people living with HIV than a matched HIV-negative cohort, while COVID-19-related hospitalization/death rates were more than double. Timely booster doses and other pharmaceutical and non-pharmaceutical interventions are needed to reduce the risk of severe outcomes in people living with HIV.

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SARS-CoV-2 Seroprevalence among People Living with HIV in Ontario: Findings from the COVID-HIV Evaluation of Serology and Health Services (CHESS) Study

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Background: Ongoing monitoring of SARS-CoV-2 seroprevalence is important among people living with HIV who may be at greater risk of severe COVID-19 outcomes. We estimated the seroprevalence of SARS-CoV-2 antibodies among people living with HIV in Ontario.

Methods: We invited participants from the Ontario HIV Treatment Network Cohort Study (OCS) to self-collect a one-time dried blood spot (DBS) sample using at-home collection kits and self-complete a brief questionnaire. DBS samples underwent serologic analyses of SARS-CoV-2 Immunoglobulin G (IgG) antibody levels to three viral antigens: spike protein (S), receptor-binding domain of the spike protein (RBD), and nucleocapsid protein (N). Along with self-reported vaccination status, hybrid immunity was defined as presence of all three antigens, whereas vaccine-induced immunity (VII) was defined as presence of solely anti-S and anti-RBD. We present prevalence estimates with 95% confidence intervals (CI).

Results: 476 people participated between February 2022 and April 2023. Most were men (87%) and white (71%), with a median age of 57 years (Interquartile range (IQR) 47-63)). Nearly all were vaccinated (>98%). All vaccinated participants received at least 2 doses of COVID-19 vaccine; 92% reported 3 or more doses. The prevalence of hybrid immunity was 32% (95%CI 28-36) whereas VII was 66% (95%CI 62-71). Those with hybrid immunity were slightly younger than the VII group (Median: 55 years (IQR 44-61) vs 58 (IQR 49-64); p=0.026). The prevalence of VII was higher among men (67%, 95%CI 62-72) than women (60%, 95%CI 47-72) but did not reach statistical significance.

Conclusions: In a sample of OCS participants, about one third had serologic evidence of a recent SARS-CoV-2 infection. Waning anti-N levels over time may be impacting serologic groupings and will be investigated in upcoming analyses. Continued monitoring of SARS-CoV-2 serology is critical to inform clinical and immunization guidelines for people living with HIV.

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Most People with and without HIV who Experience Nonfatal or Fatal Overdoses are not Identified as People who Use Drugs in Administrative Health Data

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Background

Algorithms are often used to identify people who use drugs (PWUD) in administrative data to better understand the health impacts of the drug toxicity crisis. We assessed occurrence of nonfatal and fatal overdoses among individuals identified as PWUD to those not identified as PWUD by a combination of three published and validated algorithms.

Methods

Using COAST study data, we followed people with HIV (PWH) and a 10% random sample of people without HIV (PWoH) in British Columbia from 2012-2020. The study population was stratified based on meeting the criteria of any of three PWUD algorithms in the 5-years before baseline (cohort-entry). We assessed the proportion experiencing ≥1 nonfatal overdose resulting in a healthcare encounter and/or a fatal overdose.

Results

At baseline, 10.1% of 9,430 PWH and 2.1% of 368,732 PWoH were classified as PWUD. The proportions of people experiencing ≥1 nonfatal overdose and a fatal overdose was significantly higher in those identified as PWUD (Table 1). However, 976 of 1206 PWH (80.9%) who experienced ≥1 nonfatal overdose and 173 of 211 PWH (82.0%) who experienced a fatal overdose had not been identified as PWUD. Similarly, 82.5% of PWoH with ≥1 nonfatal overdose and 79.8% of PWoH with a fatal overdose had not been identified as PWUD.

Conclusion

Most people with or without HIV who experienced fatal or nonfatal overdoses, as recorded in this administrative dataset, were not identified as PWUD at baseline. These findings suggest that existing algorithms may significantly under-capture PWUD, even when they are used in concert.

Supporting Document

Table 1: Nonfatal and fatal overdoses among people with and without HIV, stratified by PWUD-status at baseline.

	PWH N=9,430			**PWoH N=368,732**		
	PWUD* N=955	**Non-PWUD N=8,475**	**p-value (Chi²)**	**PWUD N=7,847**	**Non-PWUD N=360,885**	**p-value (Chi²)**
≥1 nonfatal overdose	230 (24.1%)	976 (11.5%)	<0.0001	914 (11.7%)	4,307 (1.2%)	<0.0001
Fatal overdose**	38 (4.0%)	173 (2.0%)	0.0001	96 (1.2%)	380 (0.1%)	<0.0001

PWH, people with HIV; PWoH, people without HIV; PWUD, people who use drugs.
** The definition used in this study combined the following three published definitions: 1. Janjua et al, Int J Drug Policy, 2018; 2. Homayra et al, Int J Epidemiol, 2021; 3. BC Ministry of Health, http://www.bccdc.ca/resource-gallery/Documents/Chronic-Disease-Dashboard/substance-use-disorder.pdf, 2022.*
***Fatal overdoses are likely undercounted as a large proportion of deaths with unknown cause may actually be due to overdose/poisoning.*

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Improving national HIV surveillance to better meet the needs of data users

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Introduction
Effective surveillance is a core pillar of public health, driving evidence-based action. The national HIV Surveillance System collects HIV diagnosis data submitted by provincial, territorial and other data providers and publishes national trends on HIV epidemiology in Canada. An ongoing Review and Renewal process is aimed at determining what national-level surveillance data is needed by data users, and improving the quality and usefulness of that data in reflecting the current state of the HIV epidemic.

Methods
The review phase of the Review and Renewal involved several steps:
1. Internal technical assessment;
2. Questionnaires among data providers and users;
3. Review of HIV surveillance system practices in other similar countries; and
4. Literature review to identify best practices.

Ongoing engagement with data providers and community members has provided rich information to guide improvements.

Results
Findings from the review phase were synthesized to identify priority areas for the renewal. These included: improving community engagement; improving the quality of and access to data about race and/or ethnicity, gender identity and a person's identification with populations disproportionately impacted by HIV; reviewing the HIV exposure categories and hierarchy of risk; shifting to HIV stage information instead of separately reporting new AIDS cases; and improving database infrastructure.

Conclusion
The key issues identified during the review phase will inform the subsequent renewal phase. Proposed changes based on these findings will be developed in collaboration with the provincial, territorial, and other data providers, as well as with community members, and their implementation will happen in stages over the coming years. Additionally, as part of the renewal phase, a new data governance framework outlining the guiding principles, roles, responsibilities, and practices regarding HIV surveillance data is being developed to support the improvement of data quality.

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Vertical Transmission Rates over time in the Canadian Perinatal HIV Surveillance Program

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Objectives: To understand the impact of demographics, antiretroviral treatment during pregnancy, and other co-factors on the vertical transmission (VT) rates in the Canadian perinatal HIV surveillance cohort of births to women living with HIV (WLWH).

Methods: 23 Canadian pediatric and HIV centres report data yearly, including maternal characteristics, pregnancy antiretroviral treatment (ART) and infant outcomes.

Results: There have been 5893 mother-infant pairs (MIPs) reported since 1990. The number of births to WLWH rebounded from 210 in 2021, the lowest since 2009, to 238 in 2022. In 2022 26% of MIP were living in Ontario, 26% in Quebec, 15% in Saskatchewan,12% in Alberta, 11% in Manitoba, 8% in BC, and 2% in the Atlantic Provinces Among those for whom the risk factor for infection was known, 75% of women acquired HIV heterosexually, 17% through injection drug use and 2% perinatally. In 2022, 56% of mothers were Black and 28% were Indigenous. Since 2015, there have been 1-6 infants per year infected with HIV. With 5 reported cases in 2022, the overall VT rate was. The proportion of pregnant WLWH receiving less than 4 weeks of continuous ART prior to birth was 8.9% in 2022, matching the highest rate since 2011. Among MIPs for whom infant outcomes were known, the VT rate among those who did not receive at least 4 weeks of combined ART prior to delivery (n=17) in 2022 was 23.5%, in contrast to a rate of 0.6% among those who did.

Conclusions: VT rates in MIPs when mothers receive appropriate treatment remains close to zero. The suboptimal treatment rate in 2022 was 8.9%, a rate exceeded only once in the previous 10 years. Continuing effort is required to overcome barriers to timely engagement in prenatal care and HIV treatment in pregnancy.

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Geographic distribution of pre-exposure prophylaxis dispensations in Ontario, 2022

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Introduction: Pre-exposure prophylaxis (PrEP) uptake has contributed to a decrease in HIV transmission in several global jurisdictions. It is important to monitor PrEP uptake and understand trends to identify where and to whom PrEP outreach is required.

Methods: PrEP uptake was estimated using a published algorithm together with branded/generic TDF/FTC and branded TAF/FTC dispensation data extrapolated from 70% coverage of retail pharmacies in Ontario, provided by a private company, IQVIA. Dispensations were assigned to geographic regions based on pharmacy location. To adjust for a major pharmacy that dispenses online, dispensations attributed to that pharmacy's forward sorting address (IQVIA data) were geographically redistributed proportionate to its clients' mailing locations. The adjusted estimated number and rates of individuals dispensed PrEP and the "PrEP-to-need ratio" (P2N:proportion of PrEP use relative to first-time HIV diagnoses [as determined by the Ontario HIV Epidemiology Surveillance Initiative]) are described by geographic region.

Results: An estimated 14621 individuals were dispensed PrEP at least once in Ontario in 2022. This is compared to 6378, 9203, 9973 and 12039 dispensed PrEP in 2018, 2019, 2020 and 2021 respectively; an increase of 129.2% from 2018. In 2022, most PrEP users were male (97.0%) and aged 20-40 years (59.0%). Adjustment of the rates of PrEP dispensation and PrEP-to-need ratio using mailed dispensation data resulted in 15 to 40% increases across regions without mailed dispensation and a 70% reduction in regions where mailed dispensation originated from. In 2022, the adjusted rates of PrEP dispensations per 100,000 people and adjusted P2N ratios were highest in Toronto (rate:299.1,P2N:31.2) and Ottawa (rate:159.3,P2N:37.0) followed by South West (rate:41.7,P2N:21.8), Central West (rate:41.9,P2N:13.6), Eastern (rate:32.4,P2N:15.5), and lowest in Central East (rate:22.8,P2N:9.5) and Northern (rate:23.8,P2N:7.5) regions.

Conclusion: PrEP uptake has increased significantly and online PrEP clinics play an important role in distribution. Strategies to optimize geography-based PrEP accessibility are needed.

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PrEP Awareness and Uptake Among Transgender and Non-binary Residents of Canada.

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Transgender populations are disproportionately impacted by HIV and face unique barriers to accessing HIV-related services. Pre-exposure prophylaxis (PrEP) is a highly effective medication that can be taken to reduce the risk of HIV acquisition. While transgender and non-binary individuals may benefit from PrEP, there is no current evidence describing PrEP awareness and uptake among this population in Canada.

This study analyzed data from the 2019 Trans PULSE Canada survey to estimate PrEP awareness and uptake and to identify predictors of PrEP awareness among transgender and non-binary individuals in Canada. Block-wise modified Poisson regression models were used to identify potential predictors of PrEP awareness.

The analytic sample included 1,965 respondents, of whom 71.0% were aware of PrEP, 2.2% had ever used PrEP, and 0.9% were currently using PrEP. The multivariable analysis revealed multiple statistically significant predictors of PrEP awareness, including variables related to sociodemographics, sexual risk, social support, and gender affirmation. Specifically, the results highlighted a need to improve PrEP awareness among respondents who were older, transfeminine, Indigenous, living in Quebec or Atlantic Canada, had high school education or less, and who were not receiving gender-affirming medical care. Respondents who were single or in a nonmonogamous relationship, those who had ever engaged in sex work, and those who had received an HIV/STI test in the past year were more likely to be PrEP-aware. Additionally, reporting higher levels of emotional social support was identified as a facilitator of PrEP awareness, which may be important for informing future health promotion initiatives.

This study highlights the need to improve overall PrEP awareness and uptake among transgender and non-binary communities in Canada. The study identified inequities in PrEP awareness within the population, which may inform future targeted public health initiatives.

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Characterizing Healthcare Providers' Behaviour regarding Prescribing HIV PrEP to Cisgender and Transgender Women in Canada: A Cross-sectional Survey

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BACKGROUND: Although of proven efficacy, HIV PrEP is underused in women. We explored providers' perspectives on prescribing PrEP to women using the COM-B model for Behaviour change.

METHODS: OBGYN, family, internal, infectious diseases, and preventive medicine physicians/residents, and eligible pharmacists were recruited to complete an online, cross-sectional questionnaire between August/2023-December/2023. Providers self-assessed their Capability, Opportunity, and Motivation to prescribe PrEP to women from 0 (lowest)-100 (highest), following guiding questions designed to operationalize each construct. We analyzed results using descriptive statistics, and compared Motivation according to provider characteristics using non-parametric tests.

RESULTS: Of 241 respondents representing all five Canadian regions, most were women (152/241=63%), residents (89/241=37%) or family physicians (64/241=27%), non-HIV specialists (193/241=80%), managed STIs (219/241=91%) and worked at an academic/community hospital (130/241=54%). Median (IQR) duration of practice was 3 (0,10) years. Median (IQR) self-assessed Capability to prescribe to cis and trans-women, respectively, was 50 (25,80) and 51 (25,84); Opportunity was 40 (13,70) and 37 (10,73); and Motivation was 80 (60,92) and 85 (65, 100); 56 (23%) had ever prescribed to cis-women and 55 (23%) to trans-women Motivation differed by province and scope of practice, among others (Table).

CONCLUSION: Although providers are highly Motivated to prescribe PrEP to cisgender and transgender women, with some variability by geography and professional characteristics, only a quarter have done so, likely due to limited Capability and especially, Opportunity. Interventions to increase PrEP prescribing skills and to help providers identify women in need may help optimize PrEP prescriptions to women in Canada.

Supporting Document

Table. (Comparing) Self-reported motivation to prescribe PrEP to cisgender women by demographic characteristics of survey participants (n=241)

Characteristics	Count by subgroup (n)	Motivation (median, interquartile range)	p-value[1] (Wilcoxon rank sum or Kruskal-Wallis test)
Region			0.0091*
Quebec	20	86 (78, 100)	
Prairies (AB, SK, MB)	96	85 (71, 100)	
Atlantic (NF, NS, NB)	8	79 (59, 86)	
BC	40	78 (58, 86)	
Ontario	76	74 (51, 89)	

Sex assigned at birth			0.13
Female	155	80(60, 91)	
Male	84	81(70, 100)	
Professional position			0.000094*
Resident	89	71(55,69)	
Non-resident	152	85(67,78)	
Professional position			0.012*
Primary Care	68	82(61,91)	
Specialist	82	89(75,84)	
Work setting			0.038*
Sexual health clinic	16	90(77,85)	
Not a sexual health clinic	225	80(60,91)	
Involved in STI care			0.02*
Yes	219	80(64,94)	
No	20	66(50,76)	
Years in practice			0.85
≥5 years	26	75(58,72)	
< 5 years	215	85(69,79)	
HIV specialist			0.00015*
Yes	48	90(80,100)	
No	193	76(60,90)	
*Statistically significant			

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Implications and (Mis)Understandings of U=U in the Lives of Gay and Bisexual Men Living with HIV in Southern Brazil: a Qualitative Study

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BACKGROUND: U=U is a public health strategy founded on solid scientific evidence that plays an important role in reducing HIV stigma. In 2019, Brazil's Ministry of Health declared that understandings about U=U impact HIV-related stigma, sexual and reproductive rights, linkage to health services, treatment adherence and HIV testing. Our study explored the implications and (mis)understandings of U=U on the health behavior and outcomes of gay and bisexual men living with HIV (GBMLWH) in southern Brazil.

METHODS: We analyzed data from in-depth, semi-structured interviews with 11 GBMLWH from May to September 2023 in two urban centers in southern Brazil. We conducted a thematic analysis to assess how knowledge and understandings of U=U impact their lives.

RESULTS: Our study identified three dominant themes in relation to U=U: physical and mental well-being, interpersonal relations with family and friends, and interpersonal relations with sexual and/or romantic partners. First, participants described how knowing they are undetectable cultivated feelings of tranquility and stability, which they contrasted to experiences of distress and anxiety before acquiring that knowledge. Secondly, while some participants described that people in general, and even themselves, were uncertain about HIV untransmissibility once one is living with the virus, some described how their interpersonal lives were positively impacted by U=U, including because these understandings had facilitated reconnections and disclosures about their serostatus to family and friends. Finally, many participants reported that their own knowledge about U=U opened new possibilities for having romantic and/or sexual relationships – experiences they contrasted with feelings of being "dirty" and "HIV vectors".

CONCLUSION: U=U is pivotal to everyone living with or without HIV since it promotes HIV-stigma reduction and impact on PLWHA's welfare. Our study highlights the importance of the awareness and comprehension of HIV non-transmissibility when people are on ART, which goes beyond the health target of becoming undetectable.

Supporting Document

Socio-demographic characteristics	*N (11)*
Age	
18-29	4
30-49	5
50+	2
Skin Color	
Black	2
Brown	2
Indigenous	1
White	6
Sexual orientation	
Bisexual	2
Gay	9
Relationship status	
Casual	6
with partner	4
Both	1

None	1
How long living with HIV	
- 2 years	1
3 to 9 years	5
10 to 19 years	2
+ 20 years	3
Work and Study	
Both	4
study	0
work	6
Retired	1

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"Picturing Change" in HIV Prevention Efforts, Including Undetectable = Untransmittable (U=U) for sub-Saharan African Women Migrant Living With HIV in British Columbia, Canada

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Social Sciences Oral Abstract Session #2, April 26, 2024, 3:00 PM - 5:00 PM

Introduction: For the sub-Saharan African women migrants living with HIV (SSAWMLH) in British Columbia, their knowledge of, and access to HIV prevention efforts, particularly Undetectable = Untransmittable (U=U) approaches are limited, impacting their daily life experiences, and generating inequities. Our objective was to explore the SSAWMLH's experiences (knowledge and accessibility) of U=U.

Methods: This work relates to the findings generated from our larger community-based research study, Picturing Change, that explored social structural determinants of health of SSAWMLH in Canada. Applying an intersectionality lens, we used participant-generated photographic research methods of photovoice and photo-elicitation to carry out six photovoice focus group discussions and nine photo-elicitation semi-structured interviews over a seven-month period (December 2022 - June 2023). We analyzed participant images and verbatim transcripts using NVivo.

Results: With a mean age of 50 years (range 34-65 years), our 12 SSAWMLH participants are women (cis and transgender) members of a disprivileged community organization, Afro-Canadian Positive Network of BC. We identified five sub-themes concerning U=U. They include i) knowledge and awareness of U=U; ii) untruths about U=U; iii) immigration; iv) HIV non-disclosure laws; and v) impact of U=U on shame, stigma, pressure to take medications, pressure to maintain undetectable viral load, and mental health. We found that current U=U messaging, and other HIV prevention efforts, are primarily unknown and underutilized among this group.

Conclusion: For an optimal response to end HIV there is need to focus on culturally safe research programs and evidence-informed health promotion to equip these women's individual agency regarding their health. Empowering these women will enable them to be community peer researchers and knowledge mobilizers within their community structures. While this may ameliorate the impacts of inequities, multilevel interventions are needed to address underlying issues of social structural determinants of health, particularly for new immigrants and hard to reach members.

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Awareness, Acceptance, and Uptake of the Undetectable Equals Untransmittable (U=U) Message in People Living with HIV from across Canada

Arthur Dave Miller[1], Jason Lo Hog Tian[1,2], Kristin McBain[1], Deborah Norris[3], Kim Samson[3], **Patricia Ukoli**[4], Mary B. Thompson[1], Leon Mvukiyehe[5], James Edwards[6], George Da Silva[1], Michael Murphy[1], Sylvain Beaudry[7], Sean B. Rourke[1,2], **James Watson**[1]
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In 2016, the Prevention Access Campaign launched the Undetectable equals Untransmittable (U=U) campaign to promote awareness of the scientific evidence that people maintaining an undetectable HIV viral load cannot pass on the virus. This study aims to describe the acceptance and uptake of the U=U message from a sample of people living with HIV from across Canada.

Participants (n=1016) were recruited from all provinces across Canada to complete the People Living with HIV Stigma Index – a global survey tool designed by and for people living with HIV to measure lived experiences of stigma. The survey contained questions assessing awareness and uptake of U=U. Chi-squared tests were used to examine if awareness of the message varied by gender, sexual orientation, and ethnicity.

Participants were mostly cis-male (61%), white (54%), and identified mostly as heterosexual (45%) or gay/lesbian (40%). Despite high levels of awareness of the message (73%), only 39% of participants had discussed U=U with their primary healthcare provider. Participants identifying as transgender, non-binary, or other genders (87%) were more likely to have heard about U=U than cis-women (67%) and cis-men (75%, $p<0.01$). Those identifying as gay/lesbian (84%) were more likely to have heard of the message compared to heterosexual (65%), bisexual (62%), or other sexual orientations (77%, $p<0.01$). Indigenous peoples had heard about the message the least (61%) compared to those identifying as African/Caribbean/Black (71%), White (76%), or other ethnicities (83%, $p<0.01$).

Our findings show that people living with HIV are mostly aware of and accept the U=U message although there is still a significant proportion still to be reached. Increasing awareness and uptake of the U=U message in healthcare providers and within the healthcare system may be a next key step to spreading the message and reducing stigma and fear around HIV.

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Sexual behaviour, partner choice, and prevention practices among gay, bisexual and queer cis-men living with HIV in clinical care

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Introduction:

Gay, bisexual and queer men (GBQ) living with HIV who are on treatment can have a long life expectancy and a healthy and active sex life without the risk of transmitting HIV to their sexual partners. GBQ men living with HIV in clinical care employ a range of biomedical and behavioural HIV and sexually transmitted infection (STI) transmission prevention strategies while engaging in sex.

Methods:

The OHTN Cohort Study (OCS) is a longitudinal cohort study at 15 clinics in Ontario. Between 2019 and 2022, 1,620 self-identified gay, bisexual and queer cis-men were interviewed using structured questions about number of sexual partners, types of sexual activities, partner HIV status, and condom use in the previous 3 months.

Results:

70% of respondents were sexually active and had a cis-male sexual partner in the previous 3 months. Among sexually active respondents, 77% had anal sex (insertive and receptive) and 94% engaged in other sexual activities including oral sex. Among those having anal sex, 96% reported having a suppressed viral load, with only 3% not knowing their viral load, and 52% of their partners were also living with HIV. They also reported that 26% of their partners were taking pre-exposure prophylaxis. Condom use with anal sex was 31%, but was higher when sexual partners were HIV negative and not on PrEP (42%).

Conclusion:

GBQ men living with HIV who are in care currently practice a variety of methods to prevent HIV and STI transmission. Including treatment as prevention as a strategy (U=U), they engage in sexual practices that protect their partners, from partner choice (choosing partners living with HIV or who are on PrEP) to barrier prevention methods.

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Positive and Negative Correlates of Stigma and Health: An Overview of the People Living with HIV Stigma Index from Across Canada

James Watson[1], Jason Lo Hog Tian[1,2], Kristin McBain[1], Deborah Norris[3], Kim Samson[3], Patricia Ukoli[4], Leon Mvukiyehe[5], James Edwards[6], George Da Silva[1], Michael Murphy[1], Sylvain Beaudry[7], **Arthur Dave Miller**[1], Sean B. Rourke[1,2], **Mary Bernice Thompson**[1]
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Canada prides itself on the strength of its health and social systems, yet HIV stigma remains high, undermining HIV prevention and treatment efforts and negatively impacting health and wellbeing. Understanding how different types of stigma may have a different effect on overall health maybe be important for developing stigma reduction interventions.

A total of 1365 participants were recruited from all provinces across Canada between September 2018 to November 2023 to complete the People Living with HIV Stigma Index – a global survey tool developed by and for people with HIV to measure lived experiences of 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 scores for health risk and protective factors were established for each person. Cross-sectional relationships between health risks and types of stigma were examined as well as the potential for protective factors to mitigate stigma.

Rates of stigma were high with 49% endorsing significant levels of internalized stigma, 62% with enacted stigma, and 83% with anticipated stigma. Internalized and enacted stigma were significantly associated with overall health ($p<0.01$), but anticipated stigma was not significantly related. With each additional health risk, rates increased for enacted (55% to 72%, $p<0.01$) and internalized stigma (44% to 59%, $p<0.01$), but not for anticipated stigma. Increasing levels of protective factors was linked with decreased enacted (81% to 56%, $p<0.01$), internalized (81% to 40%, $p<0.01$), and anticipated stigma (91% to 79%, $p<0.01$).

The burden of stigma is still high for people with HIV in Canada which may be exacerbated by socioeconomic and health-related risk factors. Interventions aiming to increase external support systems and internal resources may buffer against the negative impact of stigma and lead to improvements in health and wellbeing for people living with HIV.

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How social support affects the relationship between stigma and mental health

Jason Lo Hog Tian[1,2], James Watson[1], **Arthur Dave Miller**[1], Kristin McBain[1], Janet Parsons[2], Robert Maunder[2], Lynne Cioppa[1], George Da Silva[1], Michael Murphy[1], Sean B. Rourke[1,2]
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HIV stigma remains a persistent barrier to good health and wellbeing for people living with HIV. Understanding how protective factors such as social support may reduce the negative impact of stigma on health is critical for designing stigma reduction interventions. This study aims to understand how different types of social support may moderate or change the nature of the relationship between stigma and mental health.

We recruited 329 participants to complete the People Living with HIV Stigma Index at baseline (t1) between August 2018 and September 2019 and at follow-up (t2) between February 2021 and October 2021. Separate moderation models were created with different types of social support (emotional/informational, tangible, affectionate, positive social interaction) as moderators, baseline stigma (internalized, enacted, anticipated) as the antecedent, and mental health (t2) as the outcome.

Emotional/informational support was a significant moderator for the relationship between enacted (b = -2.12, 95% CI: -3.73, -0.51), internalized (b = -1.72, 95% CI: -3.24, -0.20), and anticipated (b = -2.59, 95% CI: -4.59, -0.60) stigma at t1 and mental health at t2. Tangible support was a significant moderator for internalized stigma and mental health (b = -1.54, 95% CI: -2.74, -0.35). Lastly, positive social interaction was a significant moderator for internalized (b = -1.38, 95% CI: -2.71, -0.04) and anticipated stigma (b = -2.14, 95% CI: -3.93, -0.36) and mental health.

We found that emotional/informational support, tangible support, and positive social interaction moderated the relationship between at least one type of stigma and mental health. In general, the relationship between social support and better mental health was stronger for participants with low stigma. These findings suggest that intervention strategies aimed at both stigma reduction and boosting a variety of social supports with different functions may be important for the good mental health of people living with HIV.

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Where does my blood and information go? Mapping sero surveillance in Ontario from the clinic to public health

Alexander McClelland, Colin Hastings, Andrea Krüsi, Amy Wah, Ryan Peck, Martin French, Maureen Owino, Emerich Daroya, Michael Burtch, Alex Tigchelaar, Katarina Bogosavljevic
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Background: Communities of people living with HIV across Canada have become increasingly concerned about ways that their biomaterial and personal information collected in clinical health care and research encounters is being shared and used for secondary purposes without consent by public health authorities to conduct surveillance.

Methods: This community-based research project, led by people living with HIV, legal experts, and researchers, uses Institutional Ethnography to map the pathway of biomaterial and information as it flows from clinical to public health settings. To do so, we conducted 26 qualitative interviews with clinicians and public health officials, and 17 qualitative interviews with people living with HIV who have had interactions with public health authorities, including those who have been under public health investigation or legal orders.

Results: Biomaterial and personal information travels through a range of information management systems across different jurisdictions to enable surveillance. Viral genotyping of biomaterial collected in Ontario is conducted in British Columbia, and HIV tests for Ontario are transferred to a lab in the prairies. In some regions, local provincial public health authorities directly access electronic medical records, including viral load and other diagnostics, via a range of diverse databases connected to the Ontario healthcare system. This information routinely used as part of public health investigations. People living with HIV have limited knowledge of the pathways of their blood and personal information and are distrustful of surveillance systems, organizing their lives in a defensive stance towards public health authorities. Clinicians may work with inconsistent understandings about how public health systems and investigations operate, despite being the focal points for procuring informed consent and clinical information.

Conclusions: Outcomes aim to speak back to top-down surveillance systems, and to articulate a new approach to public health, articulated from the ground-up, built on principles of trust, informed consent, and transparency.

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Going beyond HIV sector: Mobilizing community leaders and settlement service providers to reduce HIV stigma

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Introduction:

Despite five decades of HIV/AIDS responses and advances in prevention, treatment and care, HIV related stigma continues to impede public health and community response. Racialized and immigrant communities in Canada bear disproportionate burden of HIV. However, access to culturally safe and inclusive HIV related services for racialized immigrants is limited. HIV related stigma contributes to community silence, impedes community responses, and perpetuates suffering.

Methods:

The Acceptance and Commitment to Empowerment (ACE) Study is a multi-phase project in Alberta and Ontario. The study aims to mobilize community leaders and service providers to reduce stigma in racialized immigrant communities. Phase One focuses on identifying HIV related stigma, community values that reduce or reinforce stigma, and reduction strategies applied in the local contexts. We used focus groups to engage 30 service providers/community leaders and 60 community members living with or affected by HIV related stigma. Collaborative partnerships were established to enhance outreach and recruitment.

Results:

In this presentation, we report on the observations, experiences and perspectives of service providers and community leaders. Service providers and leaders from diverse health and non-health sectors took part in the study. Key findings include: (1) the absence of HIV information in newcomer communities perpetuates silence and misconceptions of HIV; (2) service providers in settlement and non-health sectors feel unprepared to discuss HIV issues; (3) trends of increased conservatism in Canada and globally are barriers to youth sexual health education; and (4) innovative non-conventional HIV prevention education is needed.

Conclusion:

HIV vulnerabilities and HIV-related health disparities experienced by racialized and immigrant communities are complex and contextual. Effective HIV responses in racialized immigrant communities require engagement of stakeholders outside of the HIV sector. Phase One results of Project ACE will inform the refinement of our evidence informed online intervention to reduce HIV stigma and mobilize community HIV champions.

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Black Expert Working Group to Inform National HIV Surveillance

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Research and local public health surveillance data have shown that Black communities are disproportionately impacted by HIV in Canada. However, national HIV surveillance data do not contain sufficient race and/or ethnicity information to adequately describe the magnitude of the problem. Systemic racism and discrimination contribute to vulnerability, exposure to HIV, and health system barriers to accessing prevention technologies, testing and care and have also contributed to the data gaps that limit our ability to describe, address, and monitor these inequities. The low quality and completeness of race and/or ethnicity information in the national HIV surveillance data limits the ability to use this data to inform prevention and care programming, funding decisions, and the monitoring of outcomes.

A group of Black researchers and practitioners came together in 2022 to advocate for new approaches to research and policy to address Black people's continued disproportionate exposure to HIV. During engagements with the Public Health Agency of Canada (PHAC)'s National HIV/AIDS Surveillance Program (HASS), data quality concerns and opportunities for improvement were discussed. As a result of this engagement, the Black Expert Working Group (BEWG) was launched in Summer 2023. The BEWG will provide advice to HASS and contribute to the co-development and implementation of strategies to improve the completeness of the race and/or ethnicity data. This work will include reviewing the language in national HIV surveillance reports, critically reviewing race and/or ethnicity categories currently in use in Canada, developing data collection scripts and training tools, and building capacity among Black stakeholders for evidence-informed responses to HIV.

The BEWG has the potential to support a robust response to HIV among Black communities through community leadership in optimizing the quality, completeness and use of data on HIV.

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Exploring Ethical Complexities in HIV Testing among African, Caribbean, and Black Communities: A Qualitative Study

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Background: Existing research on ethical issues in HIV testing, such as perceptions of consent, privacy, and management of HIV-related data and biosamples among African, Caribbean, and Black (ACB) populations in Canada, is scarce. This qualitative study aimed to explore these ethical complexities in community-based HIV testing within the ACB communities in Canada.

Methodology: In-depth, semi-structured interviews were conducted with 33 ACB community members in Manitoba, Canada. A diverse sample was recruited through community agencies, social media, and flyers, considering variations in age, gender, sexual orientation, and geographical location. Data were analyzed using iterative, inductive thematic analysis.

Results: Participants expressed significant concerns about the collection, sharing, and use of HIV data from healthcare encounters, revealing mistrust towards institutions like police, child welfare, and immigration accessing their health information. Participants expressed concerns about several issues, including the management of biological samples, the possibility of data misuse, the risk of human rights violations, anti-Black racism, and the difficulties in upholding principles of consent, privacy, and bodily autonomy. While open to contributing to medical research, they unanimously demanded greater transparency, informed consent, and control over the secondary use of their health data. Participants emphasized informed consent, the need for clear communication on sample use, and ethical considerations like compensation for the use of HIV bio-samples in future research.

Conclusions: The study underscores the need for culturally sensitive approaches in HIV testing and ethical governance in healthcare for ACB communities. It highlights the importance of prioritizing participant empowerment, ensuring transparency, practicing informed consent, and implementing robust data security measures to balance effective HIV information management with the protection of individual rights. A comprehensive, decolonizing, and anti-racist strategy is crucial for transforming HIV testing and healthcare into an equitable and just system.

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HIV-1 Nef-Mediated MHC-I Downregulation Contributes to the Maintenance of the Replication-Competent Latent Viral Reservoir

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The persistence of latently infected cells during antiretroviral therapy (ART) remains a barrier to a cure for HIV-1. The HIV-1 accessory protein Nef downregulates MHC-I from the surface of infected cells, preventing the presentation of HIV-1 antigens, which can impede cytotoxic T lymphocyte clearance of latently infected cells. For a group of ART-suppressed Ugandans with HIV-1 (n=14), we identified and sequenced primary nef genes from outgrowth viruses derived from the quantitative viral outgrowth assay (QVOA; (n=49 total nefs). These unique nefs were cloned or synthesized into proviral vectors, used to generate pseudoviruses, and utilized to measure cell surface CD4 and MHC-I downregulation within infected CD4+ Sup-T1 cells via flow cytometry. In these same individuals, the size and rate of change of the replication-competent latent reservoir (RC-LVR) was estimated using previous QVOA results and a Bayesian model over a 5-year study period. We observed substantial variability in participant-derived Nef-mediated MHC-I downregulation (median 114.5% of NL4-3 downregulation, IQR 104.6-121.4%), and CD4 downregulation (median 94.1% of NL4-3 downregulation, IQR 83.9-100.0%) within this cohort. Importantly, we found a significant relationship between Nef-mediated MHC-I downregulation and the rate of change of the RC-LVR (rho=0.61, p=0.023), where less efficient MHC-I downregulation correlated with a faster rate of RC-LVR decay during long-term ART. In contrast, Nef-mediated CD4 downregulation was not associated with changes in the RC-LVR (rho=-0.16, p=0.58). Nef-mediated MHC-I downregulation may contribute to HIV-1 persistence during long-term ART. Strategies to inhibit Nef-mediated MHC-I downregulation could represent a viable therapeutic avenue to reduce the size of the latent reservoir in vivo.

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Excessive Demand: A Study of Canada's Treatment of Non-Citizens Living with HIV

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Background: Canada's immigration system restricts access to those living with certain health conditions, including HIV. Specifically, the Immigration and Refugee Protection Act bars access to anyone who may pose an "excessive demand" on Canada's public healthcare system or who poses a danger to public health or safety. The system also bars access to individuals who are unable or unwilling to undergo an HIV test, mandatory for many immigration applications.

Description: As part of our advocacy to defend the human rights of people living with HIV, the HIV Legal Network sought to examine the structure and impact of Canada's immigration system on people living with HIV through legal research, desk-based research, documents obtained through Access to Information Requests, and dialogues with community organizations and people with lived experience.

Lessons Learned: Canada's immigration system perpetuates harms against people living with HIV and interferes with global efforts to end HIV. People living with HIV are exposed to anti-HIV stigma throughout the immigration process – be it through an application for asylum, for a work or study permit, or for permanent residence. The measures that create that stigma introduce significant inefficiency to Canada's immigration system, without evidence that they achieve their purported goals. They also limit access to a country in which HIV testing, treatment, and counselling is available, instead reaffirming the false notion that HIV is a condition one must hide to be accorded the same rights as others.

Next Steps: In 2018, the Minister of Immigration, Refugees, and Citizenship promised to repeal the "excessive demand" regime, in light of its recognized harms. Instead of repealing the regime, the government implemented half measures. Our research confirms the ongoing harm of the "excessive demand" regime, as well as the other identified immigration policies and practices, and confirms the ongoing need for a fulsome reform.

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Pre-HIV Infection CD4+ Th17 Cells as predictors of HIV disease progression in two African cohorts

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Interleukin-17 producing (Th17) CD4+ T cells are more susceptible to HIV infection and depleted early in people living with HIV. Here, we explored whether the frequency of circulating Th17 cells pre-HIV infection were associated with HIV disease progression. We used archived cryopreserved blood cells collected <1 year prior to HIV infection from participants enrolled in HIV Vaccine Trials Network (HVTN) 503 (n=35) and the Partners Pre-Exposure Prophylaxis (PrEP) Study (n=32) cohorts. We applied flow cytometry to quantify Th17 cell frequency. In HVTN 503, participants had a median age of 23 years (IQR: 22-27), while in Partners PrEP, the median age was 30 years (IQR: 25-40). We included 17 female and 18 male participants in HVTN 503, and 19 female and 13 male participants in Partners PrEP. In HVTN 503, IL17+CD4+ T cell frequency correlated inversely with CD4/CD8 ratio measured <180 days (Spearman rank r =-0.42, p=0.012) and >180 days (r = -0.55, p=0.001) post-HIV infection and was associated with a faster decline in CD4+ T cells below 500 copies/mm3 (Cox regression HR = 2.9, 95% CI = 1.2 – 6.9, p=0.015), including after adjusting for viral load (aHR = 2.5, 95% CI = 1.0 – 6.1, p=0.038). However, in Partners PrEP, the correlation with CD4 decline was not significant (HR = 1.2 , 95% CI = 0.4 – 3.4, p=0.795). In an analysis that combined both cohorts, IL17+CD4+ T cells remained a significant predictor of CD4+ T cell decline in the unadjusted (HR = 2.2, 95% CI = 1.1 – 4.3, p=0.023) and viral load adjusted models (aHR = 2.1, 95% CI = 1.0 – 4.1, p=0.038). IL17+ T cell frequency was not associated with peak or set-point viral loads in either cohort. Our study highlights the potential importance of pre-HIV infection Th17 cell levels in shaping HIV disease progression.

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Effectiveness of the 'I'm Ready' Program to provide low barrier access to HIV self-testing to reach the African, Caribbean, and Black communities across Canada

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Introduction: African, Caribbean, and Canadian Black (ACB) communities in Canada experience multiple barriers to HIV testing and linkage to care. The 'I'm Ready' Program is an HIV self-testing implementation strategy which utilizes a mobile app through which participants can order free HIV self-test kits for delivery or pick-up at any participating locations across Canada. This study examines the effectiveness of the I'm Ready program in reaching ACB communities across Canada.

Methods: Between June 2021 and November 2023, 2,458 participants who identified as ACB accessed the mobile app and completed the pre-test survey. We analyzed the pre-test survey to identify participants' demographics and recency of their HIV testing. We then performed binary logistic regression to examine the correlates of first-time testers across ACB communities.

Results: Participants were mostly under the age of 24 years old (51%), had greater than a high school education (55%), were employed full time (28%) and lived in rural areas (41%). Most of the participants were first-time testers (42%) or have not been tested in more than a year ago (37%). The program reached first-time testers across Canada, most notably in British Columbia (42%), Alberta (40%), and Ontario (25%). First-time testers are more likely to be under 24 years old (OR=3.06, $p<0.01$), live in small cities and rural areas (OR=1.45, $p<0.01$), and more likely to be cis-men in comparison to cis-women (OR=0.80, $p=0.01$).

Conclusion: The app is a convenient way to increase access to HIV self-testing and is effective in reaching first-time testers in the ACB community, in particular those who are younger or live in rural communities that may not be covered by available services or where services are not tailored to the needs of ACB people.

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Empowering Transformation: Catalyzing Systemic Change for Northern Manitoba First Nations' People Living with HIV

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INTRODUCTION: This CIHR-funded research project, spanning from April 2019 to March 2024, maps the care cascade system journey experienced by First Nations individuals living with HIV and the processes described by healthcare providers who serve them, highlighting barriers and facilitators. Not only does the study examine care itself, but it also maps the experience of living with HIV in Northern communities.

IMPORTANCE OF THE WORK: With escalating HIV rates among Indigenous populations in Manitoba and Saskatchewan, our study pioneers understanding the care journey of Northern First Nations people, emphasizing the pressing need for comprehensive insights and interventions.

METHODS: Our research followed a two-eyed seeing and ethical space approach, including guidance from a two-eyed seeing working group. We conducted in-depth, semi-structured interviews with 18 individuals living with HIV and 11 healthcare providers. Two lived-experience research associates enriched data collection and initial analysis. Rigorous qualitative analysis using MAXQDA software uncovered key insights on barriers, facilitators, and recommendations. To validate findings, we held a structured workshop with 50 stakeholders, including policymakers, researchers, community-based organizations, Indigenous entities, and individuals with lived experiences, from both Northern and Winnipeg contexts, yielding additional insights.

KEY FINDINGS: A key finding was that geographical location significantly shapes challenges in the HIV care cascade. This presentation will discuss key barriers, facilitators, and recommendations, emphasizing the role of geography. It will also discuss how the methodology itself generated rich data and fostered stakeholder engagement. We will finally outline plans for knowledge translation with the hope of transforming health and community systems for Northern First Nation people in Manitoba.

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Access to Services for Indigenous People Living with HIV in Manitoba and Saskatchewan during the COVID-19 Pandemic: Gigii-Bapiimin Study Findings

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Background: Saskatchewan and Manitoba have the highest and second highest rates of HIV infections in Canada. The Gigii-Bapiimin study examined the impacts of services during the COVID-19 pandemic on First Nations, Inuit, and Métis people living with HIV in Manitoba and Saskatchewan.

Method: The study used decolonizing community-based research, using Indigenous principles, and a Two-Eyed Seeing approach. Eligibility criteria included being Indigenous and living with HIV in either Manitoba or Saskatchewan. The interviews explored the impacts of COVID-19 on healthcare access, HIV, and harm reduction services. The data was validated by a Community Guiding Circle of 13 Indigenous people living with HIV.

Results: The Gigii-Bapiimin study found decreased access to health services, HIV care and harm reduction during the COVID-19 pandemic. Participants shared stories that included stigma towards their HIV status and racism in the healthcare system. Finally, the pandemic interrupted vital harm reduction and support services, leaving many individuals without access to the resources they needed to stay healthy and safe. The impacts on access to HIV care were exacerbated by poverty, homelessness, and distress over inadvertent disclosure of HIV status. Participants mitigated these impacts by relying on Indigenous knowledges, ceremonies, and resilience within their communities.

Conclusion: Service providers need to improve access to healthcare, HIV treatment, harm reduction services and cultural ceremonies for Indigenous people living with HIV who are facing multiple access challenges. Reducing barriers to harm reduction and expanding the response to the toxic drug supply and the overdose crisis is urgently needed.

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Sex Education by Theatre (SExT) and the Secure, Trauma-Informed, Inclusive (STI) Model of Peer Mentorship: An Arts-Based Peer Approach to HIV Prevention in a Newcomer Community of Toronto.

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Sex Education by Theatre (SExT) is a trauma-informed and anti-racist approach to engaging youth in HIV/AIDS prevention through theatre. SExT addresses the need for culturally appropriate and trauma-informed pedagogical interventions, particularly for newcomer and Indigenous youth in Canada. Vulnerable youth populations face a disproportionate burden of sexual and other health issues due to a complex interplay of historical, social, economic and systemic factors.

Originating in Toronto's Thorncliffe/Flemingdon Park, SExT has evolved into a dynamic workshop program and touring performance—sketches, songs, raps, dances, and spoken word pieces by youth for youth—reaching over 10,000 young people in underserved communities nationwide. Research has found improved sexual health self-efficacy (condom use, STI/HIV testing, and sexual limit-setting) and personal/social development of peer educators and audiences.

In 2022, SExT received a SSHRC grant to explore program sustainability and community capacity-building by training current cast members in trauma-informed research and facilitation to become community researchers and peer mentors for a new cohort of youth from their home community.

Through Performative Inquiry and the DEPICT model of participatory qualitative health promotion research, arts-based data collection included scene creation, video, and comic-style field notes. 14 semi-structured interviews and one focus group were conducted with SExT Peer Mentors, and five focus groups were conducted with newly trained/mentored high-school-aged SExT Peer Educators. Peer Mentors were actively involved in all research, including design, facilitation, interviewing, field notes, analysis, and writing. Collaborative analysis led to the conceptualization of the 'STI' Model of Peer Mentorship: establishing a 'Secure' base (meeting basic needs, foundation of relationship, peer vulnerability/modelling); adopting a 'Trauma-Informed' approach emphasizing choice, empowerment, and nervous system regulation; and prioritizing 'Inclusivity' by including mentors with shared and diverse culture, gender, community ties, and immigration status. This peer model may be applied in diverse youth HIV prevention contexts.

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Indigenous Women living with HIV and Aging with Wisdom: Unfinished

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The Aging with Wisdom project aimed to develop a culturally and gender-responsive approach with Indigenous women to support their ability to age well with HIV, while taking up their traditional roles as leaders in their families and communities. The six participants in our study identified as women, cis or trans, with one identifying as a Two Spirit, gender-fluid, trans woman. Three identified as Cree, one as Coast Salish, one as Métis and one as "urban Indigenous." They had been living with HIV for 10 to 30 years. The participants attended four research and wellness days at Tsleil-Waututh Nation (Vancouver). These days featured cultural and craft activities, ceremony, lunch and research as a distinct activity. Our First Nation Elder guided four sequential research sharing circles with the same participants in each circle which allowed an in-depth exploration of aging and HIV. The participants spoke about how HIV affected them in every part of the medicine wheel: physically, emotionally, mentally and spiritually. We concluded that (1) A small group of participants in a series of meetings with cultural activities and ceremony can provide incredibly rich data on a complex health issue. (2) The group setting provided meaningful supports to participants; they called it a sisterhood. (3) Culture is healing. Our Elder led ceremonies and gave cultural teachings throughout which helped women reconnect or connect more deeply with their culture. The title of our paper, "Indigenous Women living with HIV and Aging with Wisdom: Unfinished," refers to these women having been left on their own to deal with the non-clinical aspects of HIV; that more could and should be done; that services could be added or adjusted; that our social safety net has holes; and that our work isn't done.

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Decolonizing Gender Research: Navigating Indigenous Protocols for Ethical Gathering of Gender Diverse Experiences

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Background: The 9Genders project aims to promote cultural reclamation and land reconnection for Gender-Diverse Indigenous people in Canada. The project has developed a unique decolonized research methodology that centers Indigenous protocols and ethics as the framework for guiding respectful gathering of gender-diverse narratives and experiences relevant to the HIV care continuum. Indigenous research methodologies emphasize community-led protocols, contrasting with procedural ethics oversight like institutional review boards (IRBs) which take a Western approach.

Methods: A developmental team gathering was held in Elsipogtog First Nation, Mi'kma'ki (New Brunswick, Canada). The purpose of the meeting was to develop appropriate protocols for ethically collecting data about Indigenous Gender Diverse experiences within ceremony. The team gathered in ceremony over seven days including; circles, sweats, sacred fires, drumming, and traditional basket making facilitated by Indigenous Elders and Knowledge Holders.

Results: Drawing on the team dialogue, we identified key considerations including: centering Indigenous protocols; ensuring voluntary informed consent and self-determined participation; providing holistic care and safety through community; protecting traditional knowledge; and reconciling flexibility of land-based ceremonies with institutional demands for details. Dialogue excerpts demonstrate commitments to voluntary participation and continuity of consent, determined by individual comfort levels rather than rigid protocols. Recommendations were drawn from the dialogues to assist the team in strategically planning for ethics submission to an institutional review board.

Conclusion: Positioning Indigenous oversight as the primary ethical review enables research grounded in reciprocal care and self-determination. We encourage creative translation aligned with the values of reciprocity and transparency, open spaces in regulatory systems to conduct research in ethical partnership rather than opposition with Indigenous communities. Recommendations uphold Indigenous ethical frameworks while translating core protections to align with IRB priorities like review of risk and benefits. This negotiation illustrates pathways for conducting human subjects research in academic institutions in ethical partnership with Indigenous communities.

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Enhancing Access to HIV Testing in Northern, Remote, and Isolated Communities through Community-Led, Decentralized Approaches in Canada

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Introduction

Achieving equitable access to diagnostic testing, especially in Northern, Remote, and Isolated (NRI) communities in Canada, has long been a challenge, particularly for Indigenous populations. The Health Equity, Access, and Response (HEAR) program, formerly known as the NRI initiative, emerged during the COVID-19 pandemic to support community-led testing programs supporting Indigenous communities' rights of self determination. Initially focused on COVID-19, HEAR has expanded its scope to include community-led testing for HIV and other Sexually Transmitted and Blood-Borne Infections, aiming to address the longstanding testing accessibility issues in NRI communities.

Methods

The HEAR program, based at the National Microbiology Laboratory Branch, validated commercially available molecular and rapid antigen HIV tests suitable for decentralized HIV testing. To facilitate community-based testing, HEAR collaborates closely with communities to identify their specific needs. This support involves shipping necessary supplies, providing training, and offering ongoing quality oversight through quality assurance programming.

Results

The HEAR network has supported community-led COVID-19 testing in 600 NRI sites across every province and territory. Since its expansion to include HIV testing in July 2022, the network has effectively deployed various HIV self-tests and multiplex tests for HIV and Syphilis. This effort has resulted in the establishment of community-based HIV testing sites in four provinces to date.

Discussion

Community-led testing is pivotal for improving public health outcomes, particularly for challenging cases like HIV, where identifying undiagnosed individuals remains a significant hurdle. Prioritizing decentralized testing for HIV ensures accessible diagnostic services at the community level, facilitating prompt infection identification and linkage-to-care. This approach plays a crucial role in safeguarding the health of all Canadians and addressing health disparities in NRI communities.

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Safe Supply at Supervised Consumption Services: Legal and Policy Options

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Background

Given the ongoing public health crisis of drug poisoning deaths, there is growing interest in measures that would facilitate access to a safe supply of quality-controlled substances for those currently risking their lives — a significant proportion of whom are people living with HIV and/or HCV — because they are compelled to secure potentially fatal street drugs. Law and policy play a central role in enabling the effective implementation of safe supply initiatives, including their integration alongside supervised consumption services (SCS).

Description

We examined legal/policy options to facilitate safe supply via SCS, informed by a synthesis of the available evidence, the expert perspectives of people who use drugs, service providers (including those working in SCS), safe supply prescribers, policymakers, and lawyers, and human rights standards.

Lessons learned

Grey literature and key informant interviews described three main barriers to implementing safe supply at SCS:

1. Prescribed-safe supply is limited by lack of available/willing prescribers, resulting in long waitlists and limited capacity to serve high volumes of participants.

2. There is need for a greater variety of non-medical safe supply through co-ops, compassion clubs, and additional community-based options.

3. The selection of drugs available is inadequate, with no prescribed safe supply options for people who smoke their drugs or use stimulants.

Next steps

A range of legal/policy responses are possible to facilitate safe supply at SCS, requiring efforts from federal and provincial policymakers and colleges overseeing regulated health professionals. These include regulatory college guidance, delegated orders or medical directives, expanding the class of practitioners and prescribers, scaling up other operational models, broadly exempting SCS from federal drug control legislation, and expanding coverage of safe supply options in provincial public drug plans. These options will be shared with policymakers to sustain pressure on them to facilitate the scale-up of this lifesaving intervention.

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"Establishing the EcoHIV+ Pregnancy Model to Determine Fetal-Maternal Outcomes"

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Introduction: In 2021, approximately 1.3 million pregnant women were living with HIV, of which an estimated 81% received antiretroviral drugs (ARVs) for their health and to prevent perinatal HIV transmission. Although the benefits of ARVs outweigh any risks, several reports show adverse effects of ARV treatment during pregnancy. Previous studies from our group have validated a mouse pregnancy model to investigate the impact of in-utero ARV exposure on fetal-placental development, demonstrating direct parallels with clinical observations. The current model lacks HIV infection, limiting the ability to investigate the impact of both virus and drug on pregnancy outcomes. This study aims to establish a murine model of HIV infection (EcoHIV) in pregnancy.

Methods: EcoHIV-infected pregnant mouse model; 7-week-old female C57BL/6 were divided into two arms: (A) EcoHIV (B) PBS. Treatment group (A) were intraperitoneally (I.P) injected with EcoHIV virus, and control group (B) were I.P injected with PBS only. Mice were mated at 9 weeks of age. Mating was confirmed by presence of plug, and pregnancy was confirmed by weight gain of >1.5g by gestational day (GD) 11.5. Mice were sacrificed at two-time points – GD14.5 and GD18.5. Fetal and placenta weights were recorded as well as fetal viability and number of resorptions. Tissue was collected for further analyses.

Results: Successful induction of infection was confirmed through p24 (viral protein) detection in spleen lysates by western blot analysis. No significant differences in fetal or placental weights were observed at GD14.5 between groups. At GD18.5, significantly lower fetal weights were seen in EcoHIV infected mice as compared to controls.

Significance: Establishing a mouse pregnancy model that incorporates HIV infection in addition to ARV treatment will greatly enhance our abilities to understand the impacts of perinatal HIV and ARV exposure on fetal development and long-term health outcomes of these children.

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Impact of mental health and substance use comorbidities on healthcare utilization in persons with HIV: administrative data in Alberta, Canada

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Background: A few large-scale US-based and Canadian studies have shown that among persons with HIV (PWH), mental health and substance use comorbidities can increase the likelihood of emergency department (ED) and hospital visits. However, there is no information about the reasons for the increases in hospital-based healthcare utilization and the associated costs to the healthcare system. Reasons of those visits are needed to manage the healthcare costs in PWH with mental health/substance use comorbidities (PWH-MH). We hypothesized that PWH-MH will have increased rates of hospital-based treatment utilization compared to PWH without (PWH-only), which will result in higher costs. Reasons for higher healthcare utilization in PWH-MH will include but not be limited to acute mental health-related crises, e.g., suicide attempts.

Methods: Alberta Health Service data (practitioner claims) from April 1, 2002 to March 31, 2020 were consulted to identify PWH-MH and PWH-only. Hospital and ED utilization (discharge and ambulatory care records) were inspected over a three-year follow-up period with respect to visit frequency, duration, reasons, and costs.

Results: PWH-MH visited the ED or hospital (78%) more often than PWH-only (48%; $p<0.01$). This resulted in an average hospitalization costs of $58190 (98361) in PWH-MH compared to $35031 (64203) in PWH-only ($p<0.01$). Higher visit rates in PWH-MH compared to PWH-only included increased ED-visits for mental-health-related reasons (28% vs. 4%), physical conditions typically treated in ambulatory care (30% vs. 14%), physical trauma (45% vs. 19%) and medication complications (19% vs. 3%). ED admissions after acute mental-health crises due to self-harm or suicide attempts were rare but if observed, they only occurred in PWH-MH (2%).

Conclusion: Our outcomes highlight the significant burden of healthcare utilization and costs in PWH-MH compared to PWH-only. It emphasizes the need for targeted interventions to manage mental health/substance use comorbidities, potentially reducing healthcare utilization and associated costs among this population.

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Safer supply and COVID-19: Client and service provider's perspectives on implementation challenges and benefits during the COVID-19 pandemic in Ontario, Canada

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Introduction: We explore COVID 19 pandemic impacts on safer opioid supply programs (SSPs) to identify structural factors that sustain or impede access to crucial HIV prevention and harm reduction services for people who use drugs during public health emergencies.

Methods: During 2021, we conducted semi-structured interviews and demographic surveys with service providers (n=27) and clients (n=52) from four Ontario SSPs about program implementation. Thematic analysis was conducted.

Results: Quick SSP service adaptations led to reduced: crowding in waiting rooms, appointment wait times, appointment frequency, and public transit trips which in turn reduced COVID-19 exposure. Data show that SSP clients often reduced or stopped injecting drugs, thereby reducing their risk of HIV transmission. Access to harm reduction supplies and HIV medication prescriptions were maintained, but appointments and pickups were less frequent. Clients with stable telephone/computer access and housing were better able to access and enrol in programs with pandemic-related changes in hours of operation and admission processes. Some programs increased outdoor outreach to establish/maintain connections with clients and prioritized those with untreated HIV and pregnancy for enrolment. Advocacy ensured that clients were given priority access to COVID 19 vaccines. Prescribers and staff played important roles in providing up-to-date and accurate information about COVID for clients. Public health restrictions (e.g., indoor capacity, distancing) resulted in reductions in new enrolments, particularly for newer programs. Reduced staffing created stressful situations and burnout.

Discussion: Sustaining access to harm reduction and HIV prevention services during emergencies depended on harm reduction clinician/worker ingenuity, willingness to quickly adapt, flexible service guidelines, and forceful advocacy on behalf of clients. Access to telephones and the internet create barriers for more isolated clients or those newly in need of prevention services. Strategies to avoid staff burnout are especially needed during emergencies to maintain services.

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A Prick of the Finger: Evaluating Dried Blood Spot Sampling for HIV, Hepatitis C, and Syphilis Testing in British Columbia

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Dried blood spot (DBS) samples can diagnose new HIV and hepatitis C (HCV) infections and screen for syphilis by using blood from a finger-prick onto paper that is dried and mailed to a laboratory for testing. DBS can improve access to testing, particularly for rural and remote communities, as sampling can be performed outside a laboratory. BC, with other provinces, has accepted confirmatory results from DBS samples for HIV and HCV positive case-definition. DBS sampling started in BC in 2019 but the BCCDC launched a pilot DBS process in 2021. A mixed methods evaluation was conducted of implementation processes at pilot sites between 2019-2022 using provincial data, service provider semi-structured interviews and a survey, and a focus group at a community-health agency, including peer workers to explore pilot strengths, limitations, and outcomes. 335 DBS samples submitted, 70% from Northern Health Authority. When comparing DBS and phlebotomy sampling, HIV and HCV antibody positivity rates were ten-times higher with DBS, similar positivity rates for syphilis antibody, but HCV RNA positivity was higher for phlebotomy samples. DBS sampling is a useful, low barrier tool to engage people who are not being served by standard-of-care testing, including people who use substances, have experienced discrimination in healthcare settings, or do not have access to phlebotomists. While an ordering provider is required for DBS to support linkage to care, non-healthcare providers, such as peer workers, can take samples. The biggest challenge was turnaround time for results: average 33-34 days, compared to 3.5-6 days for phlebotomy tests, increasing the risk of losing people for follow-up. The results suggest DBS can reach populations at higher risk for HIV, HCV, and syphilis in less urban areas with a high-level of satisfaction. The evaluation provides recommendations for improving the current DBS process and for a potential future DBS provincial program.

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Geospatially Informed Pop-Up Interventions: Enhancing Accessibility of Harm Reduction Services Through Naloxone Training in Regina, Saskatchewan

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Background: Saskatchewan faces a syndemic involving disproportionately high HIV incidence (more than 4x the national average) and elevated drug toxicity overdose deaths (3rd worst in Canada). From 2010 to 2019, injection drug use accounted for ~65% of new HIV cases in the province. This syndemic underscores the need for harm reduction interventions like Naloxone training. Regina, Saskatchewan's predominantly non-walkable infrastructure creates need for pop-up services.

Methods: Areas with high needle prevalence in Regina were identified using the geospatial platform reportneedles.ca. Four Naloxone trainings were conducted in these areas between October 2023 and November 2023, focusing on fentanyl overdose risks, recognizing overdose symptoms, responding to overdose, and Naloxone administration. A post-training survey was conducted assess training knowledge.

Results: All participants completed the training and post-training survey (n=30). Participants ranged in age (M = 39.6, SD = 13.4), gender (53.3% cisgender women, 30.0% cisgender men, and 6.7% non-binary), and ethnicity (56.7% Indigenous and 36.7% White). The majority of participants (75.6%) lived within a 15-minute walk of the trainings. When assessing participant knowledge after training, 82.8% understood Naloxone's onset time, and 65.6% knew its duration. Nearly all (93.1%) participants could identify Naloxone administration methods. In recognizing opioid overdose risks, most were able to identify factors that increase the risk of opioid overdose. Most could identify overdose indicators, including blue discoloration (93.1%), slow/shallow breathing (86.2%), loss of consciousness (82.8%), and unresponsiveness (82.8%).

Conclusions: This initiative demonstrates preliminary feasibility and promise of geospatial technology with community-based health interventions in Regina. The targeted approach, informed by geospatial data, enhances the accessibility of harm reduction services like Naloxone training. The diverse participant demographics and improved knowledge of overdose prevention indicate this program's potential community impact. Leveraging geospatial data offers a pragmatic and feasible framework for enhancing service accessibility and addressing public health challenges applicable in various contexts.

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Learning From Newly HIV Diagnosed People in British Columbia: Findings from a Community-Based Qualitative Study

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Background: Systemic gaps in HIV prevention, diagnosis, and care persist in British Columbia (BC) that result in ongoing HIV transmission, particularly among communities that experience intersectional social inequities. We sought to learn how HIV prevention, diagnosis, and care can be improved from the perspectives of those newly diagnosed with HIV.

Methods: Using a community-based approach and applying GIPA/MEPA principles, we conducted in-depth peer-led interviews with people in BC who were diagnosed with HIV between 2018-2023. Eligible participants were aged 18+ and were recruited using flyers (in-person and online) in partnership with local HIV service organizations and care providers. Interviews were conducted in-person or online in English (n=20) or Spanish (n=11), audio-recorded, transcribed, and thematically analyzed by peer researchers.

Results: Most participants (27/31) were Two-Spirit, gay, bisexual, and queer men or non-binary people, about a third were white (n=12) and another third Latinx (n=12), and ages ranged from 24-62. Participants highlighted barriers to HIV education, PrEP access, and testing services, which were amplified due to structural barriers (e.g., immigration status, limited English fluency), and emphasized the importance of trauma-informed diagnosis. Participants shared positive experiences with their HIV care providers but highlighted the need to address care across different regions of BC, HIV stigma, and access to peer support. Participants highlighted opportunities to enhance HIV care by better integrating STI prevention, including doxy PEP/PrEP, and improving the availability of long-acting treatment.

Discussion: Learning from people newly diagnosed with HIV in BC highlights how HIV responses must address structural drivers and inequities and how resultant gaps in HIV prevention, diagnosis, and care can be addressed. Potential enhancements to BC's HIV care cascade should include multilingual HIV education, improved access to long-acting treatment, and services that are tailored to communities that are disproportionately impacted by HIV.

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Rethinking HIV-PrEP delivery in Canada: Marginalized 2SGBQM's views on accessing injectable cabotegravir

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Background
Oral HIV pre-exposure prophylaxis (PrEP) has reduced HIV incidence among Two-Spirit, gay, bisexual, queer and other men who have sex with men (2SGBQM) in Canada, but some marginalized subgroups remain under-represented relative to need. Ahead of the regulatory approval of long-acting injectable cabotegravir (CAB-LA) in Canada, PrEP delivery models must be examined to minimize barriers to PrEP access and use.

Methods
'The Future of PrEP is Now' is a community-based research project examining CAB-LA access needs and preferences among Canadian 2SGBQM. We conducted 10 focus groups and 9 semi-structured interviews with 2SGBQM across Canada, 84rioritizing participants meeting PrEP guideline indications and who are: Indigenous and Two-Spirit; African, Caribbean or Black; other persons of colour; transgender or non-binary; residents of remote/rural areas; and people who use substances. We analyzed qualitative data using reflexive thematic analysis to understand acceptability, community needs, and preferences related to CAB-LA.

Results
Participants (N=42; 76% with current/previous PrEP experience) were positive about CAB-LA, citing its ease of adherence compared to oral PrEP. However, many discussed the inconvenience of CAB-LA's two-monthly injection cycle, requiring additional visits to healthcare providers annually on top of the quarterly monitoring visits currently recommended for oral PrEP. Also of concern was the cost of CAB-LA, especially in provinces without publicly-funded PrEP programs. Participants were interested in PrEP (oral and CAB-LA) delivery through an expanded range of providers, including sexual health clinics, community organisations, pharmacies, or primary care providers (PCPs), though complaints about PCPs' unfamiliarity with PrEP were common. Finally, 2SGBQM described current PrEP access pathways as overly complicated, desiring more integrated approaches to PrEP consultations, delivery and monitoring.

Conclusion
Recommendations for improving access to CAB-LA include expanding the range of service providers able to administer PrEP, aligning monitoring frequency with CAB-LA administration, integrating monitoring within PrEP delivery, and expanding universal coverage.

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Ongoing Advocacy Efforts to End HIV Criminalization in Canada through Federal Law Reform

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Background: The criminalization of HIV non-disclosure is an ongoing concern for PLHIV. Under Canadian law, PLHIV face prosecution for serious criminal offences in circumstances where they did not disclose their HIV status to a partner before sex that poses a "realistic possibility of HIV transmission". The overly broad interpretation of this legal standard by prosecutors and courts has created an enduring disconnect between scientific consensus regarding HIV transmission and Canadian criminal law.

Description: Such criminalization poses a number of challenges to human rights and public health, including perpetuating stigma, discrimination, and other harms against PLHIV. Incremental and piecemeal efforts to address this issue through prosecutorial policies and courtroom advocacy have had a modest but insufficient impact. A consensus has emerged at the community level that Criminal Code reform is required to align the law with the science and mitigate the harms of criminalization. Meanwhile, PLHIV face continued risk of criminal liability even in cases where no transmission occurred, where there was no intent to transmit, and even where reasonable precautions were taken to limit potential transmission.

Lessons learned: Criminal Code reform to limit HIV criminalization continues to be a key demand from community members and has been recognized as necessary by important governmental stakeholders.

Conclusions/next steps: It has been a year since the federal government concluded public consultations regarding Criminal Code reform. The Canadian Coalition to Reform HIV Criminalization (CCRHC) issued a widely-endorsed Community Consensus Statement in 2022 that outlines key elements for any proposed Criminal Code reform. Despite persistent advocacy efforts and collaboration offered by the CCRHC to assist the government in advancing law reform, a bill has yet to be introduced. Community advocacy will be essential if Parliament is ever to adopt reforms that significantly restrict HIV criminalization in line with science, human rights, and public health concerns.

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Les 86eductions informelles de 86eduction des méfaits en 86educti de chemsex : comment renforcer les connaissances et s'appuyer sur les pairs pour 86eduction des 86eductions adaptées ?

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Contexte : le chemsex est de plus en plus documenté parmi les hommes de la diversité sexuelle et de genre (HDSG), en particulier les motivations derrière cette pratique et ses 86eductions8686 potentielles. Les HDSG mettent en œuvre une série de 86eductions informelles de 86eduction des méfaits. Cependant, on sait peu sur la manière don't ces 86eductions sont utilisées pour 86eduction des services adaptés.

Objectifs : 1) identifier les pratiques de 86eduction des méfaits, sur le plan sexuel comme sur celui de la 86eductions8686, mises en œuvre par les HDSG qui pratiquent le chemsex dans trois villes québécoises; 2) discuter de la manière don't ces 86eductions pourraient être utilisées pour 86eduction des services adaptés de 86eduction des méfaits.

Méthodologie : 64 personnes ont participé à des entretiens semi-structurés d'une durée 86educti de 90 minutes sur leurs 86eductions86 en matière de chemsex. Une analyse thématique a été effectuée.

Résultats : quatre 86educt ont été 86eductions : 1) les 86eductions pour réduire le 86educt de 86eductions le VIH ou d'autres ITSS, comme l'utilisation d'une PrEP; 2) la sécurité et la qualité des produits, souvent évaluée par la confiance accordée aux vendeurs; 3) l'apprentissage avec les pairs des techniques pour consommer efficacement et en toute sécurité ; 4) les 86eductions pour gérer les effets secondaires de certaines substances, comme l'utilisation d'autres substances pour dormir ou manger après avoir pris des stimulants.

Discussion : les HDSG développent et partagent de manière informelle des 86eductions de 86eduction des méfaits. Certaines fondées sur des connaissances scientifiques et d'autres non. L'utilisation de la PrEP et du dépistage pourrait être renforcée. Le 86edu des pairs est crucial dans la transmission de ces 86eductions. Il est 86eductions de renforcer les connaissances des HDSG et de mobiliser les 86educti des pairs pour mettre en place des services de 86eductions des méfaits.

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Estimation of the number of gay, bisexual, and other men who have sex with men in Ontario who are eligible to take HIV pre-exposure prophylaxis (PrEP)

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Introduction: Estimating the number of gay, bisexual and other men who have sex with men (GBMSM) eligible for HIV pre-exposure prophylaxis (PrEP) provides insight into estimating projected uptake and potential costs of a fully publicly-funded PrEP program in Ontario.

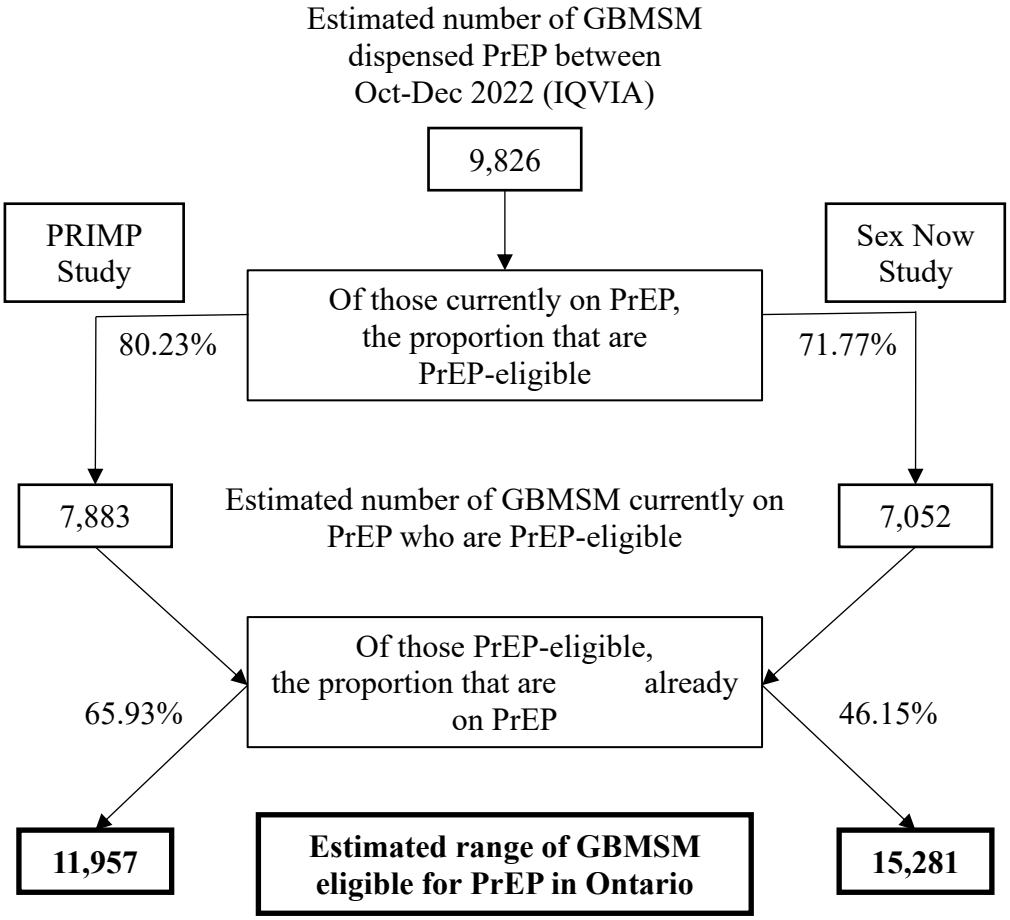
Methods: We modeled the number of PrEP-eligible GBMSM in Ontario. Using 2022 aggregated dispensation-level data from commercially available pharmacy data, we estimated the number of males (GBMSM proxy) currently using PrEP in Ontario. We then applied two proportions from two Ontario GBMSM surveys, Sex Now (June-Sept 2022, n=944) and PRIMP (July-Dec 2022, n=872), to account for 1) individuals on PrEP but not PrEP-eligible and 2) individuals PrEP-eligible but not on PrEP. PrEP-eligibility criteria included having condomless anal sex AND EITHER a bacterial STI (chlamydia/gonorrhea/syphilis) OR a HIRI-MSM score >10. As British Columbia has a universal PrEP program, a sensitivity analysis applied the proportion of GBMSM using PrEP in BC to Ontario's estimated GBMSM population.

Results: An estimated 9,826 GBMSM were using PrEP between Oct-Dec 2022. 11,957-15,281 GBMSM are estimated to be eligible for PrEP in Ontario (Figure 1); roughly 21.7%-55.5% more than estimated number of GBMSM currently on PrEP. Sensitivity analysis yielded PrEP-eligible estimates within the modeled range (12,317).

Conclusion: These estimates indicate moderate current PrEP uptake based on modeled PrEP-eligibility criteria and are essential for cost-analysis and uptake projections for universal PrEP in Ontario. Important to note this is a point in time and not all eligible will take PrEP and not all on PrEP meet the criteria stated above.

Supporting Document

Figure 1: Modeling the estimate number of gay, bisexual and other men who have sex with men (GBMSM) eligible for pre-exposure prophylaxis (PrEP) in Ontario using PrEP status and sexual behaviour PrEP-eligibility indicators from two GBMSM studies in Ontario.


Estimated number of GBMSM dispensed PrEP between Oct-Dec 2022 (IQVIA)
9,826
PRIMP Study
Sex Now Study
Of those currently on PrEP, the proportion that are PrEP-eligible
80.23%
71.77%
7,883
Estimated number of GBMSM currently on PrEP who are PrEP-eligible
7,052
Of those PrEP-eligible, the proportion that are already on PrEP
65.93%
46.15%
11,957
Estimated range of GBMSM eligible for PrEP in Ontario
15,281

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Identifying Syndemic Factors and Their Effect on HIV Sexual Risk Behaviour Among Gay and Bisexual Men Who Have Sex With Men in Vancouver, Toronto and Montreal

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Introduction: Numerous studies have examined the effect of syndemics on HIV risk. However, there is no standard approach for identifying the syndemic factors most important in HIV risk. We aimed to (1) identify syndemic factors associated with HIV sexual risk behaviour among HIV-negative gay, bisexual and other men who have sex with men (GBM) and (2) apply syndemic theory to examine the syndemic factors' influence on HIV sexual risk behaviour.

Methods: We used baseline data from Engage, which recruited sexually-active GBM through respondent-driven sampling in Montreal, Toronto and Vancouver. We defined HIV sexual risk behaviour as condomless anal sex with at least one of the last five partners where the partner was HIV-positive with detectable viral load or had unknown HIV status, and the participant was not using HIV pre-exposure prophylaxis. We explored pairwise associations between syndemic factors, sociodemographic characteristics and HIV sexual risk behaviour using Somers' D statistics. We reduced the number of syndemic factors using a variable reduction method and conducted a mediation analysis using a path model.

Results: The final sample included 1458 GBM. Addressing objective 1, we identified childhood sexual abuse (CSA), intimate partner violence, transactional sex, polysubstance use and sexual compulsivity as syndemic factors associated with HIV sexual risk behaviour. Using these factors, we conducted the syndemic analysis (objective 2). We found a statistically significant direct effect for CSA (c' = 0.09, 95% CI 0.01– 0.17) and total effect (c = 0.14, 95% CI 0.06 – 0.21) of CSA on HIV sexual risk behaviour. The combined mediated effect of the other syndemic factors was 41% of the total effect of CSA on HIV sexual risk behaviour.

Conclusions: We identified the most influential syndemic factors associated with HIV sexual risk behaviour, which can help determine the primary focus of interventions to reduce HIV risk among GBM.

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Sex hormones impact the systemic immune response differently according to HIV status and sex work duration

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Background: During vaginal intercourse, women are twice as likely to be infected with HIV versus their male partners. Many factors drive this, including biological ones. Sex hormones, progesterone and estrogen interact closely with immune cells. The menstrual cycle or use of hormonal contraception could modify the immune response and, therefore, alter the risk of HIV acquisition. This study will explore immune changes during the menstrual cycle or when using the hormonal contraception depot-medroxyprogesterone acetate (DMPA) in female sex workers (FSWs).

Methods: FSWs from the Sex Worker Outreach Program in Nairobi, Kenya were enrolled in 4 groups: 1) women living with HIV (WLWH), 2) HIV uninfected, new to sex work (<3 years, NN) and not using hormonal contraception (no-HC), 3) HIV uninfected, >7 years in sex work HIV-exposed seronegative (HESN) and no-HC, and 4) HIV uninfected NN using DMPA contraception. Mucosal and blood samples were taken during the follicular and luteal phases of the menstrual cycle. Plasma Sex hormones and 22 cytokines/chemokines were assessed using Millipore bead array in plasma and CVL. T cells from the genital tract and blood and NK cells from the blood were phenotyped using flow cytometry. Data was analyzed using a mixed effects model controlling for age and menstrual cycle length.

Results: In HESN but not NN, we observed increases in the proportion of NK expressing the activation marker NKG2D during follicular phase. DMPA use was associated with higher CD4 (follicular:p=0.011, luteal:p=0.027) and lower CD8 (follicular:p=0.005, luteal:p=0.042) T cells compared to NN no HC. In WLWH, Tregs were lower during luteal phase (p=0.03).

Conclusion: We observed different immune profiles according to menstrual cycle phase, DMPA, HIV status, and sex work duration. This provides insights into the impact of sex hormones and hormonal contraception on HIV acquisition risk and transmission in the key population of sex workers.

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Monkeypox Virus Infection of Human Astrocytes Causes Gasdermin B Cleavage and Pyroptosis

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Monkeypox virus (MPXV) infections in humans cause neurological disorders while studies of MPXV-infected animals indicate that the virus penetrates the brain. Pyroptosis is an inflammatory type of regulated cell death, resulting from plasma membrane rupture (PMR) due to oligomerization of cleaved gasdermins to cause membrane pore formation. Herein, we investigated the human neural cell tropism of MPXV compared to another orthopoxvirus, vaccinia virus (VACV), as well as its effects on immune responses and cell death. Astrocytes were most permissive to MPXV (and VACV) infections, followed by microglia and oligodendrocytes, with minimal infection of neurons based on plaque assays. Aberrant morphological changes were evident in MPXV-infected astrocytes that were accompanied with viral protein (I3) immunolabelling and detection of over 125 MPXV-encoded proteins in cell lysates by mass spectrometry. MPXV- and VACV-infected astrocytes showed increased expression of immune gene transcripts (IL12, IRF3, IL1B, TNFA, CASP1, and GSDMB). However, MPXV infection of astrocytes specifically induced proteolytic cleavage of gasdermin B (GSDMB) (50kDa), evident by the appearance of cleaved N-terminal-GSDMB (37 kDa) and C-terminal-GSDMB (18 kDa) fragments. GSDMB cleavage was associated with release of lactate dehydrogenase (LDH) and increased cellular nucleic acid staining, indicative of PMR. Pre-treatment with dimethyl fumarate reduced cleavage of GSDMB and associated PMR in MPXV-infected astrocytes. Human astrocytes support productive MPXV infection, resulting in inflammatory gene induction with accompanying GSDMB-mediated pyroptosis. These findings clarify the recently recognized neuropathogenic effects of MPXV in humans while also offering potential therapeutic options.

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Dynamics of T-cell responses to COVID-19 vaccination in people living with HIV

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Background: Vaccine-elicited immune responses can be impaired among people living with HIV (PLWH). To examine this for COVID-19, we evaluated SARS-CoV-2 spike-specific T-cell responses after two, three and four COVID-19 vaccine doses, with or without breakthrough infection, in PLWH whose viremia was well-controlled on antiretroviral therapy.

Methods: CD4+ and CD8+ T-cells reactive to overlapping peptides spanning the ancestral SARS-CoV-2 spike protein were quantified in 50 PLWH and 87 controls without HIV using an activation induced marker assay based on co-expression of CD137/4-1-BB and CD134/OX-40 (for CD4) or CD69 (for CD8). Antibody-mediated neutralization was quantified using a live SARS-CoV-2 infection assay. SARS-CoV-2 infection was assessed by seroconversion to nucleocapsid (N) antigen and self-reported PCR or rapid test results. All participants were COVID-naive until at least one month after their third vaccine dose. T-cell responses were further assessed in 21 PLWH who experienced their first SARS-CoV-2 infection after this time.

Results: CD4+ and CD8+ T-cell frequencies did not differ between PLWH and controls after the second vaccine dose. The third dose boosted T-cell frequencies in both groups (all $p<0.0001$), but CD8+ T-cell responses were modestly lower in PLWH at this time ($p=0.02$), a result that remained consistent in multivariable analyses ($p=0.045$). T-cell frequencies increased further in PLWH who subsequently experienced a breakthrough infection (all $p<0.0001$). CD8+ T-cell responses remained higher in these individuals even after a fourth vaccine dose ($p=0.03$), though CD4+ responses were similar to those of SARS-CoV-2-naive PLWH at this time. T-cell responses did not correlate with neutralizing antibody titers, nor predict breakthrough infection after multivariable correction. In multivariable analyses, only younger age associated with increased infection risk, consistent with higher infection rates among younger Canadians during the initial Omicron waves.

Conclusion: PLWH mount strong T-cell responses to COVID-19 mRNA vaccines and boosters, which may be enhanced following breakthrough infection.

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Packaging an Immunostimulatory RNA Motif into an HIV/Virus-like Particle Platform to Enhance Targeted HIV Latency Reversal Effectiveness.

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An HIV/virus-like particle formulation (HLP) presented by MDDCs efficiently induces HIV latency reversal and release from CD4+ T cells harboring latent HIV in PLWH and receiving ART during early or chronic infection. For improved safety, HLP production was derived from near full-length (nfl) HIV-1 genome mutated to prevent genomic RNA packaging (HIV-1_nfl_ΔΨ_gRNA). However, in absence of gRNA, the HLP lost approximately 2-fold latency reversal related to an RNA adjuvant, TLR response in the CD4+ T cells. Thus, we explore two distinct ways to re-introduce an RNA adjuvant effect to HLP to enhance latency reversal, one involving the exogenous addition and the other preferential encapsidation of an optimized RNA adjuvant sequence into the HLP. For the former, the "Multi" RNA adjuvant containing 100x4 repeats of optimized RNA sequences for type 1 interferon and TNFα response was complexed into DOTAP vesicles. For the latter, the same optimized "Multi" RNA adjuvant sequence was placed downstream of the HIV-1 Ψ RNA packaging element with the HIV-1 Genome RNA Packaging Enhancer (GRPE) element to produce "Multi-Ψ-GRPE". For optimal encapsidation of the "Multi-Ψ-GRPE" RNA adjuvant in the HLP and almost complete exclusion of remnant gRNA (HIV-1_nfl_ΔΨ_gRNA), a 4:1 plasmid ratio expressing the "Multi-Ψ-GRPE" versus the HIV-1_nfl_ΔΨ_gRNA was used. Testing immunostimulatory and latency reversal responses, both forms were added to PBMCs and to THP1-Dual™ cells to measure immunoinflammatory markers and TLR pathways through NFkB and IRF7 responses. We found that the exogenous form showed a greater response than the encapsidated form. However, in PBMCs, the encapsidated adjuvant had a targeted effect to HIV-specific CD4+ T cells, i.e. found to harbor the latent HIV majority. In contrast, the exogenous form might induce hyperimmune activation with the lack of specific cell targeting at the site of future intramuscular injections for treatment. Animal models are now being used to test this hypothesis.

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Circulating Acyl-CoA-Binding Protein impedes T-cell function in people living with HIV on ART

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Background
Autophagy and oxidative phosphorylation allow efficient anti-HIV T-cell responses, notably through IL-21 production by anti-HIV CD4 T-cells, which stimulates anti-HIV CD8 T-cells. Extracellular Acyl-CoA-Binding Protein (ACBP) inhibits autophagy, tricarboxylic acid (TCA) cycle and oxidative phosphorylation in mouse models. Herein, we assessed the levels of circulating ACBP and its influence on T-cell function in people living with HIV (PLWH) on antiretroviral therapy (ART).

Methods
Plasma ACBP and cytokines were quantified by ELISA in 50 PLWH on ART (mean duration 14.7 years) and 30 uninfected controls with similar age. Metabolomic analyses were performed on serum samples by GC-MS (10 participants with high and low ACBP). In vitro, recombinant ACBP (recACBP) was added at concentrations up to 10µg/mL on PBMCs from PLWH on ART and controls. T-cell responses were assessed by flow cytometry.

Results
ACBP levels were higher in PLWH on ART compared to controls (median 127.5 vs 78.1 ng/mL, p=0.03), independently of age and sex.
In ART-treated PLWH, plasma ACBP levels were not associated with CD4 counts. However ACBP levels correlated positively with plasma levels of G-CSF, IFN-α2, IFN-γ, and IL-1β ($r>0.3$, $p<0.05$ for all), and inversely with plasma IL21 levels ($r=-0.54$, $p<0.01$).
PLWH with high plasma ACBP had higher serum levels of TCA intermediates glutamate (2-fold, p=0.02) and α-ketoglutarate (1.5-fold, p=0.09), respectively.
Addition of recACBP to PBMCs stimulated with anti-CD3 antibodies or HIV Gag, Nef and Env peptides, decreased IFN-γ, IL-2 and TNF-α production in CD4 and CD8 T-cells ($p<0.03$ for all). Upon anti-CD3 stimulation, IL-17A and IL-21 production were also decreased in CD4 T-cells while IL10 levels remained unaffected.

Conclusion
Higher plasma ACBP levels in ART-treated PLWH were associated with inflammation, unfit metabolism, and T-cell dysfunction. ACBP directly impedes polyclonal and anti-HIV T-cell functions, compelling the development of circulating ACBP inhibitors to improve anti-HIV T-cell responses in PLWH.

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Differences in neuromotor behaviour based on NRTI backbone in mice exposed in-utero to PI or INSTI-based antiretroviral therapy

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Introduction: Treatment of HIV using combination antiretroviral (ARV) therapy (ART) has been pivotal in reducing perinatal transmission. While most children who are HIV-exposed but uninfected (cHEU) remain in good health, they are at higher risk for neurodevelopmental impairments. We have developed mouse models of in-utero ARV exposure to understand the effects of different ARVs on the fetal development and subsequent neurodevelopmental and motor outcomes. Here, we compare the impact of in-utero exposure to protease inhibitor (PI)-based ART (ritonavir-boosted atazanavir, ATV/r), or integrase strand transfer inhibitor (INSTI)-based ART (dolutegravir, DTG) administered with either the dual NRTI backbone abacavir/lamivudine (ABC/3TC) or tenofovir/emtricitabine (TDF/FTC).

Methods: Plugged C57BL/6 female mice were randomly assigned to one of the five treatment arms, administered at therapeutic doses by oral gavage once daily throughout pregnancy. Treatment arms included: 1) control (water); 2) ABC/3TC+ATV/r, 3) TDF/FTC+ATV/r, 4) ABC/3TC+DTG, 5) TDF/FTC+DTG. Gross and fine motor (coordination and balance) of offspring (males and females) were assessed using the accelerating rotarod test. The striatum region (associated with locomotion) was extracted from the brain and used to study gene expression by real-time quantitative PCR.

Results: Female mice exposed in-utero to regimens containing TDF/FTC (either ATV/r or DTG) showed increased performance in the rotarod test suggesting hyperactivity and/or increased balance and coordination. Mice exposure to regimens containing ABC/3TC (either ATV/r or DTG) performed similar to controls. Gene expression analysis showed changes in neurotransmitter receptors regulating locomotion in the striatum. We found increased subunit (NR2A and NR2B) expression of NMDA glutamate receptors in TDF/FTC+ATV/r exposed mice.

Conclusion: Exposure to TDF/FTC, but not ABC/3TC during pregnancy in mice, regardless of whether the base drug was a PI or INSTI, revealed heightened locomotion and hyperactivity in a sex-dependent manner. These results imply that the choice of NRTI backbone may impact the neurological development of offspring.

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Nef Inhibitors as Adjuvants Towards a Cure for HIV/AIDS

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The HIV-1 accessory protein, Nef, plays a central role in HIV virulence and pathogenesis by impairing T cell activation and maturation, subverting apoptosis, and modulating major histocompatibility complex class I (MHC-I) expression. Following infection and upon interacting with Src family tyrosine kinases (SFK), Nef initiates and misdirects a signaling cascade that leads to MHC-I cell surface down-regulation and sequestration within the trans-Golgi network. Additionally, this also reduces the presentation of MHC-I-restricted HIV-derived epitopes to limit immune recognition and represents a major impediment towards the development of HIV cure strategies. By performing an in silico docking screen, we identified a small molecule inhibitor (H3-1) of the Nef-SFK interaction. Preliminary studies in HIV-infected primary human CD4+ T cells demonstrated that H3-1 addition to ex vivo culture counteracted Nef-dependent MHC-I down-regulation in the absence of cytotoxicity. When testing this Nef-SFK inhibitor in a transgenic mouse model of a HIV/AIDS-like phenotype, H3-1 lead to enhanced cell surface presentation of both total MHC-I and MHC-I presenting a model epitope; despite being rapidly cleared in vivo after oral and intraperitoneal administration as assessed using mass spectrometry. Given the proteolytically-labile peptidic nature of H3-1, we used organic synthesis to generate a peptidomimetic panel of H3-1 analogues predicted to have improved biostability. As expected, ex vivo plasma stability was improved in these analogues and will be further characterized for their in vivo plasma stability in transgenic mice. Using a luciferase-based readout of protein-protein interaction, we have identified two analogues that significantly impair the intracellular interaction of Nef with Hck, a prominent SFK, in live cells for upwards of 24 hours without measured cytotoxicity. The synthesis and characterization of biostable H3-1 analogues that combat Nef-mediated MHC-I down-regulation is an important step towards evaluating the role of Nef-SFK inhibitors as adjuvants within a HIV/AIDS functional cure.

Supporting Document

Syphilis test result, population	Number of syphilis tests (N)	% with same-day HIV test	% with same-day HIV test or +/-28 days	% with a positive HIV test result*
Overall	3,039,209	89.4%	91.2%	
Negative, all	2,954,908	90.1%	91.7%	
Males	1,445,274	89.3%	91.1%	
Females	1,472,370	90.9%	92.4%	
Positive, all	84,301	65.5%	73.2%	1.1%
Males	71,452	67.2%	74.7%	1.2%
Male heterosexual contact	6,226*			0.8%
Male-to-male sexual contact	38,589*			1.2%
Male unknown exposure	7,918*			2.0%
Females	11,962	56.3%	65.2%	0.3%
Active syphilis infection (DFA+/RPR ≥1:8), all	21,369	57.1%	68.7%	2.3%
Males	17,661	57.5%	69.1%	2.7%
Females	3,473	55.8%	67.1%	0.3%
Historical syphilis infection (RPR <1:8), all	62,932	68.3%	74.8%	0.7%
Males	53,791	70.4%	76.6%	0.8%
Females	8,489	56.5%	64.4%	0.3%

*Among syphilis tests with an HIV test on the same day +/-28 days.

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Effects of Antiretroviral Drug Exposure on the Expression and Activity of System L-amino acid Transporters in Human Placental BeWo cells

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Introduction.

Over 1 million pregnant people living with HIV receive antiretroviral therapy (ART) annually. Integrase strand transfer inhibitors (INSTIs) and non-nucleoside reverse transcriptase inhibitors (NNRTIs) are commonly used. While the benefits of ART outweigh the risks, antiretrovirals are associated with adverse birth outcomes and metabolic complications. The Na+-independent System L-amino acid transporters (LAT1,2,4) transfer essential amino acids (mainly leucine) across the placenta and are crucial for proper fetal development. Although lower System L transport activity is noted in pregnancies complicated by fetal growth restriction, these transporters have not been investigated in the context of HIV/ART exposure. We explored the effects of antiretrovirals on the expression and activity of System L transporters using a human placental cell line.

Methods.

BeWo cells were induced to syncytialize with 1µM dibutyryl-cAMP for 24h followed by 24h exposure to INSTIs (dolutegravir, raltegravir, bictegravir, cabotegravir) or NNRTIs (efavirenz) at clinically relevant concentrations. Cytoplasmic and membrane expression of LAT1, LAT2 and LAT4 were quantified by Western blot, normalized to α-tubulin or E-cadherin respectively. System L transport activity was measured by tritium-labelled leucine uptake assays. Data were compared using Student's t-test.

Results.

LAT1 and LAT2 proteins were prominently expressed in the cell membrane while LAT4 was cytoplasmic. LAT1 and LAT2 membrane and LAT4 cytoplasmic protein levels were lower in the bictegravir-treated (C50, Cmax) group compared to control. LAT1 and LAT2 membrane protein levels were lower in the dolutegravir-treated (Cmax) and efavirenz-treated (Cmax) groups compared to control (n=3). Lower leucine uptake was observed in bictegravir-treated cells, correlating with lower levels of System L isoforms.

Conclusions.

Our data suggest that exposure to bictegravir is associated with lower expression and activity of System L isoforms in BeWo cells. Further work is required to understand the impact of INSTI-based ART on placental System L-amino acid transfer and potential impacts on the fetus.

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Efficacy and safety of long-acting subcutaneous lenacapavir in heavily treatment-experienced people with multi-drug resistant HIV: Week 104 results

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Lenacapavir (LEN) is a highly potent, long-acting, first-in-class inhibitor of HIV-1 capsid protein for the treatment of HIV-1 infection in adults with multidrug resistance (MDR) in combination with other antiretrovirals. CAPELLA is an ongoing, phase 2/3 study in heavily treatment-experienced people with HIV-1 with multidrug-resistance. Participants received oral LEN for loading followed by subcutaneous LEN Q6M in addition to an optimized background regimen (OBR). The protocol was amended after week 52 to allow longer follow up; we report W104 results.

Of 72 participants enrolled (36 in each cohort), 25% were female, , median age was 52 years, 64% had CD4 □200 cells/µL, and 46% had HIV-1 resistant to all 4 major classes (NRTI, NNRTI, PI, INSTI). One participant (of 72) decided not to continue in the post-W52 extension. At W104, 62% (44/71) had HIV-1 RNA □50 c/mL via FDA Snapshot algorithm, and 14% (10/71) had HIV-1 RNA □50 c/mL; 24% discontinued for reasons other than lack of efficacy (13/71) or had missing data but were on study drug (4/71). When analyzed as missing=excluded, 81% (44/54) had HIV-1 RNA □50 c/mL. CD4 count increased by a median 97 cells/µL (Q1 to Q3: 18 to 224) Fourteen participants had emergent LEN resistance, 6 of whom subsequently suppressed while continuing LEN. The median (Q1–Q3) duration of follow-up on LEN was 125 (111–140) weeks. One participant discontinued due to injection site nodule at W52 (Grade 1, previously reported); no participant discontinued due to an AE after W52. Most common AEs (excluding injection site reactions [ISRs] and COVID-19) were diarrhea and nausea (19% each, +5% each since W52, respectively). LEN-related ISRs were mostly mild-to-moderate. In people with MDR HIV-1 and limited treatment options, LEN in combination with an OBR was well tolerated and maintained virologic suppression at W104.

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Exploring Trauma Healing Preferences: Findings from the Trauma- and Violence-Aware Care (TVAC) Mixed Methods Survey

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Background: Rates of trauma and/or violence in the lives of women with HIV are high and can have detrimental health and social impacts. To inform the design of trauma/violence healing programs, we surveyed women and gender diverse people to gather insights on the optimal design, delivery, and essential components for effective programs.

Methods: Informed by intersectionality and community-based research approaches, we developed a mixed methods, strengths-based survey. Women and gender diverse people with HIV in British Columbia and Ontario were recruited through clinics, health organizations, and by community research associates (CRAs; women with HIV trained in research). CRAs administered the surveys. Qualitative responses were typed or recorded and transcribed (according to participant preference). In this presentation, we share our preliminary descriptive statistics and content analysis.

Results: 115 women and gender diverse people (82.6% cis, 17.4% gender diverse) participated (median age=49, range=20-81). 77% of participants reported childhood trauma and 96.5% adulthood trauma. Few participants (12.1%) always received the professional support they desired. The top activities participants accessed and would do again for healing included: exercise (94.8%); nature activities (84.3%); art, crafting, and/or art therapy (77.4%); music/music therapy (77.4%); and religious/spiritual engagement (73.9%). Participants felt it was important for programs to: be cost-free (85%); include food (75.7%) and transportation (71.3%); be population-specific [e.g., only women (56.5%) or people with HIV (67.0%)]; involve loved ones (68.7%); and be peer-led or have peer-involvement (80.9%).

Conclusions: Most participants had experienced both childhood trauma (events that could be classified as adverse childhood events; ACE) and adulthood trauma. Professional support options were often inaccessible or unhelpful. Therefore, increased accessibility for diverse TVAC programming that supports healing is urgently needed. Our findings offer crucial insights to shape meaningful trauma/violence healing programs, including the necessary inclusion of women and gender diverse people in their design.

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Impact of Social Factors on Time to HIV Treatment and Viral Undetectability for Migrants Enrolled in a Multidisciplinary Clinic with Rapid, Free, and Onsite B/F/TAF: "The ASAP Study"

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Background

Multidisciplinary care with free, rapid, and on-site bictegravir/emtricitabine/tenofovir alafenamide (B/F/TAF) dispensation may improve health outcomes among migrants living with HIV (MLWH). However, models for rapid B/F/TAF initiation are not well studied among MLWH, and there is limited understanding of how social determinants of health (SDH) may affect HIV-related health outcomes for migrants enrolled in such care models.

Methods

Within a 96-week pilot feasibility prospective cohort study at a multidisciplinary HIV clinic, participants received B/F/TAF for free and rapidly following care linkage. The effect of SDH (i.e., birth region, sexual orientation, living status, education, employment, French proficiency, health coverage, use of a public health facility outside our clinic for free blood tests, and time in Canada) and other covariates (i.e., age, sex) on median time to B/F/TAF initiation and HIV viral undetectability were calculated from care linkage via survival analyses

Results

Thirty-five migrants were enrolled in this study. Median time to B/F/TAF initiation and HIV undetectability was 5 (range: 0-50) and 57 days (range: 5-365), respectively. Those who took longer to initiate B/F/TAF: were less than 35 in age (p-value = 0.002, 95% CI = -1.98 to -0.44); identified as heterosexual (p-value = <0.001, 95% CI = 0.90 to 2.74); had less than university-level education (p-value = 0.003, 95% CI = 0.43 to 2.09); or were unemployed (p-value = 0.021, 95% CI = -1.69 to -0.11). No factor was found to significantly affect participants' time to HIV viral undetectability.

Conclusions

Despite cost-covered B/F/TAF, several SDH were linked to delays in ART initiation. However, once initiated and engaged, MLWH were able to reach HIV undetectability efficiently. Findings provide preliminary support for adopting this care model with MLWH, but concurrently suggest that SDH and other covariates should be considered when designing clinical interventions for more equitable outcomes.

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BYOCP - Build Your Own Care Program: Using Design Thinking Methodology to Develop a Monthly Injectable Cabotegravir/Rilpivirine Program for Vulnerable Patients Living with HIV in London, Ontario

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Background:
In London, Ontario, people living with HIV who experience housing instability and have substance use disorders have challenges with daily antiretroviral medication adherence. Monthly injectable antiretroviral medication offers a possible solution; however, safe delivery of this medication requires a comprehensive care program. Design thinking methodology provides a framework to create an innovative model of care that centers this population's needs and utilizes the local resources available in this setting.

Aim: We describe the design thinking-informed process used for the inspiration and ideation phase of care program design.

Methods:
During the inspiration and ideation phase, we engaged stakeholders to build off of pre-existing care structures and brainstorm new care pathways. In order to build empathy in clinical care design, interviews for end-users were performed with participants enrolled in our pre-existing HIV care programs. Interviews were transcribed and analyzed using thematic analysis.

Results:
Engaged stakeholders include primary care serving vulnerable patients, physicians and outreach workers from the local public health unit, an outpatient pharmacy, psychiatry outpatient teams (ACT), and the local jail.
In total, eleven interviews were conducted with participants enrolled in our pre-existing HIV care program. Themes generated include dissatisfaction with their current daily antiretroviral regimen, while reasons cited include forgetting to take or losing their medications, having them stolen, and that picking up their medications disrupts their lives. Participants were interested in enrolling in a program (Likert Scale: mean 4/5), though anticipated barriers include attending regular appointments, not having a phone, or concurrent competing social factors including lack of housing.

Conclusions:
Design thinking methodology was useful in the early phases in the creation of a care program to safely deliver injectable HIV medication to vulnerable patients. We engaged a diverse set of stakeholders and incorporated the current preferences of our patient population.

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CS3.191

The Community Pop-up Clinic (CPC): HIV Treatment in vulnerable population of people who use drugs (PWUD)

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Background: To address the HIV pandemic, a concerted effort is needed to include vulnerable inner-city residents, many of whom are active drug users, disengaged from care, and facing issues such as housing and financial insecurities. We have evaluated a new model of HIV care using our community pop-up clinic (CPC) as a strategy to identify HIV-infected individuals to engage them in care and maintain them on antiretroviral therapy.

Methods: Weekly events are conducted at places of residence in Vancouver's inner city. Point-of- care testing for HCV and HIV are completed (with phlebotomy performed on site), along with ascertainment of prior HCV or HIV infection status. All individuals in whom this is indicated are then offered access to antiretroviral therapy delivered within a multidisciplinary program with adherence support.

Results: From 01/21 to 11/23, we conducted 125 CPCs (3.5 events/month) evaluating 2111 individuals, 68 (3.2%) of whom tested positive for HIV antibodies, all previously diagnosed with HIV infection and lost to follow up. Of the 68, 45 (66.2%) showed active HCV co-infection. Among HIV-infected subjects, we note median age 50 (25-66) years, 24 (35.3%) female, 11(16.2%) indigenous, and 26 (38.3%) with unstable housing, 28 (41.2%) experiencing recent incarceration, and 26 (38.2%) were active drug users, 25 of whom had a significant opioid overdose in the previous 6 months. Of 68, 45 (66.2%) engaged in long-term care at our center and continued with antiretroviral therapy.

Conclusions: Although we have made significant progress in the control of the HIV pandemic in British Columbia, many inner-city residents have disengaged from care and discontinued antiretroviral therapy. To control disease progression and transmission in this priority population, there is an urgent need to develop and evaluate interventions such as our CPC program to optimize our approach to the diagnosis and treatment of HIV infection in Canada.

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Assessing continuity of care among a prospective cohort of people living with HIV in British Columbia, Canada

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Background: Continuity of care (CoC) has been shown to decrease adverse clinical outcomes and is critical to improving healthcare engagement for people living with HIV (PLWH). This study will characterize and assess correlates with CoC among a cohort of PLWH across BC.

Methods: We recruited 644 PLWH aged ≥19 years in BC between January 2016-September 2018 into the STOP HIV/AIDS Program Evaluation (SHAPE) study using purposive sampling across BC. We collected data regarding socio-demographics, health behaviours, and medical history through interviewer-administered surveys. In this analysis, we characterize HIV-related CoC using a validated scale (HIV Engagement in and Continuity of Care Scale) and utilize a linear regression model to determine factors associated with higher reported CoC scores in the cohort.

Results: Of the 640 PLWH in the SHAPE study who completed the CoC scale, 459 (71.7%) identified as cis-men and the median age was 50 years old (Q1-Q3: 42, 56). Median CoC scores were higher among cis-men when compared to cis-women or Trans/non-binary/2S participants (138 vs 134 vs 132, respectively, p=0.044) and among participants without a history of injection drug use when compared to those reporting use ever or in the past 12 months (141 vs 135 vs 129, p<0.001). In the regression model, higher CoC scores were negatively associated with homelessness in the past 12 months or lifetime homelessness (-6.89, 95% CI: -10.55- -3.23; -4.00, 95%CI: -6.63- -1.36, respectively) compared to those never experienced homelessness and higher everyday discrimination scores (-0.52, 95% CI: -0.63- -0.40). Comparatively, later era of HIV diagnoses (from 2010 onwards) was positively associated with higher CoC scores (5.60, 95%CI: 1.25- 9.95) compared to those diagnosed before 1996.

Conclusions: CoC for PLWH may vary significantly and enhanced supports for long-term survivors of HIV and those facing structural inequities, such as homelessness, may be important to improve CoC.

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Associations of CD4 cell count measures with infection-related and infection-unrelated cancer risk among people with HIV in Ontario, Canada, 1997-2020

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Background: People with HIV are at higher risk of infection-related cancers (e.g., human papillomavirus-related cervical and anal cancers) than people without HIV. The objective of this study was to explore the role of CD4 measures as immune function indicators on infection-related and infection-unrelated cancer risk.

Methods: Participants of the Ontario HIV Treatment Network Cohort Study linked to cancer registry data at ICES (formerly the Institute for Clinical Evaluative Sciences) were included in the study. Incident cancers were ascertained from January 1, 1997 to December 31, 2020 and grouped into infection-related and -unrelated cancers. Competing risk time to event analysis was used to obtain adjusted hazard ratios (aHR) and 95% confidence intervals (CIs). Separate models were conducted for the associations between baseline CD4, nadir, time-updated or current CD4 and CD4:CD8, and cancer incidence rates, stratified by cancer grouping.

Results: 4,771 people with HIV contributed 59,111 person-years of observation. Of the 549 cancers identified, 48.5% were infection-related cancers. The most diagnosed cancers were non-Hodgkin lymphoma, anal, and lung cancer, as well as prostate among males and breast cancer among females. Low baseline CD4 (<200 cells/µL) (aHR 2.08 [95% CI 1.38-3.13], nadir (<200 cells/µL) (aHR 2.01 [95% CI 1.49-2.71]), current CD4:CD8 ratio (<0.4) (aHR 2.02 [95% CI 1.08-3.79]), and current CD4 (aHR 3.52 [95% CI 2.36-5.24]) were associated with an increased hazard rate of infection-related cancer when compared to CD4 counts of at least 500 cells/µL. No associations were observed for infection-unrelated cancers.

Conclusions: Low CD4 counts were associated with an increased risk of infection-related cancer among people with HIV, irrespective of the CD measure used. Early diagnosis and linkage to care and high antiretroviral therapy uptake may improve immune function and could add to other prevention strategies such as screening and vaccine uptake.

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CS3.242

Therapeutic Drug Monitoring of Integrase Inhibitors in Pediatrics

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Background: Therapeutic drug monitoring (TDM) of integrase inhibitors (INIs) is often conducted in the pediatric population but it is unclear if this is needed.

Methods: Retrospective study of data from the Québec Antiretroviral TDM program. Children and adolescents (> 6 weeks of life to < 18 years old) living with HIV who had at least one INI TDM between January 1st 2011 and March 31st 2023 were included. Concentrations at the end of the dosing interval (Ctrough) were extrapolated. Ctrough were therapeutic if: bictegravir ≥0.84 mg/L, dolutegravir ≥0.32 mg/L, elvitegravir ≥0.13 mg/L, raltegravir ≥0.02 mg/L. Dolutegravir Ctrough was considered supratherapeutic if ≥1.47 mg/L. Intersubject coefficient of variation (CV%) for each INI was calculated. Mean Ctroughs were compared for patients achieving or not a viral load <50 copies/mL using a T test.

Results: Overall, 107 subjects were included (per INI (# subjects/# samples): bictegravir 16/35; dolutegravir 56/285; elvitegravir 32/150; raltegravir 50/383). Mean (SD; range) age 10.3 (4.7; 0.2-17.8) years, 57% female, viral load <50 copies/mL 79.2% (range over study period: undetectable-6.85 $\log_{10}$), mean (SD) CD4+ 590(245). Ctroughs were above virologic efficacy thresholds for 96.8% (bictegravir), 94.5% (dolutegravir), 79.2% (elvitegravir) and 86.4% (raltegravir) of samples. Dolutegravir Ctrough was supratherapeutic for 68.9% of samples. For subjects 6 weeks-<12 years old, intersubject CV% were 69.9% (bictegravir), 50.9% (dolutegravir), 111.3% (elvitegravir), 172.0% (raltegravir). For subjects 12-<18 years old, these results were 63.8%, 52.4%, 94.1%, 112.7%, respectively. Overall, subjects 12-<18 years old had a higher proportion (9.6%) of undetectable Ctrough as compared to younger subjects (5.4%). Mean raltegravir Ctrough was lower in subjects with a viral load ≥ 50 copies/mL (p=0.08).

Conclusions: Most INI Ctroughs were above the efficacy thresholds. Routine TDM of INIs is not recommended in this population. Pediatric patients receiving dolutegravir should be monitored for a possible increased risk of toxicity.

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HIV testing among those tested for syphilis in Ontario, 2017-2022

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Introduction: Canadian guidelines recommend HIV testing for individuals being evaluated or treated for syphilis. Our objective was to examine HIV testing and potential missed testing opportunities (e.g. if HIV test occurred, timing of HIV test in relation to syphilis test, proportion with a positive HIV test result) amongst individuals without a previous positive HIV diagnosis who tested for syphilis between 2017 and 2022.

Methods: Direct fluorescent antibody (DFA) and serological non-prenatal syphilis testing data from January 1, 2017 to December 31, 2022 were retrieved from the Public Health Ontario (PHO) Laboratory Information Management System. Individuals aged ≥15 years and without a previous positive HIV test result were included. Positive syphilis tests were categorized using the rapid plasma reagin (RPR) antibody titre as "active" (DFA+/RPR ≥1:8) or "historical" (RPR <1:8). Exposure categories were assigned using individually-linked HIV exposure category data.

Results: 3,039,209 syphilis tests between 2017 and 2022 were included in the analysis. Those with a positive syphilis result were less likely to be tested for HIV within 28 days of the date of their syphilis test compared to those with a negative syphilis test result (73.2% vs. 91.7%). Males overall and males with "active" syphilis were more likely to be diagnosed as HIV-positive.

Conclusion: Most individuals tested for syphilis at PHO were tested for HIV, though those positive for syphilis were less likely to be tested, representing an opportunity for enhanced HIV testing. Ensuring that syphilis-positive individuals are tested for HIV may identify previously undiagnosed people living with HIV.

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STBBI Testing by Community Pharmacists – Interim Results from the APPROACH 2.0 Study

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Background: Pharmacists are well-positioned to offer point of care (POC) and dried bloodspot (DBS) testing for sexually transmitted and bloodborne infections (STBBI). The APPROACH 2.0 study evaluated implementation of testing for HIV, hepatitis C (HCV) and syphilis by pharmacists in Newfoundland and Labrador, Nova Scotia, and Alberta. Findings from year 1 are presented.

Methods: Testing was available through 32 pharmacies in urban and rural communities. Participants could choose to receive POC (HIV, HCV) and/or DBS testing (HIV, HCV, syphilis). Pharmacists provided pre-test counselling, collected blood samples, and provided post-test counselling including information about prevention measures [e.g. condoms, HIV Pre-exposure Prophylaxis (PrEP)]. Participants with reactive screening results were offered a laboratory requisition for confirmatory testing and linkage to care was tailored for each province. Participants completed surveys to collect demographic and risk behaviour data and feedback about their testing experience (presented separately). PrEP eligibility was assessed for interested participants to estimate impact of the intervention on improving awareness for at-risk participants. Descriptive statistics were used to analyze results.

Results: From December 1, 2022 to December 31, 2023, there were 297 testing visits; 29.5% reported being first-time testers for at least one infection. 191/199 participants with DBS testing received their results within a median of 24 days. Proportions of reactive screening results were 3/286 for HIV, 15/258 for HCV, and 13/190 for syphilis; of those with reactive results, 67%, 100%, and 77% for HIV, HCV and syphilis, respectively, accepted referral for confirmatory testing and follow-up at the time of analysis. Of 73 participants who intended to pursue PrEP, 62% met eligibility criteria.

Conclusions: STBBI testing by pharmacists may be effective in reaching first-time testers and linking those with reactive screening results to care. Confirmatory test results available at end of study will describe the number of new infections found through pharmacist testing.

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Acceptance of STBBI Testing by Pharmacists in the APPROACH 2.0 Study

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Background: Effective sexually transmitted and bloodborne infection (STBBI) testing options must be both accessible and acceptable to people seeking testing, especially among vulnerable populations or those who experience social stigma. Pharmacist testing programs aim to overcome barriers and normalize the testing experience. We sought to determine participant acceptance of pharmacist testing for STBBI through the APPROACH 2.0 study, and preference for different testing modalities.

Methods: Participants were offered a choice of point-of-care (POC) and/or dried bloodspot (DBS) testing options. Participants completed voluntary pre- and post-test surveys to provide demographic and risk behaviour data and feedback about their testing experience. Survey items were based on the Theoretical Framework of Acceptability (TFA) to assess domains of Affective Attitude (AA), Burden (B), Ethicality (E), Intervention Coherence (IC), Opportunity Costs (OC), Perceived Effectiveness (PE), and Self-efficacy (SE). Surveys included multiple-choice questions and Likert-type scales. Descriptive statistics were used to analyze the results.

Results: During 297 participant visits, 1031 total tests were administered: 258 HIV POC, 179 HCV POC, 594 DBS. Participants chose both POCT and DBS (57%), only POCT (35%), or only DBS (9%). The immediate report of test results was important to 79% of participants; 38% wanted pharmacist testing without preference for type of test used. There were high positivity ratings (>90%) in domains AA, IC, PE and SE. Strong positivity ratings were expressed around comfort in pharmacist testing (97%) and lack of stigma/discrimination faced at the pharmacy (92%). If pharmacist testing was not available, 13% of participants indicated they would not have been tested and 28% were unsure if they would get tested elsewhere.

Conclusions: Pharmacist testing is associated with high participant acceptability and was a preferred testing option for many participants. Many participants chose to receive both POC and DBS tests indicating acceptability of both testing options, possibly for different reasons.

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HIV self-testing relative to the landscape of HIV testing on Ontario

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Background: In Ontario, HIV self-testing is available for free through provincial and federal programs. Individuals who receive positive results should receive a confirmatory test and enter care. Our objective was to examine the proportion of HIV self-testing contributing to the provincial HIV testing program.

Methods: HIV serology and point-of-care testing data for Ontario was obtained from the Public Health Ontario Laboratory. HIV self-testing information was obtained from the Public Health Agency of Canada for their funded programs and the Ontario GetaKit program. Data availability differed by program (Nov 2022-Apr or Jun 2023); therefore, monthly rates from self-testing programs were used for comparison. Test results were only available for the GetaKit program, which were used to calculate test positivity.

Results: In 2022, 643,266 HIV serology tests (excluding prenatal) were conducted, equating to 53,605.5 tests per month with an overall positivity rate of 0.10%, and 1.4 tests per unique tester (2021). Ministry of Health funded point-of-care testing programs conducted 7,562 tests in 2022, with a positivity rate of 0.20%. Over the time period provided, an average of 1700 self-test kits were distributed per month, with 2.5 kits per person. Test positivity for GetaKit was 0.23% (positive reported self-test result among all distributed kits) (2022). In 2022, 26 HIV serology tests were conducted with self-testing as the reason serological testing, presumably for confirmatory testing of a positive self-test result. In Ontario in 2022, HIV self-testing represented 3.1% of all HIV tests conducted in Ontario and approximately 1.5% of all testers.

Conclusions: Offering HIV self-testing to individuals at-risk for HIV may improve access to HIV testing and assist in reaching the first 95 goal of the UNAIDS targets regarding diagnosis. We must continue to monitor self-testing programs as part of HIV testing overall and ensure proper linkage to confirmatory testing and linkage to care.

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Evaluation of the National Community Link Program to provide access to HIV self-testing to reach first-time testers and key populations in Canada

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Background: The Public Health Agency of Canada-funded Community Link Program distributes free HIV self-tests through frontline, community-based and harm reduction organizations, including community health centres, mobile distribution units, shelters, pharmacies, and public health units to reach those who are undiagnosed and key populations most impacted by HIV.

Methods: Community Link Program partnered with 347 agencies for distribution. Individuals could access up to 5 kits. Participants completed an anonymous demographic survey to evaluate the effectiveness of the program in reaching first-time testers and key populations. Chi-squared tests (significance with $p<0.01$) were conducted to examine the demographic characteristics of first-time testers compared to people with previous testing experiences.

Results: Over the past year, 26,281 HIV self-tests were distributed to 9,292 people, and 46% were first-time testers. Significant results obtained for first-time testers: (a) age: people <20 years had greatest proportion of first-time testers (77% overall) compared to those >20 years (51% overall); (b) gender: 47% of cisgender men, 52% of cisgender women, and 46% of transgender and non-binary participants; (c) sexual orientation: 57% of heterosexual and 59-63% of lesbian, asexual and questioning participants compared with 30% and 44% of participants who identifies as gay and bisexual, respectively; and (d) key populations: 68% of African, Caribbean and Black, 57% of women, 50% of Indigenous people, 53% of people who inject drugs, compared with 34% of participants who identify as gay, bisexual, and men who have sex with men. First-time testers were higher in the Prairies and Quebec (55% and 80%, respectively) as compared with Ontario and British Columbia (40% and 42%, respectively).

Conclusion: Community Link Program is effective in reaching high rates of first-time testers, particularly those who are younger, women, those who identify as heterosexual or with a sexual minority group, from key populations, and in previously underserved geographic regions in Canada.

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Our Healthbox: Implementation of a novel interactive dispensing machine for low-barrier access to HIV self-test kits and harm reduction supplies to marginalized communities in New Brunswick.

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Introduction: In Canada, 20% of new HIV cases are attributable to people who use substances. Amidst the national overdose crisis, there is a need to democratize access to harm reduction materials and testing for those with complex healthcare needs. Our Healthbox (Notre Boîtesanté) is building a network of 'smart,' interactive dispensing systems hosted by community-based organizations, providing free, low-barrier, anonymous access to HIV self-testing (HIVST) kits, harm reduction supplies, sexual health and other wellness items along with educational resources and service directory for people to find the care they need.

Methods: Our Healthbox launched in January 2023 in four New Brunswick communities: Moncton (large urban), Sackville (small urban), Richibucto (small rural) and Woodstock First Nation (Indigenous rural). Program evaluation included describing participant demographics, supplies dispensed and reason for accessing items using data collected from sign-up, dispensing and post-access survey questions between January 23 to December 23, 2023.

Results: From the four Healthboxes 1,512 persons accessed 10,380 items. Overall: 59% participants were male, 78% were under 40, 44% identified as heterosexual, 64% educated (≥high school), 67% had difficulty paying for basic needs, and 63% were under-housed. A total of 6,284 harm reduction materials were dispensed (45% were safe injecting supplies), including 156 naloxone kits. Overall, 217 participants accessed 386 HIVST kits; 50% were first-time testers, 12% gave a kit to someone, 5% identified as gay, bisexual or men who have sex with men, 10% as African, Caribbean or Black, 30% as Indigenous, 36% were women and 59% indicated using substances. Overall, 76% would recommend Our Healthbox to others.

Conclusion: Our Healthbox program is reaching underserved people where they live in both large urban and small rural areas. By the end of 2024, we aim to implement 50 machines in communities across Canada and scale-up to 100 communities over the 3-year program.

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Characteristics of first-time testers access HIV self-testing through GetaKit

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Background: Despite innovative testing and prevention strategies, new HIV diagnoses continue to affect gay, bisexual and other men who have sex with men (gbMSM), persons who identify as African, Caribbean or Black (ACB), Indigenous persons, and people who use injection drugs. To improve access to HIV testing, as consequently to HIV treatment and/or prevention, we developed and launched GetaKit, an online assessment and mail-out system for HIV self-tests and other sexual health services.

Methods: GetaKit is a study to evaluate the real-world outcomes associated with offering online sexual health services. Individuals who consent to participate and create their accounts are invited to complete the online risk assessment to determine if the HIV self-test is appropriate based on self-reported demographics and risk.

Results: During the first 10 months that GetaKit was available across Ontario, 882 participants who identified as gbMSM, ordered an HIV self-test. Of these 882 participants, 25% (n=220) reported that this was their first-time testing for HIV. These participants tended to be younger than repeat testers, more likely to be a member of a racial/ethnic minority population and reported invalid results more frequently than other repeat testers.

Conclusions: The demographics of first-time testers raise important questions about how HIV self-tests may or may not facilitate access to HIV prevention and treatment services. The success of HIV self-testing may say more about the shortcomings within the traditional HIV prevention system. So, while we work together to improve access and supports around HIV self-testing, we should not forget about the importance of continuing professional learning for clinicians to deliver services in a culturally safe environment. More research is needed to gain a better understanding of why first-time HIV self-testers use that method, their attitudes and beliefs about healthcare systems, and more broadly sexual health education.

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Application of Multiple Intervention Framework to expand HIV self-testing in Ontario

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Background: Health Canada's approval of the HIV self-test raised a number of questions: would people find the device easy to use? Would people know what to do when they received their result? Are systems in place to support self-referral to prevention and treatment services, if needed? To answer these questions a team of nurses developed GetaKit, an online risk-assessment and mail-out system to distribute HIV self-tests.

Methods: GetaKit is a real-world evaluation of an online platform to deliver sexual health services. We applied Multiple Intervention Framework to understand the socio-ecological features of the problem (defined as access to HIV testing), identify and develop interventions to overcome barriers, optimize the impact of implemented strategies and offer ongoing monitoring and evaluation of the project.

Results: To understand the socio-ecological features of the problem, the research team used evidence from the previous implementation of HIV point-of-care in Ontario to make the following assumptions: there is no process to determine whether the HIV self-test will be used in a way that is clinically appropriate; self-tests would not naturally be available in regions and within communities that have historically undertested; and post-test linkage to care can be unclear for users. We worked with community partners to develop interventions to ensure self-testing was (1) appropriate, (2) accessible, and (3) linked to care. Throughout implementation, we observed some barriers to uptake among community-based organizations especially in light of high staff turnover and competing mandates.

Conclusions: HIV self-testing can increase testing rates, especially within communities that have historically undertested. However, we argue that one device, by itself, cannot overcome decades of unequal and inequitable access to HIV services. Successful integration into community requires thoughtful implementation that includes resource development and ongoing support to ensure that both clinically trained staff and non-clinical staff can support HIV self test users.

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Insights and Reflections from a Mixed Methods Study of Group Sex Using Community-Based Approaches to Conduct Inclusive HIV/AIDS Research

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Conducting HIV/AIDS research often involves collecting data from communities who are minoritized based on their sexuality. Especially for researchers who are not of the community that they are studying, planning and implementing such research can be challenging. For example, it can be difficult to develop recruitment messaging and materials that resonate with participants; to use language/terminology that is current, appropriate, and inclusive; and to identify research objectives and questions that will be interesting and beneficial to the community. One way to address these types of challenges is to conduct community-based sexual health research. This involves building authentic community relationships and conducting research in partnership with that affected community by sharing power in decision making. But, how does a research team begin this process when studying a phenomena like group sex that is not bounded by a clear discrete singular community network, and how does this reality shape the trajectory of a community-based research project? In this methodology-focused presentation, we will share insights and reflections from our team's experience conducting a community-based mixed methods study of group sex in Canada. We established a longitudinal Community Advisory Board of 7 members, conducted longitudinal qualitative interviews annually with 20 participants, and a national trilingual online survey of 500 group sex practitioners. We share and reflect on our process for developing a community advisory board of diverse group sex practitioners, and how we worked together to develop our study protocol and solicited their guidance, feedback, and approval throughout the research process. Community advisory board members provided written informed consent, and we recorded meetings, transcribed them verbatim, and analyzed them thematically. Our overall objective in this presentation will be to give a grounded example of conducting community-based sexual health research and to provide practical insights for researchers interested in employing this methodology in future work.

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A Case Study on Trauma and Violence-Aware Care (TVAC) as a Research Framework

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Introduction: Women with HIV in Canada report a high prevalence of trauma and violence, emphasizing the need for trauma-healing programming. In response, the TVAC study recruited women with HIV in British Columbia and Ontario to complete community research associate (CRA) administered surveys to determine the most suitable form of TVAC actions and/or programs for women with HIV. Acknowledging the pervasive experiences of trauma and violence among CRAs and participants, our research methodology incorporated TVAC practices. We present a case study that offers valuable lessons learned from this process.

Methods: The objective of the TVAC study was to generate meaningful insights to inform healing programming while prioritizing the well-being of both participants and CRAs. To achieve this, we planned comprehensive CRA training with a focus on trauma education and interview approaches, fostering an empowering environment for diverse participants. We established support channels for CRAs and curated a resource list for participants. CRAs led recruitment and survey administration to minimize power dynamics and prevent participant re-traumatization.

Results: Although our plans laid a strong foundation, the complexity of a TVAC research methodology demanded reflection and flexibility. The COVID-19 pandemic necessitated adjustments to timelines and the inclusion of pandemic-related questions. Feedback from CRAs during interviews led to adaptations, such as additional CRA training on participant substance use, and enhanced, more frequent check-ins with an emphasis on CRA self-care. Strengthened collaboration with community-based organizations in participants' communities ensured robust participant follow-up support after challenging interviews. Overall, both CRAs and participants praised the study's design and process as validating, supportive, and necessary.

Conclusion: This case study provides insights into creating and conducting research that prioritizes the well-being of participants and CRAs. The lessons learned underscore the importance of reflection, flexibility, and time and resource investment to promote participant and CRA well-being while yielding meaningful findings.

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Co-Developing Research Data Gathering Ethics through Ceremony: The 9Genders as Traditionalist Worldview of Indigenous Genders Developmental Study

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Background: The 9Genders Developmental Study treats research as Ceremony. It centers Indigenous protocols, community priorities, and reciprocal obligations in the research relationship as its core ethical framework. Utilizing decolonizing methodologies to collect data, a primary aim of this land-based study is to promote well-being through land connection and cultural identity while wholistically exploring one's body-and-spiritual gender identities.

Methodology: A Research as Ceremony team gathering with seven members was held over seven days on the n Elsipogtog First Nation, a Mi'kmaqi community, in May 2023. Team members co-developed ethical data gathering processes within ceremony guided by three considerations: Local Indigenous Elders and Knowledge Keepers, Ceremonial Protocols, and Traditional Ethics. The gathering began in ceremony with the first of four Sweats and a Sacred Fire, the Drum was set up on day two, and a Feast on day seven. Sitting in a Sacred Circle was used as a method to collect data.

Findings: Four emergent themes surfaced: 1) By researching in a good way, trust and comfort was established through ceremony which facilitated holistic, deep sharing; 2) Participants appreciated that the study honoured their rights to self-determination, ongoing consent, and flexibility of participants where they could share or abstain according to their individual comfort levels; 3) The research team noted the importance of relational ethics to listen and connect with the lands of various research sites to determine which ceremonial activities would be most appropriate; 4) the deciding of appropriate dissemination will involve deliberation with knowledge holders to determine permissions, restrictions and benefits back to the community.

Conclusion: The centering of Indigenous worldviews in land-based research offers respectful oversight, self-determination and flexibility towards research participants. Ongoing consent serves as safeguards from forced research participation or sharing of knowledge, thus upholding meaningful ethical research relationships and obligations to collective community priorities.

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HIV In Our Day: Assessing the Impact of Mobilizing Research Through Artistic Practice

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Background: Arts-based storytelling and oral history are important methods to collect nuanced individual stories of the early years of HIV/AIDS, explore disparities between different social groups, and mobilize learnings about HIV across different generations and communities to improve our contemporary responses to the ongoing pandemic. "HIV in My Day" has collected the stories of over 100 long-term survivors and caregivers in British Columbia and sought to mobilize key findings through arts-based methods.

Methods: We assessed the impacts, successes, and challenges of arts-based knowledge mobilization (KM) through In My Day, a verbatim theatre production based on collected oral histories, and an associated intergenerational community gathering held in December 2022. We conducted semi-structured qualitative interviews with members of the creative team (e.g. actors/actresses, director, playwright) and people involved in planning the gathering. Interviews were conducted in-person or online, audio-recorded, transcribed verbatim, and thematically analyzed.

Results: We interviewed 17 participants, including 8 members of the creative team and 9 people involved in planning the community gathering. Participants shared multiple positive impacts of arts-based KM, including improved sense of community and belonging, increased awareness about local impacts of HIV/AIDS, expanded intergenerational connections and networks, and increased dissemination of critical HIV/AIDS histories to broad audiences. Participants also highlighted the importance of meaningful collaboration, appropriate financial resources, and time to optimize arts-based impacts.

Conclusions: Our project identifies strengths and challenges of arts-based KM and key learnings for HIV researchers who wish to effectively engage arts-based methods. Arts-based KM should centre communities directly impacted by HIV and has the potential for far-reaching impact in HIV research. Specifically, the study highlights theatre's role in increasing knowledge about the historic and ongoing HIV/AIDS pandemic in Canada across generations and diverse communities impacted by HIV/AIDS.

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nika wîci-pimohtêyimitinân (we will walk with you): Training and Integrating Culturally Appropriate Peer Support Networks into Healthcare Systems

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Background

Peer support is an established evidence-based method to support people to access treatment and care for HIV and other chronic conditions. Although underutilized, incorporating culturally appropriate peer support within standard care delivery can help improve health for people living with HIV (PLWH) and inform decisions for the coordination and management of HIV care.

Methods

The Wellness Wheel offered a 'Basic Training' peer support certification program for HIV peer support trainees in 2022. The program consisted of a two-day in-person module training, and several land-based and cultural experiential learning opportunities. The modules were adopted from an established peer training program developed by a Saskatchewan-based psychologist. In a train-the trainer model, modules were revised and culturally enhanced. Experiential learning was facilitated by cultural leaders and knowledge keepers. Sharing circles facilitated knowledge sharing and relationship building. Participant feedback and findings will inform future trainings and strengthen the cultural appropriateness of peer support trainings and ensure readiness of peer workers within community and acute care settings.

Results

14 participants completed Basic Training. Five peers were hired by agencies for peer support work following certification. The full-day training schedule was found to be too short to fully explore the models and facilitate skill development. Hosting an immersive retreat style training added logistical challenges and costs, such as transport, food, accommodation, environmental temptations/triggers, recreational activities, and childcare concerns. Land-based experiential learnings were all well attended and highly regarded by participants.

Lessons Learned/Recommendations

This oral presentation will outline the training program, outcomes, lessons learned and recommendations for HIV peer support trainings, and integration into the health care system. Key recommendations include flexible training schedules with frequent breaks, dedicated skill development and practice, emphasis on confidentiality and communication, critical need for dedicated support for the peer workers, and an established referral system to access peer support services.

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The Stat's Talk Back: Building Capacity with Indigenous Peoples Living with HIV/AIDS in Research Through a Community at the HeART Framework

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Background: Stat's Talk Back 2.0 aimed to humanize the experiences of individuals living with HIV/AIDS through art and self-reflection. The project's primary objective was to create artworks that reflect the personal stories of those living with HIV/AIDS and move beyond numerical representations.

Methods: A 'Community at the HeART' framework' prioritized community-led research with problem identification, result interpretation, and knowledge dissemination. For example, a self-assessment of medication effects utilized the Medicine Wheel's quadrants to assess the impact of medications on physical, mental, emotional, and spiritual aspects to maintain a sense of balance. Participants received canvas art materials depicting HIV medication-related side effects and positive action stories, sweetgrass, cedar, sage, tea, and toolkit documents to guide self-assessments. Following the project, a video will be a further educational guide to help educate the researchers, students, medical professionals, and trainees to ensure that they consider the perspectives of the communities they serve and start asking questions and listening with an open mind and heart.

Results: Alongside 23 participants, 19 of whom identified as women and four as men, the project extended beyond academic boundaries to reach care providers and was able to build capacity among researchers who, themselves, are People Living with HIV/AIDS. Lessons learned included flexibility, reflexivity, and creating safety through trauma-informed, strengths-based approaches to evaluate, envision, engage, and enlighten.

Conclusion: By providing a platform for individuals to become 'Wisdom Speakers,' participants were empowered to share their stories within a safe and supportive environment. Together, they brought community healing, mutual understanding, empathy, and connection. Discussing lived experiences and educating others is paramount, particularly concerning the side effects of medications and the role that gender plays.

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Co-Creation as a Path Toward Inclusion: How Guiding Circles Improve Our Work to Bridge the HIV, Aging, Disability and d/Deaf Communities

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Background: Grounded in and centered on the core principles of the Greater Involvement of People Living with HIV/AIDS (GIPA) and the Meaningful Engagement of People Living with HIV/AIDS (MEPA), as well as "Nothing For Us, Without Us", the National Guiding Circle on HIV and Disability (NGC) and the National Coordinating Committee on HIV and Aging (NCC) serve as Pan-Canadian co-creation mechanisms, providing expert leadership, guidance and advice on Realize's awareness-, capacity,- and relationship-building activities across the HIV, aging, disability and d/Deaf communities.

Methods: The NGC is convened by three Co-Chairs, two of whom live with disability. The NCC is guided by a 12-member Steering Committee. Members of both groups are individuals with living experience, as well as representatives from aging/disability/civil society/human rights and HIV/STBBI organizations in Canada. These volunteer networks provide leadership and strategic advice in the co-creation of policy, research, and programmatic responses. Co-creation balances the responsibilities, benefits, and interests of stakeholders and focuses on the strengths and needs of those with lived experience. This transparent and inclusive approach builds trust in the work.

Outcomes: Guided by these circles, Realize enables policymakers, health professionals, and front-line organizations to uphold human rights commitments to people living and aging with HIV and other disabilities. Examples of co-created works include the NCC's tools to support organizational change in long-term care to foster inclusion for people aging with HIV; and The Pan-Canadian Research Agenda on HIV, Aging & Older Adulthood; and the NGC's assessment of the availability and accessibility of HIV testing, treatment, and care services for people living with disabilities which highlighted gaps in service delivery that limit access to STBBI resources by disabled people.

Learnings: Meaningful, on-going consultation with HIV, aging, and disability communities using a co-creation model rather than an 'advisory committee' builds authentic relationships and strengthens impact.

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The Positively Dance Pilot Program: Examining the Feasibility of a Community-Based Peer Research Associate-Led Dance Program for Women Living With HIV

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Women living with HIV (WLWH) are at greater risk of concurrent conditions and early mortality than men living with HIV or women in the general population. WLWH face social and economic disadvantages that serve as barriers to accessing physical activity programming. Consultations with WLWH affiliated with the Canadian HIV Sexual and Reproductive Health Cohort Study (CHIWOS) identified the need for implementation science research to promote well-being and social connectedness and identified dance as an activity to support both goals, if made free and accessible. Therefore, the purpose of this study was to pilot feasibility of a community-based, peer-led dance program developed with, by, and for women living with HIV.

From June 2022-2023, dance classes were taught twice weekly by peer dance instructors. Feasibility and acceptability were assessed via qualitative interviews with class participants. In keeping with the iterative nature of community-based research, our team also sought to be responsive to the informal feedback provided by participants and community partners and documented adjustments made throughout.

In total, 17 WLWH enrolled in the dance program. Eight participants (53%) attended classes more than once, and three (18%) participants attended between 15 and 20 classes. Dance classes were well-received and elicited feelings of joy and accomplishment for participants. Common participation barriers included life events or employment conflicting with the dance schedule, injuries, and the requirement to complete a blood draw to participate in the study. To maximize accessibility and support participation, our research team made adjustments throughout the study, including removing the blood draw requirement, supporting self-enrolment in the dance program, and embedding the dance program within a community organization. Our study shows that ongoing efforts are required to encourage participation in community physical activity programming and that collaborative approaches, such as community-based research, can support the feasibility and sustainability of future dance programs.

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Screening viral host dependency factors and human loss of function polymorphisms identifies broad-acting host-directed antiviral candidates

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Multiple genome-wide knockout/knockdown studies of viral infection have identified sets of host dependency factors (HDFs) that are essential for viral replication. Although these factors may be candidates for developing novel antivirals, defining candidates that do not lead to drug toxicity is challenging. One opportunity to identify promising targets is to leverage available human genome resources to determine which HDFs harbour homozygous loss of function polymorphisms in healthy people. To that end, we sought to combine data from 27 genome-wide host dependency factor screens that covered HIV, Hepatitis C, Hepatitis D, SARS-CoV-2, SARS-CoV, Ebola, Influenza A, Zika, Dengue and West Nile virus, with the genome aggregation database (gnomAD) including >125,000 human exome and >15,000 whole-genome sequences. We identified 2,907 unique HDFs combined across all viruses, including 353 which were essential for ≥2 viruses and 2 which were essential for 5 viruses. Of the combined list, 137 targets were deemed non-essential by the observed/expected constraint score and the presence of homozygous loss-of-function variants found within the gnomAD control population.

When functionally annotated, the 2,907 unique HDFs were enriched for several biological processes, notably protein transport, macromolecule catabolism, autophagy, and vacuole 122rganization. We also found that HDFs implicated in more than one virus were highly intolerant to a loss of function variant, suggesting they are likely to be involved in host-essential processes. In silico and in vitro screening of HDFs harbouring homozygous loss of function variants in healthy people may aid in developing novel broad-acting antivirals capable of targeting more than one virus.

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Fine-Mapping of CHD1L Implicates Cell-Type-Specific Restriction of HIV Set-Point Viral Load

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A recent genome-wide association study (GWAS) in 3886 individuals of African ancestry identified genetic variants close to the gene CHD1L to be strongly associated with decreased HIV set-point viral load (spVL) and that CHD1L knockout enhanced HIV replication in myeloid cell models. However, the precise genetic variants that mediate the observed effect of CHD1L, and the extent of cell-specificity remains unclear. To address this, we performed a functionally-informed fine-mapping study of the CHD1L region. Using multiple gene expression datasets from individuals of African ancestry, we observed no significant colocalization of GWAS signals and variants regulating CHD1L expression (eQTLs) in LCLs (N=1,032), whole blood (N=757), or monocytes (N=233) suggesting that the individual effects of variants identified in the GWAS on CHD1L expression may be small.

Statistical fine-mapping of the CHD1L region demonstrated that combinations of GWAS variants, rs7519713/rs73004025 and rs7519713/rs72999634, were more strongly associated with HIV spVL than the top GWAS hit alone (ANOVA p=0.023 and p=0.019, respectively) highlighting the enhanced effect of variant combinations on restricting HIV spVL. We then tested how variant combinations may impact CHD1L expression but observed no significant CHD1L expression differences in LCLs (N=89) or monocytes (N=118) in individuals carrying the alternate allele, however small sample sizes limit our power to detect significant differences. We next generated genetically regulated expression data in the 3886 African individuals from the spVL GWAS using two separate training datasets from whole blood or monocytes from African American individuals. Combinations of rs7519713/rs73004025 or rs7519713/rs72999634 were significantly associated with increased CHD1L expression in monocytes (both p<2e-16) but were associated with decreased CHD1L expression in whole blood (p<2e-16). These results suggest that CHD1L-mediated HIV restriction likely occurs in a cell-type specific manner supporting the hypothesis that CHD1L is a cell-specific HIV restriction factor mainly active in the monocyte compartment.

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Reconstructing the Transmitted Founder HIV Sequence from Within Host Proviral Sequences sampled during suppressive ART

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Elucidating the transmitted/founder (T/F) HIV sequence can help us address key questions in HIV evolutionary dynamics at the between-host level (e.g. the nature of the transmission bottleneck) and the within-host level (e.g. the ancestor-descendant relationships between the T/F virus and HIV sequences persisting in the reservoir). T/F sequences should ideally be reconstructed from plasma HIV RNA sequences collected immediately after seroconversion (which is not feasible in most settings) or from plasma HIV RNA sequences sampled longitudinally during untreated infection. The latter approach however is longer possible because current guidelines recommend that antiretroviral treatment (ART) be initiated immediately following HIV diagnosis. Alternative methods to infer T/F virus sequences are therefore needed. Reasoning that the population of proviruses that persist in an individual during long-term ART represent an archival record of within-host HIV evolution, we explored the possibility that these sequences could be used to phylogenetically infer the T/F sequence (or a close descendant thereof). To do this, we leveraged HIV sequence data sets from 11 individuals that comprised single-genome plasma HIV RNA env sequences collected shortly after seroconversion (which served as a proxy for the T/F virus sequence) along with single-genome proviral sequences collected during suppressive ART (median 23; interquartile range 10-25.5 unique proviruses/participant). We explored a variety of phylogenetic methods to estimate ancestral sequences, including phangorn, IQ-TREE and MrBayes, to investigate whether proviral sequences can be used to recover T/F viruses sequences. All methods produced broadly comparable results. Notably, we were able to correctly reconstruct more than 70% of the variable sites within the T/F sequence for all participants for whom >20 unique proviral sequences were sampled during ART. The evolutionary history catalogued within proviruses persisting during ART can be leveraged to reconstruct T/F sequences, yielding insights into HIV evolutionary dynamics.

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Therapeutic Potential of INT131, a Novel PPARγ Agonist, for HIV-Associated Neurocognitive Disorders: Anti-Viral and Anti-Inflammatory Effects in an EcoHIV Mouse Model

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Background: Approximately 50% of people living with HIV experience HIV-associated neurocognitive disorders (HAND), impacting motor/cognitive functions. Peroxisome proliferator-activated receptor gamma (PPARγ), primarily involved in regulating glucose/lipid metabolism, are also known to be expressed in the brain and can elicit anti-inflammatory responses in neurodegenerative diseases. HAND is associated with brain inflammation, astrocytic activation and neuronal apoptosis. Our study aimed to investigate the effect of activating PPARγ by a novel selective agonist, INT131 to attenuate HIV-induced brain inflammation, using an ecotropic HIV-1 (EcoHIV) mouse model that simulates HAND. We also investigated the expression/localization of PPARγ, and astrocytic/neuronal apoptotic markers in HIV+ human brain samples.

Methods: We used qPCR to analyze the mRNA expression of viral genes, inflammatory cytokines/chemokines, and blood-brain barrier (BBB) tight junction proteins. BBB permeability was tested using the NaF assay, 21 days post intracranial injection of saline or EcoHIV (2x108 pg/ml) in: i) uninfected mice, ii) EcoHIV-infected mice, and iii) EcoHIV-infected mice treated with INT131 (50 mg/kg/day). Additionally, immunohistochemistry on human brain tissue (cerebellum, basal ganglia, and cortex) assessed GFAP (astrocyte marker), Casp-3 (apoptosis marker), and PPARγ protein expression/location.

Results: Exposure of mice to EcoHIV significantly increased the mRNA expression of viral genes (Vif, Tat), inflammatory markers (Tnf-α, Il-1b, Il-6, Ifn-γ) and decreased BBB markers (Ocln, Cldn5, Tjp-1) in brain regions. INT131 significantly reduced the expression of viral genes and inflammatory markers and restored the expression of BBB markers and permeability in the EcoHIV mouse model. Post-mortem brain tissues from HIV+ individuals with neurocognitive impairment showed increased expression of astrocytic/apoptotic markers and reduced PPARγ expression compared to HIV- individuals.

Conclusion: Our findings suggest PPARγ as a potential novel molecular target for treating/preventing HIV-associated brain inflammation, BBB dysfunction, and HAND. INT131 effects in reversing neurocognitive deficits will be investigated in the EcoHIV mouse model through behavioral studies. (Supported by CIHR)

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Organotypic foreskin mimetic tissues support colonization by penile anaerobes in physiological oxygen (2%) conditions

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Background:
Within the penile microbiome, a triad of co-occurring anaerobic bacterial species (Prevotella bivia, Peptostreptococcus anaerobius, and Dialister micraerophilus) are associated with HIV seroconversion, increased pro-inflammatory cytokines, and increased local HIV target cell density. However, observational data cannot attribute causality to these bacteria in increasing foreskin inflammation and HIV risk. To study these interactions empirically, we have developed in vitro foreskin mimetic tissues for co-culture with bacteria.

Objective:
Determine if organotypic foreskin tissues support growth of facultative and strict anaerobic penile bacteria applied as monospecies and polymicrobial inoculums in physiological (microaerophilic) oxygen conditions.

Methods:
Primary foreskin fibroblasts and keratinocytes were used to generate foreskin mimetics with dermal and stratified epidermal layers. Tissues were inoculated with ~1000 CFU of either: facultative anaerobes unassociated with HIV risk (Staphylococcus epidermidis or Corynebacterium tuberculostearicum), strict anaerobes belonging to the triad (P. bivia or P. anaerobius) or a polymicrobial inoculum containing the triad species (derived from coronal sulcus swabs). Tissue-bacterial co-cultures were incubated at 37°C in 2% O2 for 5 days. Bacterial abundance (qPCR) and viability (plating) were assessed throughout co-culture.

Results:
Monospecies facultative isolates showed increased abundance (5 log-fold and 2-log fold increase for S. epidermidis and C. tuberculostearicum, respectively) and maintained viability over 5 days. Similarly, viable strict anaerobes P. bivia (3 log-fold increase) and P. anaerobius (stable abundance) were recovered from the tissue surface after 5 days of co-culture. Stable abundance and viability were also observed for all three triad species when tissues were inoculated with the polymicrobial community and cultured at 2% O2. No tissue degradation or contamination was observed.

Conclusions:
Foreskin mimetics support colonization by facultative and strict penile anaerobes from monospecies and polymicrobial inoculums in microaerophilic conditions. These findings affirm our co-culture approach, which we will use to further investigate the influence of the penile microbiome on HIV susceptibility.

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HIV-1 accessory proteins regulate post-translational modifications of the ZAP-70 kinase

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Introduction: HIV-1 infected cells evade cytotoxic T lymphocytes (CTLs) recognition by downregulating cell surface major histocompatibility complex class I (MHC-I). To accomplishes this, the HIV-1 protein Nef complexes with host Src family kinases (SFKs) to phosphorylate the Zeta-chain-associated protein kinase 70 (ZAP-70) thereby initiating a signalling cascade that results in surface MHC-I endocytosis. This evasion of CTLs contributes to HIV-1 latent reservoir persistence, a primary obstacle to curing HIV-1 infection. Consequentially, the Nef:SFK interaction represents a potential therapeutic target to reverse MHC-I downregulation by HIV-1.

Methods: To further elucidate the role of Nef:SFK in MHC-I downregulation, we employed a flow cytometric analysis of ZAP-70 in primary human CD4+ T cells infected with the HIV-1 transmitted founder virus CH58. Infected cells were measured for levels of ZAP-70 and specific post-translational modifications (PTM) at activating (Tyr319) and inhibitory (Tyr292) ZAP-70 tyrosine residues.

Results: Infected CD4+ T cells had significantly increased total ZAP-70 and PTM of ZAP-70 pTyr319 and pTyr292. Deletion of nef significantly decreased total ZAP-70 levels and decreased pTyr319 PTM levels. Furthermore, a significant decrease in pTyr319 PTM was observed when vpu was also deleted. Infected CD4+ T cells with high levels of pTyr292 PTM harboured significantly elevated surface MHC-I. These results suggest that HIV-1 Nef increases ZAP-70 protein levels to expand the pool of ZAP-70 available for activation. Furthermore, Nef meditates the activating pTyr319 PTM with Vpu having a compensatory role when Nef is absent. We also determined that the inhibiting ZAP-70 pTyr292 PTM is associated with higher surface MHC-I and therefore may disrupt MHC-I downregulation by HIV-1.

Conclusions: These findings support that HIV-1 accessory proteins promote ZAP-70 pTyr319 PTM for enhanced downregulation of surface MHC-I. Moreover, the dynamics of ZAP-70 and pTyr292 PTM levels during infection suggest concurrent novel processes effecting surface MHC-I downregulation.

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Serologic evidence of cytomegalovirus reinfection during pregnancy and congenital transmission among women living with HIV in Quebec

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Background: Maternal HIV infection increases the risk of congenital CMV infection (cCMV) >4-fold compared to the general population, even with effective ART during pregnancy. It is unknown what proportion of these cCMV cases are due to reactivation of chronic CMV infection versus maternal reinfection with a new CMV strain during pregnancy.

Methods: Samples were drawn from a prospective cohort (1999-2020) of pregnant CMV+ women living with HIV (WLWH) and their newborns exposed to but not infected with HIV. Serologic testing of maternal plasma from the first (T1) and third trimester (T3) was performed using standard clinical tests and a strain-specific ELISA that distinguishes between antibody responses directed against 4 different circulating CMV variants. Reinfection was defined by acquisition of an antibody response to a new epitope between trimesters of pregnancy. cCMV status was confirmed via qPCR on infant serum, plasma, or urine within 21 days of life.

Results: Among 411 pregnancies with available samples at T1 and T3, six (1.63%) of 369 newborns were positive for cCMV. A greater IgG titer increase from T1 to T3 was observed in cCMV cases (mean difference=607 AU/mL) compared to those without cCMV (mean difference=121 AU/mL; $p<0.01$). Of 299 pregnancies with type-specific serology results, 14 reinfections (4.7%) were detected, two of which were associated with cCMV. Compared to cCMV cases without reinfection, those with reinfection had significantly lower T3 IgG titers.

Conclusion: Our results suggest that most cCMV among WLWH occurred due to reactivation of latent CMV infection. However, because strain-specific ELISA does not capture responses to all circulating CMV variants, the rate of reinfection was likely underestimated. More sensitive methods for detecting CMV reinfection are needed to inform strategies to prevent cCMV among children of WLWH.

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Cytomegalovirus infection decreases CD4+ T-cell counts among children who are HIV exposed and uninfected

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Background: Children who are HIV-exposed and uninfected (CHEU) may have an increased risk of infectious diseases due in part to immune dysregulation. Cytomegalovirus (CMV) is a highly immunomodulatory virus that predisposes to infectious diseases among transplant recipients. We therefore assessed the impact of CMV infection on lymphocyte populations among CHEU.

Methods: CHEU enrolled in the CMIS cohort (Montreal, Canada, 1997-2010) were retrospectively evaluated for CMV by PCR in serum or plasma before 3 weeks and at 2 months of life using the Altona AltostarTM assay. We classified infants as having congenital (PCR positive before 3 weeks) or postnatal (PCR positive only at 2 months) CMV infection, and as CMV-positive if either test was positive. Lymphocyte subsets were measured by flow cytometry at 2 months of age.

Results: Among 334 non-breastfed CHEU, 7 (2.1%) had congenital and 5 (1.5%) had postnatal infection by 2 months of age. Compared to CMV-negative infants, congenital and postnatal infection were associated with detectable maternal HIV viral load (>50 copies/ml) at delivery (OR 4.31, 95%CI [1.12-13.9] and 4.31, 95%CI [1.35-13.8], respectively). There were no differences according to maternal CD4 count at delivery or gestational age. While total CD3+ T-cell and CD19+ B-cell frequencies were similar between CMV-positive and CMV-negative infants, CMV-positive infants had significantly higher CD8+ T-cell frequencies (20 vs. 15%, $p<0.001$), lower CD4+ T-cells frequencies (35 vs. 49%, $p=0.006$), and lower CD4/CD8 ratios (1.84 vs. 3.26, $p<0.001$). These differences remained statistically significant after adjusting for gestational age, maternal CD4 count and viral load at delivery, and the type of postnatal prophylaxis.

Conclusion: Congenital CMV infection was common in this Canadian CHEU cohort. As in other populations, CMV infection was associated with decreased CD4+ and increased CD8+ frequencies. Future research is needed to determine the contribution of CMV to immune dysregulation and infectious diseases among CHEU.

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Preterm births in pregnant women living with HIV with concurrent sexually transmitted infections and bacterial vaginosis in British Columbia

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BACKGROUND: Preterm births, sexually transmitted infections (STIs), and bacterial vaginosis (BV) are common in women living with HIV (WLWH). Our study aimed to identify the impact of antenatal diagnosis of STIs and BV on preterm birth in WLWH.

METHODS: We analyzed the British Columbia perinatal HIV surveillance database for births from January 1997 to December 2022. The primary outcome is deliveries < 37 weeks gestational age (preterm births). "Sexually transmitted infection or bacterial vaginosis" (STIBV) is a composite variable of Chlamydia trachomatis (CT), Neisseria gonorrhoea (NG), Trichomonas vaginalis (TV), or bacterial vaginosis (BV) diagnosis. Risk factors were identified through univariate and multivariate logistic regression analyses.

RESULTS: Out of 578 singleton pregnancies in WLWH, 111 (19.2%) delivered preterm. In our cohort, 11% were identified with STIBV in pregnancy. The preterm birth rate in WLWH with a diagnosed STIBV was 37% vs. 17% in those without (OR: 2.18; p = 0.0003). Specifically, preterm deliveries were more common in individuals with antenatal concurrent Hepatitis C (OR: 2.42; p < 0.0001), Chlamydia trachomatis (OR 2.17; p = 0.036), Trichomonas vaginalis (OR: 2.78; p < 0.001) and bacterial vaginosis (OR: 2.15; p = 0.003). After adjusting for substance use, ethnicity, viral suppression, and preterm birth history, STIBV remains an independent risk factor (RR: 1.95; 95% CI: 1.02 – 3.75; p = 0.045).

CONCLUSION: Sexually transmitted infections and bacterial vaginosis are risk factors for preterm birth in WLWH. For WLWH, comprehensive screening for sexually transmitted and bloodborne infections and bacterial vaginosis in pregnancy is crucial.

Supporting Document

Table 1: Preterm Birth Rate in Pregnant Women Living with HIV with Concurrent Sexually Transmitted and Bloodborne Infectious

		Cohort Total (n = 578) n (% of total)	Term Birth (n = 467) n (rate of term birth)	Preterm Birth (n = 111) n (rate of preterm birth)	Odds Ratio (95% confidence interval)	p-value
Syphilis	Yes	5 (1%)	3 (60%)	2 (40%)	2.1 (0.71 - 6.23)	0.25
	No	573 (99%)	464 (81%)	109 (19%)	1	
Hepatitis B	Yes	14 (2%)	10 (71%)	4 (29%)	1.51 (0.65 - 3.51)	0.32
	No	564 (98%)	457 (81%)	107 (19%)	1	

Hepatitis C	Yes	83 (14%)	51 (61%)	32 (39%)	2.42 (1.72 - 3.39)	<0.0001
	No	495 (86%)	416 (84%)	79 (16%)	1	
Gonorrhoea	Yes	4 (1%)	2 (50%)	2 (50%)	2.63 (0.97 – 7.12)	0.17
	No	574 (99%)	465 (81%)	109 (19%)	1	
Chlamydia	Yes	20 (3%)	12 (60%)	8 (40%)	2.17(1.23 - 3.81)	0.036
	No	558 (97%)	455 (81%)	103 (18%)	1	
Trichomonas	Yes	22 (4%)	11 (50%)	11 (50%)	2.78 (1.77 - 4.38)	0.0009
	No	556 (96%)	456 (80%)	100 (18%)	1	
Bacterial vaginosis	Yes	42 (7%)	26 (62%)	16 (38%)	2.15 (1.40 - 3.29)	0.003
	No	536 (93%)	441 (82%)	95 (18%)	1	
STIBV*	Yes	65 (11%)	41 (64%)	24 (37%)	2.18 (1.5 – 3.16)	0.0009
	No	513 (89%)	426 (83%)	87 (17%)	1	

** STIBV includes chlamydia, gonorrhoea, trichomonas, and bacterial vaginosis diagnoses in pregnancy*

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Differential Effects of Antiretroviral Classes on Placenta Morphology and Vascular Patterning.

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Introduction. Combination antiretroviral (ARV) therapy (ART) is imperative to improving maternal health and preventing perinatal HIV transmission. However, some ARVs have been associated with increased risk for adverse pregnancy and birth outcomes including preterm and small for gestational age births. Proper placental development is essential for the exchange of nutrients, oxygen, and waste products throughout pregnancy. Any impairments to this process may contribute to adverse outcomes. We hypothesized that exposure to specific ARV classes (protease inhibitors [PIs], non-nucleoside reverse transcriptase inhibitors [NNRTIs], integrase inhibitors [INSTIs]) differentially affect placental vascular development.

Methods. Term placentas from 35 Canadian individuals (13 HIV-seronegative, 22 HIV-seropositive) were included. Individuals with HIV were taking either PI- (ritonavir-boosted lopinavir or ritonavir-boosted atazanavir), NNRTI- (nevirapine), or INSTI-based (dolutegravir or raltegravir) ART. Morphological observations were conducted using histological staining (Masson's Trichrome Stain). Quantitative analysis of capillary-per-villous ratios were performed via stereological tools to assess vascular development and patterning.

Results. Histological examination of placentas exposed to NNRTI-based ART revealed an under-branched morphology characterized by a preponderance of intermediate villi and lack of terminal villi. Placentas exhibited a thick syncytium and diminutive capillary structures. Placentas exposed to INSTI-based ART displayed an over-branched and hyper-capillarized morphology accompanied by disorganized smooth muscle in the stem villous structures. In agreement with morphological observations, stereological analysis showed that NNRTI-exposed placentas exhibited a significantly lower capillary-to-villous ratio than HIV-seronegative controls ($p<0.05$). PI-based ART revealed no differences in capillary-to-villous ratios compared to controls.

Conclusions. Our findings highlight the divergent effects of NNRTI- and INSTI-based regimens on placental morphological features. The observed changes in capillary villous ratios underscore the potential shift toward an under-branched state induced by NNRTI exposure. Future studies with a larger sample size are merited to explore associations between ARV-induced placenta morphological changes and birth outcomes.

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Clinical and Sociodemographic Covariates of Amenorrhea in Women Living with and Not Living with HIV in the British Columbia CARMA-CHIWOS Collaboration (BCC3)

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Background: The menstrual cycle, sometimes deemed a fifth vital sign, is a critical indicator of women's health. Amenorrhea, the reversible lack of a menstrual period, increases risk for morbidity and mortality. Amenorrhea research in women with HIV is inconsistent, often lacks an adequate control sample, and seldom reflects the Canadian context. We aim to determine whether women with HIV have a higher lifetime prevalence of amenorrhea and whether this is independently associated with HIV and other bio-psycho-social variables.

Methods: Women sex-assigned female at birth were eligible if aged ≥16 years, not pregnant/lactating, and without anorexia/bulimia nervosa history. Amenorrhea was defined by self-reported history of no period for at least 12 months ever, not due to pregnancy/lactation, medications that affect hormones, or menopause. Univariable and multivariable logistic regression models explored bio-psycho-social covariates of amenorrhea (Table 1).

Results: Overall, 317 women with HIV and 420 similarly aged controls were included (Table 1). History of amenorrhea was significantly more prevalent among women with HIV than controls (24.0 versus 13.3%; p<0.001). In the multivariable analysis, independent covariates of amenorrhea included HIV status (adjusted odds ratio=1.70 (1.10-2.64), older age (1.01 (1.00-1.04)), white ethnicity (1.92 (1.24-3.03)), substance use history (6.41 (3.75-11.1)), and current food insecurity (2.03 (1.13-3.61)).

Conclusions: Amenorrhea is highly prevalent among women with HIV, and associated with some modifiable risk factors including substance use and food insecurity. Given that HIV status is independently associated with amenorrhea, care providers should regularly assess women's menstrual health and advocate for actionable socio-structural change to mitigate risk.

Supporting Document

Table 1. Clinical and demographic characteristics of women with HIV and HIV-negative women include in analyses of amenorrhea prevalence

	Women with HIV (n=317)	HIV-negative women (n=420)	p-value
Clinical characteristics			
Age (years), median [IQR]	47.5 [39.2 to 56.4]	46.2 [32.6 to 57.2]	0.14
BMI* (kg/m^2), median [IQR]	26.7 [22.3 to 32.1]	25.8 [22.0 to 30.5]	0.26
History of amenorrhea, n (%)	76 (24.0)	56 (13.3)	**<0.001**
Currently on antiretroviral therapy, n (%)	288 (90.9)	---	---

Undetectable viral load (<40 copies/ml), n (%)	260 (85.2)	---	---
Current CD4 count, n (%)			
<200 cells/µl	25 (10.0)	---	---
200-500 cells/µl	60 (24.0)		
>500 cells/µl	165 (66.0)		
Nadir CD4 count, n (%)			
<200 cells/µl	131 (50.6)	---	---
200-500 cells/µl	113 (43.6)		
>500 cells/µl	15 (5.8)		
Socio-behavioral characteristics			
Ethnicity, n (%)			
White	118 (37.6)	193 (46.3)	**0.02**
Racialized†	196 (62.3)	224 (53.7)	
Household income‡, n (%)			
≥$20,000 CAD/year	175 (57.0)	257 (63.3)	0.10
<$20,000 CAD/year	132 (43.0)	149 (36.7)	
Tobacco smoking, n (%)			
Never	119 (37.7)	228 (54.5)	**<0.001**
Ever	197 (62.3)	190 (45.5)	
Substance use§, n (%)			
Never	162 (51.4)	280 (67.3)	**<0.001**
Ever	153 (48.6)	136 (32.7)	
Type(s) of substance ever used, n (%)			
Opioids ± stimulants	119 (37.8)	51 (12.3)	**<0.0001**
Stimulants only	34 (10.8)	85 (20.4)	
None	162 (51.4)	280 (67.3)	
Food insecurity‖, n (%)	76 (42.9)	89 (34.2)	0.08
PTSD,** n (%)	70 (33.8)	81 (30.0)	0.43
Ever experienced violence, n (%)	159 (90.3)	226 (87.6)	0.46
Type(s) of violence experienced, n (%)††			
None	17 (9.7)	32 (12.4)	0.38
Physical	111 (63.1)	142 (55.0)	0.10
Verbal	150 (85.2)	216 (83.7)	0.67
Control	83 (47.2)	100 (38.8)	0.08
Sexual	81 (46.0)	111 (43.0)	0.54

Bold p-values indicate p<0.05. ***BMI =** body mass index. **†Racialized =** Indigenous, African/Caribbean/Black, and Other/Mixed. **‡Income** = dichotomized at $15,000 CAD/year in CARMA and $20,000 CAD/year in BCC3. **§Substance use** = prescription or non-prescription opioids, cocaine, crack, and/or methamphetamine. **‖Food insecurity** = measured by three items from the Canadian Community Health Survey Household Food Security Survey ****PTSD** = post-traumatic stress disorder. Measured by the Six-item PTSD Checklist.
Data were missing for BMI (n=9), viral load (n=12), current CD4 count (n=67), nadir CD4 count (n=58), ethnicity (n=6), income (n=24), smoking (n=3), substance use (n=6), food insecurity (n=51), violence (n=54), and PTSD (n=11).

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Adverse socio-structural experiences, concurrent illnesses, and polypharmacy among women living with HIV and HIV-negative women in the British Columbia CARMA-CHIWOS Collaboration (BCC3) Study

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Background: Understanding factors associated with healthy aging is a priority for women living with HIV (WLWH). Data describing associations between socio-structural factors disproportionately affecting WLWH, burden of concurrent illnesses, and polypharmacy are needed to highlight areas for improvement.

Methods: BCC3 is a community-based study of healthy aging among WLWH and controls ≥16y. We included 224 WLWH and 312 controls. Demographics and number of non-HIV prescribed medications were self-reported. The question "has a doctor ever diagnosed you with __" assessed 45 physical and 13 mental health diagnoses. Groups were compared univariately (Mann-Whitney, Fisher's, Chi-Squared tests) and through multivariable negative binomial regression.

Results: Demographics and socio-demographic experiences are reported in Table 1. In multivariable analyses (adjusted for demographics in Table 1), WLWH had fewer mental health diagnoses (rate ratio (RR) 0.81 (95% CI: 0.70-0.93); p=0.003) or medications prescribed for them (RR 0.62 (0.47-0.83); p=0.001). WLWH had a similar number of physical diagnoses (RR 1.03 (0.92-1.14; p=0.61) and medications for them (RR 1.03 (0.80-1.32; p=0.81). Adverse socio-structural experiences were significantly associated with higher number of concurrent illnesses and medication burden. Mental health conditions were associated with substance use, smoking, homelessness, and ethnicity; and their medication burden with substance use, smoking, hepatitis C, education and age. Physical conditions were associated with substance use, homelessness, hepatitis C and age; and their medication burden with substance use and age. All p<0.05.

Conclusions: In BCC3, adverse socio-structural experiences may have more impact on health and treatment than HIV status, suggesting a focus for patient care and advocacy.

Supporting Document

Table 1: Clinical and demographics characteristics in women living with HIV and HIV-negative women in the BCC3 cohort

	Women living with HIV* (n=224)	HIV-negative women (n=312)	P-value
Demographic characteristics			
Age (years), median [IQR]	49 [41-57]	46 [34-57]	0.027
Ethnicity, n (%) *White* *African/Caribbean/Black* *Indigenous* *Other racialized groups*	 82 (37) 41 (18) 75 (33) 26 (12)	 131 (42) 17 (6) 88 (28) 76 (24)	 <0.0001
Education, n (%) *Less than high school grad* *High school grad* *University/college*	 69 (31) 89 (40) 66 (29)	 46 (15) 106 (34) 160 (51)	 <0.0001
Substance use**, n (%) *Current*	 65 (29)	 65 (21)	 0.005

Past	68 (31)	77 (25)	
Never	90 (40)	169 (54)	
Tobacco use, n (%)			
Current	97 (44)	97 (31)	<0.0001
Past	58 (26)	62 (20)	
Never	68 (30)	153 (49)	
Ever experienced homelessness, n (%)	112 (50)	115 (37)	0.003
Hepatitis C virus (HCV) seropositive, n (%)	82 (38)	41 (14)	<0.0001
Self-reported diagnoses and prescribed medications			
Physical health diagnoses, median [IQR]	5 [3-8]	4 [2-7]	0.002
Mental health diagnoses, median [IQR]	2[0-3]	2[0-4]	0.779
Medications for physical health, median [IQR]	1 [0-2]	1 [0-2]	0.199
Medications for mental health, median [IQR]	0 [0-1]	0 [0-1]	0.600

**83% of WLWH were virologically suppressed.*

***Self-reported use of opioids, non-opioid sedating drugs, stimulants, psychedelics at a frequency ≥ once per month.*

Data were missing for substance use (n=2), tobacco use (n=1), ever experienced homelessness (n=3), and Hepatitis C virus seropositive (n=16).

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Predictors of fatal drug poisoning (overdose) in a Canadian HIV-HCV co-infected cohort

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Background: HIV and Hepatitis C (HCV) co-infection disproportionately affects people who use drugs. Drug poisonings (overdose) in Canada cause a significant number of deaths annually. Investigating potential predictors for drug poisoning could help reduce excess mortality. Our aim is to predict 6-month drug poisoning mortality among people living with HIV-HCV co-infection using data from a national co-infection cohort.

Methods: Data from the Canadian Co-Infection Cohort (CCC), a study which has followed 2,000+ participants from across Canada living with HIV-HCV co-infection since 2003, were used. Participants were eligible for analysis if they ever reported injection or non-injection drug use. A wide array of sociodemographic and clinical covariates from the CCC were included, such as age, sex, ethnicity, income, frequency of drug use, use of harm reduction services, and HIV and HCV clinical measures. We used a weighted random forest model using a classification algorithm. Due to the imbalanced data, weights were added to the model to improve model performance.

Results: Of 2,132 total CCC participants, 1,998 met the eligibility criteria. Of those eligible, 1,799 (90%) reported using injection drugs and 1,879 (94%) reported using non-injection drugs. Drug poisoning was the most frequently recorded known cause of death. Of a total of 94 drug poisoning deaths, 53 drug poisoning deaths occurred within 6 months of a participant's last visit. Predictors were ranked in order of importance. Predictors that were consistently ranked in the top third of variables were being on prescribed opioids, being on prescribed benzodiazepines, and sex work.

Conclusion: Uncovering important predictors of drug poisoning is the first step towards developing a prediction tool for use in clinical settings. However, at this time, our results cannot be generalized beyond our cohort given the subjectivity of the weighting approach and the small number of outcomes used to build models.

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Factors associated with not receiving optimal care (NROC) for Hepatitis C (HCV) in the Canadian Co-infection Cohort (CCC)

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Background: HCV micro-elimination involves targeting priority populations to improve the care cascade. People living with HIV-HCV co-infection are important candidates for micro-elimination due to faster liver disease progression and existing linkages to HIV care. Not receiving optimal care(NROC) remains a major challenge for achieving HCV elimination- different groups potentially face different challenges at each care step.

Methods: The CCC, an open cohort of people with co-infection in care across Canada with bi-annual visits was used to identify factors associated with NROC at various cascade steps (2014-2019). NROC, was defined differently at each cascade step, based on what is considered optimal care from a system perspective:
1) failure to initiate treatment within 1-year of diagnosis (Step1)
2) absence of a negative RNA result within 1-year of treatment completion (Step2)
3) absence of a negative RNA result 1-year post-sustained virologic response (SVR;Step3)
Logistic regression models with a random-intercept term for clinic were used for each step. Results are conditional on completing previous steps.

Results: Among 856, 643, and 432 participants, 67%(n=576), 15%(n=97), and 44%(n=191) experienced NROC in Steps 1, 2, and 3, respectively. We observed different patterns across the three steps such as:
1) Indigenous ethnicity, previous incarceration, hazardous-drinking, and low-income were associated with NROC in Step 1.
2) Injection drug use and men who have sex with men(MSM) were associated with NROC in Step 3.
3) Uncontrolled HIV infection, and unknown status of hazardous-drinking were associated with NROC across all steps.

Conclusions: Different groups face different barriers to accessing/staying in care at different stages emphasizing the importance of tailoring interventions to their needs. Markers of vulnerability were associated with NROC in Step 1 but once treatment is initiated, people can be retained in care (Step 2). Ensuring people who inject drugs and MSM remain in care post-SVR (Step 3) is needed.

Supporting Document

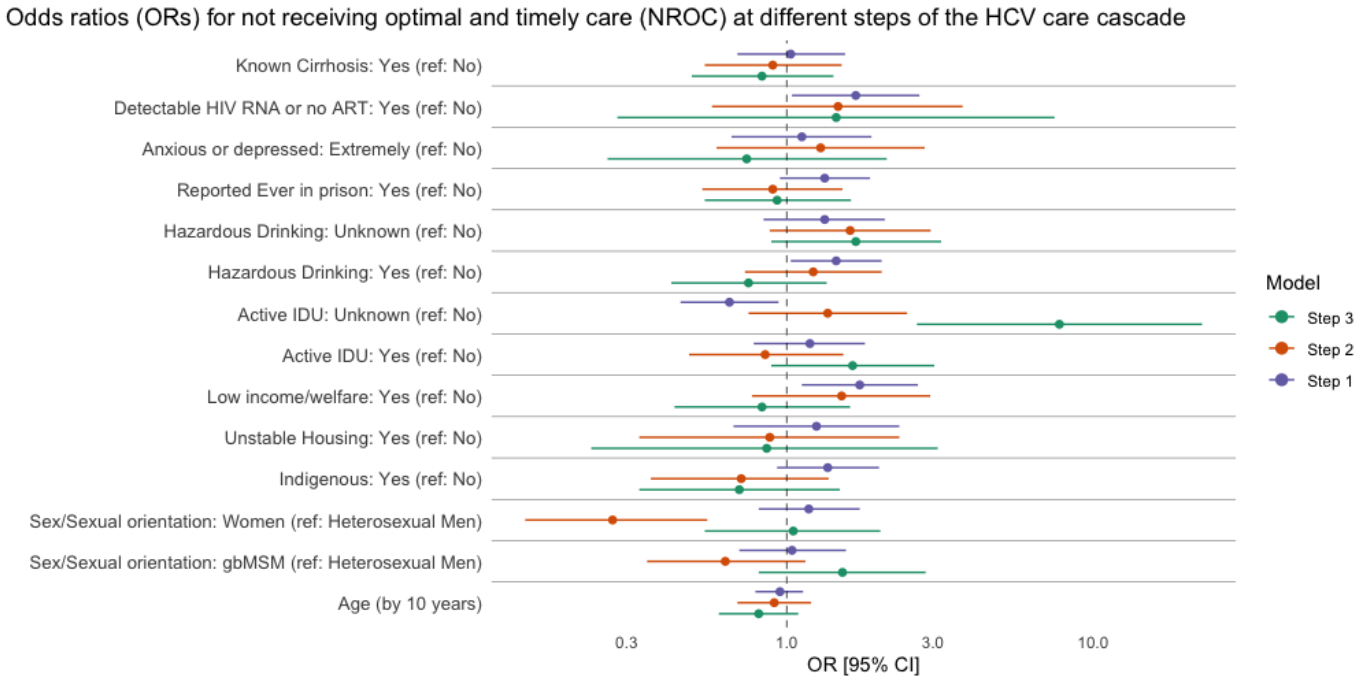

Figure 1: ORs from three logistic models, one for each step. Step 1 includes participants who are HCV positive and are eligible for direct acting antivirals (DAA) coverage. NROC is failing to initiate HCV treatment within 1 year of diagnosis. Step 2 includes participants who initiated HCV treatment. NROC is the absence of a negative HCV RNA result (evidence of sustained virologic response- SVR) within 1 year of treatment completion. Step 3 includes participants who achieved SVR. NROC is the absence of a negative HCV RNA result 1 year post-SVR. Abbreviations: ART: antiretroviral treatment, IDU: injection drug use, gbMSM: gay bisexual and other men who have sex with men, SVR: sustained virologic, CI: confidence interval.

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Hepatitis C therapeutic outcomes among people concurrently living with HIV: Examining the impact of modern DAA therapy in British Columbia

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Objective: Hepatitis C (HCV) therapeutic outcomes have improved after introduction of short-course, pan-genotypic, oral direct-acting antivirals (DAA) with clearance rates of >95%. Despite their effectiveness, DAA treatment access varies among key populations. This study describes DAA treatment outcomes among a population-based cohort of people living with HIV (PLWH) in British Columbia (BC) from 2015 onwards.

Methods: We utilized data from the Seek and Treat for Optimal Prevention of HIV/AIDS (STOP HIV/AIDS) cohort of PLWH between April 1996 and March 2020 in BC, Canada. PLWH aged ≥ 19 years old with an HCV treatment record from January 1 2015 onward and ending on or before March 31 2019 were included with a one-year follow-up for therapeutic outcome and post-treatment measures. First HCV treatment was identified using DAA dispensation from PharmaNet. Therapeutic outcome, SVR (sustained virologic response), was defined using Drug Treatment Program registry laboratory results (10 to 52-week cut-off after treatment end) from the BC Centre for Excellence in HIV/AIDS.

Results: The study included 789 PLWH engaged in HCV treatment in BC from January 2015 to March 2019. Median age at start of treatment was 52 (Q1-Q3: 46-57). Table 1 shows demographic characteristics stratified by SVR achievement. Most common DAA regimens were ledipasvir/sofosbuvir (n=371) and sofosbuvir/velpatasvir (n=274).

Discussion: Findings show descriptive statistics of HCV treatment success among key populations in the STOP/HIV AIDS cohort. Future analysis will model key characteristics associated with achieving SVR. A secondary analysis will test for associations between HCV treatment engagement and HIV treatment adherence.

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Beyond direct-acting antiviral therapy: Characterizing mental health conditions and depressive symptoms among patients recently treated for hepatitis C virus (HCV)

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Background: While hepatitis C virus (HCV) treatments have become increasingly tolerable and effective, it is unclear whether patients undergoing HCV treatment are receiving adequate support to engage in healthcare for comorbid conditions. The objective of this study was to characterize psychiatric disorders and depressive symptomatology among a cohort of patients recently treated for HCV.

Methods: Data from the Preservation of Sustained Virologic Response (Per-SVR) study, a prospective cohort of individuals aged 19 or older who achieved SVR following treatment for HCV in British Columbia (BC), were used for this analysis. Participants were enrolled in the study within three months post-HCV treatment and completed an interviewer-administered survey. We used self-reported lifetime psychiatric diagnoses to characterize mental health disorders. Depressive symptoms were assessed through a validated depression scale (CES-D 10). Multivariable logistic regression modelling was used to assess factors associated with significant depressive symptoms.

Results: Of 256 participants, 142 (55%) reported having been diagnosed with at least one psychiatric disorder, including 86 (34%) with depression, and 49 (19%) with anxiety. Using the CES-D 10, we found that 122 (48%) had significant depressive symptoms. Of those, 82 (67%) reported ever being diagnosed with a psychiatric disorder and 64 (52%) reported ever having accessed psychiatric treatment or care. Factors associated with significant depressive symptoms were illicit drug use (odds ratio [OR]: 3.51; 95%CI: 1.36-9.11), intimate relationship dissatisfaction (OR: 3.43; 95%CI: 1.62-7.24), unstable housing (OR: 2.48; 95%CI: 1.37-4.5), experiencing barriers to healthcare (OR: 2.27; 95%CI: 1.02-5.03), and poorer quality of life (OR: 0.03 [per unit]; 95%CI: 0.01-0.17).

Conclusion: We observed a high prevalence of psychiatric disorders among patients recently treated for HCV, with almost half currently experiencing symptoms of depression. Health services that incorporate the provision of mental health care alongside HCV treatment may alleviate barriers to care and improve health outcomes among HCV-affected populations.

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Hepatitis C virus incidence among gay, bisexual and other men who have sex with men in Vancouver, Toronto and Montreal: 2017 - 2023.

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Introduction: Gay, bisexual and other men who have sex with men (GBM) are a priority population for microelimination of hepatitis C virus (HCV) in Canada. Previous research has demonstrated high levels of treatment uptake among HCV-positive GBM in Montreal, Toronto and Vancouver which should limit HCV transmission risk. We calculated HCV incidence and related correlates among HCV antibody negative GBM recruited in all three cities.

Methods: Sexually active GBM, aged ≥16 years, were recruited through respondent-driven sampling from 02/2017 to 08/2019. Participants completed a computer-assisted self-interview and tests for HIV, HCV, and other sexually transmitted infections at enrolment and every 6–12 months until Feb 28, 2023. Using pooled three-city data, we calculated HCV seroincidence and used multivariable generalized linear mixed modelling to examine associations with new HCV seropositivity.

Results: We recruited 941 HCV antibody-negative participants in Montreal, 378 in Toronto, and 575 in Vancouver with at least one follow-up visit. A total of 19 participants developed HCV seropositivity over a median of 4.21 years (Q1-Q3 3.14–4.61) for an incidence of 0.27 per 100 person-years. New HCV seropositivity was associated with living with HIV (Adjusted Incident Rate Ratio [aIRR]= 5.13; 95% CI 2.01-13.1) older age (aIRR= 1.05; 95% CI 1.02-1.09 per year) and number of anal sex partners in the previous six months(P6M) (aIRR=1.01 per partner; 95% CI 1.01-1.02) but not P6M injection drug use (IRR 0.19; 95% CI 0.03-1.36). We found no differences in seroincidence by city: IRR=0.20 for Toronto (95% CI 0.03-1.31) and IRR=0.46 for Vancouver (95% CI 0.15-1.44) compared to Montreal.

Conclusion: Among urban GBM, we found very low HCV seroincidence. However, older GBM, those living with HIV and those with more anal sex partners are at higher risk. The latter finding and the lack of association with injection drug use suggests that transmission is likely through sex.

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Reducing Gaps In The HCV Cascade-Of-Care Among People Who Use Drugs: Evaluation And Application Of Lessons Learned From A Health Services Implementation Pilot Study

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Background:
Enhancing access to hepatitis C virus (HCV) care and treatment for people who use drugs (PWUD) is critical to eliminating HCV as a public health threat. However, the actions required to improve treatment uptake remain unclear. The Hep C Connect (HCC) study is a nurse-led HCV testing and linkage-to-care intervention developed for clients of a supervised consumption site (SCS) in Vancouver. In this study, we examine opportunities to improve the HCV cascade-of-care among PWUD.

Methods:
The HCC pilot ran from November 2021-October 2023. Participants (SCS clients ages 19+) completed point-of-care HCV antibody (Ab) testing and an interviewer-administered survey. The survey captured experiences with healthcare, drug-use, HCV testing and treatment history, and HCV knowledge. In this analysis, we characterize HCV knowledge (validated 8-item questionnaire) and progress across the HCV cascade-of-care.

Results:
The HCC study engaged 188 participants (median age of 42 (34, 50); 31% identifying as women); 35% reported not having a current primary healthcare provider. Knowledge of HCV was high among participants (median score of 7/8 correct responses). We found a substantial proportion of participants were HCV Ab+: 111/188 (59%) participants had a reactive HCV Ab test. Of those, 62 (55.9%) chose to engage in confirmatory RNA testing, and 30 (27%) returned a positive HCV RNA result. Despite 95% of participants knowing that untreated HCV can result in liver failure and 92% knowing there is a curative treatment for HCV, 44% of participants chose not to engage in RNA confirmatory testing following an HCV Ab+ result.

Conclusion:
The HCC intervention successfully engaged a population with high HCV sero-prevalence and found high HCV knowledge. However, almost half of the HCV Ab+ participants chose not to engage in confirmatory testing. Our results suggest that areas for further intervention should focus on facilitating linkages-to-care and reducing barriers to testing and clinical engagement.

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Power Dynamics in HIV/STBBI Peer Navigation with Black, African, and Caribbean Communities in Manitoba

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Introduction: Research indicates that peer navigators are highly effective in fighting HIV and improving life quality in diverse groups, especially in HIV prevention and treatment. However, there's limited knowledge about their impact in African, Caribbean, and Black (ACB) communities. This study investigates how peer navigators influence HIV testing within ACB communities, examining discourses surrounding peer navigation and the nuances of power dynamics in peer-to-peer interactions.

Methodology: The study adopted a community-based participatory research methodology. It involved conducting detailed interviews with 33 members of the African, Caribbean, and Black (ACB) communities in Manitoba, Canada. To ensure diversity among participants, the recruitment process involved community agencies, social media, and flyers and focused on including a range of ages, genders, and sexual orientations. For analyzing the data, the study used an iterative process of inductive thematic analysis and a critical Afrocentric feminist lens.

Results: Members of the African, Caribbean, and Black (ACB) community perceive HIV peer navigators as knowledgeable professionals who effectively engage with and advocate for their communities. Some argue that peer navigation, by shifting healthcare responsibilities onto communities, masks the health system's flaws and fails to tackle issues like marginalization and discrimination, hindering equitable HIV care access for ACB communities. Participants described peers as community leaders whose visible and accountable roles as insiders not only significantly enhance HIV service utilization by mobilizing communities but also serve as vital connectors between the community and various programs or research initiatives. Finally, cultural discourses on gender and age significantly impact peer navigation in the ACB communities.

Conclusions: To stem the increase of new HIV/STBBI infections in Manitoba's ACB communities, it is imperative for HIV service providers to tackle peer-to-peer power dynamics and develop culturally sensitive prevention strategies for ACB communities.

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Reclaiming the Promise of Peer Navigation. Introducing Healthcare CARES, a Relational Model for Historic Trauma Safe Healthcare

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Truths
Peer navigation is a promising approach to supportive HIV and hepatitis C (HCV) care. Peer navigation can be underutilized by Indigenous women who have lived experiences of HIV and/or HCV (IWLE). This is attributed to Indigenous-specific racism in healthcare and the consequent (re)traumatization of peer navigators and IWLE. As a result, peer navigators burn out and IWLE quit accessing healthcare and disengage from peer navigation in the process. These truths call for reconciliation.

Reconciliation
Peer navigators and IWLE demanded healthcare system change. In response, this study addresses two questions: 1) what needs to change to stop Indigenous-specific racism in healthcare? and, 2) how can we achieve historic trauma safe healthcare?

Journey
Peers4Wellness is an Indigenous-led and community-driven study. This research unfolds in British Columbia. In 2017-2021, we consulted with 54 people (Peers4Wellness community) including peer navigators, IWLE, community organizations and Indigenous community researchers. Knowledge gathering and learning involved ceremony, which was grounded in Indigenous ways and supported by qualitative research methods. The journey culminated with a collective story about the community's approach to reforming HIV/HCV care.

Story
The Peers4Wellness community introduces Healthcare CARES, a reconciliation-oriented relational model for HIV/HCV care. The model aims to decolonize the meaning and standing of peers (a group that includes peer navigators and IWLE) in healthcare. It also introduces Indigenous protocols for practicing historic trauma safe healthcare. These protocols Indigenize the principles of peer navigation and adapt them as standards for all HIV/HCV care. Healthcare CARES provide a foundation for transformative healthcare system change.

Presentation
We will share teachings from the Peers4Wellness story. These include the community's approach to uprooting Indigenous-specific racism. The teachings also set relational standards (Healthcare CARES) for HIV/HCV care so that it is historic trauma safe, hence, supportive of peer navigators and IWLE.

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Advancing Inclusion and Cultural Safety in HIV Leadership Training: A Comprehensive Evaluation by Peer Evaluators

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Background: The Positive Leadership Development Institute (PLDI), funded by the Public Health Agency of Canada, launched an 18-month initiative to enhance cultural safety and inclusion within its HIV leadership training programs. The objective of the project is to build respectful relationships with Indigenous, and African, Caribbean, and Black (ACB) communities, expand PLDI's reach while reducing HIV-related stigma, improve health outcomes, contribute towards Truth and Reconciliation, and examine cultural safety and inclusivity of the leadership training program and delivery methods.

Methods: Adopting a mixed-method evaluation approach, the project utilized over 20 peer evaluators who brought a deep understanding of cultural context reflecting their community's perspective to cultural safety evaluation. The peer evaluators evaluated various components of the training in both online and in-person settings in four provinces using the PLDI cultural safety evaluation manual and shared their perspectives in three different focus groups. Additionally, the PLDI training participants completed the post-training evaluation reflecting on their overall experience around cultural safety and inclusivity.

Results: Evaluation results highlighted that the online and core PLDI training had high inclusivity and good cultural representation. Meanwhile, the focus group discussion emphasized the need for ACB and Indigenous cultural representation in the trainer's pool, curriculum, duration, and delivery of the training components, incorporating various cultural teachings and community representation.

Discussion: The evaluation underscores the critical need for culturally safe approaches in HIV leadership training. With existing gaps in current literature and practices in community-based education, PLDI took steps to evaluate the inclusivity and cultural safety in HIV leadership training by leveraging insights from lived cultural experience. Work is underway to implement and evaluate the key recommendations from the project. Our team acknowledges that these efforts not only aim to improve training outcomes but also contribute significantly to broader health equity and community empowerment.

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The Peer Navigator Project: The Complexities and Nuances of Implementing Peer Navigation with Street-Connected Youth for HIV Care in London, ON.

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The Peer Navigator Project (PNP) is a mixed method collaborative implementation science research project that brings together researchers and community partners in Canada (London, Toronto, Vancouver) and Kenya (Eldoret, Huruma, Kitale) to explore and evaluate the use of peer navigators (PNs) for street-connected youths' (SCY) access to HIV prevention, testing, and treatment. Five PNs are currently working in four 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 HIV.

The London site analyzed qualitative and meeting note data to better understand the complexities and nuances of implementing a PN in their respective site. Qualitative interview data which inquired about the PN role was collected from the PN at 6- and 18-months post implementation and at project completion. Interview data from SCY, healthcare providers, community stakeholders were collected at 6- and 18-months post project implementation. Documented notes from monthly meetings with the PN, Research Assistant (RA), and site Principal Investigator (PI) were reviewed by the RA and analysis involved theme co-creation and member checking with the PN and site PI.

Overall, the PN model has been an adaptable and well-received addition to the active project sites, and SCY has experienced improvements to social determinants of health and access to HIV care. In London, the PN is a positive role model that encourages and supports youth's overall well-being. However, the PN must also navigate several structural, systemic, and interpersonal nuances and challenges based on their social location(s), place of employment, role description, and available support. Despite challenges, the PN role demonstrated a unique and life-saving support to SCY that merits being scaled up and sustained.

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The Qualitative Comic Book Mapping Method for Reducing Intersectional Stigma in the HIV Prevention Cascade: Lessons learned from case studies in Bidi Bidi, Uganda

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Intersectional stigma presents barriers to HIV research and cascade engagement. Graphic medicine, the use of images and text such as in comic books, has been employed to depict lived experiences to promote health, wellbeing, and education. Comic books provide a low-cost, youth-friendly approach to health promotion that is accessible to varying literacy levels. Limited research, however, has described the process of developing graphic medicine approaches for HIV prevention cascade interventions with youth experiencing marginalization in low and middle-income contexts. To address this knowledge gap, we developed the Qualitative Comic Book Mapping approach, whereby qualitative data alongside theoretical and empirical literature was used to inform scenarios that addressed intersectional stigma. Two case studies focused on youth aged 16-24 living in the Bidi Bidi refugee settlement, Uganda, include: 1) HIV prevention, with a focus on post-exposure prophylaxis (PEP), and 2) HIV testing. Steps included conducting focus groups and in-depth individual interviews with affected communities and key informants to explore lived experiences of intersecting stigma, coping, and recommendations to reduce stigma. The Qualitative Comic Book Mapping approach involved: thematic analysis of qualitative data and identification of overarching themes; aligning qualitative themes with theories of change for HIV cascade engagement and stigma reduction; and co-developing comic book scenarios with youth and community experts to integrate lived experiences alongside theoretical underpinnings. Youth were provided completed and blank versions of comics to complete themselves. Comics were well received by youth and service providers. Best practices include multi-lingual comics; integrating strengths-based and gender-transformative scenarios; and ensuring contextually relevant comic scenarios (e.g., trees, clothing, hairstyles). Case study 1 was associated with reduced sexual violence stigma and increased PEP knowledge and acceptance. Theoretically-informed comic books can be developed from qualitative data to inform HIV research and intervention approaches in community-based research with and for youth experiencing intersecting stigma.

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Utilizing A Peer-Led Model To Increase Access to HIV Testing for African, Caribbean, and Black Communities

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Background: African, Caribbean, and Black (ACB) people in Canada are disproportionately impacted by HIV/AIDS. Statistics show that although ACB people only represent 3.5% of the Canadian population, they represent 21.9% of all new HIV infections (Etowa et al., 2022). A key factor has been attributed to multiple determinants of health that produce barriers to accessing culturally aware HIV services.

Peer support models have been utilized in various aspects of healthcare, as a tool to connect people to support and care. The ability for clients/patients to receive support from someone with lived experience has proven to be a valuable asset in reducing barriers to healthcare services. This paper will discuss the utilization of a peer-led model to increase access to HIV testing through peer-led outreach and distribution of the INSTI HIV self-test kit in community settings for ACB people.

Method: We pulled from several HIV testing peer-led interventions conducted to increase access to HIV testing for ACB women and community members in the Greater Toronto Area. Three ACB women were recruited and trained to distribute the INSTI HIV self-test kit in collaboration with Community Link, a community-driven initiative to distribute kits in community settings across Canada. The peers conducted weekly distribution through individual encounters, as well as community events.

Results: Preliminary findings between June 2023 and November 2023; the peers have distributed 2780 kits through individual encounters, and 1565 kits have been distributed at community events. This strategy has identified the peers as top distributors in Ontario by Community Link.

Conclusion: Through the utilization of peers who reflect the diversity within the ACB community, we have identified a strategy that aims to reduce barriers to access to HIV testing for ACB people. These preliminary findings show great promise in addressing the disproportionate impact on HIV/AIDS for ACB people in Canada.

Poster Abstracts – Basic Sciences / Abrégés affiches – Sciences fondamentales

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Linkage of a SNP near the CHD1L locus to amino acid variants in HIV integrase in a Kenyan population

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HIV viral load (VL) is variable between individuals, with host genetics and viral fitness contributing to this variability. For example, a locus on chromosome 1, near CHD1L, is associated with control of HIV replication. Recently we showed that this region is also linked to amino acid (AA) variation in HIV reverse transcriptase (RT) and gag in a South African cohort primarily infected with HIV subtype C. To assess the reproducibility of these findings, across diverse populations and viral subtypes, we acquired plasma for 33 PLWH from Kenya. HIV sequences for RT, protease (PR), and integrase (IN) were acquired via Sanger sequencing and genotypes for 4 host variants near CHD1L were acquired by qPCR. Of 33 individuals, we were able acquire RT, PR, and IN sequences for 27 individuals primarily infected with subtypes A and D. Genotyping was successful for all 27 individuals and 5 individuals were heterozygous for the minor allele of the 4 variants. Logistic regression was used to test the association between HIV AA variants in RT, PR, and IN with host alleles near CHD1L. Due to the small sample number, we were unable to test for an association at RT codon 248, as a majority of sequences did not cover RT up to codon 248. However, adding to our previous findings, we observed significant associations between the CHD1L variant rs7519713 and codons 60 (p=1.3x10-2) and 216 (p=3.3x10-2) of IN suggesting a mechanism of HIV restriction by CHD1L at integration. Here, we report on the success of HIV sequencing and host genotyping from plasma samples >15 years old and we show evidence of selective pressure by variants near CHD1L on IN. Our findings provide further insight into how genetic variability, near the CHD1L locus, contributes to viral evolution and host control in a population highly affected by HIV.

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Flow Cytometry Panel Development: Measuring HIV Risk Markers in T Helper Subsets in PBMCs

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Background: HIV remains a major global health issue, with over 39 million people living with the virus and 1.3 million new infections in 2022 alone. During infection, HIV specifically targets the CD4 molecule found on T helper cells (Th cells) to mediate its viral entry. There are five well-characterized subsets of CD4 T cells: Th1, Th2, Th17, regulatory T cells, and follicular helper T cells. The Th subsets are particularly important to the immune system due to their specialized cytokine productions, enabling them to target specific classes of pathogens. Moreover, different Th subsets can exhibit varying levels of susceptibility to HIV infection. To investigate these HIV target cells, we are developing a flow cytometric assay to detect Th subsets and measure their expression of biomarkers associated with increased HIV risk.

Methods: The development of this assay involved utilizing peripheral blood mononuclear cells (PBMCs) from healthy Winnipeg donors (n=4). Following PBMC isolation, cells were pre-stained for chemokine receptors to identify specific Th subsets: Th1 (CCR6-CXCR3+); Th2 (CCR6-CXCR3-CCR4+); Th17(CXCR3-CCR6+CD161+); Th1/17 (CCR6+CXCR3+). Following pre-staining, the cells were subjected to ex vivo staining for T cell markers (CD3, CD4, and CD8 T cells) and activation markers (CD38, HLA-DR, and CD69).

Results: This assay has been optimized for clone interactions, fluorescence compensation, voltage titration, and antibody titration. Upon implementation, this assay can measure the % frequency of the following Th subsets in PBMCs: Th1 (% mean ± SD: 12.10± 1.54), Th2 (12.60 ± 8.37), Th17 (6.38 ± 3.36), Th1/Th17 (6.53 ± 2.52). Moreover, the assay can also measure activation markers associated with increased HIV risk (CD38, HLA-DR, CD69, CCR5) in each Th subset, resulting in 24 potential readouts.

Conclusion: Moving forward, this assay will be employed to characterize HIV susceptibility in PBMCs collected from sex workers in Nairobi, Kenya.

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Biochemical and Functional Characterizations of HIV-1 Nef Isolates Exhibiting Differential Virulence

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Human Immunodeficiency Virus Type 1 (HIV-1) is a global burden, with an estimated 36.9 million people currently living with HIV-1 (PLWH). HIV-1 evades the immune system using its accessory proteins to interact with host cellular proteins. One of those accessory proteins, Nef, decreases the levels of cell surface molecules such as cluster of differentiation 4 (CD4), major histocompatibility complex class I (MHC-I), and Serine Incorporator 5 (SERINC5) to accelerate T cell decline in untreated PLWH. As we have previously measured the levels of CD4 and SERINC5 levels in PLWH, which may be related to associated disease progression, we hypothesized that the ability of Nef to downregulate surface molecules could affect the overall pathogenesis of HIV-1.

We wish to investigate our hypothesis using a recently discovered hypervirulent variant of Subtype B HIV-1 in the Netherlands, which led to higher viral load and quicker T cell decline in PLWH harbouring this variant. To uncover the relationship between Nef functions and HIV-1 virulence, we aim to measure other surface molecule downregulation activities mediated by Nef in the hypervirulent HIV-1 subtype B variant during infection. Furthermore, although the common pathway of Nef-mediated SERINC5 and CD4 downregulation is characterized, we have identified a polymorphic motif in Nef that only influenced SERINC5 downregulation. We will explore how this motif affects Nef functions and potential novel pathways.

This research will provide insight into Nef functions that could enhance HIV-1 subtype B virulence and explore Nef motifs involved in modulating surface molecule downregulation. Overall, this research may shed light on the development of new therapeutic interventions to control HIV-1 pathogenicity during an infection.

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Novel Approaches to Study the HIV Envelope Glycoprotein using Flow Virometry

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The HIV envelope glycoprotein (Env) is critical for infection, as it is the key protein mediating viral attachment and entry. Moreover, it is the only viral protein present on the HIV surface, making it a central target in vaccine development. However, Env is notoriously difficult to target because it is present in low amounts on the virus surface, has high genetic variability, and a high level of glycosylation. These features present key challenges to studying the basic biology of HIV Env using conventional techniques, and have limited knowledge discovery. Herein, we demonstrate the utility of a novel approach to study HIV Env, using Flow Virometry (FV), an emerging technique that can sensitively probe virion surfaces in a high-throughput, single-particle manner.

We performed FV on HIVIIIB produced in the H9 T cell line, using indirect staining techniques with a panel of 85 monoclonal anti-Env antibodies. A subset of antibody stains were performed in the presence/absence of soluble CD4, to detect differences in Env conformations. We also assessed the accessibility and quantity of Env in the context of different virus models, comparing antibody binding to the same HIV isolate (HIVBaL) produced in different cell types (293T, T cell lines, and PBMC).

We observed that many anti-Env antibodies can be used in indirect staining techniques to study HIV Env with FV, with the highest quantitative staining results using anti-V3 loop antibodies. Env staining with FV was influenced by the virus model used, with highly divergent staining observed on identical viral isolates produced in different cell types. We also observed that some antibodies perform differently when tested in parallel across different assays (FV, neutralization, and virus capture) applied to identical viral stocks. By staining viruses in the presence/absence of soluble CD4, we showed that FV can sensitively assess differences in the HIV trimer conformation.

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Identifying the Regulatory Role of CLK Kinases in the Control of HIV-1 Gene Expression

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The major barrier to a cure for HIV-1 is the reservoir of latently infected cells primarily within memory CD4+ T cells. Thus, understanding the regulation of HIV-1 expression is critical for developing curative therapies for HIV-1, by affecting either provirus transcription or processing of viral RNA. Our lab determined that SR kinases, known regulators of RNA splicing, can modulate HIV-1 gene expression and latency. Specifically, we found that CLK1 suppresses transcription initiation from the HIV-1 promoter, while CLK2 affects post-initiation events essential for the accumulation of viral mRNA. Our investigations have shown that depletion of CLK1 also increases the percentage of cells responding to latency-reversing agents (LRAs), indicating that CLK1 plays a role in regulating HIV-1 latency. To further investigate these mechanisms, we have examined the impact of depleting specific CLKs on HIV-1 promoter activity. Consistent with our current model, reducing CLK1 levels enhances HIV-1 promoter function, while depletion of CLK2 or CLK3 has no effect. In experiments investigating the effects of CLK2 depletion on nascent HIV-1 RNA expression, we observed a significant decrease in completely spliced viral RNA abundance but other viral RNAs were minimally affected, indicating that CLK2 is essential for the removal of the last intron. Parallel ChIP assays revealed that all CLKs selectively associate with the HIV-1 promoter, consistent with the hypothesis that CLKs act in a local fashion to regulate various steps of HIV-1 gene expression. Additionally, we have demonstrated that the depletion of CLKs to levels that affect HIV-1 gene expression has limited impact on expression of most host genes, at the level of RNA abundance, alternative splicing, or polyadenylation. Collectively, these findings highlight the sensitivity of HIV-1 gene expression to small changes in CLK activity, indicating that CLKs are promising targets for development of curative strategies for HIV.

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Dynamics of Cytotoxic CD4 T Lymphocytes during SIV Infection

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CD4+ T cells are essential for helping B cells and cytotoxic CD8 T cells. Notably, a subset of CD4+ T cells exhibits cytotoxic activity, known as CD4 CTL, that has been previously described in the blood and to participle in the control of viral infections. They express molecules related to CD8 T cells like granzyme B and perforin. However little is known about the distribution of these effector cells in the tissues. Thus, we investigated the dynamics of these cytotoxic CD4 T cells during SIV infection in rhesus macaques.

Over forty rhesus macaques (RMs) were studied, including healthy, SIVmac251-infected RMs, ART treated and RMs subjected to ART interruption. After sacrifice, lymphoid tissues, including the spleen, mesenteric and axillary/inguinal lymph nodes, as well as blood were recovered. Dynamics and phenotype of CD4 T cells expressing cytotoxic molecules (perforin and granzyme B) were analyzed by flow cytometry. Bulk RNA-seq transcriptomic experiments were performed on distinct CD4+ T cell subsets to analyze more in deep transcriptional gene profiles.

Our results demonstrated that cytotoxic CD4 T cells are predominantly present in the blood and spleen of healthy RMs highlighting the compartmentalization of these cells in different anatomical tissues. Interestingly, we observed that the percentages of this population decrease during SIV-infection. Additionally, we observed that differentiated CD4 T cells exhibit a prevalent expression of cytotoxic molecules reflecting the full differentiation of these cells although associated with short-half life. Early ART transiently prevents the depletion of this population in the blood that nevertheless decreases upon ART discontinuation.
Thus, their depletion in the blood and spleen, early after infection, may contribute to the absence of effector cytotoxic CD4 T cells associated with the absence of viral control.

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Identification of Novel G4-binding Candidates That Influence HIV-1 Proviral Integration in the Human Genome

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One of the biggest obstacles in curing HIV-1 infection is the elimination of infected cells that remain in a dormant state and do not actively replicate, a state referred to as latency. One important facet of HIV-1 latency involves the ability of the HIV-1 genome to integrate into regions of the human genome that promote latency.

Previously, we showed that HIV-1 specifically targets non-canonical B-form DNA (non-B DNA) features, particularly guanine quadruplex (G4), for integration. Non-B DNA structures are alternative DNA structures that differ from the regular B-DNA double helix conformation and assume different shapes and structures, akin to a genomic form of Braille. We showed that integration near one form of non-B DNA, G-quadruplex (G4) DNA, increases the pool of latently infected cells. To better understand how the HIV-1 pre-integration complex (PIC) targets G4 DNA, we compared the integration site profiles of HIV-1 containing subtype A, B or D variants of integrase. We showed that the subtype D integrase variant significantly enhanced integration site targeting of G4 DNA compared to subtypes A and B. Co-immunoprecipitation of the different HIV-1 PICs, followed by comparative liquid chromatography mass spectrometry analysis of the PIC proteins, identified Nucleolin, Nucleophosmin, and Heterogenous nuclear ribonucleoprotein A1 as G4 DNA binding candidates that were enriched in subtype D PICs. As such, this data identifies novel human protein candidates that may direct the PIC to host G4 DNA during integration and influence integration patterns. Likewise, our findings also shed light on potential mechanisms behind HIV-1 latency and introduces promising avenues for antiviral drug therapies targeted to eradicating latent HIV-1 reservoirs.

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Modifying Glycans on HIV-1 to Determine Optimal Envelope Composition for Heterosexual HIV Transmission

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Heavily glycosylated, the envelope of human immunodeficiency virus 1 (HIV-1) plays a key role in its transmission. During transmission, a single HIV-1 clone, the transmitter/founder (T/F) virus, establishes infection within the new host. Previous work done by our group has focused on characterizing the traits of T/F HIV-1 that allow for its successful transmission and identified glycosylation as a selection factor for transmission in human genital tissue. During ex vivo experiments when genital tissues were saturated with lectins that prevented glycans on the HIV-1 envelope from binding, the virus was better able to enter the tissue and establish infection. Thus, the role of HIV-1 envelope glycosylation and its influence on the establishment of infection is a central focus of our group's research.

We believe that the type and amount of glycans on the HIV-1 envelope may be a selection factor for efficient transmission. However, TF HIV-1 propagated in vitro has the specific glycan patterns of the cell lines used for propagation. These glycan patterns are distinct from those present on the TF HIV-1 from an infected individual's blood or vaginal tract. We propose to instead, systematically modify the glycans on HIV-1 to determine the best glycan composition for the most efficient heterosexual transmission. Glycans will be modified by treating virions with glycosidases and propagating viruses in cell lines with inhibited transferases created using CRISPR/Cas9. These glycan-modified HIV-1 virions will then be tested for transmission fitness in human genital tissues to determine the best glycan composition for efficient transmission. HIV-1 envelope glycosylation continues to be a major challenge in vaccine development. Through this project, we aim to identify the most optimal glycan composition for an HIV-1 vaccine design and to expand the scientific understanding of glycans and their role in HIV-1 transmission.

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The Inflammasome-Pyroptosis Axis in HIV-Associated Neurocognitive Disorder: Activation of Gasdermin B in Neural Cells

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Over 38 million people live with HIV infection, of whom 25% will experience neurological disability. HIV infection activates the brain's innate immune cells causing inflammation and neuronal death that underpins the neurodegenerative disorder, HIV-associated neurocognitive disorder (HAND). Inflammasome activation triggers the proteolytic cleavage and release of specific cytokines (IL-1beta and -18) and a type of inflammatory programmed cell death termed pyroptosis. Pyroptosis is mediated by a group of proteins called the gasdermins that undergo proteolytic cleavage mediated by caspases and other proteases; the cleaved gasdermins cause plasma membrane pore formation with ensuing cell lysis and death. We investigated that the primate-specific pyroptosis-associated protein, gasdermin B (GSDMB). In the brain tissues from patients with HAND, GSDMB was highly expressed based on the RNA-seq analyses of frontal cortex that was confirmed by RT-PCR.

Immunofluorescence studies revealed increased GSDMB expression in glial cells, which was verified by GSDMB western blotting of neural cells showing increased expression in astrocytes. RNA-seq showed increased caspase-1 transcripts in brain samples from HIV-infected persons. Cleavage of GSDMB by caspase-1 resulted in a N-terminus moiety (N-GSDMB). Immunodetection revealed GSDMB to be expressed in oligodendrocytes and astrocytes of HIV [+] brains and antiretroviral therapy (ART) treatment in patients with HIV decreased GSDMB expression versus non treated patients. Expression of N-GSDMB in transfected astrocytes caused pyroptosis, evidenced by increased LDH release, in contrast to the transfected full-length or C-terminus of GSDMB. In a model of SIV infection of nonhuman primates, we observed increased GSDMB immunoreactivity in the brains of animals with encephalitis including the N-GSDMB moiety.

In conclusion, GSDMB was principally expressed in astrocytes and oligodendrocytes within human brain of HAND patients while ART supressed GSDMB expression. N-GSDMB generation caused pyroptosis in astrocytes. The GSDMB cleavage-pyroptosis pathway could be considered a druggable target that contributes to neurodegeneration in HIV infection.

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Alarmingly High Pretreatment Resistance Against Non-Nucleoside Reverse Transcriptase Inhibitors in Uganda

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While antiretroviral drugs cannot cure HIV-1 infections, they allow millions of HIV-1 patients globally to live essentially normal lives. However, the development of drug resistance against antiretroviral drugs presents a major barrier. Drug resistance has been documented against all classes of antiretroviral drugs, and resistant strains can be transmitted to newly infected, treatment-naïve patients. Pretreatment drug resistance is a major problem in low-to-middle income counties, where alternative drug availability may be limited. Uganda is a geographically diverse country with distinct rural and urban regions, and it has among the highest global burden of HIV-1. Here, we aim to determine the frequency of pretreatment drug resistance regionally and over time in Uganda. We collected >3000 protease/reverse transcriptase sequences from treatment-naïve Ugandan patients between 1997 and 2017. This represents by far the largest collection of pretreatment sequences from Uganda and the only sequence set divided by region to our knowledge. We predicted drug resistance against the most commonly used antiretroviral drugs using the Stanford DRM penalty scoring system. We note a low frequency (<2%) of resistance against the WHO-recommended nucleoside reverse transcriptase inhibitors, especially in central Uganda. Similarly, resistance against protease inhibitors is low (<2%) over time and in all regions of Uganda. However, resistance against non-nucleoside reverse transcriptase inhibitors is alarmingly high (>15% in central Uganda) and appears to be increasing over time. Thus, non-nucleoside reverse transcriptase inhibitors should not be recommended for widespread use in patients initiating antiretroviral therapy in Uganda. Similarly, this work serves as a warning to other countries which still recommend the use of non-nucleoside reverse transcriptase inhibitors in initial therapies in their national guidelines.

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Tryptophan catabolism in people living with HIV under anti-retroviral therapy diagnosed with subclinical coronary artery disease

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Background: Despite the success of ART, people living with HIV (PLWH) suffer from inflammatory comorbidities such as coronary artery disease (CAD). Tryptophan (Trp) catabolism into Kynurenine (Kyn) via the IFNg-inducible enzyme indolamine2,3-dioxygenase (IDO), is associated with HIV disease progression and atherosclerosis. Herein, we assessed the Trp metabolism in PLWH with subclinical CAD.

Materials and Methods: Plasma specimens from HIV+CAD+ (n=34), HIV+CAD- (n=32), HIV-CAD+ (n=17) and (4) HIV-CAD- (n=23) participants were obtained form the Canadian HIV Aging Cohort Study. CAD was assessed by cardiac computed tomography angiography. Plasma levels of Tryptophan metabolites were measured by solid-phase-extraction liquid chromatography–tandem mass spectrometry. Soluble inflammatory mediators were measured by Luminex or ELISA.

Results: IDO activity defined by Kyn/Trp ratio, was significantly increased in HIV+CAD+ compared to HIV-CAD- (p=0.0023) and HIV-CAD+ (p=0.0018). Accordingly, plasma IFNg levels were highest in HIV+CAD+ individuals within study groups and correlated positively with Kyn/Trp ratio (p=0.02, r=0.435). Positive correlation of Kyn/Trp ratio with plasma IP-10 levels in both HIV+ and HIV- groups were observed, while independent of the CAD status. Significant increases in the Trp metabolites kynurenic acid, althranilic acid were observed in PLWH, while the levels of xanthurenic acid were decreased in PLHW independent of their CAD status. HIV+CAD+ individuals also exhibited with the highest plasma levels of the markers of gut mucosal damage REG-3α and IFABP within study groups, but only IFABP was associated with the CAD status. Increase in the levels of other inflammatory mediators sTNFR-II and IL-6 were associated to the presence of HIV, but independent of CAD.

Conclusions: IDO activity and Trp/Kyn ratios were increased in HIV+CAD+ individuals compared to both HIV negative groups, along with their higher levels of the markers of the gut mucosal damage and IFNg.

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Within-host phylogenetic analysis of reservoir-origin viremia in non-B HIV Subtypes

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People with non-subtype B HIV are underrepresented in studies of reservoir-origin viremia, defined as persistent low-level viremia (PLLV) during ART and post-ART rebound viremia. We characterized PLLV in an individual with HIV subtype A ("P1"), and HIV rebounding in plasma following ART interruption in an individual who experienced HIV superinfection with a unique recombinant form (URF) ("P2").

P1, diagnosed in 2003, initiated ART in Fall 2006. Viremia was largely suppressed until early 2020, after which a prolonged PLLV episode (50-709 copies/ml) occurred. During this time, plasma ARV levels were confirmed by mass spectrometry, and longitudinal plasma genotyping identified a clonal sequence lacking drug resistance mutations. This was consistent with a reservoir origin, so we conducted full-genome proviral sequencing to locate the source. P2, diagnosed in 2010 with HIV subtype B, subsequently experienced superinfection with a subtype G/CRF02_AG URF before initiating ART in Spring 2012. P2 interrupted ART in 2018, allowing us to characterize rebound viruses in context of on-ART proviral diversity.

P1's PLLV sequence harboured a 3-base deletion in HIV's major splice donor (MSD) site, which is predicted to yield non-infectious virus. Proviral sequencing identified 12 clones identical to the PLLV, consistent with a clonally-expanded source. Preliminary virus culture experiments using molecular clones supported the PLLV as non-infectious; restoring the deleted bases rescued function. For P2, on-ART proviral sequencing revealed 20% subtype B and 80% URF sequences, with replication-competent proviruses of both subtypes identified by viral outgrowth. After ART interruption, rebound HIV was genetically diverse and comprised 9% B and 91% URF, with no novel within-host recombinants detected. Notably, more recently-archived lineages emerged in plasma first.

In non-B HIV subtypes, clonally-expanded reservoir cells harbouring MSD-defective HIV can drive non-infectious PLLV. During ART interruption, diverse HIV lineages reactivate sequentially. These findings deepen our understanding of HIV reservoir dynamics in non-B subtypes.

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Lack of T Cell Mutational Escape during Analytical Treatment Interruption in Early Treated HIV

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Background:
The HIV viral reservoir persists in latently infected CD4+ cells and rebounds upon treatment interruption, hindering a sterilizing cure. Understanding the mechanisms of virus re-emergence may inform cure treatment strategies. Potential factors include HIV escape from CTL responses or inadequate HIV-specific CTL responses. It is unknown whether mutational escape from HIV-specific CTL responses occurs during viral rebound in early-treated individuals (<6 months).

Methods:
To determine if rebound HIV displays mutational escape from pre-cART T cell responses, subject immune responses were epitope mapped and plasma virus was sequenced prior to treatment and during analytical treatment interruption (ATI). Participants (n=4) were treated during the early phase of infection and later participated in the placebo group for an HIV therapeutic vaccine trial in which ATI was a component (NCT01859325). We mapped subject-specific anti-HIV epitopes using IFN-γ ELISpot assays with peptides spanning Gag, Pol, Env, and Nef (NIH reagents program). Plasma virus was sequenced pre-cART and post-peak viral rebound during ATI and mutational escape was assessed by comparing amino acid sequences of CTL-eliciting epitopes from both timepoints.

Results:
By ELISpot, only Gag epitopes elicited responses in all subjects. Furthermore, we determined that amino acid sequences from plasma HIV RNA harvested prior to cART initiation and following peak viral rebound during ATI showed no instances of mutational escape in confirmed CTL-eliciting epitopes. When comparing pre and post ATI sequences, only one mutation was observed in an individual during ATI which putatively corresponds to Env escape from the antibody response.

Conclusions:
Our results suggest that immune epitope escape to pre-existing T cell responses is not a major factor in viral rebound of HIV during treatment interruption for early-subjects patients. Other immunological factors such as T Cell exhaustion, or reservoir resistance to killing by CTL should be investigated to understand viral rebound dynamics during ATI.

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Determining the Impact of Non-Subtype B Nef-Mediated SERINC5 Downregulation on the Size of the Latent Reservoir in People Living with HIV-1

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Due to the existence of a latently infected immune cell population, termed the latent reservoir, Human Immunodeficiency Virus Type 1 (HIV-1) persists in people living with HIV-1 (PLWH) on antiretroviral treatment (ART). Recent studies have shown that the ability of the HIV-1 accessory protein Nef to downregulate Major Histocompatibility Complex Class I (MHC-I) positively correlates with the size of the latent reservoir in PLWH on ART. Most research on the latent reservoir involves high-income countries dominated by the Subtype B strains. As such, little is known of the impact non-Subtype B Nef proteins have on the latent reservoirs of PLWH in lower-middle-income countries.

To address this, the MHC-I downregulation ability of non-Subtype B Nef proteins from ART-treated PLWH in Uganda was characterized and demonstrated a positive correlation on latent reservoir size. However, it is unknown if Nef's other functions affect latent reservoir size. SERINC5 – a cell surface host restriction factor – incorporates into the host-derived membrane during egress and reduces progeny virion infectivity. To counteract this, Nef downregulates SERINC5 from the cell surface to restore infectivity.
As SERINC5 downregulation is important for enhancing infectivity, we hypothesize that the ability of non-Subtype B Nef derived from PLWH in Uganda to downregulate SERINC5 will also positively correlate with the associated latent reservoir size. To test this, primary nef sequences will be cloned into pN1 expression vectors to produce a Nef protein C-terminally linked to the eGFP fluorophore upon cellular expression. The clones will be expressed in CD4+ HeLa cells along with plasmids encoding SERINC5, with cell surface levels being determined via flow cytometry. Additionally, we will carry out luciferase assays to determine how SERINC5 downregulation impacts virion infectivity.

Overall, we aim to characterize non-subtype B Nef's ability to downregulate SERINC5, and its relationship with latent reservoir size in PLWH on ART.

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Phenotypic analysis of the inducible HIV-1 reservoir suggests an increased potential for cell survival and viral silencing during ART

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The major obstacle to HIV cure is the persistence, despite antiretroviral therapy (ART), of a pool of latently infected cells. Most infected CD4+ T cells persisting under ART display a central (TCM) or effector memory (TEM) phenotype. Considering the differences between them, we hypothesized that the mechanisms underlying the persistence of infected TCM and TEM cells may differ.

We studied longitudinal samples (3-24 years of ART) from 10 ART-treated participants, using a modified HIV-Flow approach to analyze the phenotype of cells harboring inducible proviruses. CD4+ T cells were stimulated for 24h with anti-CD3/anti-CD28 antibodies, which minimally affected the expression of cellular markers and allowed us to compare the phenotype of p24+ and p24- cells.

p24+ cells expressed lower levels of HLA-ABC than p24- cells ($p=0.026$, fold decrease 1.4), likely reflecting the downregulation of class I molecules by Nef and Vpu. The immune checkpoint molecules PD-1 and TIGIT, which were previously shown to favor latency maintenance, were both expressed at higher levels in p24+ cells ($p<0.0001$, fold increase 1.8 and $p<0.0001$, fold increase 3.4, respectively). Similarly, CD127, the receptor of IL-7, was expressed at higher levels in p24+ cells ($p<0.0001$, fold increase 2.4). Furthermore, p24+ cells more frequently expressed the anti-apoptotic protein Bcl-2 ($p=0.006$, fold increase 1.1) as well as Granzymes A and B ($p<0.0001$, fold increase 6.2 and $p=0.02$, fold increase 6.8). The only notable difference between TCM and TEM in p24+ cells was a stronger downregulation of HLA-ABC in TEM compared to TCM ($p=0.025$, fold decrease = 2.7). A longitudinal analysis of our limited number of samples, revealed increased expressions of granzymes A and B over time during suppressive ART ($p=0.009$, $r=0.55$ and $p=0.005$, $r=0.59$, respectively).

Our data suggest that persistently infected cells have increased capacity for cytotoxicity, survival and viral silencing compared to non-infected cells during ART.

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Combating HIV and Influenza through targeting of cellular RNA processing pathways

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From the seasonal influenza to the ever enduring crisis of HIV, the viruses' ability to rapidly adapt and resist current therapeutics has become increasingly evident. The existing arsenal of antiviral medications, often targeted to viral proteins such as polymerase or protease in HIV, or neuraminidase for influenza to prevent new viral particles release, have struggled to keep up with the rapid evolutionary adaptation of viruses. Both HIV and Influenza genomes are compact, coding for multiple proteins whose expression relies on alternative RNA splicing for their replication. This requirement for a cellular process presents an opportunity to approach antiviral strategies from a host perspective by targeting RNA processing steps. We hypothesize that modulation of key splicing machineries and their regulators can hinder virus replication. SR (Serine-Arginine) proteins and Heterogeneous nuclear ribonucleoproteins (hnRNPs) are conserved host proteins involved in both host and viral RNA processing. We curated a chemical library of SR kinase inhibitors and compounds that modulate HNRNPs' binding and expression to test our hypothesis. Screening of this library identified several compounds that are able to inhibit both HIV and influenza replication. Here, we present various evidence in the context of HIV and influenza on the capacity of select compounds to reduce viral RNA and protein, accumulation at the level of RNA synthesis, stability or changes in alternative splicing site usage that correlate with changes in SR protein phosphorylation patterns. These studies set the stage for the future exploration of inhibitors that target the RNA processing steps as antivirals, potentially leading to a therapeutic breakthrough in the ongoing battle against viral infections.

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Understanding the cellular mechanisms that drive clonal T cell expansion of the HIV reservoir

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Successful antiretroviral therapy (ART) reduces mortality rates by suppressing Human Immunodeficiency Virus-1 (HIV) replication to undetectable levels in people living with HIV (PLWH). However, ART is not curative due to the establishment of the HIV reservoir that continues to persist despite prolonged ART. It has been established that long-lived memory T cells represent the most important HIV reservoir population and that a large proportion of the reservoir is composed of CD4+ T cell clones which are established early after infection and increase during ART treatment. Our studies show that cognate dendritic cell (DC):T cell interactions drive clonal expansion of latent T cell subsets in which CD28 plays a major role in regulating proliferation while IL-7 supports a pro-survival state. Low antigenic stimulation drives proliferation without viral reactivation in latent T cell subsets indicating that during interaction with antigen presenting cells, the magnitude of T cell receptor (TCR) stimulation is a key regulator of proliferation and survival mechanisms that maintain the HIV reservoir.

However, it remains unknown how antigen stimulation regulates opposing biological processes of proliferation leading to clonal expansion and viral production leading to cell death. Here, we utilized a dual-fluorescent HIV latency reporter and human CD4+ T cell clones to modulate TCR signaling strengths using a panel of altered peptide ligands, and directly examined the relationship between TCR signals and proliferative responses by latent T cells. Our data argue that a critical balance between stimulatory and inhibitory pathways dictate which T cell subsets clonally expand under ART suppression. These studies have implications on stimulatory signals that can be therapeutically targeted to reduce the HIV reservoir size in PLWH.

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The development of a HIV-1 Transmitted/Founder virus prophylactic vaccine using Env engineered immunogens

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A significant roadblock to the generation of an HIV-1 vaccine has been the inability to elicit cross-clade neutralizing antibody responses capable of protecting against the exceptionally high level of HIV-1 genetic diversity circulating in human populations. By targeting HIV-1 variants with high transmission fitness for our vaccine development, we hope to exploit the phenotypic characteristics that allow theses viruses to establish new infections. By then eliciting antibodies capable of neutralizing these transmitted/founder(T/F) viruses we hypothesize that we will induce an enhanced protective response as compared to immunogens generated from lab adapted HIV-1 variants. To that end, we used a Mann lab bioinformatics tool to screen thousands (n=7705) of HIV-1 subtype B sequences within the Los Alamos database, to identify viruses which exhibit characteristics for enhanced transmission fitness. Using our in-silico approach we have identified three highly transmissible subtype B viruses to form our baseline immunogens. Additionally, we have engineered a series of structural and N-linked glycan mutations into the glycan shield of our HIV immunogens to expose specific sites known to be highly vulnerable to neutralizing antibody mediated attack. The resulting mutant viruses were shown to have increased vulnerability to neutralization by a variety of cross-clade broadly neutralizing antibodies (BnAbs).

Preliminary data evaluating the antigenicity of our HIV Immunogens in BnAb expressing murine B-cells show our most vulnerable immunogens were also highly antigenic. We are in the process of generating virus-like particles (VLPs) of our most promising vaccine candidates using our established protocols. Our VLPs are genome-less assemblies of HIV structural proteins which are morphologically indistinguishable from HIV-1. As vaccine delivery platforms, we have published data showing our VLP immunogens possess in-vitro CD4 T cell immune priming and recall capabilities. By generating cross-clade neutralizing antibodies through vaccination, this research will have overcome the most significant roadblocks to HIV vaccine development.

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HIV-1 Integration Site Profiles In Diverse Anatomical Tissues: Fresh Insights Into Reservoir Dynamics And Genomic Landscapes

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Tissues harboring HIV-1 are potential key reservoirs that are established early during infection and represent a major barrier for an HIV-1 cure. An essential and permanent step in the HIV life cycle is the integration of its viral genome into its host's genome. This integration site targeting is not random and plays a critical role in the expression and long-term survival of the integrated provirus. HIV-1 integration site profiles have been extensively studied in peripheral blood from infected individuals; however, less is known about integration site distribution in clinically derived anatomical tissues. To better understand the heterogeneity of tissue HIV reservoirs, we characterized the genomic environment surrounding integrated HIV-1 proviruses from a unique biobank of cryopreserved biopsy samples of esophagus, peripheral blood leukocytes/peripheral blood mononuclear cells (PBL/PBMC), stomach, duodenum, colon and brain tissue from HIV-1 subtype B infected individuals between the years of 1993 and 2010. Integration site profiles with respect to common genomic features were comparable in all tissues except brain, which exhibited significantly reduced integration frequency in genes and increased integration in short interspersed nuclear elements (SINEs) and DNaseI hypersensitivity sites. Strikingly, we observed differential targeting of non-canonical B-form DNA (non-B DNA) with distinct tissue-specific preferences. In addition, we identified remarkable integration site overlap between tissues and between individuals with integration hotspots enriched in non-B DNA. Lastly, we identified several genes that were highly targeted for integration in all tissues that have been linked to disease. Our data offers fresh insights into the genomic landscape surrounding integration sites of HIV-1 in various tissues of infected individuals.

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Effect of Switching to an Integrase Inhibitor on Mitochondrial DNA content in Women Living with HIV

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Background: Integrase inhibitors (INSTI) are the most recommended antiretrovirals around the world. However, some people experience weight gain upon initiating INSTIs, and this might implicate metabolic off-target effects. Mitochondria play an important role in metabolism, and mitochondrial DNA (mtDNA) content is a biomarker for mitochondrial dysfunction. Here, we aimed to measure mtDNA content changes in women with HIV who have switched to an INSTI-based regimen, compared to women who remained on their protease inhibitor (PI) or non-nucleoside reverse transcriptase inhibitor (NNRTI) containing regimens.

Methods: This was a retrospective study. All women enrolled in the CARMA and/or BCC3 study who had blood specimens available before and after switching to INSTIs were included. Each woman was matched 1:1 for age, ethnicity, PI/NNRTI pre-switch, and smoking status with women who remained on their PI/NNRTI-containing regimens. Blood mtDNA was determined using monochrome multiplex qPCR and % change per year compared between groups by Mann Whitney U Test.

Results: Fifty-six women (40 PI-, 16 NNRTI-regimen) were matched with 56 controls (Table 1). While older age was associated with lower mtDNA content ($p=0.0045$), no significant differences in the change in mtDNA/year were detected between women who switched to INSTI and those who continued their regimens ($p=0.77$). Mitochondrial DNA content changes were not associated with ethnicity, smoking status, viral load or CD4 count.

Conclusions: Switching to INSTI showed no association with mtDNA content, a reassuring finding. However, given the large variance observed, associations between changes in mtDNA and experiences of adverse effects should be further investigated.

Supporting Document

Table 1: Demographics of InSTI switchers and matched non-switchers in the CARMA and BCC3 cohort

	INSTI switcher		Non-Switcher		p-value
	PI (n=40)	NNRTI (n=16)	PI (n=40)	NNRTI (n=16)	
Age, years (median (range))	51 (17-67)	50 (13-74)	50 (18-69)	49 (13-74)	0.59
Ethnicity, n (%)					
White	19 (48)	7 (44)	19 (48)	7 (44)	
African, Carribean, Black	5 (13)	2(13)	5 (13)	2 (13)	0.83
Indigenous	8 (20)	1 (6)	8 (20)	1 (6)	
Other	8 (20)	6 (38)	8 (20)	6 (38)	
Smoking status, n (%)					
Current	16 (40)	4 (25)	15 (38)	8 (50)	
Past	6 (15)	1 (6)	5 (13)	1 (6)	0.43
Never	17 (43)	9 (56)	19 (48)	4 (25)	
Unknown	1 (3)	2 (13)	1 (3)	3 (19)	
Time between visit, years (mean ± standard deviation)	5.6 ± 3.2	6.0 ± 3.3	3.6 ± 3.7	3.2 ± 2.8	**0.008**
Undetectable Viral load at both visits, n (%)	28 (70)	12 (75)	30 (75)	14 (88)	0.56
CD4 Count (cells/ul) median [interquartile range]					
Visit 1	485 [390-728]	560 [433-680]	489 [319-627]	580 [439-715]	0.22
Visit 2	595 [361-870]	640 [298-875]	525 [370-743]	670 [465-910]	0.42
% change/year in mitochondrial DNA content median, [interquartile range], (range)	-20 [-39, 21] (-71, 123)	-2.9 [-43, 25] (-77,93)	-11 [-38, 8] (-56, 46)	-13 [-49, 3] (-62, 26)	0.77
	-14 [-39,23] (-77,123)		-11 [40,6] (-67,46)		

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Dynamics of SIV co-receptors, CCR5 and GPR15, in rhesus macaques infected with SIVmac251

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Despite advances in antiretroviral therapy, human immunodeficiency virus (HIV) persists in lymphoid organs. HIV specifically infects T lymphocytes coexpressing the CD4 and the CCR5 or CXCR4 coreceptors. Unlike its counterpart HIV, CXCR4 is not used by the simian immunodeficiency virus (SIV). In vitro, it has been suggested that SIV uses alternative coreceptors such as GPR15. However, little is known about the dynamics of CD4 T cells expressing GPR15 compared to those expressing CCR5. Here, we analyzed the expression level and the dynamics of CCR5- and GPR15-expressing CD4 T cells in rhesus macaque (RM).

RM infected with SIVmac251 (20 AID50) were sacrificed at different times post-infection. Blood and lymphoid organs were recovered, and cells were stained with specific antibodies and then analyzed by flow cytometry.

Firstly, we observed that naïve cells CD4 T cells express low levels of coreceptors whereas effector memory and terminal differentiated CD4 T cells express CCR5. T cells expressing CCR5 do not express GPR15 suggesting distinct T cell subsets. Thus, our results indicated that central memory CD4 T cells represent the main population expressing GPR15. In the blood and peripheral lymph nodes, we observed the early depletion of CD4 T lymphocytes expressing the CCR5 and GPR15 receptors. Of interest and consistent with immune activation, we found that CD4 T cells expressing CCR5 are increased at eight weeks post-infection. Similarly, we found that peripheral blood CD4 T cells expressing GPR15 are also increased. Antiretroviral administration prevented such early depletion.
The depletion of GPR15-expressing CD4 T cells like those expressing CCR5 cells strongly suggest the use of GPR15 as a coreceptor for SIV infection in RMs.

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Evaluation of Dried Blood Spot Testing Among HIV-1 Viral Controllers with the Roche COBAS AmpliPrep/COBAS TaqMan HIV-1 Qualitative Test, Version 2.0 (HI2QCAP)

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Background: Dried blood spots (DBS) have been increasingly adopted due to their ease of use and stability over fresh blood. The Roche HI2QCAP is a qualitative assay that detects HIV-1 total nucleic acid from DBS samples to assist with HIV diagnosis. However, the assay's performance among HIV viral controllers is unknown. We sought to evaluate the utility of DBS specimens tested with HI2QCAP among a cohort of individuals with HIV-1 viral control phenotypes.

Methods: Patients actively followed at a tertiary hospital-based HIV clinic were reviewed. Adults aged eighteen and older who were serologically diagnosed with HIV-1 and maintained viremic control without any anti-retroviral therapy were included. Viremic control was defined as plasma HIV-1 RNA viral loads of ≤400 copies/mL over the most recent twelve-month period or for ≥90% of all viral load measurements. Samples were collected for parallel testing of DBS with the HI2QCAP assay and whole blood with a gold-standard HIV reference lab-developed pro-viral assay targeting HIV-1 pol and LTR-gag regions. Descriptive statistics were used and results were compared for categorical agreement.

Results: Seven individuals met the inclusion criteria and underwent parallel testing. Participants' median age was 48 years old and four were female. DBS testing achieved categorical agreement with reference testing in all but one patient who resulted DBS negative, reference assay positive for pol and LTR-gag, and had a plasma HIV-1 RNA viral load of 197 copies/mL. Additionally, DBS testing correctly identified a patient as positive who was pol positive but LTR-gag negative by the reference assay.

Conclusions: DBS-based testing demonstrated reliable and robust performance for the qualitative HIV-1 assay HI2QCAP among HIV viral controllers. These initial results support the current approach of orthogonal testing algorithms employed by HIV reference laboratories and encourage future studies with larger cohorts to validate DBS testing among unique HIV immuno-phenotypes.

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Emergence of PD1+CD95+ B cells after SIV vaccination in rhesus macaques

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Human and simian immunodeficiency viruses (HIV/SIV) are widely known to deplete CD4 T lymphocytes, a key component of the immune system. The CD4 T cells are implicated in humoral responses by helping B cells in B cell follicles, a T-dependent humoral response that is distinct from extrafollicular B cell activation, which is T-independent. During the acute phase, a drastic T cell depletion is reported that may impact memory B cell immune response such as vaccine.

We assessed in rhesus macaque (RM) the impact of SIVmac251 infection on a vaccine response developed beforehand. Thus, a HIV/SIV vaccine candidate was administrated in RMs. B cell differentiation and dynamics were monitored throughout the vaccination protocol and after infection. Blood samples, as well as peripheral lymph nodes, were collected and analyzed by flow cytometry.

Firstly, we analyzed B cells given their crucial role in the development of humoral response leading to neutralizing antibodies. Following a prime and a boost, we noticed a differentiation of B cells as well as an increase in the expression of CD95, a marker of activated germinal center reaction, but also the expression of PD-1 as compared to the placebo. Whereas an increase in PD-1 expression is reported to be a marker of naïve B cell activation, our results highlighted higher expression of PD-1 on activated memory and resting memory B cells following vaccination. This population may represent regulatory B cells such as B-1 cells. Studies are in progress to better define their specificities. Intriguingly, these populations are increased following SIV infection in both vaccinees and controls. Additional works are in progress using alternative vaccines such as Influenza for determining the specificities of the B cells dynamics and the role of this cell subset.

This work will draw a preliminary portrait of the interactions between vaccine responses and SIV infection.

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Assessing the Effect of M66I/Wildtype Trans-encapsidation in HIV-1 as a Novel Mechanism of Lenacapavir Resistance

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HIV-1 is the causative agent of a global pandemic infecting tens of millions of people and resulting in the death of hundreds of thousands each year. Lenacapavir (GS-6207) is a novel antiretroviral recently approved by the FDA and the first drug to target the HIV-1 capsid. Lenacapavir binds to hexameric units within the capsid and causes hyperstabilization, inhibiting proper virion assembly and uncoating. The M66I mutation in the capsid protein was previously shown to be the primary cause of resistance against Lenacapavir in clinical and laboratory settings. However, M66I mutants also have significantly lower fitness than wild-type viruses in the absence of Lenacapavir. The mechanism by which the M66I mutation confers resistance to Lenacapavir while maintaining the viability of the virus is unknown. We hypothesize that treatment with Lenacapavir selects for HIV-1 virions possessing a mixture of M66I and wildtype capsid proteins produced during co-infection events.

We predict that this viral trans-encapsidation confers sufficient resistance to Lenacapavir without over-compromising the function of the viral capsid. To determine the effect of M66I/wildtype trans-encapsidation on Lenacapavir resistance, HEK293T cells were cotransfected by plasmids encoding wild-type and mutant HIV-1 fused with EGFP in the presence or absence of Lenacapavir. Viral titres were determined by assaying for reverse transcriptase activity or EGFP fluorescence. We found that in the presence of Lenacapavir, M66I-mutant viruses were produced at higher titres than in its absence. Further research will investigate the effect of M66I/wild-type trans-encapsidation on capsid stability and uncoating in the presence of Lenacapavir. Additionally, dose response analysis will be used to further investigate how production of M66I viruses is enhanced by Lenacapavir. Finally, mass spectrometry will be used to quantify the M66I:wild-type capsid ratio in the fittest virions following Lenacapavir selection.

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Investigation of the Sociodemographic, Clinical, and Immunogenetic Factors Influencing HIV Reservoir Size During ART

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The HIV reservoir is the major barrier to cure, yet the factors that influence reservoir size during ART remain incompletely characterized. We investigated sociodemographic, clinical, and immunogenetic correlates of HIV reservoir size in 105 ART-treated PLWH.

HIV reservoir size was measured in genomic DNA from CD4+ T-cells using the Intact Proviral DNA Assay, where primers/probes were adapted to within-host HIV polymorphism where required. HLA class I types were characterized by sequence-based typing.

Participants were 90% male and median 51 (interquartile range [IQR] 38-59) years old. Participants had a median recent CD4+ T-cell count of 740 (IQR 508-953) cells/mm³, and a median nadir CD4+ T-cell count of 260 (IQR 110-480) cells/mm³. They had been receiving ART for a median 8.7 (IQR 4.4-13.2) years, and 65% were receiving an INSTI-based regimen at time of sampling. Most (92%) HIV infections were subtype B.

The median intact proviral load (i.e. reservoir size) was 79 (IQR 31-194) HIV copies/million CD4+ T-cells. The median total proviral load (i.e. intact and defective) was 984 (IQR 509-2143) HIV copies/million CD4+ T-cells.

These measures correlated strongly (Spearman ρ=0.72, p<3e-16). HLA-B*07:02 carriage was associated with both larger reservoirs and total proviral load, while HLA-A*02:01 was associated with larger total proviral load (all p<0.02, q<0.18). In univariable analyses, lower nadir and recent CD4+ T-cell counts, and receiving a non-INSTI-based regimen, were associated with larger reservoirs (p<0.03). Older age, lower nadir CD4+ T-cell count, longer time on ART, and receiving a non-INSTI-based regimen were associated with higher total proviral load (all p<0.002), but only older age and lower nadir CD4+ T-cell count remained significant after multivariable analysis (both p<0.05).

We identified older age and lower nadir CD4+ T-cell count as correlates of higher total proviral loads during ART. The mechanisms underlying HLA associations with reservoir size require further investigation.

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A new High-Throughput method for Mapping Viral Integration Sites

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The HIV/AIDS pandemic, originating from spillovers of SIV in chimpanzees and sooty mangabeys, has surpassed COVID-19 in casualties — AIDS killed more than five times more people than COVID-19. In elite controllers (0.5% of HIV infected individuals), viral replication remains undetectable despite the presence of a replication-competent viral reservoir. Integration site disparities between elite controllers and long-term antiretroviral therapy patients shed light on viral persistence mechanisms. Distinct reservoir configurations prompt questions about HIV integration site selection preferences: are there differences in integration site selection between the two types of HIV? Largely confined to the West of Africa, HIV-2 receives less attention due to its slower progression compared to the globally dominant HIV-1. The genomic sites of HIV-2 integration require deeper exploration. Strategies to determine viral integration sites include bulk sequencing that can be cost challenging. The recent mapping approaches are very promising techniques, sensitivity scalable down to single-cell level. However, low throughput and high cost remains an issue. Practically, the limitations do not work in favor of clinical study. Here, we propose the use of a novel high throughput sequencing mapping technique based on linear amplification and A-tailing that will address some of the limitations of previous mapping strategies to identify the site and frequency of HIV-1 and HIV-2/SIV integration in cell models. The protocol is optimized using HIV-1 infected cell lines. We have obtained the first dataset, and the high-resolution maps provide in-depth understanding of insertion hotspots. This technology has the potential to characterize highly complex samples with multiple target sequences and has sufficient sensitivity, specificity, and robustness to detect and sequence even single cell insertion events via an initial linear amplification step. The long-term plan is to apply this new mapping approach on clinical samples.

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Dolutegravir-based therapy alters the expression of the anti-oxidant enzyme superoxide dismutase 1 in mouse embryos after primary neurulation

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Background: Dolutegravir (DTG) is a well-tolerated drug used in first-line combination antiretroviral therapy. However, DTG is associated with oxidative stress in clinical and in vitro studies, a pathway that may contribute to the initial small increase in rates of neural tube defects (NTD) reported in 2018. We investigated the effect of DTG on oxygen-dependent enzymes before and after neural tube closure in a murine pregnancy model.

Methods: C57BL/6 mice were mated and randomized 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 supratherapeutic levels of DTG. Embryos and placentas were collected at gestational days 9.5 and 11.5. RT-PCR and western blot assessed gene and protein expression of relevant enzymes with HPRT, and β-actin used as housekeeping genes/proteins. Statistical analyses were performed using one-way ANOVA with Tukey's post-test or Kruskal-Wallis with Dunn's post-test.

Results: Embryo mRNA levels of superoxide dismutase 1 (SOD1) and SOD2 were similar between groups at GD9.5 (pre-neural tube closure). Post neural tube closure (GD11.5), embryo SOD1 mRNA levels were significantly lower, while protein levels were higher in both DTG groups versus control (1xDTG p= <0.0001, 5xDTG p=0.0079 for SOD1 mRNA; 1xDTG p= 0.0036, 5xDTG p=0.0136 for protein). SOD2 mRNA expression was significantly lower in embryos exposed to the therapeutic dose of DTG versus controls (p<0.0001), but no differences were observed at the protein level. Placental SOD1 protein expression was significantly higher in GD9.5 DTG-treated dams, but significantly lower in GD11.5 DTG-treated dams (p<0.001).

Conclusion: DTG was associated with a lower embryonic mRNA and higher protein levels of the anti-oxidant enzyme SOD1 in the post-neural tube closure window, suggesting that DTG may dysregulate anti-oxidant pathways that may result in oxidative stress common to many pathways leading to congenital defects.

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Evolutionary dynamics of HIV-1 proviral DNA sequence in individuals receiving long-term combination antiretroviral therapy

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BACKGROUND/AIMS
An understanding of HIV diversity in the latent pool and the impact of this recrudescent virus population upon latency reversal is poorly understood. This study investigates the dynamics of HIV-1 proviruses (latent and non-infectious) in subtype B and subtype D infected individuals under long-term treated with cART (up to 20 years) and upon latency reversal.

METHODS
Five subtype B and 16 subtype D HIV-1 infected individuals receiving cART after 10 to 20 years were analyzed for this study. Nested-PCR and RT/nested-PCR were used to amplify nearly full-length HIV proviruses from extracted DNA samples from HIV-positive donors PBMC on cART and virus released from the same samples following latency reversal. We measured proviral load by qPCR, and viral diversity by next-generation sequencing using both Illumina MiSeq and Oxford Nanopore.

RESULTS
Ten nearly full-length proviruses could be amplified from the HIV-1 subtype D samples (of 16) and three from HIV-1 subtype B infected participants (of 5), all on long-term stable cART. The Gag and Pol genes were less diverse than the Env genes. Although the proviral load decreased with the time length of stable cART, the overall genetic diversity of the latent HIV population did not decrease, nor did the fraction of predicted replication-competent to incompetent proviral integrants in this CD4 T cell population. Latent HIV that activated and released following latency reversal clustered with proviral DNA in these CD4+ cells of individuals on long-term cART. However, an identical match could not be found in the provirus compared to the released, replicating virus clones sequenced following latency reversal from the same CD4 T cell sample of the same individuals on long-term cART.

CONCLUSION
Our results demonstrate a highly divergent pattern of intra-host viral diversity in both subtype B and subtype D HIV-1 proviruses in individuals on long-term cART.

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

Francis Mwimanzi[1], Rebecca Kalikawe[1], Fatima Yaseen[2], Yurou Sang[1], Sneha Datwani[1], Peter Cheung[1,3], Hope R Lapointe[3], Rachel Waterworth[1], Gisele Umviligihozo[1], Marc G Romney[4], Marianne Harris[3], Julio S.G Montaner[3], Zabrina L Brumme[1,3], Mark A Brockman[1,2,3]
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Background: COVID-19 vaccines have significantly reduced the public health impacts of SARS-CoV-2. However, limited data exist regarding the dynamics of memory B cell responses following COVID-19 vaccination in people living with HIV (PLWH) receiving suppressive antiretroviral therapy. Here, we examined the durability and specificity of memory B cells induced by three vaccine doses in PLWH.

Methods: Memory B cells specific for SARS-CoV-2 spike receptor binding domains (RBD) derived from wild type (WT, Wuhan) and Omicron BA.1 strains were quantified in 66 PLHW at one and six months post-third vaccine dose using flow cytometry.

Results: WT-, Omicron- and dual/cross-reactive memory B cells were observed in all individuals after three vaccine doses and these responses persisted over time. Nevertheless, Omicron-specific responses were significantly lower compared to WT ($p<0.0001$). Interestingly, individuals who subsequently experienced SARS-CoV-2 breakthrough infection displayed a lower frequency of WT- and dual-specific B cells at one month post-third dose compared to those who remained naïve ($p<0.03$).

Conclusion: Our results demonstrate that three doses of COVID-19 vaccine elicited memory B cell responses against WT and Omicron variants in PLWH receiving suppressive ART. The persistence of memory B cells likely contributes to robust responses observed following breakthrough infection and may contribute to an individual's susceptibility to infection. Overall, our results underscore the immune benefits of COVID-19 vaccines among PLWH.

Funded by the Public Health Agency of Canada (COVID-19 Immunity Task Force) and CIHR.

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Examining the Immunological Consequences of SARS-CoV-2 Infection Following COVID-19 Vaccination

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Background: COVID-19 vaccines have significantly reduced the public health impacts of SARS-CoV-2. However, an increase in the incidence of other respiratory infections has been seen following peaks of SARS-CoV-2 infection in Canada and in other settings. This observation raises concerns that SARS-CoV-2 infection may dampen existing immunity against other pathogens. Here, we examined the impact of SARS-CoV-2 infection on immune responses to unrelated viruses among a cohort of vaccinated individuals.

Methods: Study participants included 38 adults who remained SARS-CoV-2 naive until at least one-month after receiving their third dose of COVID-19 vaccine. Of these, 19 participants subsequently experienced SARS-CoV-2 infection (hybrid group) and 19 participants remained naive (control group). IgG antibody responses against common respiratory pathogens (RSV, Influenza A and Influenza B) were quantified using Multi-plex ELISA at one month (pre-infection for all) and six months (post-infection for hybrid group) following COVID-19 vaccination. Similarly, CD4+ and CD8+ T-cell responses against CMV (C), Epstein-Barr virus (E) and Influenza virus (F) were assessed using CEF peptide pools with an activation induced marker assay.

Results: IgG responses to RSV, Influenza A and Influenza B were similar at both time points in controls and in hybrid individuals pre- and post-infection. In contrast, a significant decline in CEF-specific CD8+ T cells was observed among hybrid individuals post-infection (p=0.006), whereas these responses remained unchanged among control individuals.

Conclusion: Our results suggest that CD8+ T cell responses are impaired following SARS-CoV-infection, despite prior COVID-19 vaccination. We observed no change in IgG responses against RSV or Influenza viruses post-infection or in CD4+ T cell responses to CEF peptides, indicating that immune dysfunction due to SARS-CoV-2 may be selective. Further analyses are warranted to dissect the specific responses that may be impacted by SARS-CoV-2 infection.

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Sex-specific Immune Responses to COVID-19 Vaccination in an Immunocompromised Population

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Vaccination has been critical in stemming the COVID-19 pandemic; however, the effectiveness of vaccination in immunocompromised populations remains an important area of research. Studies have shown end-stage renal disease (ESRD) patients have muted memory B cell formation and reduced humoral responses to COVID-19 vaccination; however, early innate immune responses have yet to be characterized. To address this, we collected blood before (BD1) and 1-4 days post dose 1 (PD1) of BNT162b2 vaccination in ESRD patients (n= 39 BD1, 35 PD1) and healthy controls (34 BD1, 15 PD1) for quantification of 20 plasma cytokines. Detailed enrolment and follow-up questionnaires capturing demographic, medical and COVID-19 infection information was collected from participants. Samples were also collected for RNA sequencing and cellular and antibody responses at multiple timepoints post vaccination. We observed ESRD patients to have an elevated ($p<0.01$) baseline (BD1) inflammatory cytokine profile (IFN-γ, IL-1β, IL-6, TNF-α, eotaxin, IP-10, MCP-1, MIP1-α, MIP1-β) compared to healthy controls. When stratifying by sex, female ESRD patients had a higher concentration of key inflammatory cytokines than males at baseline which appears to drive the inflammatory profile in the full sample.

This trend is also found when considering clinical biomarkers (MIP1-α, MIP1-β) for ESRD, with a higher concentration found in female ESRD patients. Despite baseline inflammation, ESRD patients were able to mount cytokine responses to vaccination similar to those of healthy controls, with females in both populations more reactogenic to vaccination than males. Specifically, IL-2, IL-10, and IP-10 were more significant in ESRD females ($0.001p<0.0001$) compared to ESRD males ($0.01<p<0.001$), and IL-6, IFN-γ, IL-13, eotaxin, were exclusive to females ($0.05<p<0.01$). Similar findings were present in the healthy population. Further analyses will assess how these data impact long term vaccine responses in ESRD patients. These data can be leveraged for other immunocompromised populations, including people living with HIV.

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Increased Copy Number of Interferon-Stimulated Response Element (ISRE) in HIV-1 Long Terminal Repeat (LTR) is Associated with more rapid HIV Disease Progression.

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Background/Objectives: The HIV-1 LTR regulates the expression of viral genes, and hence, HIV replication. Interferon regulatory factors (IRF-1, IRF-8) have been shown to regulate the transactivation and repression of the HIV-1 LTR, via binding to the ISRE and forming a complex with NF-κB. This study examined the hypothesis that mutation(s) at the NF-kB and/or ISRE of the HIV-1 LTR may impact HIV fitness and hence, the pathogenesis observed in HIV-infected patients.

Methods: HIV-1 sequences of 5' LTR from published HIV database (n=411, Los Alamos National Laboratory) and 97 HIV-infected patients of Kenyan Pumwani Sex-Worker Cohort were analyzed using ClustalW. Longitudinal CD4 counts of antiretroviral-treatment-naïve patients enrolled in the study were used as a measure of disease progression.

Results: In all HIV-1 sequences analyzed, the LTR NF-κB binding motif was highly conserved and essentially identical in all samples, including subtypes A, A1, B, C, and D. Similarly, the LTR ISRE motif was also highly conserved, with >99% identity. However, some LTR sequences contained two-tandem ISRE motifs. The majority of these 2-ISRE sequences were found in subtypes A1, A1-recombinants, G, and U. Longitudinal study of HIV provirus from HIV-infected patients (n=6) showed conservation of LTR sequences over time (4-9 years). When HIV-infected patients were grouped into 1-ISRE and 2-ISRE, based on HIV-1 provirus sequences, the 2-ISRE patients had a relatively faster drop in CD4 counts, suggesting a more rapid disease progression.

Conclusions: The NF-κB motif and ISRE of HIV-1 LTR is likely highly critical to viral fitness, as the sequences are conserved over time and between different subtypes examined. Furthermore, duplication of ISRE in the HIV-1 LTR may contribute to increased viral replication and more rapid disease progression.

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Investigational studies to understand the decreases in lymphocytes seen clinically with Islatravir(ISL) and enabling the initiation of new clinical trials

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Title: Investigational Studies to Understand the Decreases in Lymphocytes Seen Clinically with Islatravir (ISL) and Enabling the Initiation of New Clinical Trials

Purpose:
ISL is an inhibitor of HIV-1 replication. Its active form (ISL-triphosphate; ISL-TP) preferentially accumulates in lymphocytes. During Phase 2/3 clinical trials, ISL-related decreases in lymphocytes were observed at doses (e.g., ≥0.75 mg QD) corresponding to ISL-TP concentrations ≥35 µM, but not at doses associated with an ISL-TP concentration of 9µM). Studies were conducted to investigate possible mechanisms for these lymphocyte decreases.

Method:
In vitro effects of ISL and several HIV NRTIs on TK6 cells (lymphoblast cell-line) population doubling and mitochondrial DNA content were evaluated. In vitro effects of ISL on human PBMC cytotoxicity, activation, and function were also assessed. ISL TP was evaluated for its ability to inhibit human DNA polymerases α, β, and γ. Additionally, ISL was evaluated in a 10-week immunophenotyping study in mice.

Results:
In TK6 cells, ISL and most NRTIs resulted in population growth inhibition at similar triphosphate concentrations. ISL-TP concentrations that resulted in cytotoxicity in TK6 cells and human PBMCs were comparable. ISL-TP weakly inhibited DNA polymerase α. Consistent with the lack of inhibition of polymerase γ, ISL did not impact mitochondrial DNA content. In mice, decreased lymphocyte counts were observed at ISL-TP PBMC levels associated with lymphocyte decreases in humans. Additionally, effects on B and/or T cell activation in splenocytes from mice dosed with ISL were observed at ISL-TP levels that greatly exceed those achieved at the clinical dose without lymphocyte effects.

Conclusions:
Preferential accumulation of high ISL-TP concentrations in lymphocytes can lead to cytotoxicity, possibly through DNA polymerase α inhibition as a contributing factor. These effects are shared with several marketed NRTIs, at similarly high triphosphate levels. Mitochondrial toxicity is not a contributing mechanism. These investigations, together with clinical and modelling data, identified an ISL-TP threshold (9µM), and subsequently ISL QD and QW clinical doses) below which decreases in lymphocytes are not expected.

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Dimethyl alpha-ketoglutarate rescues energy dysfunction in exhausted CD8 memory T-cells in PLWH along with enhanced cytotoxic immunity

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Background: The cytotoxic immunity of memory CD8 T-cells (Mem) depends on their produced ATP levels. Although autophagy inducers improve ATP-dependent cytotoxic Mem function in PLWH, it is however ineffective in helping their exhausted PD-1+CD39+subset. Since heat shock protein 60 (HSP60) can also regulate ATP production in Mem, we investigated if exhausted cells found in PLWH display defective HSP60 energetic support, and if so, could we rescue this defect with dimethyl alpha-ketoglutarate (DMKG); indeed, DMKG is a diester AKG analog, which can supplement mitochondrial metabolism.

Methods: We assessed the HSP60-regulated ATP production in CD8 Mem including anti-HIV-1 cells in PLWH and HIVneg donors; For that, CD8 Mem were T-cell activated [TcR engagement, and HIV-1 peptide stimulation], with or without (w/wo) anti-PD-1 blocking antibodies (Abs), autophagy inducer AICAR, and dimethyl alpha-ketoglutarate (DMKG). At 16 hours post-activation, we assessed in both total, non-exhausted and PD-1/CD39 dual-stained CD8 Mem, HSP60 expression, autophagy activity, mitochondrial ATP production, and cytotoxic functions [defined as the percentages of perforin/Granzyme-B dual-stained cells]. Of note, we determined both the whole and FAO-mediated mitochondrial ATP-linked respiration levels, using Seahorse flux analyzer.

Results: Our data confirmed lowest HSP60 expression in exhausted CD8 Mem of PLWH after T-cell activation when compared to other cells, despite similar rescuable autophagy activity with AICAR. Blocking PD-1 signaling in exhausted Mem enhanced their HSP60-dependent ATP-linked respiration. Although induction of autophagy alone was confirmed ineffective in rescuing ATP-dependent cytotoxic function of exhausted Mem in PLWH, our metabolic investigation further revealed that DMKG supplementation led to enhanced percentages of cytotoxic cells, with levels that were comparable to HIVneg donor.

Conclusions: Stimulating mitochondrial energy metabolism with metabolic drugs for better effector CD8 T-cell immunity is an enticing concept for PLWH. In this context, our data have revealed that DMKG may be considered in rescuing defective immunity in exhausted HSP60low cells.

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Metformin Enhances Antibody-Mediated Recognition of HIV-Infected CD4+ T-Cells by Decreasing Viral Release

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The mechanistic target of rapamycin (mTOR) positively regulates multiple steps of the HIV-1 replication cycle. We previously reported that a 12-weeks supplementation of antiretroviral therapy (ART) with metformin, an indirect mTOR inhibitor used in type-2 diabetes treatment, reduced mTOR activation and HIV-1 transcription in colon-infiltrating CD4+ T-cells, and decreased systemic inflammation in nondiabetic people with HIV-1 (PWH). Herein, we investigated the antiviral mechanisms of metformin.

Experiments were performed with CD4+ T-cells isolated by negative selection using magnetic beads from HIV-uninfected participants, infected with wild type CCR5-tropic HIV-1 NL4.3BaL (HIVNL4.3BaL) or single round VSV-G-pseudotyped HIV-1 (HIVVSVG) in vitro, as well as T-cells of ART-treated PWH ex vivo (n=8/group/experiment). HIV-1 replication was measured by real-time nested PCR (early/late reverse transcripts, integrated HIV-DNA), ELISA (soluble HIV-p24) and flow cytometry (intracellular HIV-p24). A viral outgrowth assay (VOA) was used to measure replication-competent HIV-1 reservoirs. Cell-associated HIV-RNA was measured by real-time RT-PCR. The HIV-1 RNA/DNA ratio was used as a surrogate marker of HIV-1 transcription. Surface BST2/Tetherin and intra-nuclear BCL2 expression, as well as binding of broadly neutralizing (bNAbs; 2G12, PGT121, PGT126, PGT151, 3BNC117, 101074, VRC03) and non neutralizing (nnAbs; F240, 17b, A32) HIV-1 Env Abs, were measured by flow cytometry.

In the VOA performed with CD4+ T-cells from ART-treated PWH, and upon infection in vitro with HIVNL4.3BaL and HIVVSVG, metformin decreased virion release, but increased the frequency of productively infected CD4lowHIV-p24+ T-cells. These observations coincided with increased BST2/Tetherin (HIV release inhibitor) and Bcl-2 (pro-survival factor) expression, and improved recognition of productively infected T-cells by the PGT126 bnAbs, recognizing the “closed” conformation of HIV 1 Env. This improved recognition could potentially translate in killing of infected T-cells by ADCC.

Thus, metformin exerts pleiotropic effects on post-transcription/translation steps of the HIV-1 replication cycle and may be used to accelerate viral reservoir decay in ART-treated PWH.

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Pharmacological Blockade of the Transcriptional Repressor REV-ERB Boosts HIV-1 Outgrowth in CD4+ T-Cells of ART-Treated PWH while Preventing Virion Propagation

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We previously demonstrated that Th17-polarized CD4+ T-cells are enriched in viral reservoirs (VR) in people with HIV-1 (PWH) receiving antiretroviral therapy (ART), and that the Th17 master regulator RORC2 acts as positive regulator of HIV replication/outgrowth. REV-ERBalpha/beta acts as transcriptional repressors of RORC2. Thus, we hypothesized that REV-ERBalpha/beta inhibits HIV-1 transcription/replication via mechanisms involving the repression of RORC2.

Memory CD4+ T-cells of HIV-uninfected individuals were exposed to replication-competent and single-round HIV-1 constructs upon CD3/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 PWH. The REV-ERBalpha/beta agonist SR9011 and the antagonist SR8278 were used to modulate REV-ERBalpha/beta activity. RNA-Sequencing was performed using the Illumina technology. Gene expression was quantified by real-time RT-PCR and western blotting.

SR9011 decreased RORC2 and IL-17A expression, and reduced HIV-1 replication in vitro and viral outgrowth in T-cells of ART-treated PWH. SR8278 reduced HIV replication in vitro and viral outgrowth, in part via decreasing the expression of the HIV-1 co-receptor CCR5. In a single-round infection model, the REV-ERBalpha/beta drugs increased the intracellular expression of HIV-p24 but decreased the release of viral particles. These effects coincided with an increased SAMHD1 phosphorylation, indicative of efficient reverse transcription. Surface expression of BST2 was increased by SR9011 but not SR8278. RNA-Seq analysis revealed an increase of APOBEC3G mRNA in the presence of SR8278.

These results provide evidence that REV-ERB modulates Th17 effector functions by repressing RORC2 and interferes with HIV replication at multiple levels including entry (CCR5), reverse transcription (SAMHD1), integration, translation, virion release (BST2) and infectivity (APOBEC3G), with the REV-ERB blockade reverting HIV latency, while limiting viral propagation Thus, REV-ERB pharmacological targeting may be used in HIV cure/remission strategies.

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Real-world Effectiveness and Tolerability of Bictegravir/Emtricitabine/Tenofovir Alafenamide (B/F/TAF) in Treatment-Experienced (TE) People With HIV With a History of CKD

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TAF-containing regimens, e.g. B/F/TAF, are approved in Canada in people with an estimated CrCl ≥30 mL/min and have demonstrated comparable long-term renal safety vs non–tenofovir-based regimens. No proximal renal tubulopathies have been reported in 26 TAF trials or in a trial rechallenging those with history of tubulopathy on tenofovir disoproxil fumarate.

We investigated the renal safety profile and efficacy of B/F/TAF in the BICSTaR study, in which 963 TE participants with HIV switched from current antiretroviral therapy (ART) to B/F/TAF.

Of 843 participants with baseline (BL) eGFR data available, 90 had CKD (MDRD eGFR <60 mL/min/1.73 m2), 83% were male and 85% were non-Black. More participants with vs without BL CKD were >50 yrs old (79% vs 43%; P<0.001), had ≥1 cardiovascular condition (54% vs 20%; P<0.001), diabetes mellitus (12% vs 6%; P=0.029) and hypertension (44% vs 16%; P<0.001). Those with vs without BL CKD had longer prior exposure to ART and time from diagnosis to B/F/TAF initiation (Table).

Drug-related (DR) AEs were reported in 16% of people with BL CKD vs 15% in those without. A single DR renal AE (RAE) was reported in 1 person with BL CKD (proteinuria, drug continued); there were no DR RAE discontinuations or serious DR RAEs. Median eGFR was stable through 24 months for people with BL CKD (Fig.).

B/F/TAF was effective and safe with respect to renal outcomes in this real-world study, supporting use of TAF-based regimens in people with eGFR <60 mL/min/1.73 m2.

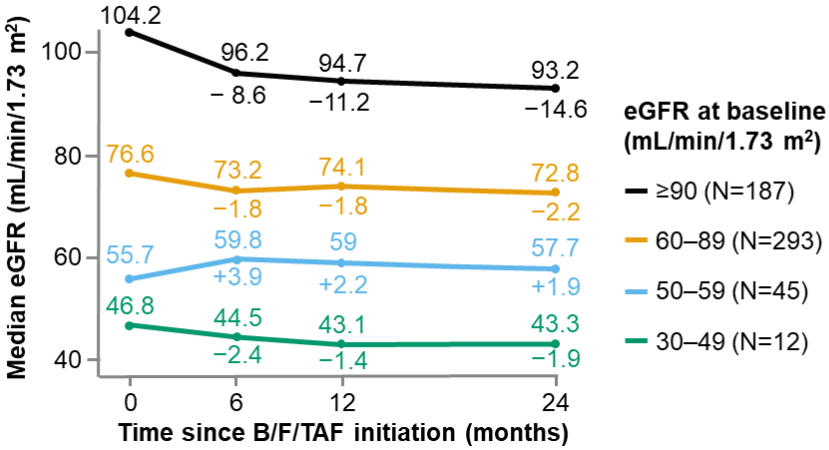
Supporting Document

Table: Baseline Characteristics and 24-Month Effectiveness and Safety Outcomes

	eGFR <60 mL/min/1.73m^2 (N=90)	eGFR ≥60 mL/min/1.73m^2 (N=753)	P-value*
Baseline Characteristics			
HIV-1 RNA, n (%)†: <50 c/mL / ≥50 c/mL	80 (93) / 6 (7)	676 (92) / 60 (8)	0.704
No. of previous antiretroviral therapy regimens, median (IQR)	3.0 (2.0, 5.5)	2.0 (1.0, 4.0)	0.027
MDRD eGFR (numeric formula), median (IQR), mL/min/1.73 m^2	55.2 (51.2, 57.3)	85.5 (74.4, 99.6)	<0.001
Time from HIV diagnosis to B/F/TAF, median (IQR), years	14.5 (7.2, 21.8)	10.0 (4.0, 17.0)	<0.001
24-Month Effectiveness and Safety Outcomes			
HIV-1 RNA viral load at 24 months, n (%)†: <50 c/mL / ≥50 c/mL	67 (100) / 0 (0)	556 (95) / 30 (5)	0.058
Change in MDRD eGFR at 24 months from baseline, median (IQR), mL/min/1.73 m^2	1.3 (−3.6, 6.7)	−6.0 (−15.0, 1.6)	<0.001
Drug-related AE within 24 months, n (%)	14 (16)	111 (15)	0.978
Drug-related renal AE within 24 months, n (%)	1 (13)‡	0 (0)	0.062

*Chi squared test for categorical data / Kruskal–Wallis tests for numeric data; †Missing = Excluded analysis; ‡Proteinuria (did not result in dosage change/study withdrawal). AE, adverse event; B/F/TAF, bictegravir/emtricitabine/tenofovir alafenamide; c, copies

Figure: Median MDRD eGFR over time for people with results at all timepoints
Values below data points represent median change from baseline in MDRD eGFR



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Efficacy of Bictegravir/Emtricitabine/Tenofovir Alafenamide (B/F/TAF) Versus Dolutegravir (DTG)-Based 3-Drug Regimens in Adults With HIV Who Have Suboptimal Antiretroviral Adherence

Kristen Andreatta, Paul E Sax, David Wohl, **Bertrand Lebouche**, Michelle L. D'Antoni, Hailin Huang, Jason Hindman, Christian Callebaut, Hal Martin

B/F/TAF Studies 1489, 1490, 4458, 1844 and 4030 demonstrated the noninferior efficacy of B/F/TAF versus DTG + 2 nucleoside reverse transcriptase inhibitors (NRTIs). We retrospectively assessed drug adherence and effect on virologic outcomes.

All studies were double-blind, placebo-controlled, and enrolled treatment-naïve (1489, 1490, 4458) or virologically suppressed (1844, 4030) adults. Participants were randomized 1:1 to receive B/F/TAF or DTG + 2 NRTIs (Table) plus placebo; thus, all received multiple tablets. Adherence was calculated by pill count.

2,622 participants were included (B/F/TAF: 1,306; DTG + 2 NRTIs: 1,316). The proportions of participants with high (≥ 95%), intermediate (≥ 85%–< 95%) or low (< 85%) adherence were similar; few had low adherence (B/F/TAF: 46 [3.5%]; DTG + 2 NRTIs: 69 [5.2%]). In the B/F/TAF group, virologic suppression (HIV-1 RNA < 50 copies/mL) was similar in high and intermediate adherence versus low adherence. In the DTG + 2 NRTI group, virologic suppression was significantly higher in high and intermediate adherence compared with low adherence (P ≤ 0.002, Figure). Similar results were observed at W144 . Nine participants with low adherence had HIV-1 RNA ≥ 50 copies/mL at their last visit through W48: 3 subsequently resuppressed (B/F/TAF: 1; DTG + 2 NRTIs: 2), 5 discontinued (all DTG + 2 NRTIs) and 1 lost to follow-up (B/F/TAF).

Most participants receiving either B/F/TAF or DTG + 2 NRTIs demonstrated ≥ 85% adherence. In those with suboptimal adherence, B/F/TAF maintained high levels of virologic suppression, while those with suboptimal DTG + 2 NRTI adherence had reduced virologic suppression.

Supporting Document

Table. Adherence Category Based on Pill Count

Adherence category, n (%)	Studies 1489, 1490, 1844, 4030 and 4458 Through Week 48		Studies 1489 and 1490 Through Week 144	
	B/F/TAF (n = 1,306)	DTG + 2 NRTIs* (n = 1,316)	B/F/TAF (n = 623)	DTG + 2 NRTIs† (n = 637)
High adherence ≥ 95%	1,046 (80.1)	1,012 (76.9)	436 (70.0)	432 (67.8)
Intermediate adherence ≥ 85%–< 95%	214 (16.4)	235 (17.9)	149 (23.9)	161 (25.3)
Low adherence < 85%	46 (3.5)	69 (5.2)	38 (6.1)	44 (6.9)

*DTG + 2 NRTI regimens included DTG/ABC/3TC (n = 595), DTG + F/TAF (n = 600) or DTG + F/TDF (n = 121);
†DTG + 2 NRTI regimens included DTG/ABC/3TC (n = 314) or DTG + F/TAF (n = 323)
B/F/TAF, bictegravir/emtricitabine/tenofovir alafenamide; DTG, dolutegravir; DTG/ABC/3TC, dolutegravir/abacavir/lamivudine; F/TAF, emtricitabine/tenofovir alafenamide; F/TDF, emtricitabine/tenofovir disoproxil fumarate; NRTI, nucleoside reverse transcriptase inhibitor

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Real-World Effectiveness and Tolerability of Bictegravir/Emtricitabine/Tenofovir Alafenamide (B/F/TAF) in Treatment-Experienced People With HIV and a History of Antiretroviral Drug Resistance Mutations

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BICSTaR is an ongoing, multinational, observational cohort study evaluating the real-world effectiveness and safety of B/F/TAF in treatment-naïve and treatment-experienced (TE) people with HIV (PWH).

This analysis included TE virologically suppressed PWH who started B/F/TAF with/without present/past evidence of HIV drug primary resistance mutations (PRMs). We report virologic and other outcomes at 12 months (M).

BL genotypic drug resistance testing data were available for 441/996 (44%) participants (ppts); most tests were historic (Table 1).

Of 441 ppts with BL resistance data, 105/441 (24%) had present/past evidence of PRMs: 13% to NRTI, 11% to NNRTI, 6% to PI, 0.2% to INSTI. The most common PRMs were M184V/I (39 [37%]), ≥ 1 thymidine analog mutation (TAM; 40 [38%]), K103N/S in reverse transcriptase (23 [22%]) and M46I/L in protease (13 [12%]). Primary resistance to > 1 ART drug class was observed in 40 (38%) ppts with PRMs. Ppts with preexisting PRMs were older (≥ 50 years), had more prior ARTs and more prior virologic failure, and had a longer time between HIV diagnosis and starting B/F/TAF.

At 12M, effectiveness (HIV-1 RNA < 50 copies/mL; missing VL data = excluded) was maintained in 78 (99%) and 739 (98%) ppts with, versus without, any BL PRMs, respectively. No treatment emergent PRMs to B/F/TAF were reported. Drug-related adverse events (DRAEs) occurred in 17 (16%) ppts with PRMs versus 113 (13%) without. Additional outcomes are shown in Table 2.

After 12 months, virologically suppressed PWH initiating B/F/TAF maintained high rates of effectiveness despite the presence of PRMs.

Supporting Document

Table 1. Baseline characteristics of virologically suppressed treatment-experienced population with or without present/past evidence of PRMs

Characteristic	Total (N = 996)	With PRMs at BL (n = 105)	Without known PRMs at BL (n = 891*)
Sex at birth, n (%)			
Female	163 (16)	27 (26)	136 (15)
Male	833 (84)	78 (74)	755 (85)
Age at B/F/TAF initiation			
Median (IQR), years,	49 (39–56)	52 (46–58)	48 (39–56)
< 50 years, n (%)	526 (53)	42 (40)	484 (54)
≥ 50 years, n (%)	470 (47)	63 (60)	407 (46)
Race, n (%)			
White	782 (79)	81 (77)	701 (79)
Black	121 (12)	16 (15)	105 (12)
Other	93 (9)	8 (8)	85 (9)

Time from HIV diagnosis to B/F/TAF initiation, years, median (IQR)	11 (5–18)	17 (7–24)	10 (5–17)
Reasons for switching to B/F/TAF, n (%)†			
Simplification of ART regimen	604 (61)	73 (70)	531 (60)
Participant preference	227 (23)	20 (19)	207 (23)
Side effects of current ART	222 (22)	27 (26)	195 (22)
Other reasons	197 (20)	19 (18)	178 (20)
Other reasons: safety (e.g. cardiovascular, renal, and bone health)	58 (6)	7 (7)	51 (6)
Other reasons: drug–drug interaction	56 (6)	7 (7)	49 (6)
Number of previous regimens, median (IQR)	2 (2–4)	4 (2–7)	2 (1–4)
Prior ART history, n (%)			
≥ 4 previous regimens	323 (32)	61 (58)	262 (29)
> 5 years' NRTI	581 (58)	76 (72)	505 (57)
> 5 years' NNRTI	260 (26)	24 (23)	236 (27)
> 5 years' PI	232 (23)	58 (55)	174 (20)
> 5 years' INSTI	138 (14)	24 (23)	114 (13)
DTG-based regimen	259 (26)	39 (37)	220 (25)
TDF-based regimen	325 (33)	42 (40)	283 (32)
TAF-based regimen	508 (51)	46 (44)	462 (52)
Known virologic failure on any regimen	97 (10)	41 (39)	56 (6)
Participants with resistance data available, n	441	105	336
M184V/I in RT, n (%)	NA	39 (37)	NA
M184V/I + 1–2 TAMs	NA	14 (13)	NA
M184V/I + ≥ 3 TAMs	NA	4 (4)	NA

*For 555/891 participants, resistance data were either missing or not available; †More than one can be applicable for each participant
ART, antiretroviral therapy; B/F/TAF, bictegravir/emtricitabine/tenofovir alafenamide; BL, baseline; DTG, dolutegravir; INSTI, integrase strand transfer inhibitor; IQR, interquartile range; NA, not applicable; NNRTI, non-nucleoside reverse transcriptase inhibitor; NRTI, nucleoside reverse transcriptase inhibitor; PI, protease inhibitor; PRM, primary resistance mutation; RT, reverse transcriptase; TAF, tenofovir alafenamide; TAM, thymidine analog mutation; TDF, tenofovir disoproxil fumarate

Table 2. Virologic, immunologic and other outcomes at 12 months

Outcome	**Total (N = 996)**	**With PRMs at BL (n = 105)**	**Without known PRMs at BL (n = 891)**
Virologic outcome, n (%)			
HIV viral load < 50 c/mL (M = E)	817 (98)	78 (99)	739 (99)
Immunologic outcomes, median (IQR)			
Change from BL in CD4 count, cells/μL	9 (-94, 109)	26 (-53, 100)	8 (-98, 110)
Change from BL in CD4/CD8 ratio	0 (-0.1, 0.1)	0 (-0.1, 0.1)	0 (-0.1, 0.1)
Other outcomes, n (%)			
Discontinuation of B/F/TAF due to AE	71 (7)	12 (11)	59 (7)
Discontinuation of B/F/TAF due to DRAE	56 (6)	9 (9)	47 (5)

Discontinuation of B/F/TAF due to lack of efficacy	2 (< 1)	1 (1)	1 (< 1)
≥ 1 serious DRAE within 12 months after B/F/TAF initiation	2 (< 1)*	0	2 (< 1)
*Both depression AE, adverse event; B/F/TAF, bictegravir/emtricitabine/tenofovir alafenamide; BL, baseline; c, copies; CD, cluster of differentiation; DRAE, drug-related adverse event; IQR, interquartile range; M = E, missing = excluded; PRM, primary resistance mutation			

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Use of Dalbavancin in treatment of Acute Bacterial Skin and Skin Structure Infections: Prospective Case series from a Canadian Perspective

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Background:
Treatment of acute bacterial skin and skin structure infections (ABSSSIs) with parenteral antibiotics is difficult in marginalized populations including PWID due to challenges with homelessness necessitating prolonged hospitalization for IV therapy, and frequent accessing of IV lines for drug use. Dalbavancin which is a novel lipoglycopeptide antibiotic with activity against gram-positive organisms with a duration of action of 7-14 days may be an ideal antibiotic in patients in whom administering parenteral antibiotics may be difficult.

Methods:
Prospective cohort study consisting of 19 patients who were referred to the Cellulitis Clinic at London, Ontario, Canada who were referred for ABSSSI between February 1st and July 30th, 2023. Patients were treated as outpatients with one dose of IV dalbavancin. Patients had social factors which precluded administration of outpatient parenteral antibiotics in a traditional setting, such as injection drug use, severe psychiatric comorbidities, or unstable housing.

Results:
The median age of patients enrolled was 43 (range 36 to 56), were predominantly male (74%), unemployed (90%), and with unstable housing (58%). Treatment with dalbavancin was successful in 13/19 (68%); indeterminate (presumed success as could not be reached for follow-up but were not admitted to any institution within our catchment area) 3/19 (16%); Failure (needed further antibiotics following dalbavancin) 3/19 (16%).

Conclusions:
Administering dalbavancin through a single IV infusion eliminates the need for indwelling IV access and may enhance treatment of ABSSSI without the need for hospital admission, in those with challenging socioeconomic factors who may have difficulty with adherence to outpatient antibiotic therapy.

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Characterizing Cis and Trans Women's Knowledge of Risk of HIV and Access to HIV Prophylaxis

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PrEP, PEP, and PEP-in-pocket (PIP) are effective HIV prevention strategies, yet HIV rates are increasing among Canadian women, and studies elsewhere have shown significantly lower PrEP-to-need ratio among women as compared to men. The objective of this study was to assess women's HIV risk and prophylaxis awareness and access.

This cross-sectional questionnaire study included prophylaxis-naïve self-identified cis and trans women who are sexually active and/or using drugs. Recruitment occurred in community-based organizations across Ontario. The questionnaire included demographics, HIV risk factors, and interest and knowledge on prophylaxis. Responses were grouped into high or low risk for HIV. Awareness, interest, and prior offers of prophylaxis were compared between risk groups using chi-square testing.

Responses from 175 women were analyzed. Of these, 17% were <26 years old, and 74% reported having a primary care provider. Homelessness occurred in 40%, and 59% had public funding for medications, while 11% reported no coverage. In total, 50% were grouped as "high risk"; sexual (46% of sample) and drug risk factors (29%) were correlated ($p<0.0001$). Despite these responses, 71% reported "low/very low" subjective HIV risk. In the sample, 49%, 50%, and 68% reported no awareness of PrEP, PEP, and PIP respectively. Neither subjective nor objective risk was associated with awareness. Only 7% of respondents had been previously offered prophylaxis, with no significant difference related to risk. Of those reporting previous sexual violence, only 10% had been offered PEP, and there was no association between recent sex work and prophylaxis offer. There was strong interest in prophylaxis (69%), but cited barriers included access (54%), side effects (49%), and low subjective risk (31%).

Women at risk of HIV acquisition may not perceive their risk, and women have low knowledge and access to prevention options. This understanding is essential to addressing barriers to HIV prophylaxis uptake among women.

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Restarting bictegravir/emtricitabine/tenofovir alafenamide (B/F/TAF) after virologic rebound: a pooled analysis of studies in people with HIV-1

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Management of HIV-1 virologic failure without resistance includes reinitiation of antiretroviral therapy to regain virologic suppression. We examined outcomes following virologic rebound in people with HIV-1 receiving B/F/TAF.

Participants who received B/F/TAF in switch studies 1844, 1878, 1961, 4030, 4449 and 4580, and first-line studies 1489, 1490 and 4458, were included. Viral load was analyzed at baseline/Day 1, at Weeks 4, 8 and 12, then every 12 weeks through end of study plus unscheduled visits. Virologic rebound events (≥1 viral load ≥1,000 copies/mL after virologic suppression [<50 copies/mL]) were counted and categorized by subsequent virologic suppression or viremia (≥50 copies/mL). Time to virologic suppression (first value <50 copies/mL) after virologic rebound and duration of viremia (time between virologic rebound event and last ≥50 copies/mL value) were calculated.

In total, 110 virologic rebound events were identified in 96 of the 3,768 participants (2.5%; Table). Ninety-one virologic rebound events (82.7%) were followed by subsequent resuppression [median time: 23 days (interquartile range [IQR]: 19–38)]. Seven virologic rebound events (6.4%) were followed by continued viremia that persisted without resuppression for a median of 30 days (IQR: 14–87) before discontinuation of B/F/TAF, without emergence of resistance; 12 virologic rebound events (10.9%) were not evaluable (virologic rebound at last assessment). Excluding non-evaluable virologic rebound events, resuppression was noted in 91/98 (92.9%) virologic rebound events.

Among people who experienced virologic rebound after virologic control, the majority achieved rapid viral resuppression with B/F/TAF. No treatment-emergent resistance was observed, supporting the high barrier to resistance of B/F/TAF.

Supporting Document

Table. Virologic rebound and outcomes by participant and event

	Participants with any virologic rebound event, n/N (%) [95% CI]*	**Virologic rebound events, n/N (%) [95% CI]***
Resuppressed	77/96 (80.2) [70.8, 87.6]†	91/110 (82.7) [74.3, 89.3]
Continued viremia	7/96 (7.3) [3.0, 14.4]	7/110 (6.4) [2.6, 12.7]
Virologic rebound event not evaluable	12/96 (12.5) [6.6, 20.8]	12/110 (10.9) [5.8, 18.3]
Resuppressed (not evaluable=excluded)	77/84 (91.7) [83.6, 96.6]	91/98 (92.9) [85.8, 97.1]
Continued viremia (not evaluable=excluded)	7/84 (8.3) [3.4, 16.4]	7/98 (7.1) [2.9, 14.2]

*95% CIs were calculated using the Clopper–Pearson exact method; †Resuppressed after last virologic rebound event
CI, confidence interval

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Failure to Enroll Into A Prospective Doravirine/Lamivudine/Tenofovir DF (DOR/3TC/TDF) Switch Trial To Halt Or Reverse INSTI-Associated Weight Gain (DeLiTE)

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Background: In randomized trials, doravirine (DOR) appears relatively weight-neutral, while tenofovir DF (TDF) may be weight-suppressive. We designed a prospective, observational pilot study to assess whether a switch to DOR/3TC/TDF would stabilize or reverse weight trajectory in patients experiencing significant INSTI-associated weight gain.

Methods: Virally suppressed adults with ≥10% increase in body weight while on an INSTI-regimen for 1-5 years were switched to DOR/3TC/TDF for 12 months. Weight, waist circumference, adherence, diet/exercise habits, and routine bloodwork including fasting lipids/glucose were measured at baseline and every 12 weeks. DXA scan and body image questionnaires were administered at baseline and week 48. The target enrollment was 25 participants. Patients receiving specific weight-loss interventions (including GLP-1 agonists/bariatric surgery) other than diet/exercise were excluded.

Results: The study protocol was developed in 12/2019, but enrollment began in 09/2021 due to delays in securing funding, institutional contract approval, and research holds during the COVID pandemic. Between 09/2021-09/2023, 4 participants were enrolled with results available for 3 women (Black, age 51/56/70 years, CD4 139/801/664/mm3, weight 146.8/100.2/75 kg, BMI 45.3/33.9/30.8, 56/45.7/50% total body fat, on dolutegravir/abacavir/3TC, dolutegravir/FTC/TAF or elvitegravir/cobicistat/FTC/TAF for 5.5/4.25/4.5 years). At 12 months, reductions in weight (0/-7.5/-5 kg), BMI (0/-2.6/-2), waist circumference (-0.8/-1.1/+1 cm), total body fat (-1.5/-2.9/-3.5%), systolic and diastolic BP (+2/-9/-10 and -1/-3/-6 mmHg), fasting glucose (-1.8/-1.6/-0.2 mmol/L) and lipids were observed. Body image/self-esteem improved; all remained virally suppressed with no proteinuria or significant eGFR change. Due to low enrollment, the study was closed to futility.

Conclusions: In a small sample of people with ≥10% INSTI-associated increase in body weight, small improvements in weight, metabolic, and body image/self-esteem were observed after switching to DOR/3TC/TDF. Institutional and pandemic challenges significantly impacted the ability to enroll participants in this trial. A larger trial of similar design conducted by the ACTG (NCT04636437) is underway.

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From nonalcoholic fatty liver disease to metabolic dysfunction-associated steatotic liver disease: implications of terminology change in people living with HIV

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Background
Metabolic dysfunction-associated steatotic liver disease (MASLD), a positive, non-stigmatizing definition emphasizing the association with metabolic disease, has recently replaced non-alcoholic fatty liver disease (NAFLD). The impact of MASLD definition in comparison to NAFLD in people with HIV (PWH), who are at high risk for this liver disease, remains unexplored.

Methods
We conducted a cross-sectional study of two prospective cohorts comprising PWH on stable antiviral therapy screened for hepatic steatosis, defined as controlled attenuation parameter ≥248 dB/m, and significant liver fibrosis, defined as liver stiffness ≥7.1 kPa, by fibroscan. PWH with alcohol abuse were excluded. NAFLD was defined as hepatic steatosis without Hepatitis B virus (HBV) or Hepatitis C virus (HCV) co-infection. MASLD, which does not require exclusion of HBV or HCV coinfection, was defined as hepatic steatosis plus any among overweight, diabetes, hypertension, or dyslipidemia. Factors associated with both conditions were explored by logistic regression.

Results
We included 1947 PWH (mean age 54 years, 74% males, median HIV duration 21 years, median current CD4 703, 98% with undetectable HIV viral load). NAFLD was diagnosed in 618/1714 (36.1%) PWH, after excluding those with HBV (1.2%) and HCV (9.2%), while 648/1947 (33.3%) PWH fulfilled MASLD criteria. Figure 1A depicts proportions of PWH with NAFLD, MASLD and NAFLD/MASLD overlap. Out of 618 PWH with NAFLD, 483 were reclassified as MASLD (78.1% overlap). Prevalence of significant liver fibrosis was 9.9% in no NAFLD-no MASLD, 9.3% in NAFLD-no MASLD, 26.5% in NAFLD/MASLD overlap, respectively. Male sex, CD4, triglycerides and BMI were associated with NAFLD/MASLD, while significant liver fibrosis was associated with MASLD (Figure 1B).

Discussion
There is substantial overlap between NAFLD and MASLD definitions in PWH. Interestingly, given the association between significant liver fibrosis and MASLD, this new definition may better characterize PWH with hepatic steatosis requiring surveillance and interventions to manage liver fibrosis.

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Prevalence of Methamphetamine/Amphetamine Usage and Demographics of Users in Ontario based on Laboratory Drug Screen Results

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Background

Data regarding the prevalence of amphetamine/methamphetamine use in Canada are limited.

Objectives

To estimate the prevalence of methamphetamine/amphetamine use in Ontario based on laboratory drug screening tests, and to describe the socio-demographic characteristics of methamphetamine/amphetamine users.

Methods

A cross-sectional study of persons tested with urine/serum drug screens for methamphetamine/amphetamine from an electronic database of laboratory test results from selected community and hospital-based laboratories across Ontario during 2017-2018. Persons who filled a prescription for stimulants within 120 days prior to testing were excluded. We used descriptive statistics to summarize the characteristics of those who tested positive for methamphetamine/amphetamine use, relative to those who tested negative.

Results

Over the two-year period, 215,529 persons were tested for methamphetamine/amphetamine, with 26,392 individuals testing positive. This suggests that 0.17% of the population covered by the database tested positive for methamphetamine/amphetamine use. Of those who tested positive, most were between the ages of 20-40 years, but 19.5% were over 50 years of age. 41.1% of those testing positive were women, and 40.5% were in the lowest income quintile. Within the past 2 years, those testing positive had a mean of 46.5 (SD = 54.2) primary care visits, 5.0 (SD = 11.0) emergency department (ED) visits, and 0.8 (SD = 2.1) hospitalizations. Of those who tested positive for methamphetamine/amphetamine use, 27.0 % also tested positive for opiates and 29.2% tested positive for cocaine.

Interpretation

Methamphetamine/amphetamine use is associated with poverty and a large burden on the health care system. Use among women and in those over 50 years of age may have been underestimated in previous studies, and concurrent opiate and cocaine use is common. Drug testing results can inform the assessment of the population demographics of drug use.

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Metabolic Dysfunction-Associated Steatotic Liver Disease (MASLD) is Associated with Liver Fibrosis in People with Hepatitis C

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Background. Hepatitis C virus (HCV) is a major cause of chronic liver disease worldwide. Development of significant liver fibrosis is associated with increased risk of hepatic outcomes. 45-55% of HCV patients develop hepatic steatosis (HS). The term “steatotic liver disease (SLD)” has replaced “nonalcoholic fatty liver disease (NAFLD).” SLD with cardiometabolic risk factors defined as “metabolic dysfunction-associated steatotic liver disease (MASLD).” The new nomenclature emphasizes the metabolic nature of HS and allow its coexistence with other conditions such as HCV. Therefore, we aim to investigate the effect of MASLD and HCV coexistence on liver fibrosis.

Methods. This was a retrospective, cross-sectional study including people with HCV monoinfection. Participants aged ≥18 years without HIV co-infection or other chronic liver diseases were included from 2 centers: McGill University Health Center (MUHC) and The Ottawa Hospital between the year 2014 and 2023. MASLD was defined as the presence of hepatic steatosis by controlled attenuation parameter (CAP) ≥275 dB/m plus one of the following cardiometabolic conditions: increased body mass index (BMI) and waist circumference; prediabetes or diabetes; hypertension; hypertriglyceridemia; low high-density lipoprotein. Liver fibrosis was defined as a liver stiffness measurement (LSM) of ≥7.1 kPa. The prevalence and cofactors of liver fibrosis were investigated.

Results. We included 590 people with HCV monoinfection. The prevalence of liver fibrosis was 57%, 48% 38% in MASLD, SLD without cardiometabolic conditions, and no steatosis group, respectively. After adjusting for age, sex, HCV RNA positivity, HCV genotype, and duration of diagnosis of HCV infection, cofactors of liver fibrosis were MASLD with prediabetes or diabetes (adjusted odds ratio [aOR] 4.92, 95% confidence interval [CI] 1.89-12.77; p=0.001) and MASLD with hypertension (aOR 2.25, 95% CI 1.18-4.29; p=0.01).

Conclusion. MASLD is associated with higher prevalence of fibrosis in people with HCV. Beyond pursuing virological cure, healthcare practitioners should target metabolic conditions.

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Characterizing Weight Trajectory In A Diverse Ambulatory Population Of People With HIV After Switching From Their First Antiretroviral Regimen (WEIGH-IN SWITCH)

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Objectives/Aim: Weight gain associated with integrase inhibitors (INSTI) and/or tenofovir alafenamide (TAF) may be progressive beyond normal aging/return-to-health, but its nature after switching antiretroviral therapy (ART) is not fully elucidated. We aimed to characterize weight trajectory in a diverse population of persons with HIV after switching from their first ART.

Methods: Single-centre, retrospective cohort study using data from a research registry database of a Canadian tertiary care HIV clinic. Inclusion: adults starting first ART for ≥1 year from 01/01/2010-30/09/2022, then switched to a second ART for ≥1 year with ≥2 weights recorded. The primary outcome was change in weight (kg/year) during the switch period. Participant-level regression was used to represent change; the models used piecewise linear slopes with a knot at the time of switch. Participants were categorized into stable weight (slope within ±1 kg/year), increased weight (>1 kg/year), and decreased weight (<-1 kg/year).

Results: 144 participants (83% male, 47% white, 55% born outside Canada, median age 42 years, CD4 326/mm3, weight 75.0 kg, BMI 24.8 kg/m2) started first ART (47% NNRTI/34% INSTI/19% PI with 90% TDF/2% TAF) for a median follow-up of 3.8 years. Participants switched to 12% NNRTI/84% INSTI/1% PI with 22% TDF/48% TAF for a median 4.5 years. During this period, weight remained stable (41%), increased (39%) or decreased (20%). Among those who switched to TAF, 55% increased, 28% stable and 17% decreased (p=0.006 compared to switches without TAF). The proportion who switched to bictegravir/dolutegravir+TAF who increased weight was higher than those who switched to bictegravir/dolutegravir without TAF or to other regimens [9/11 (82%) vs. 12/45 (27%) and 35/88 (40%), respectively; p=0.02].

Conclusions: In a contemporary cohort of people, those who switched to TAF were more likely to experience weight gain. Significant weight gain was less frequent in those switching to other regimens including bictegravir/dolutegravir without TAF.

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The syndemic effect of substance use on preterm births in pregnant women living with HIV in British Columbia

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BACKGROUND: While substance use is prevalent in women living with HIV (WLWH), knowledge on the synergistic impact of substance use and HIV infection on pregnancy remains limited. Our study aimed to investigate substance use in pregnancy on preterm birth rates in WLWH.

METHODS: We analyzed the British Columbia perinatal HIV surveillance database for births from January 1997 to December 2022. The primary outcome is preterm births, defined as deliveries < 37 weeks gestational age. Substance use history is obtained through antenatal records and clinical notes. Risk factors were identified through univariate and multivariate logistic regression analyses.

RESULTS: Out of 578 singleton pregnancies in PLWH, 111 (19.2%) delivered preterm. In our cohort, 20% endorsed using substances in pregnancy. For individuals who endorsed using any substances, their preterm birth rate was 31% versus 16% for those who did not (OR: 1.95; p = 0.0004). Specifically, individuals who used tobacco (OR: 2.17; p < 0.0001), methadone (OR 2.45; p < 0.0001), non-prescription opioids (OR: 3.24; p < 0.0001), cocaine (OR: 2.64; p < 0.0001) and crystal methamphetamines (OR. 3.35; p < 0.0001) had a significantly higher preterm birth rate. After adjusting for lower genital tract infections, ethnicity, history of preterm births, and viral load suppression, substance use in pregnancy remains a significant risk factor for preterm birth (OR: 2.08; p = 0.013).

CONCLUSION: Substance use in pregnancy is a significant independent risk factor for preterm birth in PLWH. Counselling about preterm births is crucial for pregnant people using substances and living with HIV.

Supporting Document

Table 1: Univariate analysis on the Preterm Birth Rate by Substance Use in Pregnant Women Living with HIV

		Cohort Total (n = 578)	**Term Birth** (n = 467)	**Preterm Birth** (n = 111)	**Odds Ratio** (95% confidence interval)	**p-value**
		n (% of total)	n (rate of term birth)	n (rate of preterm birth)		
Any substance use in pregnancy	Yes	118 (20%)	81 (69%)	37 (31%)	1.95 (1.39 - 2.74)	0.0004
	No	460 (80%)	386 (84%)	74 (16%)	1	
Tobacco	Yes	81 (14%)	52 (64%)	29 (36%)	2.17 (1.53 – 3.09)	0.0001
	No	497 (86%)	415 (83%)	82 (16%)	1	
Alcohol	Yes	38 (7%)	27 (71%)	11 (29%)	1.56 (0.92 - 2.65)	0.13
	No	540 (93%)	497 (81%)	100 (19%)	1	
Cannabis	Yes	31 (5%)	22 (71%)	9 (29%)	1.56 (0.87 - 2.77)	0.16
	No	547 (95%)	445 (81%)	102 (19%)	1	
Methadone	Yes	61 (11%)	36 (59%)	25 (41%)	2.46 (1.72 - 3.52)	<0.0001
	No	517 (89%)	431 (83%)	86 (17%)	1	

Non-prescription Opioids	Yes	41 (7%)	19 (46%)	22 (54%)	3.24 (2.3 - 4.56)	<0.0001
	No	537 (93%)	448 (83%)	89 (17%)	1	
Cocaine	Yes	42 (7%)	23 (55%)	19 (45%)	2.64 (1.80 - 3.86)	<0.0001
	No	536 (93%)	444 (82%)	92 (17%)	1	
Crystal Methamphetamines	Yes	22 (4%)	9 (41%)	13 (59%)	3.35 (2.27 - 4.96)	<0.0001

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Impact of Dolutegravir-based ART on the Maternal Metabolome in Pregnant Mice

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Our study examined the impact of Dolutegravir (DTG)-based antiretroviral treatment on the maternal metabolome during pregnancy and its potential effects on fetal development, focusing on metabolite changes in maternal plasma and liver in a mouse pregnancy model.

Pregnant C57BL/6J mice were divided into control (water, N=10), 1x-DTG (2.5 mg/kg, N=10), and 5x-DTG (12.5 mg/kg, N=11), with DTG administered alongside 50mg/kg tenofovir disoproxil fumarate and 33.3mg/kg emtricitabine (TDF/FTC). Metabolites in maternal plasma and liver (N=31 each) were analyzed using liquid chromatography-mass spectrometry. Welch's t-test was used to test for significant differences between groups.

Significant metabolite differences were observed in maternal plasma and liver from mice treated with DTG-based ART compared to control. Compared to control plasma from the 1xDTG+TDF/FTC group had 73 (24 upregulated, 49 downregulated) and from the 5xDTG+TDF/FTC group 385 (264 upregulated, 121 downregulated) metabolite differences. Liver from the 1xDTG+TDF/FTC group had 80 (22 upregulated, 58 downregulated) and from the 5xDTG+TDF/FTC group 315 (74 upregulated, 241 downregulated) metabolite differences. In the one carbon metabolic pathway we observed higher plasma choline phosphate, betaine, adenosylhomocysteine, and cysteine levels, while liver choline phosphate, betaine, and cystathionine levels were lower in the 5xDTG+TDF/FTC group versus control. In carbohydrate and energy metabolic pathways, plasma glucose and pyruvate levels were significantly higher in the 5xDTG+TDF/FTC group versus control, while fructose 6-phosphate, dihydroxyacetone phosphate, and pyruvate were higher in liver of the 1xDTG+TDF/FTC group versus control. In lipid metabolic pathway, phosphatidylethanolamine levels were higher while free fatty acids were lower in the 5xDTG+TDF/FTC plasma and liver versus control. Dicarboxylate fatty acids were lower in the liver of both DTG groups, but higher in the plasma of the 5xDTG+TDF/FTC group versus control.

Plasma and liver from pregnant mice receiving DTG demonstrated dose-response alterations to metabolites associated with one carbon, carbohydrate and energy, and lipid metabolism pathways.

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Spontaneous Clearance after Hepatitis C Virus (HCV) Reinfection in people living with HIV from the Canadian Coinfection Cohort (CCC)

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Background
HCV elimination efforts mean that an increasing percentage of new infections are reinfections. We consider the implications of spontaneous clearance after reinfection for the optimal frequency of clinical monitoring.

Methods
We simulate plausible reinfection and spontaneous clearance data for CCC participants; derive data that would be observed under different monitoring frequencies; then estimate the time to clearance from the observed data. We assume time from successful treatment to reinfection is distributed Weibull with a decreasing rate of reinfection; 90% of reinfections clear; and time from reinfection to clearance is distributed exponential (mean 0.22 years). We assume monitoring for five years, with frequencies varying from daily to yearly. We estimate the time to clearance using a Markov chain Monte Carlo model for double interval censored data and Poisson regression.

Results
With monitoring every three months, 53% of reinfections are missed. This amounts to only 7% of the total time infected over five years because the missed reinfections clear quickly (Table). However with yearly monitoring, 25% of the total time infected is never observed. Monitoring every three months in the first year and then yearly thereafter reduces the unobserved time infected to 8%.
With infrequent monitoring, estimates of the mean time to clearance are too high. Rapid clearances are often missed.

Conclusion
Yearly monitoring (recommended in guidelines for those at risk of reinfection) will miss roughly 25% of the total time reinfected, with the potential for continued HCV transmission. More frequent monitoring is needed in the first year after successful treatment.

Supporting Document

Table: Simulation of spontaneous clearance [a] after reinfection [b] in the Canadian Coinfection Cohort

	Missed over a five year period due to spontaneous clearance		Estimated mean time to spontaneous clearance (years)	
Monitoring frequency	Reinfections (%)	Time infected (%)	Poisson regression	Markov chain Monte Carlo
Daily	0	0	0.22	0.22
Monthly	23	1	0.27	0.27
Every 3 months	53	7	0.37	0.37
Every 6 months	74	16	0.56	0.53
Yearly	85	25	1.02	0.89
Every 3 months for a year – then yearly	56	8	0.44	0.41

[a] 90 % of reinfections spontaneously clear; time to clearance distributed exponential with a 1% probability clearance takes longer than a year (scale parameter = 0.22).
[b] Time from the end of successful treatment to reinfection distributed Weibull with reinfection rates of 20 per 100 person years at one year and 5 per 100 person years at five years (shape parameter = 0.15, scale parameter = 0.15).

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Viral load testing practices among pregnant women living with HIV on admission to Labour & Delivery

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Background: Routine viral load (VL) testing is recommended for pregnant women living with HIV (WLWH) antenatally to confirm viral suppression and inform the appropriate mode of delivery, although the exact timing of this bloodwork varies. Our hospital implemented a policy for physicians to order and for nurses to draw VLs for all pregnant WLWH on admission to Labour and Delivery, to obtain an up-to-date virological status immediately prior to delivery. This study characterized VL testing practices over the past ten years since the implementation of this policy.

Methods: Retrospective chart review of all pregnant WLWH admitted to Labour & Delivery at St. Michael's Hospital in Toronto, Ontario from January 2013 – December 2022. Outcomes of interest included VL order status and drawing status. Statistical analyses stratified these outcomes by antenatal data, admission date and diagnosis, group B Streptococcus (GBS) status, and labour epidural usage.

Results: This study identified 135 admissions among pregnant WLWH. The majority had VLs ordered (61.5%) and drawn (85.9%) on admission. VL ordering improved over the latter half of the study period (44.6% vs 82.0%, $p<0.001$). More VLs were ordered among GBS-negative patients (71.3%) compared to positive (41.4%) ($p=0.031$) and among those who received an epidural (74.2% vs 50.7%, $p=0.020$). More VLs were drawn by nurses among patients who delivered during the admission (90.9% vs 42.9%, $p<0.001$) and patients who received an epidural (93.5% vs 79.5%, $p=0.019$).

Conclusions: While the rate of ordering VLs gradually rose over the course of the study, the rate of drawing VLs remained high throughout the decade, indicating that nurses consistently drew the bloodwork irrespective of a written order. VL testing varied by GBS status, epidural usage, and delivery status. These findings offer opportunities to improve VL testing and to guide future clinical practices on virological testing prior to delivery.

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Polyphenol-rich Camu Camu capsules transiently influenced liver markers & inflammation in people living with HIV – Results of the Camu Camu pilot study

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Background
Non-AIDS comorbidities such as liver steatosis are linked with gut microbiota dysbiosis, gut permeability and inflammation in people living with HIV (PLWH) on ART. Camu Camu (CC), an Amazonian superfruit, modified the gut microbiota and decreased inflammation in obese mice and in smokers. In a single-arm pilot clinical trial, we assessed the influence of daily intake of CC on gut permeability and inflammation in ART-treated PLWH.

Methods
We recruited 22 ART-treated PLWH with a CD4/CD8<1 to select those with higher levels of inflammation. Participants took 1g of CC in capsules daily for 12 weeks while remaining on ART. Blood and stools were collected at 2 baseline visits, after 4 and 12 weeks of CC and 8 weeks after stopping CC. Plasma biomarkers were quantified by ELISA. Stool microbiota was characterized by 16S rDNA sequencing. HIV DNA and RNA in CD4 T-cells were quantified by nested qPCR.

Results
Median age was 53, and 21/22 were male. CD4, CD8 counts, and viral load remained stable. Participants lost a median of 1.2 kg after 12 weeks of CC. Serum levels of liver enzymes AST and ALT decreased from baseline to week 4 ($p<0.01$) and tended to decrease at week 12. Levels of gut damage markers I-FABP and REG3α tended to decrease at week 4.
Gut microbiota composition remained stable at the genus level during the study.
Plasma levels of CC-chemokine ligand 20 (CCL20), an attractant of protective Th17 T-cells in the gut, decreased at week 4 ($p=0.002$). Plasma TNFα levels tended to decrease at week 4.
A 1.3-fold increase in HIV RNA levels in CD4 T-cells was observed at week 20 only ($p=0.03$).

Conclusions
CC intake slightly reduced weight, liver transaminases and tended to decrease inflammation in ART-treated PLWH. This effect should be validated using higher dose of CC in larger studies.

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Association Between Virtual Visits and Health Outcomes of People Living with HIV: A Cross-Sectional Study

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Background: HIV presents as a persistent, long-term health challenge. Virtual care has been integrated as one of the care modalities in Ontario, yet its effectiveness compared to traditional care for PLHIV remains relatively unexplored.

Objectives: This study aims to find the effect of virtual visits on adherence to antiretroviral therapy (ART), viral load, and quality of life (QOL) in PLHIV in Ontario, Canada.

Methods: A cross-sectional study was conducted on PLHIV utilizing data from the Ontario HIV Treatment Network Cohort Study (OCS). The study included participants who completed the OCS questionnaire in 2022. Data was collected from standardized self-reported OCS questionnaires, medical charts and through record linkage with the Public Health Ontario (PHO). Three categories were used for the mode of care: (1) virtual care, (2) in-person care, and (3) both in-person and virtual care. Participants' characteristics were analyzed using descriptive analysis, with counts and percentages for categorical variables and medians and the interquartile range (IQR) for continuous variables. Logistic regression analysis was performed for dichotomous outcomes (adherence to ART and viral load), and multiple linear regression analysis was employed for the continuous outcome (quality of life).

Results: In 2022, a total of 1930 participants accessed HIV care in the Ontario Cohort Study (OCS). Among them, 19% of the participants utilized virtual care mode, 45.6% received in-person care, and 34.3% received care through virtual and in-person modalities. The median age of the participants was 55 years (IQR: 45-62], and 78% of the total sample was comprised of men. In the multivariable model, virtual care was associated with increased likelihood of optimal adherence to antiretroviral therapy (Adjusted Odds Ratio (AOR) 1.31, 95% confidence interval (CI): 1.00-1.71) and an increased likelihood of achieving viral load suppression (AOR 0.608,95% CI: 0.381-0.971). Furthermore, virtual and in-person care was associated with an improved QOL in terms of Mental Component Summary Score (MCS) compared to solely in-person care (Adjusted β1 0.960, 95% CI 0.052,1.869).

Conclusion: This study suggests virtual care positively impacts adherence to antiretroviral therapy (ART) and viral suppression within this context. However, further investigation is necessary to understand the long-term effects of virtual care.

Keywords: retention in care, cross-sectional study, HIV, antiretroviral therapy (ART), virtual visits.

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Unraveling the Collateral Impact: A Systematic Review of COVID-19's Effect on the HIV Care Continuum in Middle-Income Countries

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Introduction: The intersection of the HIV care continuum with the challenges posed by the COVID-19 pandemic has significantly altered the healthcare landscape in middle-income countries, amplifying existing vulnerabilities. Limited financial resources and pandemic-induced restrictions have exacerbated healthcare inequities. This systematic review aims to elucidate the structural dimensions of the impact of COVID-19 on HIV care, with a specific focus on identifying barriers and facilitators.

Methods: Employing The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines, our methodology encompassed a systematic search of electronic databases and a meticulous manual assessment of references. The review, spanning 2020 to 2022, included quantitative, qualitative, and mixed-method studies conducted in middle-income countries, with no age or gender restrictions.

Results: A comprehensive analysis of 51 studies revealed that the adverse impact on the HIV care continuum was intricately linked to pandemic-induced restrictions, compounded by the dual fears of COVID-19 contraction and HIV status disclosure. Telemedicine emerged as a pivotal facilitator for sustaining HIV treatment continuity amid the challenges. However, the pandemic-induced disruptions negatively affected income, increased vulnerability to HIV, compromised preventive measures such as PrEP, and escalated risky behaviors and mental health challenges among individuals living with HIV. HIV testing and diagnoses faced reduced access and frequency, particularly among key populations. Disruptions in linkage and retention in care, especially in urban areas, exacerbated barriers to essential HIV treatment.

Conclusions: The coexistence of COVID-19 and HIV has structural implications, manifesting as service restrictions, widened care gaps, and a break in the transmission chain. This abstract provides insights into the impact on medical appointments, adherence, and treatment engagement. Understanding these dimensions is crucial for targeted interventions to mitigate collateral consequences on the structural integrity of the HIV care continuum in middle-income countries.

Key words: HIV care continuum, Middle-income countries, barriers, facilitators, COVID-19

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Polypharmacy, Inappropriate Medication Use and Anticholinergic/Sedative Burden Among a Cohort of People Living With HIV Aged 65 years and Older in Canada: CHANGE-Rx

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Background:

Adults aging with HIV are at higher risk for neurocognitive complications and geriatric syndromes including falls and frailty. Polypharmacy and potentially inappropriate medications (PIMs) can further increase these risks. Both anticholinergic (≥3) and sedative (moderate-high) burden scores are associated with increased falls risk. We examined polypharmacy, PIMs, and anticholinergic and sedative burden (ASB) among a cohort of older adults living with HIV in Canada.

Methods:

CHANGE-Rx is a substudy of CHANGE-HIV, a longitudinal Canadian cohort of people with HIV aged 65 years and older, established in 2019. Information on medication use, comorbidities, HIV-specific factors and frailty were assessed. Proportion of people with polypharmacy (≥5 non-antiretroviral therapy (ART) drugs), severe polypharmacy (≥10 non-ART drugs), and PIMs (Beers and Screening Tool of Older People's Prescriptions (STOPP) criteria) were determined. Anticholinergic burden was calculated using a combination of the Anticholinergic Cognitive Burden (ACB) scale and German Anticholinergic Burden Scale (GABS). Sedative burden was calculated using the Anticholinergic and Sedative Burden Catalog (ACSBC).

Results:

440 CHANGE-HIV participants were included. The median age was 69 (range 65-89), 91% men, 76% Caucasian, 77% MSM, 99.5% were virally suppressed, median CD4 nadir of 200 cells/mm3, median 26 years living with HIV, 15.5% were frail, 19.3% had a fall within the last six months. Excluding ART, 93.6% were on a median five (range 1-26) prescribed comedications, 56% had polypharmacy, 38% had severe polypharmacy, 48.9% had ≥1 PIM. Anticholinergic (≥3) and moderate-high sedative burden were in 17.4% and 41.3% of patients, respectively. Frail patients, compared to non-frail, had more severe polypharmacy, ASB and falls ($p<0.05$).

Conclusion:

Polypharmacy is common among older adults living with HIV in Canada, with many experiencing PIMs and high ASB. Interventions to address medication-related issues in the aging population are imperative. It remains to be determined if addressing polypharmacy/PIMs would impact falls and frailty.

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Understanding Goal Setting and Goal Achievement Among Individuals Living with HIV Involved in an Online Community-Based Exercise Intervention Study

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Objectives: Our aim was to explore the nature and extent of goal setting and achievement among adults living with HIV involved in an online community-based exercise (CBE) study.

Methods: We recruited adults living with HIV in Toronto to participate in a two-phased study involving a 6-month online CBE intervention (thrice-weekly unsupervised exercise, bi-weekly supervised personal trainings, monthly educational sessions), and a 6-month follow-up period. We administered the Goal Attainment Scale (GAS) to measure participants' desired goals at Months 0 (baseline) and 6 (end of intervention), and whether goals were achieved at Months 6 and 12 (follow-up). Text analysis was performed to categorize types of goals articulated. We reported the number and nature of goals set at Months 0 and 6, and of these, the number (%) achieved at Months 6 and 12.

Results: Thirty-two participants initiated the intervention and completed the GAS at baseline. The majority were males (69%) with a median age of 53 (interquartile range [IQR]=15.8). Participants set a median of 4 goals (IQR=1.25) at baseline. The most frequently stated goals included weight reduction (n=17 participants), muscle gain (n=12), and increased water intake (n=10). At Month 6, the median number of goals achieved was 2 (IQR=2; average achievement rate=46%). Among participants who completed the intervention (22/32; 69%), a median of 4 goals were set for the follow-up phase (IQR=2), with the most frequently stated goals shifted to increasing exercise (n=9), improving strength (n=9), and reducing weight (n=9). At Month 12, participants achieved a median of 2 goals set at Month 6 (IQR=2.3; average achievement rate=47%).

Conclusion: In this online CBE intervention study, participants set goals in areas of weight, strength, and exercise engagement. Approximately 50% of their set goals were achieved. Findings may help to inform goal setting and personalized exercise interventions for adults living with HIV.

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Trajectories of Disability and Influence of Contextual Factors Among People Living with HIV: Insights from a Community-Based Longitudinal Study

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Objectives: To characterize trajectories of disability and assess the influence of contextual factors on these trajectories among adults living with HIV.

Methods: We analyzed longitudinal, observational data from a community-based study in which adults living with HIV in Toronto completed bimonthly questionnaires over 8 months (5 time points). Disability was measured across six different dimensions (physical, cognitive, mental-emotional, uncertainty, day-to-day activities, social inclusion) using the Short-Form HIV Disability Questionnaire (SF-HDQ). Higher SF-HDQ scores (range 0-100) indicate greater severity of disability. We assessed intrinsic contextual factors (age, gender, comorbidities) through a baseline demographic questionnaire and extrinsic contextual factors (stigma, social support) using the HIV Stigma Scale and MOS Social Support Scale, respectively. We performed latent class growth curve analyses to identify disability trajectories across six dimensions over 8 months. Poisson regression models were used to assess the influence of contextual factors on the disability trajectories.

Results: Of the 108 participants, 89% were men with a median age of 51 years (Interquartile range [IQR]=14). Each participant had an average of 4/5 assessments. Longitudinal analyses showed three common trajectories– low, middle, and high– in the physical, mental-emotional, and activity difficulties dimensions. Four common trajectories– low, middle-low, middle-high, and high– were identified in the cognitive, uncertainty, and social inclusion dimensions. Greater numbers of comorbidities (Incidence Rate Ratio [IRR]=1.14; 95%CI:1.08, 1.21) and higher HIV stigma scores (IRR=1.02; 95%CI:1.01, 1.03) were associated with greater numbers of high-shaped trajectories (greater disability), whereas older age (IRR=0.96; 95%CI:0.93, 0.99) and greater social support (IRR=0.98; 95%CI:0.97, 0.99) were associated with fewer high-shaped trajectories.

Conclusion: Experiences of disability among adults living with HIV followed three or four distinct trajectories over an 8-month period. Results contribute to a better understanding of the influence of contextual factors and may inform interventions or programs to mitigate disability among adults living with HIV.

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An Artificial Intelligence-based Chatbot for Pharmacists in HIV Care: Results from a Knowledge-Attitudes-Practices Needs-Assessment Questionnaire

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Background: Pharmacists, often with limited interactions with people with HIV (PWH), need support in decision-making, providing antiretroviral treatments (ART), and updating HIV knowledge. MARVIN-Pharma, an artificial intelligence-based chatbot adapted from MARVIN for PWH, is under development to assist pharmacists. Its configuration and implementation should however be evidence-based.

Objectives: This study aims to ensure MARVIN-Pharma fulfills Québec pharmacists' needs by assessing their knowledge, attitudes, involvement, and barriers in HIV care, alongside perceptions of MARVIN-Pharma's usability.

Methods: From December 2022 to December 2023, we administered an online bilingual (French and English) cross-sectional questionnaire, inspired by existing surveys, on perceived and objective knowledge, attitudes, involvement and barriers in HIV care, and perceptions of MARVIN-Pharma. Participants included Québec pharmacists, recruited through convenience and snowball sampling, beginning with affiliates of the National HIV and Hepatitis Mentoring Program. Descriptive statistics were generated, with an ethics exemption from the McGill University Health Centre.

Results: Forty-one pharmacists (28 community-based, 13 hospital-based) providing care in 15 Québec municipalities participated. Their perceived HIV knowledge as moderate corresponded to the objective assessment (50% correct answers), revealing gaps in ART, HIV symptoms, and pregnancy-related knowledge. Attitudes towards HIV care were mostly positive (76% favorable), with moderate involvement, peaking in ART adherence counseling (78% engaged) and lowest in post-exposure prophylaxis testing (24% engaged). Major barriers included time constraints (93%), limited staff resources (89%), inadequate clinical tools (82%), and insufficient HIV training (75%). Regarding MARVIN-Pharma's perceived usability, 47% welcomed it, 32% found it work-compatible, but 50% were undecided; 97% were confident using online resources.

Recommendations: For effective MARVIN-Pharma development, addressing pharmacists' knowledge gaps about ART, HIV symptoms, and pregnancy-related issues is crucial. It should include guidelines on adherence counseling and prophylaxis, considering time and training barriers. Continuous updates with ART regimens and active engagement with pharmacists are essential to ensure its adaptability and usability.

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Family Physicians are Uniquely Positioned to treat Hepatitis C: A Qualitative Analysis of an Initiative from a Primary Care Setting in Toronto Canada.

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Background: Hepatitis C is burdensome infection, significantly affecting people living with HIV, and the WHO seeks to eliminate it by 2030. However, many people living with HCV remain untreated. Because of their accessibility and existing patient relationships, family physicians are uniquely positioned to treat Hepatitis C. We developed and evaluated an initiative to support clinicians in treating HCV within primary care.

Methods: The HCV treatment initiative was implemented within a Family Health Team based in Toronto's inner city. The initiative included supports and education for clinicians, enhanced interprofessional team supports and mentorship, as well as patient outreach. To evaluate the initiative, we conducted focus groups with physicians and pharmacists to understand their perspectives on the implementation and impact of the intervention, and individual interviews with patients to explore perceived barriers and facilitators to seeking HCV treatment.

Results: Physicians and pharmacists reported that the intervention helped raise awareness and confidence for treating HCV in primary care. A collaborative team environment, and decision-support tool integrated into the electronic record were enablers of success. Patient psychosocial complexity remained a barrier to engagement in treatment. Many patients were reluctant to initiate treatment stating concern about side effects, competing health interests and complex social situations. People who did initiate treatment cited readiness and personal motivation as strong factors in their ability to receive treatment. Others reflected on increased awareness of new treatments, ease of access to these treatments through the family health team, and government coverage of costs.

Conclusion: A primary care initiative raised awareness and increased clinician confidence for treating HCV. Some physicians and patients were reluctant to start treatment due to psychosocial barriers, including some related to mental health and addiction. Those who did start therapy cited personal readiness as a significant factor.

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Changes in Physical Activity, Body Composition and Strength across a Two-Phased Online Community-Based Exercise (CBE) Intervention Study among Adults Living with HIV: Results from the Tele-Coaching CBE Study

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OBJECTIVE: To examine changes in physical activity, body composition, and strength among adults with HIV engaged in an online community-based exercise (CBE) intervention.

METHODS: We conducted a 12-month intervention study with adults with HIV. We measured engagement in physical activity weekly, and body composition, and strength outcomes bimonthly across two phases: 1) Intervention: participants were asked to exercise 3 times/week, supervised biweekly with online personal coaching, and monthly online educational sessions (6-months), and 2) Follow-Up: participants were asked to continue exercising thrice weekly, independently (6-months). We used segmented regression to assess the change in trend (slope) between phases.

RESULTS: Of the 32 participants who initiated, 22(69%) completed the intervention; and 18(56%) completed the study. The majority were males (69%), median age was 53 years (25th,75th percentiles:43,60), with a median of 3(1,7) concurrent health conditions. Median number of coaching sessions attended across participants was 10/13(77%). Participant engagement in ≥30min of moderate-vigorous physical activity in the past week increased a median of 0.02 days/week (95%Confidence Interval(CI):0.01,0.04), from 3.24 days at baseline (95%CI:2.69,-379) to 3.77 days (95%CI:3.22,4.33) at the end of intervention. At end of the intervention there were mean decreases for weight (-1.2kg), body mass index(BMI) (-0.6kg/m2), and waist circumference (-3cm); and mean increases for push-ups (7 in a minute), plank time (39sec), sit-to-stand (3 in 30sec), and sit-and-reach (3.6cm). During the 6-month intervention, the monthly rate of change (slope) was significant for weight (-0.2kg/month;95%CI:-0.39,-0.04), BMI (0.1kg/m2;95%CI:-0.13,-0.01), waist circumference (-0.5cm;95%CI:-0.69,-0.28), push-ups (1.2 pushups/month;95%CI:0.88,1.52), plank time (6.5sec/month;95%CI:4.72,8.33), sit-to-stand (0.5 times/month;95%CI:0.28,0.75), and sit-and-reach (0.6cm/month;95%CI:0.36,0.88). During follow-up, there was a reduction in benefits compared with those observed during the intervention for push-ups, and plank time.

CONCLUSION: Participants who remained in the study demonstrated increases in physical activity and improvements in strength, and body composition during the CBE intervention. Future research should consider strategies that support retention and engagement in physical activity.

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Not all Crystal Meth Use is the Same: Different Patterns of Crystal Methamphetamine (CM) Use, STIs, and Sex Among Gay, Bisexual, and Other Men Who Have Sex With Men (GBM)

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Introduction: There is significant heterogeneity among CM users in frequency of use and related symptoms. This heterogeneity may be correlated with differences in sexual health factors such as bacterial STI and HIV diagnoses.

Methods: We used Latent Class Analysis (LCA) to identify distinct patterns of CM use using the WHO-ASSIST scale and related symptoms using baseline survey and nurse-administered testing data from the Engage Cohort Study (2017-2019). Based upon bivariate analyses with CM use class, we selected demographic, sexual health, and STI and HIV diagnoses in a multinomial logistic model to examine associations with class membership.

Results: Among 228 CM-using GBM in Engage, four classes best fit the data: Class 1, Occasional users without reported concerns and problems (36.0%); Class 2, Occasional users with reported concerns and attempts to stop/control use (25.9%); Class 3, Monthly users with consequences (10.5%); and Class 4, Weekly users with frequent consequences (27.6%). In the multinomial regression (see Table), we found multiple Class differences. Class 1 had lower sexual compulsivity and escape motives than Classes 3 and 4. Class 4 was most likely to have GBM living with HIV. Injection drug use differed between classes, with the highest in Class 3 > Class 4 > Class 2 > Class 1 being the lowest.

Discussion: CM use classes differed in frequency and patterns of use and multiple STI and HIV-related variables. Our analysis underscored the importance of better integrating CM-specific health promotion and harm reduction services into GBM-serving STI/sexual health agencies and clinics.

Supporting Document

Table. Multinomial Logistic Regression Model with Correlates of CM Use Class

	Class 2 versus Class 1 OR 95%CI	Class 3 versus Class 1 OR 95%CI	Class 4 versus Class 1 OR 95%CI	Class 3 versus Class 2 OR 95%CI	Class 4 versus Class 2 OR 95%CI	Class 4 versus Class 3 OR 95%CI
Education						
College (ref: high school or lower)	0.57 (0.26-1.24)	0.24 (0.05-0.97)	0.62 (0.26-1.46)	0.41 (0.12-1.31)	0.65 (0.27-1.51)	2.17 (0.79-6.19)
Graduate (ref: high school or lower)	**0.12*** ** (0.04-0.32)	**0.08*** (0.01-0.54)	**0.23**** (0.08-0.59)	4.00 (0.85-21.15)	0.97 (0.36-2.63)	0.25 (0.06-0.99)
City						
Vancouver (ref: Montreal)	**4.40*** ** (2.11-9.43)	**38.00*** ** (7.71-251.18)	**3.16**** (1.48-6.99)	0.85 (0.23-3.25)	**2.48*** (1.12-5.71)	1.45 (0.54-3.82)
Toronto (ref: Montreal)	1.51 (0.62-3.60)	0.26 (0.03-1.58)	0.67 (0.23-1.91)	1.22 (0.17-8.03)	0.79 (0.26-2.48)	0.91 (0.18-4.96)

	Class 2 versus Class 1 OR 95%CI	Class 3 versus Class 1 OR 95%CI	Class 4 versus Class 1 OR 95%CI	Class 3 versus Class 2 OR 95%CI	Class 4 versus Class 2 OR 95%CI	Class 4 versus Class 3 OR 95%CI
Vancouver (ref: Toronto)	**2.92*** (1.19-7.52)	**146.24***** (19-2071.98)	**4.72**** (1.72-13.89)	0.70 (0.10-4.80)	**3.16*** (1.03-9.72)	1.59 (0.3-7.99)
Sexual Compulsivity	0.99 (0.69-1.43)	**4.15***** (2.21-8.64)	**3.90***** (2.63-6.11)	1.32 (0.69-2.47)	**3.27***** (2.30-4.84)	1.40 (0.90-2.29)
Escape motives	1.27 (0.90-1.79	**6.44***** (3.05-15.63)	**1.57*** (1.04-2.41)	**3.51**** (1.67-7.92)	1.11 (0.72-1.72)	0.82 (0.40-1.54)
Depression	1.30 (0.86-1.98)	0.73 (0.28-1.67)	**0.60*** (0.38-0.93)	0.62 (0.25-1.40)	**0.35***** (0.21-0.55)	1.98 (0.96-4.25)
Anxiety	1.22 (0.82-1.79)	1.34 (0.50-3.95)	**1.99**** (1.32-3.06)	1.25 (0.61-2.64)	1.16 (0.77-1.74)	0.52 (0.26-1.00)
STI	0.85 (0.38-1.91)	1.39 (0.27-6.85)	0.56 (0.25-1.23)	**13.77***** (3.69-58.92)	1.03 (0.47-2.18)	0.37 (0.12-1.06)
HIV	0.57 (0.27-1.18)	**0.02***** (0.00-0.10)	**4.63***** (2.13-10.58)	**0.06***** (0.01-0.25)	**3.40**** (1.57-7.40)	**37.24***** (12.92-127.78)
P6M number of male anal sex partners	1.19 (0.85-1.69)	**0.33*** (0.11-0.87)	1.37 (0.92-2.16)	**0.12***** (0.04-0.33)	1.07 (0.78-1.47)	**6.22***** (2.72-16.11)
P6M alcohol	**0.26**** (0.11-0.59)	1.16 (0.07-29.6)	0.91 (0.33-2.49)	**8.64*** (1.38-102.54)	1.26 (0.49-3.15)	**0.05**** (0.00-0.33)
Ever used drug by injection	**3.33**** (1.45-7.92)	**84.96***** (13.36-735.27)	**3.89**** (1.73-9.22)	**18.67***** (5.69-74.31)	**3.97***** (1.94-8.54)	**0.37*** (0.14-0.91)

Notes. Class 1, *Occasional users without reported concerns and problems*; Class 2, *Occasional users with reported concerns and attempts to stop/control use*; Class 3, *Monthly users with consequences*; and Class 4, *Weekly users with frequent consequences;* P6M = past 6 months; *p<0.05; **p<0.01; ***p<0.001.

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Occurrence of Virologic Failure Among a Cohort of People Living with HIV in Care

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Background: Maintenance of a suppressed viral load (VL) allows people living with HIV (PLWH) to experience health and longevity, while also eliminating transmission of HIV to sexual partners. We examined the frequency of virologic failures among those in care using a longitudinal cohort study.

Methods: OCS is a longitudinal cohort of PLWH receiving care in 15 clinics across Ontario. VL data are obtained through chart review and linkage with the Public Health Ontario Laboratory, which provides all VL testing for the province. Virologic failure is defined as a person who had achieved viral suppression (VL<200 copies/ml) who later experience a VL higher than 200 copies/ml. Analysis was limited to participants receiving VL tests any time from 2007-2021, and whose first viral load was not suppressed (n=5,858).

Results: Among those virally suppressed in 2007 (n=4,444), 438 experienced VL failure that year (9.9%). This has improved steadily over time; in 2021 (n=4,728) 185 individuals experienced VL failure (3.9%). The frequency of VL failure per person has also declined. For those with a first VL in 2007 (n=207), the median (IQR) number of VL failures was 2(1-3), while those with a first VL in 2017 (n=126) the median (IQR) was 1(1-2). Among those who experienced VL failure and were re-suppressed in 2007 (n=416) it took a median (IQR) of 197(89-630) days to achieve VL suppression again, as compared to those experiencing VL re-suppression in 2017 (n=232), where it took a median of 116(56-294) days.

Conclusions: While a very high percentage of people on treatment are able to achieve viral suppression, virologic failure is not uncommon. Most are able to re-achieve VL suppression, though it can take some time. Outcomes have improved over time, and the drivers of continued virologic failure must be better understood.

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Demographic Trends and Outcomes of Children & Youth Living with HIV in Canada

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Background: Pediatric HIV has become a manageable, chronic disease. Increasing numbers of youth are entering adulthood and transitioning from pediatric to adult HIV care. We describe the epidemiology of the transitioned and current Canadian cohorts of children with HIV.

Methods: We reviewed Canadian Perinatal HIV Surveillance Program data from 01/1990–12/2022. Demographic comparisons between transitioned and current cohorts were by Chi-square or Fisher's exact tests.

Results: 797 children born since 1980 were reviewed. 113 died while in pediatric care, 102 (90%) due to AIDS-defining illness, with marked decreases in AIDS deaths after 1997 and the last reported in 2007. As of 2022, 483 had reached 19y and were presumed to have entered adult care; half (50%) of the 201 children in pediatric care are at least 14y. Numbers in pediatric care each year have decreased over time (maximum 325 in 2009; minimum 200 in 2021). Almost all (678/684, 99%) survivor children were infected perinatally. Significant proportion differences were noted in demographics of the current versus transitioned cohort; fewer were born to mothers with reported heterosexual acquisition and slightly more with IDU. More of the current cohort were born to Indigenous mothers, were born abroad, and resided in Saskatchewan, Alberta and BC.

Conclusions: Since 1990, 70% of youth with HIV have transitioned from pediatric to adult care in Canada, and half the current pediatric cohort will transition in the next 5y. Demographic changes have occurred over time, with a higher proportion now being born abroad and/or residing in Western Canada.

		Transitioned (n=483)	Current (n=201)	p-value
Maternal HIV risk factor	Heterosexual	324 (67.4%)	108 (53.8%)	0.003
	IDU	53 (11.0%)	26 (13.2%)	
	Blood product	13 (2.7%)	2 (1.0%)	
	Unknown	2 (0.4%)	4 (2.0%)	
	Other	6 (1.2%)	2 (1.0%)	
	None	85 (17.6%)	59 (29.4%)	
Maternal race/ethnicity	African/Caribbean/Black	313 (67.0%)	119 (63.3%)	<0.001
	White	88 (18.8%)	13 (6.9%)	
	Indigenous	32 (6.9%)	34 (18.1%)	
	Other	34 (7.0%)	22 (10.9%)	
	Unknown	16 (3.3%)	13 (6.5%)	
Child birthplace	Canada	237 (49.1%)	79 (39.3%)	0.010
	Abroad	236 (48.9%)	122 (60.7%)	
	Missing	10 (2.1%)	0 (0%)	
Province/ region	Atlantic	8 (1.7%)	4 (2.0%)	<0.001
	Quebec	164 (34.0%)	38 (18.9%)	
	Ontario	197 (40.8%)	69 (34.3%)	
	Manitoba	5 (1.0%)	5 (2.5%)	
	Saskatchewan	8 (1.7%)	22 (10.9%)	
	Alberta	49 (10.1%)	34 (16.9%)	
	British Columbia	52 (10.8%)	29 (14.4%)	

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HIV Health Neighborhood: Evaluation of a Design for an Integrated Primary Care Service

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This paper summarizes the evaluation of a health design process for an HIV Health Neighborhood (HHN) that was designed to address health risk factors related to chronic health conditions. The HHN will engage people who are recently diagnosed with HIV along with people who have lived with HIV for a while. The goal of the design is to support newly diagnosed individuals to prevent chronic health conditions and to support those currently living with HIV and other chronic health conditions to manage their health more effectively. Currently health and social care are delivered in a very fragmented manner. In the HHN services will be supported by peer workers and delivered in an integrated way. The individual will have the opportunity to make the health promotion plan fit their life experience and values. The added value of the HHN lies, in the opportunities for peer led fellowship and support of group health promotion activities, and, the structured process of peer facilitated self-management. The peer support will be delivered in ways that have been demonstrated through research to be helpful for people living with chronic health conditions in being successful in their self-management, or, to prevent individuals from developing additional chronic health conditions.

The results of a community focus group are reported. The following design elements were considered by the focus group participants as having potential to address the needs that had been identified by community members:
• Health Neighborhood
• Individualized Peer Support, Peer Health Navigation and Peer Health Coaching
• Better Choices Better Health HIV
• Community-based development capacity.

The results of the community focus group endorsed the development of an integrated HHN with these elements.

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Community Based and Peer Led Health Promotion Intervention Design

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People living with HIV or AIDS (PLWHA) experience higher rates of chronic illness than those people who do not have HIV. This may be related to issues such as the effect of: HIV, HIV medications, emotional distress, social exclusion, limited financial resources, individual participation in unhealthy practices and lower participation in health promoting activities.

The team focused on understanding the experience of PLWHA regarding their health and participation in health promoting activities. The intention being to design health promotion interventions that could improve the health of PLWHA.

The project was completed by a core peer team who gathered community information and designed solutions. PLWHA participated in focus groups regarding their health and their participation in health promoting activities.

A number of ideas were endorsed by community members and have been helpful in the development of health promotion interventions:
• The need to place PLWHA at the center of the intervention and including community members and peer supporters at the core of the health team.
• Building an integrated health promotion and primary care system that includes the individual along with peer supporters, family/friends, primary care doctors, specialist doctors, allied health services and social supports (including food, housing and financial supports).
• The integration of health and social care services with a focus on community assets that are meaningful to each individual community member.

The solution is an integrated community based primary care initiative that is intentionally individualized and includes peer led activity. The design is intended to make sure that the individual has the support to identify and access healthcare services and activities that best meets their needs. Processes of peer support are included and intended to help overcome the stigma that may be a barrier to accessing the health promoting activities and services that individual choose to participate in.

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Uptake and interest in injectable anti-retroviral treatment in a cohort of people living with HIV

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Background Injectable anti-retroviral treatment is a new option for people living with HIV. Selected individuals can receive one intramuscular injection per month or bimonthly instead of a daily pill. We examined access to and interest in injectable ART within a cohort of people living with HIV (PLHIV).

Methods The OHTN Cohort Study (OCS) is a longitudinal cohort following people living with HIV at 15 clinics in Ontario. Questions regarding injectables were added to the annual interviewer administered questionnaire in 2022. Participants were asked about preferences for injections, if they took injectables and how they covered the cost, and interest in injectables. Results were compared to the demographics and HIV risk factors.

Results The sample includes 1,997 respondents. 37 (1.9%) were already taking injectable ART, but another 63.7% said they probably or definitely would, if offered. Of those currently taking injectables, 11 (29.7%) were receiving it through a clinical trial, 16 (43.3%) through public insurance and 5 (13.5%) through private insurance. The greatest percentage of those already on injectables was in Ottawa/Eastern Ontario (3.3%) followed by Toronto (2.0%). 22.6% of participants said that they would do an injection as frequently as once a month and 30.9% would do once every six months. 40.7% prefer to get an injection in their HIV clinic, with 25.2% in pharmacy and 11.8% at home. People living with HIV for 1-10 years were more interested in injectables (71.2%) compared to those living with HIV for more than 20 years (59.0%) (p=0.006). Interest appeared to differ slightly by key population (PWID 58.9%, Women 65.5%, GBMSM, 65.4%, ACB 69.6%).

Conclusions While uptake of injectable ART was low in the cohort, participants showed strong interest in the option of an injectable. As this new option is available, it is important for physicians to discuss injectables with their patients.

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Updating Canadian Guidelines on HIV Pre- and Post-Exposure Prophylaxis

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Background: New HIV infections occur every year in Canada, emphasizing the need for integrated prevention programs. Pre-exposure prophylaxis (PrEP) and Post-exposure prophylaxis (PEP) are standard-of-care HIV prevention strategies for which the Canadian guidelines will be updated in 2024.

Methods: We assembled a multidisciplinary panel of experts and identified clinical questions that were priorities for the guidelines to address. We conducted updated systematic reviews of PrEP and PEP literature and constituted sixteen writing groups among panel members to update the guideline text. Community engagement has been critical to the process and has involved the inclusion of community member panelists, literature review, and consultation meetings with national community and professional stakeholder groups on priorities and expectations for the updated guidelines.

Results: The 19 panelists represent five regions of Canada and diverse disciplines (infectious diseases, internal medicine, primary care, adolescent medicine, emergency medicine, pharmacy, nursing, public health, community, and knowledge translation). Key questions for the guidelines to address were clinical indications, regimens, testing strategies, and transitions between PEP/PrEP. Systematic reviews included data from 101 full-text articles (79 PrEP, 22 PEP). During consultations with 9 community stakeholders and professional groups, priorities were: 1. Broadening PrEP eligibility criteria, 2. Equitable access to PEP and PrEP, 3. Modifying messaging/language to be more inclusive of diverse groups; 4. Practical/clinical considerations (e.g., choosing between prevention modalities, PEP/PrEP transitions, safety monitoring); 5. Engaging a wider range of PEP and PrEP prescribers; 6. Integration of PEP/PrEP into other healthcare services; 7. Effective knowledge translation of the final guideline. Participants comprised groups that promote the health of sexually diverse people and genders, women, racialized communities, indigenous people, injection drug users, nurses, and pharmacists in HIV/AIDS care.

Conclusions: The panel will next formulate recommendations using the GRADE framework and gather stakeholder feedback before final dissemination planned for mid-2024.

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Evaluation of doravirine-based switch therapy among people with HIV (PWH)

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Background: Single tablet regimens (STRs) have become the standard of care in the treatment of HIV infection, with high efficacy, good tolerability with enhanced adherence compared to multi-tablet regimens. Most STRs include an integrase inhibitor (II), which may be associated with side effects, including metabolic abnormalities and weight gain. The combination of tenofovir dipivoxil, lamivudine and the non-nucleoside reverse transcriptase inhibitor doravirine (TLD) is an STR that could be used among individuals who want or need to switch away for IIs, avoiding II-specific toxicities while preserving the benefits of the STR.

Methods: Among patients on II-based STRs who wished to change therapy were offered TLD as switch therapy. Subjects were monitored according to the standard of care, with HIV RNA and other relevant evaluations completed every 3 months or as clinically indicated. The end point of this analysis at 12 months post-switch was maintenance of TLD therapy, reversal of side effects experienced on II-based STR, safety and tolerability, virologic suppression and the development of drug resistance.

Results: We enrolled 28 subjects, median age 58.5 (36-80) years, 92.8% male, 14.3% indigenous, 19% active drug users. Median baseline CD4 count was 695 (180-1510) cells/uL, with 85.7% showing full virologic suppression. At 12 months, 25 remained on TLD (reasons for switch: 2 TLD-related side effects, and 1 other). Resistance to lamivudine and doravirine was documented among 2 subjects during the course of observation. Therefore, of those still on TLD 23/25 (92%) had maximal virologic suppression at 12 months.

Conclusion: Among a population of PWH enriched for vulnerabilities, TLD was generally effective, with few significant side effects. Little reversal of prior side effects attributed to IIs was observed, and virologic failure was observed in 2 cases, both associated with development of two class drug resistance.

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Switch to bictegravir/emtricitabine/tenofovir alafenamide (B/F/TAF) among vulnerable HIV-infected individuals: evidence for long-term efficacy.

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Background: Single tablet regimens are associated with higher rates of sustained virological suppression and patient satisfaction. This is true of STRs including unboosted integrase strand transfer inhibitors with an increased barrier to resistance, tolerability, and fewer drug interactions. This is beneficial for marginalized populations, with challenges of adherence and lower tolerance for side effects. We have previously demonstrated sustained virologic suppression over 18 months among 41/43 HIV-infected active injection drug users following a switch of prior ARV therapy to the STR B/F/TAF. We sought to evaluate whether this benefit would be maintained over an additional 24 months of follow-up.

Methods: The inception cohort consisted of 43 individuals who were followed up after having received B/F/TAF for 18 months. They remained enrolled in a multi-disciplinary program, with B/F/TAF provided with enhanced adherence support, allowing daily observed therapy. The end point of analysis was the rate of virologic suppression after an additional 24 months of follow up, for a total of 42 months after initiating B/F/TAF therapy.

Results: 43 subjects were included in this analysis: median age 54 (34-66) years, 11.1% female, 20% indigenous, 37.8% men who have sex with men, and all were active drug users, with 91.1% being fentanyl users. At 18 months of follow up, we noted median CD4 count 612 cells/mm3. All 43 remained on B/F/TAF for the 24 months of follow up, with no long-term disengagement. 41/43 had maximal virologic suppression, including both participants with detectable HIV RNA at month 18. Two cases of detectable HIV RNA (1520 & 3000 copies/ml) were documented at month 42. In both cases, virologic suppression was achieved after resumption of B/F/TAF.

Conclusion: Among a group HIV-infected drug users experiencing transient viremia, switching to B/F/TAF remains effective in the long-term. Its efficacy and tolerability make it a useful therapeutic option in this vulnerable population.

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Association Between Dolutegravir and Neuropsychiatric Adverse Events in People Living with HIV: Results from the Positive Brain Health Now Cohort

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Background: Dolutegravir is a preferred first-line antiretroviral however neuropsychiatric adverse events (NP-AEs) may lead to an increased risk of treatment discontinuation. The primary objective was to estimate the association between the initiation of a dolutegravir-based antiretroviral therapy (ART) and the development of clinically relevant NP-AEs.

Methods: Substudy of Positive Brain Health Now (+BHN), a Canadian multicentric prospective observational cohort. We included participants from the cohort who had an ART modification after +BHN study entry, without clinically relevant NP-AEs before ART modification and with consecutive pre and post ART modification +BHN assessments. At each visit, participants completed questionnaires evaluating: self-reported cognitive deficit, depression, anxiety, insomnia, fatigue, dizziness and headaches. A composite endpoint defined as the presence of any of these symptoms that were clinically relevant was used. Multivariate Poisson regressions were used to estimate the association between the initiation of dolutegravir and the development of clinically relevant NP-AEs.

Results: Among the 856 participants in the +BHN cohort, 90 participants were included in this analysis: mean (range) age 53.5 (38-69) years, 13.3% female, mean time since HIV diagnosis 16.2 years, 91.9% viral load < 50 copies/mL. Forty-two (46.7%) participants were switched to a dolutegravir-containing regimen. Our findings show a tendency towards an association between dolutegravir and the development of clinically relevant NP-AEs (RR 2.02, 95%CI 0.94-4.36, p=.073). Participants who initiated dolutegravir presented an approximate 7-fold increased risk of developing clinically relevant insomnia (RR 6.85, 95%CI 1.57-28.85, p=.01). No tested variable significantly modified the association between dolutegravir initiation and NP-AEs. The incidence rate of the NP-AE composite was highest for dolutegravir (38.1%), followed by elvitegravir (25.0%) and raltegravir (10.0%).

Conclusion: Dolutegravir was associated with an increased risk of insomnia. A larger sample size may have confirmed an increased risk of other NP-AEs. Similar studies should be conducted with more recent integrase inhibitors.

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Medical Cannabis Survey of Health Care Providers in Canada

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In 2018, Canada legalized cannabis for recreational purposes, though the use of cannabis for medical purposes has been legal for over 20 years. People living with HIV use cannabis at 3-4 times the rates of the general population which may reflect widespread medical and/or problematic use. There is a need for health care providers (HCPs) to engage with patients about cannabis. However, HCPs have noted gaps in knowledge and a lack of evidence on health effects as barriers to service delivery. To help understand legalization impacts and document facilitators and barriers to service delivery, we engaged HCPs across Canada in an online survey assessing cannabis-related education, knowledge, and clinical experiences. The survey was completed by 82 HCPs (63% nurses, 22% physicians/residents, 15% pharmacists). Findings show that 23% are authorized prescribers and 52% recommend medical cannabis when clinically appropriate. The top indications for cannabis were pain, nausea, appetite, seizure disorders and multiple sclerosis. The majority of HCPs did not receive formal cannabis education and reported engaging in compensatory self-directed learning to meet patient needs.

Overall, HCP perceptions of cannabis knowledge and medical access system knowledge were low. HCPs reported the most knowledge of routes of administration, therapeutic benefits and effects of use, and the least knowledge of dosing and drug interactions. HCPs reported low knowledge of laws, regulations, and referral procedures. Despite low knowledge levels and rates of prescribing, most HCPs viewed medical cannabis as a valid treatment option but felt that more research is needed to guide their clinical practice. Recommendations to improve service delivery include comprehensive and continuing cannabis-related medical education, investments in cannabis research to build the evidence base and improved communication and guidance from medical regulators.

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Bridging the Gap: Co-Creating Community-Centric Resources from Clinical Practice Guidelines for HIV Pregnancy Planning

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Background: Recent studies indicate that while the dissemination of Clinical Practice Guidelines (CPGs) has improved clinical outcomes, there remains a gap in adapting guidelines for patient and community use. While the Canadian HIV Pregnancy Planning Guidelines (CHPPG) provide a framework for clinicians to support the reproductive and parenting planning needs of people with HIV, to fully integrate evidence and CPGs into practice, the creation of resources tailored for patients and community members is paramount.

Methods: In 2019, the CHPPG Implementation team engaged three community consultants with diverse expertise to enhance community dissemination. Collaborations between these consultants, clinicians, and our research team led to a partnership with The Public, an activist design studio. Together, we facilitated a co-creation process to produce CHPPG-informed resources tailored for the community.

Results: Through a co-design process involving 11 individuals with HIV from across Canada, the team developed a multimedia digital toolkit. This toolkit, informed by both academic research and lived experience, provides a unique intersectional perspective aimed at empowering individuals with HIV to advocate for their parenting planning options and rights. Notably, the toolkit features vignettes and audio recordings of five personal parenting planning journeys, offering a deeply personal and relatable touch. The toolkit has been well-received in initial community feedback sessions, indicating its potential as a valuable resource.

Conclusions/Implications: The development and dissemination of CPGs tailored for community audiences are seldom documented, yet our project demonstrates the feasibility and impact of such an approach. The digital toolkit, led and informed by community consultants, design team members, and research team mentors, exemplifies a successful co-design framework. This model not only fosters effective community engagement but also sets a precedent for future initiatives aiming to translate complex guidelines into accessible, community-driven resources. Further research will explore the toolkit's long-term impact on community empowerment and health outcomes.

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Cognitive concerns and uncertainty experienced by people aging with HIV

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Background: Cognitive concerns are common among people aging with HIV (e.g., memory loss, difficulty concentrating). Aging with HIV and comorbidities—such as cognitive impairment—results in feelings of uncertainty. Uncertainty involves incomplete or inadequate information about one's prognosis, treatment options, and outcomes and results in deleterious impacts, particularly when unaddressed. For people aging with HIV, uncertainties are heightened by intersecting experiences of HIV stigma, ageism, increased isolation and reliance on formal healthcare services, and amplified concerns about discrimination in care settings.

Methods: Peer-led focus groups discussed participants' cognitive concerns and experiences of uncertainty. Purposive sampling was employed to recruit people aging with HIV (40+) in Ontario and Saskatchewan who all self-identified with 5+ cognitive concerns (e.g., memory loss). Three independent coders utilized thematic content analysis to identify themes across transcripts. Participants (n=45) ranged in age (M=53.22, SD=7.62) gender (20 women, 19 men, 6 trans/non-binary/2-spirit), ethnicity (20 White, 15 Black, 6 Indigenous, 4 Mixed-race), sexuality (19 gay, 18 heterosexual, 8 bisexual/queer/lesbian/2-spirit) and employment (15 employed, 30 retired/disability).

Results: Ten, two-hour focus groups were conducted online (August–November 2022). People aging with HIV described concerns with memory, concentration, and attention. Participants felt uncertain about what was causing these cognitive concerns, and how to manage these symptoms. They described hesitancy to seek cognitive screening due to uncertainties about the impact of test results on their lives. Participants reported a paucity of resources and education from providers about cognitive health, aging, and HIV. Some participants identified community resources to partially remediate their cognitive concerns.

Conclusion: Further research is needed to understand these uncertainties, their impacts, and remediation strategies. It is particularly important to explore the multi-faceted impact of uncertainties on individuals' wellbeing, quality of life, and health-related decision-making.

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Impact of Substance Use and Mood/Anxiety Disorders on the HIV Continuum of Care in British Columbia, Canada, from 2001 to 2019

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Introduction
People living with HIV (PLWH) are disproportionately affected by mood/anxiety disorders and substance use disorders (SUD). Meanwhile, comprehensive research on the effect of these disorders on the HIV continuum of care is lacking. This study assessed the impact of SUD and mood/anxiety disorders on the HIV continuum of care in British Columbia (BC), Canada and identified the continuum stage with the highest attrition.

Methods
This retrospective population-based cohort study utilized data from the Comparative Outcomes And Service Utilization Trends (COAST) study that contains data on all diagnosed PLWH in BC. Eligible individuals were ≥19 years of age and followed during 2001-2019. Our exposure variable was SUD or mood/anxiety disorder diagnoses. Our outcomes were the achievement of the following stages of the HIV continuum of care: (1) Antiretroviral therapy (ART) initiation, (2) On-ART, (3) ART adherence, (4) Viral suppression, and (5) Maintained suppression. We estimated attrition by estimating the proportion of PLWH who proceed to each stage. Generalized linear mixed-effect models assessed the association between SUD and mood/anxiety disorders and the achievement of each stage while controlling for sociodemographic and HIV-related confounders.

Results
For the 14,398 eligible PLWH, Maintained suppression exhibited the highest attrition. Having SUD or both SUD and mood/anxiety disorder were significantly associated with reduced odds of achieving all stages of the HIV continuum of care except On-ART. SUD had the strongest association with ART adherence (adjusted Odds Ratio (aOR) 0.47, 95% CI: 0.42-0.53) and Maintained suppression (aOR 0.58, 95% CI: 0.53-0.63). Mood/anxiety disorders were also associated with reduced odds of ART adherence (aOR 0.78, 95% CI: 0.71-0.87) and Maintained suppression (aOR 0.82, 95% CI: 0.77-0.88).

Conclusion
Our findings indicate that SUD and mood/anxiety disorders contribute to attritions across the continuum, emphasizing the need for integrated mental health and substance use services to support HIV care.

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Switching to Dolutegravir/Lamivudine (DTG/3TC) Is Non-inferior to Continuing Tenofovir Alafenamide (TAF)-Based Regimens at Week 196: TANGO Subgroup Analyses

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Background: Switching to DTG/3TC from 3- or 4-drug TAF-based regimens showed durable high efficacy in virologically suppressed adults with HIV-1 through Week (W) 196 in the TANGO study. To further investigate DTG/3TC efficacy in TANGO participants who switched to DTG/3TC on Day 1 and those who switched at W148, we present Snapshot virologic response by subgroup based on demographic and baseline disease characteristics and baseline third agent class.

Methods: TANGO is an open-label, multi-center, randomized, phase 3 study assessing efficacy and safety of switching to DTG/3TC vs continuing TAF-based regimens. Adults with HIV-1 RNA <50 c/mL on TAF-based regimens for >6 months without prior virologic failure or documented NRTI or INSTI resistance were eligible. Participants were stratified by baseline third agent class and randomized 1:1 to switch to DTG/3TC on Day 1 (early-switch [ES] group) or continue TAF-based regimens for 144 weeks. Participants who continued TAF-based regimens and maintained virologic suppression at W144 switched to DTG/3TC at W148 (late-switch [LS] group).

Results: At W196, TANGO included 369 ES group and 298 LS group participants treated with DTG/3TC for 196 and 48 weeks, respectively. Few ES participants (3/369 [<1%]; 95% CI, 0.0%-1.7%) and 0/298 (95% CI, 0.0%-0.0%) LS participants had HIV-1 RNA ≥50 c/mL at W196 by Snapshot analysis (ITT-E). Overall ES group and LS group Snapshot virologic response rates were consistent with rates across their respective subgroups related to demographic characteristics, baseline disease characteristics, and baseline third agent class at W196. Safety was consistent across subgroups within ES and LS groups. Confirmed virologic withdrawal criteria were met by 1/369 (<1%) ES and no LS participants through W196, with no resistance observed.

Conclusions: These results support that switching to DTG/3TC from TAF-based regimens effectively maintains virologic suppression across different demographic and baseline characteristic subgroups at 48 and 196 weeks.

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Real-World Experience of Two-Drug Regimen Dolutegravir/Lamivudine for the Treatment of HIV-1 Among Vulnerable Patients Living With HIV in Canada: Preliminary Results From a Chart Review Study

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Background: Compared to the general population of people living with HIV (PWH), vulnerable PWH, such as those who use drugs, are disproportionately affected by HIV, and are predisposed to lower adherence to antiretroviral therapies (ARTs), which may result in poorer virologic suppression, worse health outcomes, and higher HIV transmission rates. Some may benefit from simpler single-tablet regimens that are effective, well-tolerated, and limit exposure to unnecessary medications. We evaluated clinical outcomes of vulnerable PWH who switched to the single-tablet, 2-drug dolutegravir/lamivudine (DTG/3TC).

Methods: This ongoing chart review study included PWH (≥18 years) in Canada who switched to DTG/3TC between 09/09/19-31/05/23, and had ≥1 of the following vulnerability criteria: recent drug use, opioid agonist use, recent or well-documented history of homelessness or receiving social assistance, Indigenous identity, or ≥65 years of age with diminished autonomy (‘vulnerable senior’). Descriptive summary statistics were generated for demographic and clinical characteristics at baseline (≤12-months pre-switch), and viral load and CD4+ cell counts at 6 (±2) and 12 (±2) months post-switch. Interim results are reported for the ongoing study.

Results: Across 5 sites, 20 eligible people were included (mean age: 49.9±13.0 years; male: 80%; drug use: 80%; vulnerable senior: 20%). Simplification of ART was the predominant reason for switch to DTG/3TC (n=11, 55%). At the time of analysis, 80% (n=16) had at least 6 months of follow-up, and one discontinued DTG/3TC due to intolerance. At 6 months, of those with test results, 8/8 were virally suppressed (<50 cps/mL), and median (IQR) CD4+ cell count was 815 (122.5) cells/mm³. At 12 months, 11/12 were virally suppressed (<50 cps/mL), and median CD4+ cell count was 920 (180) cells/mm³ (n=10).

Conclusions: Preliminary results suggest promising effectiveness outcomes among vulnerable PWH who switch to DTG/3TC. These results support the continued expansion of this study to include more PWH.

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Emerging Roles of Statins Beyond Lipid-Lowering Agents to Reduce Co-Morbidities Among People Living with HIV on Antiretroviral Therapy

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Antiretroviral therapies (ART) have reduced HIV infection-associated morbidity and mortality improving the quality of life of people living with HIV (PLWH). However, the risk for co-morbidities such as cancer, neurocognitive disorders, liver dysfunction and cardiovascular diseases (CVDs) remains elevated owing to chronic inflammation and immune activation fueled by residual HIV production, microbial translocation and immune-dysfunction. Emerging evidence has shown chronic inflammation and immune activation amplifying the risk for CVDs, which is further aggravated by life-style factors and dyslipidemia among ART-treated PLWH.

Lipid-lowering statins are emerging as immune-modulators in a variety of conditions including HIV. Herein, we reviewed recent studies showing pleiotropic effects of statins among ART-treated PLWH. We used multiple combinations of terms on pubmed database including “HIV, co-morbidities, statin(s), pleiotropic functions, inflammation and immune-modulation” to search relevant studies besides citing our published primary research.

The international RCT REPRIEVE recently shed light on reduction of CVDs with statin therapy among PLWH indicating more than expected benefit of statins beyond lowering lipids. However, muscle-related symptoms and incident diabetes mellitus limit statin use besides interactions with certain earlier ART regimens still in use. Despite such adverse effects, statins constitute 1st-line therapy for decreasing CVDs owing to their overall safety and efficacy. The anti-inflammatory and immune-modulatory functions of statins are associated with decreases in plasma levels of C-reactive protein, soluble CD14 and ox-LDL, inhibition of NF-KB, nitric oxide production and decrease in T-cell activation (Figure-1). Overall, the broader implication of statins can guide policy to lessen co-morbidities among aging PLWH taking long-term ART.

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Clinical Outcomes of People Living with HIV by Level of HIV Pharmacy Service in a Centralized Antiretroviral Program in British Columbia

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Background

People with HIV in British Columbia (BC) receive centrally-distributed antiretroviral therapy (ART) through the BC Centre for Excellence in HIV/AIDS (BCCfE) Drug Treatment Program (DTP). Pharmacy services vary across BC; remote services were enhanced one decade ago. We compared clinical outcomes across HIV pharmacy service levels.

Methods

DTP participants aged ≥19 years, with ≥2 ART dispensings between 01-Jan-2019 to 31-Dec-2019 were included and categorized by pharmacy service level:

-Comprehensive: In-person counselling, adherence monitoring, labwork review (efficacy and safety) with HIV-trained pharmacist at multidisciplinary clinic.

-Intermediate: In-person counselling, adherence monitoring at BCCfE-affiliated pharmacy.

-Basic: Telephone consultation, adherence monitoring, labwork review (efficacy) with pharmacist.

We describe demographics and clinical outcomes, including HIV plasma viral load suppression (pVL <50 copies/mL), monitoring (pVL ≥twice/year), and adherence (≥1 treatment interruption alert sent). We compared outcomes between groups using Chi-square and Wilcoxon rank-sum tests. Confounder logistic models were used for multivariate analysis to identify relationships between pharmacy service levels and clinical outcomes, adjusting for other variables.

Results

Of 4560 participants included, 63% received Comprehensive pharmacy services, 10% Intermediate and 27% Basic. Demographic and clinical characteristics differed between groups (Table). Odds of viral suppression did not differ between groups; all rates were ≥90%. Compared to Comprehensive, Intermediate and Basic groups had significantly lower odds of recommended pVL monitoring frequency and different odds of receiving ≥1 treatment interruption alert.

Conclusion

High viral suppression rates were achieved in all HIV pharmacy service groups. Intermediate and Basic groups may benefit from additional support to meet recommended monitoring standards.

Supporting Document

Clinical and Demographic Variables at Study Start					
		Pharmacy Service Category			**p-value**
	Total N=4560	**Comprehensive N=2878**	**Intermediate N=442**	**Basic N=1240**	

Sex and Gender (n, %) cis-Male cis-Female Transgender(1)	 3845 (84.32) 687 (15.07) 28 (0.61)	 2481 (86.21) 382 (13.27) 15 (0.52)	 374 (84.62) <70 (<15.84) <5 (<1.13)	 990 (79.84) 240 (19.35) 10 (0.81)	<0.001
Ethnicity (n, %) White First Nation Black Hispanic Asian Mixed Unknown	 2815 (61.73) 268 (5.88) 145 (3.18) 151 (3.31) 478 (10.48) 114 (2.50) 589 (12.92)	 1704 (59.21) 83 (2.88) 114 (3.96) 131 (4.55) 396 (13.76) 71 (2.47) 379 (13.17)	 329 (74.43) 16 (3.62) 11 (2.49) <5 (<1.13) 13 (2.94) <10 (<2.26) 62 (14.03)	 782 (63.06) 169 (13.63) 20 (1.61) 16 (1.29) 69 (5.56) 36 (2.90) 148 (11.94)	<0.001
Injection drug use ever (n, %) No Yes Unknown	 2779 (60.94) 925 (20.29) 856 (18.77)	 1906 (66.23) 351 (12.20) 621 (21.58)	 296 (66.97) 77 (17.42) 69 (15.61)	 577 (46.53) 497 (40.08) 166 (13.39)	<0.001
Health Authority (n, %) Vancouver Coastal Fraser Health Island Health Interior Health Northern Health Unknown	 2217 (48.62) 1213 (26.60) 656 (14.39) 363 (7.96) 106 (2.32) 5 (0.11)	 1764 (61.29) 940 (32.66) 82 (2.85) 75 (2.61) <15 (<0.52) <5 (<0.17)	 <10 (<2.26) 10 (2.26) 282 (63.80) 141 (31.90) <5 (<1.13) 0	 446 (35.97) 263 (21.21) 292 (23.55) 147 (11.85) <100 (<8.06) <5 (<0.40)	<0.001
ART regimen composition (n, %) 2NRTI + NNRTI 2NRTI + IIN 2NRTI + PI Dual Therapy/Other	 936 (20.53) 1998 (43.82) 1088 (23.86) 538 (11.80)	 608 (21.13) 1328 (46.14) 622 (21.61) 320 (11.12)	 90 (20.36) 183 (41.40) 118 (26.70) 51 (11.54)	 238 (19.19) 487 (39.27) 348 (28.06) 167 (13.46)	<0.001
Frequency of ARV dosing (n, %) Once daily Other(2)	 4119 (90.33) 441 (9.67)	 2649 (92.04) 229 (7.95)	 375 (84.84) 67 (15.16)	 1095 (88.31) 145 (11.69)	<0.0001
Number of pills in regimen (n, %) 1 2 3 4+	 2131 (46.73) 1060 (23.25) 973 (21.34) 396 (8.68)	 1430 (49.69) 687 (23.87) 544 (18.90) 217 (7.54)	 164 (37.10) 106 (23.98) 120 (27.15) 52 (11.76)	 537 (43.31) 267 (21.53) 309 (24.92) 127 (10.24)	<0.0001

Multivariate Analysis of Clinical Outcomes

Clinical Outcome	**pVL <50 copies/mL at study end(3) Odds Ratio (95% CI)**	**p-value**	**pVL monitoring ≥ twice/year(4) Odds Ratio (95% CI)**	**p-value**	**Receiving ≥1 Treatment Interruption Alert(5,6) Odds Ratio (95% CI)**	**p-value**
Pharmacy Service Level Comprehensive Intermediate Basic	 1.00 1.1 (0.62-1.92) 0.9 (0.68-1.26)	 0.765	 1.00 0.4 (0.28-0.65) 0.5 (0.38-0.66)	 <0.001	 1.00 0.6 (0.40-1.03) 1.2 (0.93-1.59)	 0.023

1. Transgender category includes transgender men and women.
2. Other category consisted of ≥99% twice daily regimens.
3. Model adjusted for age, sex, ethnicity, injection drug use history, health authority of residency, CD4 cell count, number of pills in ART regimen, frequency of ART dosing, ART regimen composition, ART regimen changes during study period, viral load monitoring frequency, and number of treatment interruption alerts sent.

4. Model adjusted for age, injection drug use history, health authority of residency, and number of treatment interruption alerts sent.
5. Model adjusted for age, ethnicity, injection drug use history, CD4 cell count, number of pills in ART regimen, prescriber type (physician vs nurse practitioner), plasma viral load, and viral load monitoring frequency.
6. Treatment Interruption Alerts are BC-CfE notifications generated for patients ≥2 months overdue for ART refill. Alerts are screened by a clinical pharmacist for accuracy prior to sending to ART prescriber.

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How OECD HIV clinical guidelines address adherence to antiretroviral therapy: a scoping review

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Background
Approaches to antiretroviral therapy (ART) adherence abound as to its definition, thresholds, assessment, addressed barriers, and proposed interventions. To gain clarity, this review synthesized these features across HIV clinical guidelines.

Methods
A scoping review was conducted. Eligible HIV guidelines and their updates concerned adults with HIV and ART from Organization for Economic Co-operation and Development (OECD) countries and international health organizations. English or French publications since 2017 were included. Three databases were searched in March 2023, along with grey literature in five guideline-specific databases. A targeted Google search for omitted OECD countries was conducted. Two reviewers participated in document selection and data charting. Content analysis was performed with NVivo software.

Results
There were 24 guidelines identified from 7 countries and 2 international health organizations. Only one (8%) provided a definition of ART adherence and none offered a threshold for adequate adherence (one (4%) addressed this topic, noting the lack of a minimum threshold). However, most guidelines (20;83%) reported interventions for adherence, including reducing pill burden (15;63%), education (13;54%), and peer or social support (13;54%). Nineteen guidelines (79%) highlighted methods to assess adherence, such as clinical assessment with patients (8;33%), viral load monitoring (6;25%), and examining pharmacy records or pill count (5;21%). Eighteen guidelines (75%) proposed a frequency for assessing adherence, including at each visit (11;46%) and suspected or observed drug resistance or virologic failure (8;33%). Fourteen (58%) guidelines identified adherence barriers, including lifestyle or activities (11;46%), social challenges (10;42%), and health system barriers (9;38%).

Conclusions
Despite its centrality to ART's success, this review underscores a conspicuous lack of definition and consensus around adherence and its management. Very few guidelines define adherence, none offer an optimal threshold, and there is no agreement on how to gauge it. More systematic and preventative approaches to monitoring adherence may be needed.

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Canadian Physicians' Perceptions and Experiences with Cabotegravir and Rilpivirine Long-acting Antiretroviral Therapy: Preliminary Results from a Cross-Sectional Survey

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Background:
Cabotegravir and rilpivirine long-acting (CAB+RPV LA) is the only complete long-acting regimen for virologically suppressed people with HIV. The reduced dosing schedule of CAB+RPV LA (monthly or every 2 months) may alleviate adherence challenges with daily oral therapy and ease HIV status disclosure concerns. This study describes the real-world experience of Canadian physicians prescribing CAB+RPV LA, focusing on acceptability, convenience, and perceived barriers to CAB+RPV LA treatment.

Methods:
Physicians across Canada who treat ≥50 people with HIV and routinely prescribe CAB+RPV LA completed an online survey regarding perceptions of, and experiences with, CAB+RPV LA (window of recruitment: September 2023-February 2024).

Results:
Nineteen physicians (73.7% cisgender men, 94.8% managing >100 people with HIV) responded as of October 2023. The majority (84.2%) reported extremely/very positive views on implementing CAB+RPV LA in their clinic/practice. Notably, 94.7% of physicians rated reduced pill burden, patient convenience, and patient preference as important factors in CAB+RPV LA prescribing decisions. Seventy-four percent of physicians found CAB+RPV LA easy to integrate into their workflow, 84% reported CAB+RPV LA optimal implementation took ≤6 months in practice, and 80.0% of those with existing patient reminder/follow-up systems did not require any change to it. Ninety percent of physicians deemed the CAB+RPV LA support program clinics and primary care clinic/practice appropriate as alternate administration sites. While 31.6% of physicians expressed moderate concern about oral bridging, none were extremely concerned. Twenty-one percent of physicians expressed moderate concern about CAB+RPV LA injection site reactions, while none were extremely concerned.

Conclusion:
Understanding the current physician experience of prescribing CAB+RPV LA is important for optimal implementation of long-acting HIV treatments in practice and improving the experience of people with HIV. This real-world data (to date) from a small sample of Canadian physicians indicates a positive overall opinion, successful integration, and benefits of CAB+RPV LA.

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SOLAR 12-Month North American Results: Randomized Switch Trial of CAB+RPV LA vs. Oral BIC/FTC/TAF

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Background:

Cabotegravir + rilpivirine (CAB+RPV) administered monthly or every 2 months (Q2M) is the only complete long-acting (LA) regimen for maintaining HIV-1 suppression. In the Phase 3b SOLAR study, switching to CAB+RPV LA Q2M was noninferior to continuing daily oral bictegravir/emtricitabine/tenofovir alafenamide (BIC/FTC/TAF). We present results for North American (NA; United States and Canada) participants.

Methods:

SOLAR (NCT04542070) is the first randomized (2:1), open-label, multicenter, noninferiority study assessing switching virologically suppressed adults to CAB+RPV LA Q2M (with oral lead-in or starting with injections) vs. continuing BIC/FTC/TAF. The primary analysis was based on the prespecified modified intention-to-treat exposed (mITT-E) population (n=11 from 1 study site excluded from the ITT-E population for protocol deviation) at Month (M) 12. The primary endpoint was the proportion with HIV-1 RNA ≥50 c/mL. Other endpoints were the proportion with HIV-1 RNA <50 c/mL, incidence of confirmed virologic failure (CVF; 2 consecutive HIV-1 RNA ≥200 c/mL), safety and tolerability (ITT-E), and treatment satisfaction (HIV Treatment Satisfaction Questionnaire status version [HIVTSQs]).

Results:

Of 670 participants (mITT-E), 325 were from North America (LA, 66% [n=216/325]; BIC/FTC/TAF, 34% [n=109/325]). Baseline (BL) characteristics were similar between arms. At M12, 1 participant in each arm had HIV-1 RNA ≥50 c/mL. No NA participant had CVF in the mITT-E population; 1 (0.3%) NA participant excluded from the mITT-E population had CVF (LA arm). Adverse events (AEs), excluding injection site reactions, were similar between the LA (74% [n=164/223]) and BIC/FTC/TAF arms (73% [n=83/113]). More participants in the LA vs. BIC/FTC/TAF arm withdrew due to AEs (8% [n=17/223] vs. <1% [n=1/113]). Mean adjusted HIVTSQs scores improved significantly (p<0.001) from BL to M12 for LA (+3.40) vs. BIC/FTC/TAF (–1.07) participants.

Conclusion:

Consistent with the overall SOLAR population, switching to CAB+RPV LA from BIC/FTC/TAF was efficacious and well tolerated, with improved treatment satisfaction, in NA participants.

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Real-world Adherence and Persistence with Long-Acting Cabotegravir Plus Rilpivirine (CAB+RPV LA) Compared to Oral Antiretroviral Therapy (ART) Among People with HIV (PWH) in the US: The ABOVE Study

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Background:
CAB+RPV LA, the only complete long-acting regimen for virologically suppressed PWH administered monthly or every 2 months (Q2M), may alleviate daily oral ART adherence challenges. ABOVE evaluated real-world adherence and persistence to CAB+RPV LA versus continuing oral ART.

Methods:
ABOVE was a retrospective US cohort study using Symphony Health Solutions Integrated Dataverse administrative claims database (01/01/2020 to 12/31/2022) of PWH ≥12 years old continuing stable oral ART or initiating CAB+RPV LA. Index date was defined as first injection between 01/01/2021 and 6/30/2022 (LA cohort) or imputed for the oral ART cohort. PWH had to have ≥6 months of follow-up after index. Adherence (proportion of days covered ≥0.9 over 6 months following index) and persistence (days from index to earliest of discontinuation or end of follow-up) were compared.

Results:
393,484 PWH were identified (eligible: oral ART, n=130,362 [N=950 after weighting]; CAB+RPV LA, n=947). Key baseline characteristics were balanced post standardized mortality ratio weighting (Table 1). CAB+RPV LA dosing was mostly Q2M only (50%) or switched from monthly to Q2M (33%). A higher proportion of PWH in the LA versus oral ART cohort were adherent (72% vs 43%, p<0.001) and had higher persistence (274 vs 256 days, p<0.001). The LA cohort had significantly higher odds of being adherent compared with the oral ART cohort (OR: 4.43, 95% CI: 2.38, 8.24, p<0.001).

Conclusion:
Among US PWH on stable oral ART, switching to CAB+RPV LA resulted in significantly higher adherence and persistence, important for long-term treatment success, compared with continuing oral ART.

Supporting Document

Table 1. Baseline Demographics and Clinical Characteristics

	SMR Weighted Sample[2]		
	CAB+RPV LA Cohort N=947	Oral ART Cohort N=950	Std Diff[3] %
Age at index (years), mean ± SD [median]	46.5 ± 12.7 [47]	46.4 ± 13.6 [46]	0.95
≥50 years, n (%)	415 (44)	411 (43)	1.03
Female, n (%)	218 (23)	220 (23)	0.33
Select comorbidities[1], n (%)			
Hypertension	249 (26)	235 (25)	3.46
Depression disorders	158 (17)	162 (17)	0.87
Anxiety disorders	139 (15)	143 (15)	1.02
Substance-related and addictive disorders	141 (15)	142 (15)	0.04
Obesity	141 (15)	98 (10)	7.92
Stable oral ART regimen			
Pre-index duration (months), mean ± SD [median]	9.4 ± 3.2 [11]	9.4 ± 3.4 [12]	0.67
Class, n (%)			
INSTI + 2 NRTIs	707 (75)	709 (75)	0.07

NNRTI + 2 NRTIs	90 (10)	90 (9)	0.20
INSTI + 1 NRTI	107 (11)	108 (11)	0.26
Boosted PI + 2 NRTIs	43 (5)	43 (5)	0.03
Insurance plan type, n (%)			
Commercial	397 (42)	397 (42)	0.20
Medicaid	279 (30)	279 (27)	0.09
Medicare	213 (23)	213 (22)	0.22
Assistance programs	32 (3)	32 (3)	0.06
Cash payments	26 (3)	28 (3)	1.46

INSTI: integrase strand transfer inhibitor; NNRTI: non-nucleoside reverse transcriptase inhibitor; NRTI: nucleoside reverse transcriptase inhibitor; PI: protease inhibitor; SD, standard deviation; SMR, standarized mortality ratio; Std Diff, standardized differences.
[1] Comorbidities were assessed in the 12-month period prior to the index date. [2] Covariates included in the propensity score used to generate SMR weights were age (continuous), gender, type of health insurance, region, year of index date, Elixhauser overall comorbidity (categorical), substance-related and addictive disorders, depression disorders, anxiety disorders, ACE inhibitors use, stable oral ART regimen, stable oral ART duration, inpatient visits (continuous), and outpatient visits (continuous). [3]Standardized difference more than 10% was considered to be an imbalance between the two cohorts.

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Steatotic Liver Disease in People Living with Hepatitis C Virus following viral eradication with Direct-Acting Antiviral Therapy: a Pilot Study

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Background. Recently, causes of hepatic steatosis (HS) were grouped under the term "steatotic liver disease (SLD)". Under the revised nomenclature, nonalcoholic fatty liver disease replaced "metabolic dysfunction-associated steatotic liver disease (MASLD),"(1) and different HS causes are allowed to coexist (2). In the context of HCV, it is unclear how sustained virologic response (SVR) affects HS in the framework of MASLD. Thus, we aim to estimate the effect of SVR on SLD and liver fibrosis.

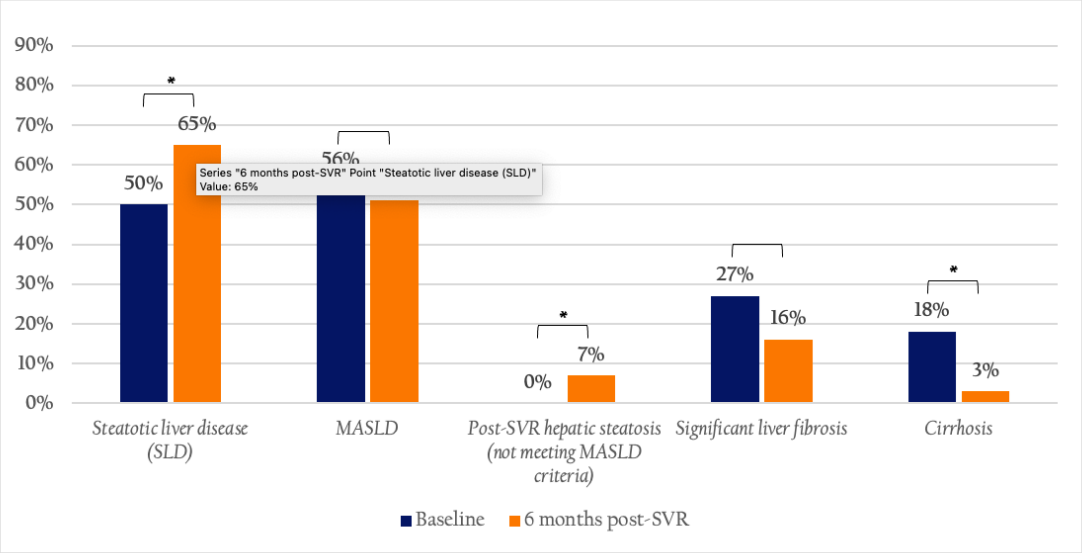
Methods. This is a retrospective study of HCV patients evaluated for HS and liver fibrosis using transient elastography (TE) and controlled attenuation parameter (CAP) before receiving direct-acting antivirals (DAA) and 6 months after SVR (end of follow-up EOF). Participants were deemed eligible if they were □18 years old and had achieved SVR following DAA therapy. HS plus □1 cardiometabolic risk factor—high BMI or waist circumference, prediabetes or diabetes, hypertension, hypertriglyceridemia, and low HDL cholesterol—defined MASLD. To identify HS, significant liver fibrosis, and cirrhosis, CAP of □248 dB/m and TE of □8 and □13 kPa, respectively, were utilized. We employed a multivariate logistic regression analysis to determine the effect of SVR on HS and significant liver fibrosis while accounting for potential confounders.

Results. We included 89 HCV mono-infected patients (mean age 65 years, 49% male). At EOF, SLD and post-SVR SLD (not meeting MASLD criteria) rose, while significant liver fibrosis and cirrhosis declined to the extent that 65% of patient's TE decreased to a level below the threshold of significant liver fibrosis. Meanwhile, MASLD remained unchanged. In the multivariate model, SVR was associated with higher odds of post-SVR SLD (aOR 2.7, 95%CI 1.38 – 5.52) but showed no impact on MASLD (aOR 1.87, 95%CI 0.95 – 3.68).

Conclusions. SLD nearly tripled post-SVR, but not MASLD. The effect of SVR on liver fibrosis was consistent with previous research.

Supporting Document

Figure: Dynamics of hepatic steatosis and liver fibrosis from baseline to 6 months after SVR.



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Examining Mental Health and Resilience among Immigrant Women with HIV in the British Columbia CARMA CHIWOS Collaboration (BCC3) Study

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Background: Prior research shows women with HIV experience mental health concerns, including depression, anxiety and post-traumatic stress disorder (PTSD) more often than women without HIV. Immigrants to Canada face multiple barriers such as access to healthcare, language challenges, and lack of social support. Yet, there remains a paucity in the research of mental health of immigrant women with HIV. Our objective is to describe and compare the mental health of immigrant women with and without HIV.

Methods: Demographics and psycho-social variables were assessed via the BCC3 questionnaire. Groups were compared by Wilcoxon, Chi-squared or Fisher's Exact tests. Immigration was defined as those who were not born in Canada. Multivariable logistic regressions assessed associations between psycho-social variables and HIV status (Table 1).

Results: Participants (n=155) are described in Table 1, with 57% (n=80) of them having >= 1 mental health concern. In the multivariable logistic regression models, mental health concerns (PTSD, General Anxiety and Depression) were similar by HIV status (all p>0.05). Higher resilience and social support were independently associated with lower odds of having >=1 mental health concern (adjusted odds ratio (AOR) = 0.94 [95%CI: 0.89-0.99], p<0.001 and AOR=0.73 [95%CI: 0.63-0.83], p<0.001 respectively).

Conclusion: Mental health did not differ by HIV status. However, our data revealed a high prevalence of mental health concerns among immigrant women, and significantly less social support for immigrant women with HIV than controls. Our data reflects a considerable need for immigrant-specific initiatives to build community and reduce stigmas, a likely stress for newcomers to Canada.

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Enhancing HIV Patient Waitlist and Triage Post-COVID: Development and Evaluation of an Excel-Based Tool

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Background: Efficient HIV clinic triage, particularly in resource-limited settings post-COVID, is critical. Prior patient waitlist management was primarily time-based, and personalized patient-centred triage was hindered by a lack of clinical data linkage (antiretroviral prescription, relevant lab data, time since last appointment, etc.). Challenges with the current system were exacerbated during the COVID pandemic. This project develops and evaluates a personalized care plan triage tool with integrated patient data for improved workload quantification and individual patient and practitioner needs.

Methods: The Excel-based tool was developed with data validation and incorporates patient demographics, visit history, antiretroviral regimens, and lab results enabling automated priority-based scheduling through embedded formulas and conditional formatting. A logic model framework was used to guide the implementation and evaluation of the tool, including the delineation of inputs, activities, outputs, outcomes, and impacts.

Results: Collaborative input from the HIV medical director, administrative staff, nurse, and pharmacist informed design of the medical aspect of the appointment waitlist management tool. Their expertise identified key medical data variables, primary sources and workflow strategies. Data validation features reduced entry errors, ensuring accuracy and reliability of the data. Outputs generated patient profiles with effective, consistently assigned priority. Embedded analytics offered visualizations of patient volumes. Outcomes included improved prioritized patient management, optimized resource allocation, and enhanced care delivery.

Conclusions: Development and implementation efforts yielded a customized, functional and operational personalized care plan waitlist and triage tool within existing software, requiring no additional financial investment. It improves patient care, streamlines resource allocation, and optimizes clinic operations in a resource-constrained setting post-COVID. Future evaluation and refinement work aims to expand this tool's potential by inviting other interested HIV physicians and people living with HIV to extend the function and use of the tool.

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Comparing Fertility Clinic Care for Individuals and Couples Living with and Affected by HIV and in Canada in 2007, 2014 and 2023

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Background: Access to fertility care, particularly medically assisted conception (MAC), presents an ongoing reproductive justice concern for individuals with HIV. Canadian research (2007/2014) revealed geographic disparities in access to fertility care for people with HIV. While the U=U principle has negated the recommendation for MAC to reduce horizontal transmission, it may still be pursued for clinical or personal reasons. Accordingly, this longitudinal study investigates current fertility care access for people with HIV in Canada, with a focus on MAC.

Methods: Ethical approval was obtained from Women's College Hospital. Surveys were distributed to medical and laboratory directors from 58 fertility clinics across nine provinces, adapting a 2014 survey and disseminating it through REDcap. Proportions were used to evaluate clinic policies, MAC access, and awareness/implementation of Canadian guidelines. Responses were initiated by 24/89(27.0%) participants, representing 19/58(32.8%) clinics in 7 provinces. Complete responses were received from 16/24(66.7%) participants.

Results: Of the 19 respondents, 13(68.42%) reported that their clinic will see individuals with HIV in consultation, with an additional 2(10.53%) limiting this to people with an undetectable viral load. The 16 respondents who completed the survey answered questions about access to MAC. 12/16(75%) offer intrauterine insemination (IUI) if the viral load is undetectable, while 10/16(62.5%) offer in vitro fertilization (IVF) under the same condition. 12.5%(2/16) offer IVF regardless of viral load, 18.75%(3/16) do not offer IVF in the context of HIV, while 1 respondent was unsure of the clinic policy. Three-quarters of the respondents were aware of Canadian guidelines related to HIV. Among those adopting guideline recommendations, 75% found them helpful.

Conclusions: Access to fertility care and MAC for people with HIV has not substantially improved since 2014. While the study's low response limits the generalizability, findings suggest that advocacy efforts are warranted to address reproductive rights for people with HIV, emphasizing U=U.

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Initial response to antiretroviral therapy in treatment naive HIV positive people with pre-treatment thymidine analogue mutations

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Background

Resistance-associated HIV mutations may impact response to antiretroviral therapy (ART). Most literature focuses on HIV treatment-emergent resistance, and there is little literature on the impact of transmitted resistance-associated mutations on initial viral suppression. We report virologic response to initial treatment in a cluster of people newly diagnosed with pre-treatment thymidine analogue mutation (TAMS) containing HIV.

Methods

All Nova Scotians with a first-time HIV diagnosis and pre-treatment TAMS between January 1, 2022 to December 31, 2023 were identified. HIV virtual phenotype and mutations, initial and on-therapy HIV viral load (VL; copies/ml), and ART regimens are reported.

Results

Sixteen people with new HIV infection were identified. TAMs and protease inhibitor (PI) resistance mutations were identified in all (Table). Fifteen had tenofovir resistance-associated mutations. 11 people started on standard tenofovir containing NRTI-based triple therapy, 9 have had follow-ups. 6/9 had HIV VL <200 copies/mL and 3/9 suppressed after addition of a protease inhibitor or an NNRTI. 1/1 person started on a tenofovir-sparing NRTI-based triple therapy suppressed, and 4/4 people started on initial quadruple regimens suppressed.

Conclusion

In this case series, all HIV-positive treatment naïve people with pre-treatment TAMS achieved viral suppression. For those without initial suppression, delayed addition of an additional agent did not compromise short-term viral suppression. With increased use of prophylactic antiretrovirals and potential for increased transmission of thymidine analogue mutation containing HIV, reports such as this and larger databases will be needed to determine best approaches to initial antiretroviral therapy.

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Investigating the effects of physical maturation and sexual debut in adolescent boys longitudinally

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Introduction: Despite global reductions in HIV, incidence in adolescents continues to increase. While risk-taking behaviour may contribute to heightened incidence, the effect of physical maturation and sexual debut remain uncharacterized among males, both of which may alter the genital microenvironment and lead to inflammation and susceptibility to HIV. Thus, we assessed both physical maturation and sexual debut as HIV risk factors in the male adolescent population.

Methods: We enrolled n=200 uncircumcised adolescent males aged 15-17 with no history of sexual experience, in the Rakai district of Uganda. Over three years of follow-up, we collected penile swabs, urine testosterone, and questionnaire data every 3 months. During this time, 84 adolescents sexually debuted (i.e., engaged in vaginal sex) and 77 adolescents elected to undergo Voluntary Medical Male Circumcision (VMMC). Tissues were collected during VMMC and HIV target cells were quantified by flow cytometry.

Results: 77% of participants completed 7/10 follow-up visits. 41% of adolescents reported initiating sex during the study. Urine testosterone positively correlated with age and Tanner staged. Of the participants who elected to be circumcised, 9 had sexually debuted before circumcision (12%), the median participant age was 16 years, the median Tanner stage was 4, and the median urine testosterone was 484 ng/dL. We observed no significant associations between the proportion of T cell subsets (Th1, Th2, Th17, Th22), HIV co-receptor expression, or T cell activation (HLA-DR+/CD34+) and participant serum testosterone, Tanner stage, or sexual experience.

Significance: Sexual maturation and debut are not associated with changes in the proportional abundance of different T cell subsets. Future research will use immunofluorescent microscopy to examine changes in tissue microstructure and density of other cell types (dendritic cells, macrophages). Addressing the gap in our understanding of sexual maturation changes throughout adolescence will help us better understand HIV transmission in this high-risk population.

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The Role of Dietitians in the Continuum of Care of People Living with HIV Who Use Drugs

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Issue: Malnutrition and food insecurity continue to persist among PLWH who use drugs with complex health and social needs. Existing services for people who use drugs (PWUD), such as supervised consumption sites often lack food programs, designated meal spaces, and integration of dietitian expertise. Previous studies indicate drug use influences dietary habits and nutrition status, and PLWH who use drugs are documented to experience significant barriers to HIV care. Integrated care facilities like the Dr. Peter Centre (DPC) utilize nutrition care as a means of engagement with overall health care. This presentation explores the role dietitians play in DPC's short-term residential stabilization program.

Description: The DPC provides 12 stabilization beds to clients with complex conditions, including HIV, HCV, and mental health and substance use disorders. Dietitians collaborate with an interdisciplinary group of care providers to address complex aspects of client care, creating individualized nutrition care plans that support wellbeing beyond the stabilization program. A recent study found that following enrollment in the program, residents experienced reduced hospitalization (76% pre-admission to 23% post-admission one year after discharge); reduced ER visits: (79%-34%); and improved HIV medication adherence (55%-65%).

Lessons Learned: Dietitians contribute to engagement, stability, and belonging for DPC clients. Integrated care sites show that incorporating holistic and comprehensive nutrition care acts as an anchor to other services. Service users continuously report that meal programs are a crucial anchor to other services. With provision of dignified meal services, providers can take time to form therapeutic relationships, identify additional needs, and support continuum of care.

Recommendations: Integrate dietitians into short-term stabilization residence care programs as they participate in relational care to enhance holistic care for PLWH who use drugs. Addressing malnutrition and long-term food insecurity requires efforts beyond integrated health care programming, acknowledging poverty and substance use healthcare gaps as significant underlying factors.

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Identifying hospitalization episodes of care in British Columbia, Canada: Implementation among people with and without HIV

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Introduction: Hospitalizations are a major component of healthcare utilization, particularly among people with chronic conditions, including people with HIV (PWH). In the Canadian Discharge Abstract Database (DAD), interhospital transfers appear as separate records – yet misclassifying transfers as independent hospitalizations can bias metrics such as readmissions. We examined approaches of combining sequential, related records into hospitalization episodes of care (HEoCs) among PWH and people without HIV (PWoH) in British Columbia (BC), Canada.

Methods: Hospitalization records (1992 to 2020) were sourced from the Comparative Outcomes and Service Utilization Trends (COAST) study, a population-based BC data linkage including PWH and PWoH cohorts. We constructed eight HeoC definitions (see table 1). Comparison was informed by the proportion of multi-record HEoCs (mHEoCs; HEoCs spanning multiple hospitalization records) generated, and feasibility given data quality.

Results: We analyzed 98,553 hospitalization records from 13,498 PWH, and 1,874,507 records from 385,011 PWoH. Across the definitions, proportion of mHEoCs varied from 2.5% to 5.3% for PWH (2.7% to 4.2% for PWoH). Definitions yielding the highest proportion of mHEoCs were the least stringent, requiring no transfer indication. Definitions yielding the lowest proportion of mHEoCs were the most stringent, requiring two-way agreement of hospital identifiers. Patterns were comparable among PWH and PWoH. We selected a pragmatic general use approach to defining HEoCs – requiring one-way population of hospital transfer identifiers and a <48 hour gap.

Discussion: Various definitions can be employed to combine related hospitalization records into episodes, to yield less biased estimates of hospitalization-related metrics for PWH, and comparisons with PWoH.

Supporting Document

Table. Summary of the eight definitions examined for combining related records into hospitalization episodes of care (HEoCs).

Definition name	**Criteria for combining records into episodes**
Dt_0day	Admit date = a prior discharge date
Dt_1day	Admit date up to 1 day after a prior discharge date
Hp_0day_pop	Admit date = a prior discharge date **AND** populated HospFROM or a prior HospTO field
Hp_0day_some	Admit date = a prior discharge date **AND** HospFROM matches a prior Hosp field **OR** Hosp matches a prior HospTO field

Hp_0day_strict	Admit date = a prior discharge date **AND** HospFROM matches a prior Hosp field **AND** Hosp matches a prior HospTO field	
Hp_1day_pop	Admit date up to 1 day after a prior discharge date **AND** populated HospFROM or prior HospTO field	
Hp_1day_some	Admit date up to 1 day after a prior discharge date **AND** HospFROM matches prior Hosp field **OR** Hosp matches a prior HospTO field	
Hp_1day_strict	Admit date up to 1 day after a prior discharge date **AND** HospFROM matches prior Hosp field **AND** Hosp matches a prior HospTO field	

Definitions were assigned descriptors, with a prefix denoting unique criteria: Dt = dates solely, Hp = hospital transfer location fields (as well as dates). Hosp: current hospital. HospFROM: indication of hospital from which a person was transferred. HospTO: indication of hospital to which a person was transferred. PWH: People with HIV. PWoH: People without HIV.

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clustuneR: Optimization of genetic clustering by predictive growth model comparison in R

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A genetic cluster is a group of sequences that are more similar to each other than to other sequences in the dataset. When applied to HIV epidemiology, genetic clusters are used to characterize the transmission risk structure of a population. Most clustering methods require the user to select one or more criteria to define groups. These decisions are often based on default settings of the software, or recommendations from public health agencies, e.g., the US Centers for Disease Control and Prevention. However, the makeup and interpretation of clusters can vary substantially from one setting to the next, due to differences in HIV prevalence, sampling rates, and access to HIV testing. Instead, we propose that the optimal clustering of sequences in a given setting should maximize one's ability to predict the distribution of new infections among existing clusters.

We have developed a suite of methods in an R package, called clustuneR. First, the sequences are partitioned into "known" and "new" cases based on their dates of sample collection. Next, clustuneR provides methods for generating clusters using either pairwise distance (e.g., TN93) or phylogenetic methods, yielding sets of clusters under varying criteria. The distribution of new cases among clusters is modelled as a count outcome, i.e., by Poisson regression. We fit a null model where cluster growth is predicted only by cluster size, and an alternate model that incorporates additional metadata, such as the sample collection dates.

clustuneR is distributed under a GNU General Public License at https://github.com/PoonLab/clustuneR with package binaries for Linux and macOS platforms. It includes a comprehensive unit test suite and example data including anonymized HIV sequences from published studies, which we have randomly scrambled to prevent comparison to any other data.

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Self-Reported HIV Viral Load is Reliable and not Affected by Adverse Lived Experiences of Women Living with HIV in British Columbia

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Background: HIV viral load (VL) is a key predictor of long-term health for women living with HIV (WLWH). Here, we investigate how self-reported HIV VL in a cohort of WLWH in the BCC3 Study relates to women's knowledge of their own key HIV-related health parameters, and whether it is associated with selected socio-demographic characteristics.

Methods: For women enrolled between March 2021-August 2023 (n=219), self-reported HIV VL (undetectable≤40 or detectable>40copies/ml) was compared to VL obtained from chart review closest to but before the date of self-reported VL. Sensitivity, specificity, predictive values and likelihood ratios were calculated overall and for socio-demographically defined subgroups.

Results: Ninety-five percent of WLWH (208/219) in the study estimated their most recent HIV VL via self-report, and 189/219 (86%) estimated it correctly. Among women who self-reported HIV VL, 200/208 (96%) were on antiretroviral therapy, half reported history of homelessness and 30% reported current substance use. Knowledge about "Undetectable=Untransmittable" was lower (4/10; 40%) among women who didn't report their most recent VL than for those who did, 153/208 (74%). Importantly, self-reported undetectable HIV VL performed similarly across socio-demographic subgroups and showed high sensitivity (Table 1). Enacted, internalized, and disclosure concerns-related HIV stigma scores did not differ between women who estimated their HIV VL correctly or incorrectly.

Conclusions: Our findings replicate previous reports of high awareness about HIV VL by women in BC, despite high prevalence of adverse socio-demographic experiences in our cohort. Our data further suggest that despite highly stigmatized life experiences, WLWH in BC self-report their VL detectability reliably.

Supporting Document

Table 1. Sensitivity, specificity, predictive values, and likelihood ratios of self-reported undetectable HIV viral load in the BCC3 cohort

	Sensitivity, % (95% CI)	Specificity, % (95% CI)	Positive Predictive Value, % (95% CI)	Negative Predictive Value, % (95% CI)	Positive Likelihood Ratio (95% CI)	Negative Likelihood Ratio (95% CI)
Study sample overall (n=208) *180/208 undetectable* *28/208 detectable*	97.2 (93.6-99.1)	50.0 (30.7 – 69.3)	92.6 (89.6-94.8)	73.7 (52.2-87.8)	1.94 (1.34-2.8)	0.06 (0.02-0.14)
Ethnicity						
White (n=77)	98.5 (92.0-99.9)	50.0 (18.7-81.3)	93.0 (87.7 – 96.1)	83.3 (39.4-97.5)	1.97 (1.06-3.66)	0.03 (0.00-0.23)
African/Caribbean/Black (n=38)	100.0 (90.0-100.0)	33.3 (0.84-90.6)	94.6 (88.7-97.5)	100.0 (2.5-100.0)	1.50 (0.67-3.34)	NA
Indigenous (n=70)	94.6 (85.1-98.9)	57.1 (28.9 – 82.3)	89.8 (82.8-94.2)	72.7 (44.8-89.8)	2.21 (1.2-4.06)	0.09 (0.03-0.31)
Other racialized groups (n=23)	95.5 (77.2-99.9)	0.0 (0.0 - 97.5)	95.5 (95.0-95.8)	NA	0.95 (0.87-1.05)	NA
History of homelessness						

Yes (n=104)	97.6 (91.7-99.7)	55.0 (31.5-76.9)	90.1 (84.9-93.7)	84.6 (56.9-95.8)	2.17 (1.33-3.53)	0.04 (0.01-0.18)
No (n=104)	96.9 (91.1-99.3)	37.5 (8.5-75.5)	94.9 (91.6-97.0)	50.0 (19.3-80.7)	1.55 (0.91-2.65)	0.08 (0.02-0.35)
Knowledge about Undetectable=Untransmittable*						
Yes (n=153)	96.3 (91.6-98.8)	38.9 (17.3 – 64.3)	92.2 (89.1-94.5)	58.3 (33.2-79.8)	1.58 (1.09-2.28)	0.10 (0.03-0.27)
No (n=54)	100.0 (92.0-100.0)	70.0 (34.8 - 93.3)	93.6 (85.1-97.4)	100.0 (59.0 – 100.0)	3.33 I(1.29-8.59)	NA
Substance use*						
Current§(n=62)	97.8 (88.5-99.9)	62.5 (35.4 – 84.8)	88.2 (79.9-93.4)	90.9 (58.1 – 98.6)	2.61 (1.38 -4.92)	0.03 (0.00-0.25)
Past/Never (n=145)	97.0 (92.5-99.2)	33.3 (9.9-65.1)	94.2 (91.5-96.0)	50.0 (22.2-77.8)	1.45 (0.97-2.17)	0.09 (0.03 – 0.32)

§*Self-reported frequency of use ≥ once per month (opioids, non-opioid sedating drugs, stimulants, psychedelics) *Data are missing for 1 person*

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HIV Testing Among Transgender and Non-binary Individuals in Canada

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Early diagnosis and treatment of HIV is important to reduce the risk of transmission and adverse HIV-related health outcomes. The Public Health Agency of Canada recommends all sexually active individuals be tested at least once in their lifetime and those engaging in high risk activities be tested at least annually. Transgender and non-binary individuals face high levels of stigma and discrimination, which contribute to a disproportionately high burden of HIV and have been highlighted as barriers to accessing HIV testing among these populations.

This study aimed to estimate the uptake of HIV testing and to identify predictors of past-year testing among transgender and non-binary individuals at sexual risk of HIV acquisition. The analytic sample included 679 participants of the 2019 Trans PULSE Canada survey who reported past-year condomless vaginal or anal sex with a partner's flesh genitals. Block-wise modified Poisson regression models were used to identify predictors of past-year testing.

Of the analytic sample, 62% had ever been tested for HIV and 33% had been tested in the past year. The likelihood of past-year testing was similar across most sociodemographic groups and appeared to follow need appropriately. Participants who were single or in a nonmonogamous relationship were more likely to report past-year testing than those in a monogamous relationship and those who reported past-year sex work were more likely to have been tested than those who did not. Overall, HIV testing levels were low among transgender and non-binary individuals at sexual risk of HIV acquisition relative to Canadian guidelines and estimates among similar U.S. samples. Future research is needed to assess the impact of self-testing initiatives and to identify potential testing facilitators in this population.

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HIV care continuum during post-partum: Canadian context

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Introduction:

The postpartum phase represents a fragile period for the HIV care—a sequence encompassing linkage to care, retention in care, initiation of antiretroviral therapy (ART), and maintenance of an undetectable viral load. Unfortunately, no comprehensive exploration of these stages in the Canadian context exists to date. This study aims to describe the HIV cascade of care during the initial postpartum year in Ontario.

Methods:

A retrospective cohort study was performed by combining data from various administrative databases provided by the Institute for Clinical Evaluative Sciences (ICES). The study encompassed all adult women (≥18 years) with HIV who underwent live births in Ontario from 2013 to 2021. We assessed the proportions of women in the first three stages of the cascade and employed univariate and multivariate logistic regression analyses to identify factors influencing each stage.

Results:

Our cohort comprised 705 pregnancies from 527 women. Within this cohort, 42.0% of pregnancies achieved linkage to care, 28.1% were retained in care, and 82.1% were on ART. Notably, younger age (<25 years) correlated with a heightened risk of taking ART, whereas women with existing children demonstrated a protective effect (adjusted odds ratio [aOR]: 1.61). Residing in neighborhoods with a high ethnic concentration emerged as a protective factor for both linkage to care (aOR: 2.71) and retention in care (aOR: 3.32).

Conclusions:

Our results indicate low percentages for linkage to care (42%) and retention in care (28%) in the HIV care cascade. The ART uptake of 82% falls short of the international goal of 95%. Numerous sociodemographic factors, identified as barriers, warrant in-depth exploration through qualitative research. This nuanced understanding can inform targeted interventions to address the unique needs of those facing the most substantial challenges within the HIV care continuum.

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Knowledge of anal cancer risk and attitudes towards anal screening among women living with HIV in Ontario

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Introduction

Women living with HIV have a 20-fold higher risk of anal cancer than the general population, and are considered a high priority for screening. We aimed to characterize knowledge of anal cancer risk and willingness to undergo anal screening among women living with HIV in Ontario.

Methods

A cross-sectional questionnaire was administered from 2017 to 2020 among women living with HIV in the Ontario HIV Treatment Network Cohort Study. Items assessed knowledge of anal cancer risk and willingness to undergo screening with anal Pap tests or digital/anal rectal exams (DARE). We restricted our analysis to those aged ≥45 years in keeping with forthcoming international guidelines. We assessed associations with demographics and HPV screening and prevention measures using chi-square tests.

Results

Among the 325/579 women aged 45 years and over, the median age was 55 years (IQR: 10 years). 56% of women believed that they had "no chance" of developing anal cancer and 17% did not know their risk. Most women responded that they were "likely'' or "very likely" to undergo anal screening if it was offered (anal Pap: 72%; DARE: 69%), with 93% reporting consistent answers for both modalities. There were no statistically significant differences in willingness to screen by age, sexual orientation, race, immigrant status, or HPV vaccination history. However, women who underwent cervical screening in the past 3 years were more willing to also undergo anal screening than those who had not (DARE: 73% vs 51%, p=0.01; anal Pap: 76% vs 55%, p=0.02).

Conclusions

Education on elevated anal cancer risk among women living with HIV is important for the implementation of anal cancer prevention and screening in Ontario. Our findings suggest that future uptake of anal screening may reproduce inequities observed for cervical screening without careful attention to barriers and facilitators to both.

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Sexually Transmitted and Blood-Borne Infections (STBBIs) Among People with Lived/Living Experience of Incarceration (PWLLE-I) in Canada: A Scoping Review

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Background: In Canada, PWLLE-I are disproportionately affected by STBBIs and are recognized as a key population in the Pan-Canadian STBBI Framework for Action, which highlights the need for evidence to guide action. We conducted a scoping review to explore the evidence on STBBI prevalence, risk exposure, prevention, testing and treatment among PWLLE-I in Canada.

Methods: We searched 6 databases for articles published between January 1, 2013 and September 13, 2023 reporting on STBBIs among PWLLE-I in Canada. For published abstracts, a search for full texts was conducted and, if not found, authors were contacted.

Results: 52 out of 426 screened records were included, of which the majority contained quantitative data only. Studies were largely conducted with one of three specific populations: people living with HIV (PLHIV), people who use injection drugs, and people who are currently incarcerated. Most studies focused on HIV and HCV, with few mentioning other STBBIs. Studies point to a higher prevalence of HCV and HIV among PWLLE-I than among the general Canadian population. Several studies with PLHIV found that the odds of optimal antiretroviral therapy adherence and the odds of HIV viral suppression were lower among PWLLE-I compared to those with no incarceration experience. Qualitative and quantitative data highlight challenges with continuity of STBBI care post-release. Limited data were found on the experiences of youth in correctional facilities, and PWLLE-I in the territories and Atlantic provinces. Trends in the past decade toward greater Ministry of Health responsibility for health service provision at provincial correctional facilities show promise in improving STBBI care.

Conclusions: Research published over the last ten years highlights the inequitable impact of STBBIs on PWLLE-I in Canada. Focused efforts are required to support PWLLE-I in accessing necessary prevention, testing, treatment and care for STBBIs both inside and outside of the corrections system.

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Trends in Unregulated Substance Use Among a Cohort of Patients Recently Treated for Hepatitis C in British Columbia, Canada

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Introduction: The illicit drug toxicity crisis in British Columbia (BC) has worsened since the onset of the COVID-19 pandemic, significantly impacting high-risk populations who are vulnerable to comorbidities such as hepatitis C virus (HCV). Using a syndemics lens, our analysis aims to understand the potential impact of COVID-19 on drug use and harm reduction services, and to characterize patterns of unregulated substance use among people recently treated for HCV.

Methods: Data from the Preservation of Sustained Virologic Response (Per-SVR) study, a prospective cohort in BC characterizing healthcare engagement and outcomes among people recently treated for HCV, was used for this analysis. Study participants completed an interviewer-administered questionnaire at regular intervals for up to four years. For this analysis, participants who reported unregulated substance use and/or had a positive urine drug screening test result at baseline were included. Preliminary descriptive analysis and generalized trend estimating models were used to describe unregulated substance use patterns over time.

Results: Of 272 participants, 179 (65.8%) were men, 32 (12%) were recently homeless, and 128 (47.1%) lived in Vancouver's Downtown Eastside neighbourhood. Amongst opioid and stimulant polysubstance users 89 (68.4%) self-reported frequent daily use. At baseline, 122 (70.9%) opioid users were engaged in opioid agonist therapy, but stimulant users did not access any stimulant therapies. In 2020, the majority of people injecting fentanyl or heroin transitioned from infrequent use to frequent daily use, which remained true over time.

Conclusions: We observed an overall increase over time on frequency of drug use, especially at the start of COVID-19, similar to other studies which have shown an increase in fentanyl and other unregulated drug use due to COVID-19. These results highlight the impact of COVID-19 on substance use and the importance of harm reduction services especially among populations affected by HCV.

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Factors Associated with HIV Testing Among Street-Connected and Homeless Youth in Kenya and Canada Enrolled in a Peer Navigator Program

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Background: Street-connected and homeless youth face barriers to HIV testing in both Kenya and Canada, including discrimination, stigma, and lack of health insurance. To address these barriers, we adapted and scaled a peer navigator program to five sites in Kenya and Canada. The purpose of this analysis is to describe the first two years of program uptake and factors associated with HIV testing.

Methods: Six peer navigators with lived experience of being street-connected or homeless were hired and trained in Kenya (Eldoret, Kitale, Huruma) and Canada (Toronto, London). Beginning in 2021, the peer navigators enrolled youth aged 16-29 and completed encounter forms at enrolment and each follow-up. Descriptive statistics were used to characterize the participants and the factors associated with HIV testing.

Results: The peer navigators enrolled 583 youth in Kenya (42% cisgender women) and 40 youth in Canada (63% cisgender women). In Canada, 73% of participants identified as 2SLGBTQ+. The median age of Canadian participants was 24 (IQR: 21-27); in Kenya it was 22 (IQR: 19-27). At enrolment, 65% of Kenyan and 75% of Canadian participants had previously been tested for HIV and 11% and 13%, respectively, were living with HIV. After two years, 95% of Kenyan participants and 80% of Canadian participants had been tested. In both countries, the median age of participants tested for HIV was higher than among those not tested (p-values <0.02). In Kenya, participants at the Eldoret site ($p<0.01$) and women ($p<0.001$) were most likely to get tested.

Conclusions: The peer navigators were successful at connecting youth to HIV testing despite ongoing external factors such as the COVID-19 pandemic and an HIV test kit shortage in Kenya. Peer navigators play an important role in increasing youth access to sexual health services, though more attention is needed to ensure equitable access for all youth.

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Mpox Diagnosis and Vaccination among Two-Spirit, Gay, Bisexual, Queer, and Trans Men and Non-Binary People in Canada

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Background: The vast majority of mpox cases in Canada have occurred among MSM (men who have sex with men). Community-led responses to this health threat included education and vaccination efforts in partnership with public health.

Methods: We examined self-reported mpox diagnosis and vaccination among Two-Spirit, Gay, Bisexual, Trans, and Queer men and Non-Binary (2S/GBTQ) participants in Sex Now 2022. Data were collected in-person at Pride festivals and community events across Canada between 06-09/2022. Participants were aged 15+, 2S/GBTQ-identified, living in Canada, and able to self-complete the survey in English, French, or Spanish. Vaccination analyses were restricted to MSM aged 18+ who reported at least one of: past-year STI diagnosis, multiple recent sex partners, or recent transactional sex. Data were analyzed descriptively, with attention to calendar time and geographic location given the rapid evolution of the mpox outbreak and response, and chi-square tests were conducted to assess statistical significance ($p<0.05$ significant). All results reported are significant, except where noted explicitly.

Results: Self-reported mpox diagnosis was 0.8% (n=24/2891), with higher prevalence among HIV-negative PrEP users compared with HIV-negative PrEP-naïve participants (1.9% versus 0.4%). Self-reported mpox vaccination uptake was 41.3% (n=475/1150), which increased over time (i.e., 12.6% at the end of June to 76.0% at the start of September). Vaccination was lower among trans versus cis men (24.3% versus 42.5%), people without a university degree (29.1% versus 50.9%), those experiencing financial strain (30.9% versus 44.1%), and HIV-negative PrEP-naïve men compared to lifetime PrEP users (26.5% versus 56.6%). Although not statistically significant, participants living with HIV had descriptively higher prevalence of mpox diagnosis (1.4% versus 0.7%) and vaccination (48.1% versus 40.8%).

Discussion: Canada's spatial-temporal experience with mpox diagnosis and rapid vaccination scale-up among 2S/GBTQ communities during summer 2022 was shaped by entrenched social determinants of health and varied based on HIV PrEP experience.

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Engaging community partners in research with people who inject drugs in Canada: strategies, challenges and lessons learned

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Problem: Community-based research (CBR) is a useful method for understanding hepatitis C (HCV) care needs among people who inject drugs (PWID). Involving community-based organizations (CBOs) in research is paramount to enhance its impact on the community. How do we implement CBR in practice? Herein, we describe strategies used to carry out the HCV virtual cascade of care cohort (VCCC) study, a study conducted in community-based and harm-reduction organizations serving PWID in Canada.

Description: In our application of CBR to the VCCC study, research questions were developed by the researchers. CBOs were responsible for recruiting the target population, collecting data with funding support, and were involved in knowledge dissemination. Over 40 CBOs were approached either by email, telephone, or in person. The recruitment process comprised 3 steps: an initial call with 14 CBOs who expressed interest, a face-to-face meeting (including a visit to their premises), and the signing of a collaboration agreement. Afterwards, the CBO is trained to conduct all research activities. To date, our study was implemented in 4 CBOs.

Lessons learned: We encountered various challenges to successfully integrate CBOs, including a lack of space and staff to execute study procedures; and staff turnover, resulting in multiple training periods. Adaptations were needed to meet ethical considerations and procedures required by our protocol. For instance, the training placed a particular emphasis on the informed consent process. Realistic recruitment goals were set for each CBO, and data was collected onsite with them. On average, the whole recruitment process took roughly 8 months, demonstrating that the process of engaging CBOs in research takes time.

Conclusions: The study protocol states what and how. However, we can be creative in how we implement it. Hence the importance of anchoring research activities in local contexts. Building on each other strengths is key to successfully engaging CBOs.

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Nurse-led Implementation of Doxycycline Post Exposure Prophylaxis (Doxy-PEP) at a Community Health Centre in Victoria, British Columbia (BC), Canada

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Background:
Infection rates for bacterial sexually transmitted infections (STBBIs) like syphilis, chlamydia and gonorrhea are increasing, and gay, bisexual, and other men who have sex with men (gbMSM) and transgender women are disproportionately affected in British Columbia (BC). Recent studies have demonstrated efficacy of doxy-PEP for STBBI prevention in this population.

The Cool Aid Community Health Centre (CACHC), an inner-city, interdisciplinary primary health care centre in Victoria, BC, serves over 7,300 clients who experience severe mental health challenges, substance use and homelessness. The bi-monthly drop in nurse-led low barrier STBBI clinic (Prism Wellness) at CACHC, staffed by STI certified practice nurses and run in partnership with AVI Health and Community Services, provides STBBI education, screening and treatment as well as pre-exposure prophylaxis (PrEP) initiation and monitoring.

In December 2022, CACHC implemented doxy-PEP for eligible individuals: people who are living with HIV, accessing PrEP, identify as gbMSM, transgender women, and with an increased risk of bacterial STI by either having a history of syphilis, chlamydia or gonorrhea in the past year, or being clinically assessed at increased risk.

Methods:
A retrospective chart review was conducted to identify clients offered doxy-PEP. All gbMSM and transgender clients who initiated doxy-PEP from December 27, 2022, to December 31, 2023, were included.

Results:
A total of 94 clients were offered doxy-pep: 91 gbMSM, 1 woman (on PrEP), 2 transwomen, 9 plwHIV, 82 on PrEP, 22 with previous syphilis, 16 with rectal chlamydia/gonorrhea (within the last year). 86 clients were provided with 10 doses of doxy-PEP and 56 clients have refilled prescriptions. To date, 8 clients have documented STBBI's (1 syphilis, 1 rectal chlamydia, 3 rectal gonorrhea, 6 throat gonorrhea) since receiving doxy-PEP.

Conclusions:
This innovative nurse-led program at a community health centre facilitated access to doxy-PEP for people at high risk of contracting STBBI's.

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Determinants of Leaving the Emergency Department without Completion of Care among People with and without HIV Attending with a Suspected Overdose

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Background
Leaving the emergency department (ED) without being seen by a physician or against medical advice, referred to as leaving without completing care, is associated with adverse outcomes. Leaving without completing care is more common in substance use related ED-presentations, but this pattern is unclear among people with HIV (PWH). We assessed incidence and determinants of leaving without completing care among PWH and people without HIV (PWoH) attending an ED with a suspected overdose.

Methods
Using linked administrative data of all PWH and a 10% random sample of PwoH in British Columbia between 2012-2020, we identified ED-presentations with a suspected overdose: symptoms and/or complaints classified by a triage nurse as “overdose ingestion”. Leaving without completing care was defined using diagnosis code and/or discharge disposition. Using a multivariable log-linked regression model with binomial distribution and generalized estimating equations, stratified by HIV-status, we identified determinants of leaving without completing care compared to being discharged or admitted, using backward selection.

Results
We identified 1,160 and 4,581 ED-presentations with a suspected overdose among 632 PWH and 3,057 PwoH, respectively. Overall, 13.9% of PWH visits and 9.0% of PwoH visits resulted in leaving without completing care ($p<0.05$). Older age (50+) and higher triage level were associated with lower risk for leaving without completing care (Table 1).

Conclusions
Leaving without completing care was more common among PWH than PwoH attending the ED with a suspected overdose. Addressing risk factors for leaving without completing care may improve linkage to care among people attending Eds with an overdose.

Supporting Document

Table 1: Determinants of leaving without completing care among people with and without HIV attending the emergency department with a suspected overdose.

	People with HIV Adjusted Risk Ratio (95% CI)	**People without HIV Adjusted Risk Ratio (95% CI)**
Sex (ref: Male)		
Female	*Not selected*	0.55 (0.40 – 0.76)
Age (ref: 19-39 years)		
40-49 years	0.74 (0.49 – 1.13)	0.91 (0.66 – 1.25)
50+ years	0.36 (0.22 – 0.61)	0.58 (0.41 – 0.82)
Mood/anxiety disorder	*Not selected*	0.64 (0.48 – 0.85)
Opioid agonist therapy dispensation in prior 5 years	1.43 (0.94 – 2.16)	1.65 (1.22 – 2.25)
Triage level (ref: Urgent/Less urgent/Non-urgent)		
Resuscitation/Emergent	0.28 (0.17 – 0.47)	0.22 (0.16 – 0.30)
Calendar year of ED visit (ref: 2016-2020)		

2012-2015	0.52 (0.34 – 0.81)	0.75 (0.55 – 1.03)
Being admitted via ambulance		
	*Not included**	1.46 (1.03 – 2.07)

**Not included as it was not associated with leaving without completing care in bivariate analysis.*
ED, emergency department.

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The impact of housing instability on substance-involved mortality among people with HIV in British Columbia, Canada

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Aim: The housing crisis in British Columbia (BC), Canada, is characterized by a shortage of accessible, safe, and affordable housing. We explore the impact of housing instability on substance-involved mortality among a cohort of people with HIV (PWH) in BC.

Methods: Data are from the Longitudinal Investigation into Supportive and Ancillary Health Services (LISA) study, a cross-sectional survey (2007-2010). Survey data were linked with prospective administrative health data from the BC Centre for Excellence in HIV/AIDS Drug Treatment Program (DTP) and Population Data BC until March 31, 2020. This linkage includes information on cause-specific mortality, allowing us to investigate the relationship between housing instability and substance-involved mortality (Table 1). Selection bias into LISA was potentially introduced through oversampling PWH marginalized by sociostructural inequities, which we addressed through inverse probability of participation weighting (IPPW). We constructed participation weights using information from the DTP database, which includes all known PWH in BC accessing HIV-treatment via the DTP (including respondents and non-respondents to the LISA survey). We estimated the hazards of substance-involved mortality associated with housing instability, adjusting for confounders, in an IPPW-weighted Cox model.

Results: Of 998 respondents (74% male, 63% white), 302 people (30%) died from any cause between the completion of the LISA survey until March 31, 2020; 111 (37%) died from substance-involved mortality. Of those people, 56 (50%) experienced housing instability. Experiences of housing instability were associated with increased hazards of substance-involved mortality (aHR: 1.80; 95%CI:1.01-3.19).

Conclusion: PWH experiencing housing instability may have a greater risk of substance-involved mortality.

Supporting Document

Table 1. Association between housing instability and substance-involved mortality, estimated via Cox proportional hazards model, weighted via IPPW.

Substance-involved mortality[1]		
Exposure	**aHR**	**95% CI**
Housing instability[2]		
No (reference)	1.00	
Yes	1.80	1.01, 3.19

[1]ICD-10 codes used to define substance-involved mortality include: F10.2, F10.3, F11.1, F14.1, F19.1, F19.2, K70.3, K70.4, K85.2, R99, X41, X42, X44, X45, Y14.
[2]The model is adjusted for: gender, race, employment, mental health disorder, current drug use, and history of incarceration.

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Patient-Reported Outcomes (PROMs) of the 'Know Your Status' (KYS) project within First Nations on-reserve communities in Saskatchewan, Canada

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Background: 'Know Your Status' (KYS) is a community-led program designed to improve education, testing, and treatment of HIV and STBBIs for on-reserve Indigenous communities. Wellness Wheel clinic (WW) delivers the program through a culturally responsive mobile medical model in remote and on-reserve communities across Saskatchewan.
Objective: To report the patient reported outcome measures (PROMs) to determine patient characteristics and experiences of the KYS program.

Methods: The PROMs were comprised of 6 validated survey tools. The tools surveyed demographics, alcohol dependency (AUDIT-C), substance use dependency (DUDIT-C), quality of life (EQ-5D-5L), personal agency questionnaire (PASI), Nature Connectedness Scale, Personal and Interpersonal Agency (PIAS – PASI & IASI), Quality of Life Questionnaire (QoL), Connectedness scale, and the post traumatic growth inventory questionnaire (PTGI). Survey tools were distributed with a letter of introduction and consent form by site nurses and returned to WW for data entry and analysis. Participation was voluntary and participants were remunerated.

Results: Surveys were completed by n=37 participants (female=19; male=18), mean age 45 (female=41; male=49), across three on-reserve communities. Analysis indicated similar responses between males and females, with divergence in four areas: 1. Substance use dependency – females reported higher incidence of substance use dependency (14/19) compared to men (11/18); 2. Self-reported health score – females scored higher (females=67; males=59); 3. Personal agency – females scored higher at 3.24 compared to 3.19; 4. PTGI questionnaire – males scored lower than females in every category except Appreciation of Life. Nature Connectedness Scale was removed from analysis for low response rate.

Conclusion: Despite higher rates of substance use and poly-substance use, females reported greater positive change and better overall health. Reported alcohol use was low across the sample. Despite small honorariums, recruitment was difficult. The number of tools required to complete in one sitting may have contributed to the low response rate.

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Impact of the COVID-19 Pandemic on HIV Incidence in Northern Saskatchewan First Nations Population: A Retrospective Analysis

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Introduction: The COVID-19 pandemic has significantly disrupted Canadian healthcare services, potentially compromising the management and prevention of infectious diseases like HIV. The study aimed to explore the impact of COVID-19 on the HIV incidence in on-reserve First Nations communities in northern Saskatchewan.

Methods: A retrospective analysis was conducted, utilizing healthcare information from northern Saskatchewan First Nations on-reserve communities between January 2019 and December 2020. HIV incidence rates one year before the pandemic (January to December 2019) were contrasted with the rates observed in the initial year of the pandemic (from January to December 2020). Demographic data, testing rates, and HIV diagnoses were analyzed descriptively to assess any substantial changes or trends. Furthermore, HIV-diagnosed cases in both periods were stratified by quarter, sex, and age and compared to detect differences.

Results: HIV testing fell by 28.6% during the COVID-19 pandemic. In addition, there was a 25% decline in the identification of new HIV cases among the northern Saskatchewan First Nations on-reserve communities, notably in the second quarter of 2020, when COVID-19 precautions and restrictions were intensive. In comparison to the pre-COVID-19 era, males had a 36% decrease in new HIV diagnoses, but females had no change. The number of new HIV cases among those aged 30 to 39 years and 40 to 49 years was reduced by 38% and 33%, respectively, compared to the pre-COVID-19 era. During the pandemic, the total number of new HIV cases detected in northern Saskatchewan's Far North Central, Far North West, and North Central areas decreased, while the Far North East region experienced an increase.

Conclusion: The COVID-19 pandemic has impacted HIV testing and diagnosis rates in First Nations on-reserve communities in northern Saskatchewan, emphasizing the need for sustained public health services during crises.

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Title: Syphilis Point of Care Testing and Immediate Treatment Evaluation (SPRITE) in 5 Ontario Public Health Units: Determining Real World Accuracy of Point-of-Care Tests

Lucy Mackrell[1], Megan Carter[1,2], Patrick O'Byrne[4,5], Nicole Szumlanski[2], Maggie Hoover[2], Bradley Stoner[1], Stephanie McFaul[7], Kandace Belanger[6], Jennifer Adams[9], Jennifer Burbidge[3], Gabrielle Deschenes[9], Christine Diadamo[8], Eric Green[2], Melissa Greenblatt[3,11], Susan LaBrie[9], Kira Mandryk[5], Jorge Martinez-Cajas[1,10], Brooke Rasinho[6], Hailea Squires[8], Erin Stienstra[2], Vanessa Tran[3,11], Stephanie Vance[7], Sahar Saeed[1]
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Background:
Public health units (PHUs) in Ontario have experienced a dramatic spike of infectious syphilis. Underserved populations, such as people who are experiencing homelessness or use drugs, are at increased risk for syphilis and other sexually transmitted and bloodborne infections. Using point-of-care tests (POCTs) outside a clinical setting represents a low-barrier method to reach undiagnosed and underserved populations.

Methods
The SPRITE study includes five Ontario PHUs (Kingston, Frontenac and Lennox & Addington Public Health (KFL&A PH), Hastings Prince Edward Public Health (HPEPH), Leeds, Grenville and Lanark District Health Unit (LGLDHU), Thunder Bay District Health Unit (TBDHU) and Ottawa Public Health (OPH)). As part of existing public health outreach programs and scheduled blitz events at community-based organizations the implementation and accuracy of INSTI® Multiplex HIV1/2 & Syphilis Antibody POCTs is being evaluated. The target sample size of 380 is expected to be obtained by April 2024.

Results:
From June to mid-December 2023, 110 POCT were administered across 3 PHUs (KFL&A PH n=85, HPEPH n=23, LGLDHU n=2); 63.6% at outreach events, 27.3% at community service hubs, and 7.3% through general outreach. Of these 110 POCT tests, six were positive, 100 negative, and four invalid. Overall, INSTI had a 54.5% sensitivity, 100% specificity, 100% positive predictive value, and 94.6% negative predictive value. Of the five false negatives, four were previously treated for syphilis (three were non-reactive) and the one new positive infection had an RPR of 1:2. All six POCT positive cases were treated – four in the field and two in the clinic after reinfection was confirmed. No HIV infections were identified.

Conclusions:
These are preliminary results in a population experiencing a high (yet heterogeneous) incidence of infectious syphilis. Evaluating the accuracy of low-barrier interventions in community settings is vital to inform future decision-making.

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Syphilis Point of Care Testing and Immediate Treatment Evaluation (SPRITE) in 5 Ontario Public Health Units: Barriers and Facilitators to Implementation.

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Background: In March 2023, the INSTI® Multiplex HIV-1 / HIV-2 / Syphilis Antibody Test, a rapid point-of-care test (POCT) was licensed by Health Canada. In June 2023, the Kingston, Frontenac and Lennox & Addington Public Health Unit implemented the "rapid POCT and treat" outreach model of care, which incorporates POCT and treatment with existing public health outreach services, bringing services to the population at highest risk including those facing housing instability, mental health concerns, or injection drug use. In September 2023 this model of care was expanded to included four additional PHUs.

Methods: We developed a survey targeting participating health care providers including outreach nurses, managers, nursing leads, and other health/social service professionals to understand the barriers and facilitators of implementing this intervention within public health units. Data collection will continue until at least September 2024, with the aim of having ~30 respondents by April 2024.

Results: While all survey respondents (n=6) indicated that the "POCT and treat" intervention should continue to be offered during outreach services, challenges were also identified. Notably, 66% reported issues with pipettes, and 33% faced difficulties obtaining sufficient blood from clients, sometimes necessitating multiple pricks. Concerns specific to outdoor settings included maintaining product temperature within recommended ranges during extreme weather and addressing challenges posed by windy conditions when using the lightweight kits. Additionally, 83% expressed apprehension about the test's sensitivity for syphilis in clients with low RPR levels, as it occasionally yields negative POCT results. Only half of the respondents believed that POCT is more acceptable to outreach clients than routine serology.

Outcomes: Preliminary results from survey responses have already provided valuable insight into professional's perception of the feasibility of POCT in a community setting. This research will inform improvements for future implementation of POCT, a vital low-barrier method to reach undiagnosed and underserved populations.

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Perceived risk of accidental exposure to HIV at work among healthcare professionals in Ontario.

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Background
Clinicians who perceive a potential risk of HIV exposure in their work environment may experience feelings of fear, anxiety, and concern regarding their health and safety. In this study, we aimed to investigate the percentage of healthcare providers who present this concern at the workplace, and the associated sociodemographic variables to inform policymakers regarding this critical issue.

The survey
Data for this study came from the project titled 'Optimizing HIV and health services for Canadians of African Descent (CAD) women: A multi-sectoral and innovative approach to capacity building'. Sample population included Physicians (n=429), Nurses (n=331), Social workers (n=173) and Others (n=120).

Results
Overall, about 15% of the participants reported the level of risk of HIV exposure as high, while more than half reported the risk of exposure as moderate (54%). Compared to women, men had 0.65 times lower odds of perceiving their HIV exposure risk as high at work (OR=0.65, 95% CI=0.46-0.93). Healthcare professionals who identified as Black Canadian (OR=2.09, 95% CI=1.53-2.84) and Caribbean (OR=2.68, 95% CI 1.69-4.24) had approximately 2 times higher odds of perceiving high risk compared to those who identified as African. Nurses (OR=2.13, 95% CI=1.30-3.48) and physicians (OR=1.91, 95% CI=1.18-3.10) had around 2 times higher odds of perceiving risk as high compared to other professions. Healthcare professionals who felt somewhat prepared (OR=1.90, 95% CI 1.27-2.84) or not prepared (OR=8.69, 95% CI 2.57-29.37) to provide HIV care had higher odds of perceiving high risk compared to those who felt very prepared.

Conclusion
Current findings indicate that racial background, profession, and perceived preparedness to provide HIV care are significant predictors of healthcare professionals' perceptions of their HIV exposure risk at work. Targeted interventions based on these factors may help improve provider awareness and safety practices related to infection control in the workplace.

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Social-Structural Correlates of Overdose among Women Living with HIV in Metro Vancouver, Canada

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Canada faces an ongoing drug poisoning crisis, yet research on overdose among women living with HIV (WLWH) remains limited. Previous studies highlight how social-structural factors including gender-based violence (GBV) and criminalization, highly overrepresented among WLWH, increase women's vulnerability to overdose. This study therefore examined the prevalence and social-structural correlates of overdose among WLWH.

The analysis drew on data (2015-2022) from a cohort of cis and trans WLWH in Metro Vancouver as part of the SHAWNA (Sexual Health and HIV/AIDS: Women's Longitudinal Needs Assessment) Project. Bivariate and multivariable logistic regression with generalized estimating equations (GEE) were performed to identify social-structural correlates of recent (last six months) unintentional overdose among WLWH who reported using criminalized substances (last six months). Adjusted odds ratios (AOR) and 95% confidence intervals are presented.

This study included 248 participants with 1303 observations over 7 years. At baseline, close to one third (31.9%) reported experiencing an unintentional overdose at least once in their lifetime, while one in ten (11.7%) reported overdose in the last six months (first available observation). In multivariable logistic regression with GEE, increased odds of overdose was associated with: previous unintended overdose (AOR:1.76 [1.09-2.83]), less than daily opioid use (AOR:2.64 [1.38-5.05]), suicidal ideations and/or attempts (AOR:1.95 [1.18-3.24]), and heightened GBV (two or more instances of physical, sexual and/or verbal violence) (AOR:1.94 [1.10-3.41]).

Findings underscore the need for HIV providers to screen for social-structural risk factors, namely overdose history, opioid use frequency, suicidality, and GBV. Comprehensive support is essential to reducing unintended drug poisoning, prioritizing trauma-informed care in harm reduction, mental health, and housing services. Urgent policy changes, like substance de-criminalization, are vital. Additionally, developing gender-specific harm reduction, such as supervised injection sites tailored for women and gender-diverse individuals within male-dominated spaces, is crucial to addressing intersections of power dynamics, violence, mental health, and substance use.

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Bridging the Gap: Empowering Communities in Enhancing Access to Public Health Surveillance Data

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Background: The importance of public health surveillance data in reducing the health impacts of HIV, viral hepatitis, and other Sexually Transmitted and Blood-Borne Infections (STBBIs) is well established. However, the accessibility and utilization of this information is limited for community, including people with lived and living experiences of STBBIs and community-based organizations. Additionally, community are infrequently 272nvolved by public health in interpreting or disseminating this data.

Method: This oral presentation will explore an innovative strategy developed by BCCDC and PAN for involving community in public health surveillance for STBBIs. Developed through the SPARTA project (Sustaining Partnerships to Advance Community Priorities in STBBI Public Health Data Sets), this strategy has fostered a collaborative approach to public health surveillance of STBBIs and made data more accessible to community in BC.

Results: Experts from community and public health will share insights and experiences from the SPARTA project, including:
(1) Describing the SPARTA model for engaging community in the process of accessing, interpreting, and disseminating STBBI public health surveillance data.
(2) Strategies to enhance the understanding of STBBI public health surveillance data among community members to promote data literacy at grassroots levels.
(3) Addressing ethical concerns related to community involvement and accessibility in STBBI public health surveillance data, including how to ensure privacy, security, and equitable access.
(4) Illustrating how increased engagement, expanded access, and utilization of STBBI public health surveillance data by community can lead to more effective interventions and improved public health outcomes related to STBBIs.

Discussion: This presentation aims to prioritize community involvement as a cornerstone and generate actionable insights and recommendations for PWLLE, community leaders, researchers, public health practitioners, and policymakers to foster a more inclusive, informed, and empowered approach to STBBI public health surveillance in Canada.

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Knowledge, Uptake, and Interest in doxyPEP/PrEP as Bacterial STBBI Prevention in Canada: Two-Spirit, Sexual and Gender Minority Men and Non-Binary People from Sex Now 2022

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Background
Bacterial STBBI rates disproportionately impact sexually active Two-Spirit, gay, bisexual, trans, and queer men and non-binary people (2S/GBTQ). Among 2S/GBTQ, the use of doxycycline as post-exposure or pre-exposure prophylaxis (doxyPEP/PrEP) reduces acquisition of chlamydia and syphilis, and to a lesser extent gonorrhea.

Methods
We assessed 2S/GBTQ community members' knowledge, uptake, and interest in doxyPEP/PrEP via the Community-Based Research Centre's Sex Now 2022 survey. Recruitment was conducted in-person at 41 Pride festivals and community events across 21 cities in Canada. Eligible participants were at least 15 years old, 2S/GBTQ, living in Canada, and able to complete the electronic survey in English, French, or Spanish. Statistical differences in awareness, uptake, and interest were computed using chi-square tests ($p<0.05$ significant)

Results
Participants (n=3284) had moderate awareness of doxyPEP/PrEP (25.4%). Lifetime uptake was low (6.3%), with half (54.3%) reporting use in the past 6 months. Among those not currently using doxyPEP/PrEP, one-third (36.0%) were interested in the intervention and one-third (31.3%) were unsure. Awareness, uptake, and interest were consistently higher among participants 30-39 years old, with more sexual partners, who have sex partners who were HIV undetectable, with recent STBBI acquisition, and concurrent HIV PrEP use. Participants who were less out about their sexuality and who reported recent front hole/vaginal sex had lower doxyPEP/PrEP awareness, uptake, and interest. Interest was lower amongst Indigenous and Black participants and higher amongst other People of Colour.

Conclusion
2S/GBTQ community interest in doxyPEP/PrEP is high, and reflects alignment with key indicators for this intervention. However, there is a significant disparity in access/uptake of doxyPEP/PrEP. This work can inform equity-oriented health promotion and health service provision of doxyPEP/PrEP.

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Incidence and Recurrence Rates of Cardiovascular Disease (CVD) Events Among People Living With and Without HIV in British Columbia: A Community-led Study with The Eng/aging Project

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Background: There remains a gap in understanding the patterns of CVD recurrence among people with HIV (PWH). Our community-led team adopted a strengths-based approach and examined the incidence of acute index and recurrent CVD events among PWH compared to people without HIV (PWoH) in British Columbia (BC).

Methods: From 01-Apr-1992 to 31-Mar-2020, PWH and a 10% random sample of all PwoH in BC aged ≥19 years were followed using linked administrative health data from the Comparative Outcomes and Service Utilization Trends (COAST) study. CVD events were identified using ICD-codes from emergency department visits and inpatient hospitalizations. Age-adjusted incidence rates were expressed per 1,000 person-years, and median time between events, as well as the distribution of potential CVD risk factors were reported.

Results: The age-adjusted incidence rate for index CVD events was 25.24 (95% CI: 21.81, 28.67) for PWH, and 12.58 (95% CI: 12.49, 12.67) for PwoH. Among the 1,466 PWH and 66,274 PwoH who had an index event (the main cohort), the age-adjusted incidence rate for recurrent CVD events was 123.73 (95% CI: 85.75, 161.7) for PWH and 73.96 (95% CI: 72, 75.92) for PwoH. Time to recurrent CVD events was less, and recurrent events occurred at a younger age among PWH vs. controls (see Table).

Conclusion: Our community-led study indicates that PWH experience higher incidence of index and recurrent CVD events; however, PwoH had more hypertension and diabetes mellitus. PWH may have access to greater care and earlier CVD diagnoses at a younger age which may affect rates.

Supporting Document

Table: Participant characteristics and CVD risk factors of the main cohort that experienced an index CVD event.

Main Cohort (N=67,740)	PWH (N=1,466)	PWoH (N=66,274)
Male Female	82% 18%	53% 47%
Median age at index CVD event (Q1,Q3)	54 (46-62)	69 (57-79)
Median age at recurrent CVD event (Q1,Q3)	59 (50-66)	75 (65-83)
Median time from baseline to index event (days) (Q1,Q3)	2,986 (1,328-5,201)	4,658 (2,165-7,244)
Median time from index to recurrent event (days) (Q1,Q3)	304 (56-1,110)	445 (65-1,651)
Virally Suppressed at index event	71%	N/A
Diabetes diagnosis at index event	17%	20%
Hypertension diagnosis at index event	27%	50%

Hyperlipidemia diagnosis at index event	39%	29%
Note: CVD events included in our outcome definition were myocardial infarction, congestive heart failure, stroke, arrhythmia, and peripheral vascular disease.		

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The Future of PrEP is Now: Pilot testing a survey to assess 2SGBQM community needs and preferences for taking PrEP

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Background
The imminent arrival of injectable long-acting HIV-PrEP (LA-PrEP) in Canada necessitates re-imagining how new PrEP modalities are delivered. 'The Future of PrEP is Now' is a mixed-methods study including a survey of Two-Spirit, gay, bisexual, queer and other men who have sex with men (2SGBQM) needs and preferences for PrEP.

Methods
Individuals of any gender other than cis-woman who identify as 2SGBQM and report being HIV negative are eligible to complete the survey. Recruitment is through sexual health clinics and community-based organizations, and prioritizes Indigenous and/or Two-Spirit, Black, People of colour, Remote/rural, substance-using, and transgender and non-binary individuals. The survey contains 49 questions, including 12 ranked stated preference (SP) questions about preferred PrEP formulations, settings, healthcare provider types, and modalities of assessments (online, in-person, etc.). We report on the survey pilot-testing, which entailed a Research Assistant (RA) asking 8 verbal questions on Zoom to assess survey length and understandability.

Results
In the first 18 days, we enrolled 7 ethnically diverse cisgender gay men with median (IQR) age of 33 (33,38) years. Participants spent a median of 28 minutes (21.5,35.5) completing the survey. 57% of participants (n=4) self-rated as having medium knowledge of LA-PrEP, with 29% and 14% reporting low and high self-rated knowledge, respectively. All participants correctly observed and comprehended the structure and content of the SP questions. Participants rated the difficulty of the SP questions at a median of 3 (2,4.5) on a scale from 1 (easiest) to 10 (most difficult). In open-ended questions, participants reported preferences for PrEP modalities with longer dosing intervals and for virtual appointments, and a dislike of implants, but still considered a daily pill acceptable.

Conclusions
Pilot results will inform a self-administered survey format for completion by a large sample of 500 2SGBQM, to inform the equitable implementation of LA-PrEP in Canada.

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Sub-Saharan Africa, 2001-2018: Temporal Shifts in HIV-1 Pre-treatment Resistance Against Integrase Strand Transfer Inhibitors

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Sub-Saharan Africa contains an estimated 67% of the HIV-1 positive population. Integrase strand transfer inhibitors (INSTIs), comprised of Raltegravir, Elvitegravir, Dolutegravir, Bictegravir, and Cabotegravir, are recommended as part of first-line treatments against HIV-1 infection. There have been growing concerns surrounding HIV-1 pre-treatment drug resistance to various antiretrovirals. Although mutations associated with INSTI resistance are generally rare, the prevalence of pre-treatment INSTI resistance in sub-Saharan Africa is unknown. In this study, we compared the frequency and potency of resistance mutations across time and region of sub-Saharan Africa. INSTI resistance mutations from individual HIV-1 sequences were collected from the Stanford HIV-1 Drug Resistance Database. The inclusion criteria was that the virus have no exposure to INSTIs, be collected from patients in sub-Saharan Africa, and be collected between 2001-2018. Each sample was organized by region and isolate date. We found that the frequency of pre-treatment resistance mutations were low, ranging from 0% to 1.31%. During most time periods, the West region experienced the greatest frequency of both major and minor INSTI resistance mutations. Pre-treatment resistance, which considers both the frequency and potency of major resistance mutations, was greatest against Elvitegravir across all regions and times. Similarly, the least pre-treatment resistance was detected against Dolutegravir and Bictegravir. However, pre-treatment Dolutegravir and Bictegravir resistance is greater in the South than in other regions, where it demonstrates a prolonged peak between 2013-2018. Interestingly, high resistance against Elvitegravir is primarily caused by the potency rather than frequency of major resistance mutations. Low pre-treatment resistance against Dolutegravir and Bictegravir corresponds to both a low frequency and potency of major resistance mutations. This study provides support for Dolutegravir scale-up efforts in sub-Saharan Africa. However, it also demonstrates the regional heterogeneity in pretreatment resistance and the importance of monitoring on a regional or national basis.

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Determinants of effective interventions for HIV prevention, treatment, and care to address inequitable HIV outcomes among Black Women of African Descent (BWAD) in High-Income Countries: A Systematic review.

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Background: In High-Income Countries (HICs) HIV/AIDS has been continuing to disproportionally affect racialized communities such as Black Women of African Descent (BWAD). Despite the multiple efforts, evidence is limited on the effectiveness of HIV interventions to address the HIV outcomes inequalities among BWAD. This paper seeks to examine determinants of effective HIV related interventions to improve HIV outcomes among BWAD in HICs.

Methods: A systematic review of eligible articles was conducted using Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) guidelines. A comprehensive search of the literature was made in MEDLINE® ALL (Ovid), Embase (Ovid), CINAHL (EBSCO Host), and Global Health (Ovid). We searched studies in English from 1980–2023. The study team independently reviewed the illegibility criteria of the articles. Articles reported on determinants of effective interventions for HIV prevention, treatment, and care among BWAD in HICs were included. Articles that met the inclusion criteria were appraised using the Joanna Briggs Instrument.

Result: Using socio-ecological framework (SEF), and the thematic mapping process, we identified the determinants of effective interventions to improve HIV outcomes among BWAD in HICs at 4 levels: individual/BWAD, interpersonal, community and systemic/health system. Themes are currently being finalized and will be ready for CAHR conference presentation in April. These will address the multilevel effectiveness factors of HIV prevention, treatment, and care including HIV-knowledge and testing, critical health and racial literacy through innovative ACB community-based health promoters.

Conclusion and policy implications: Tailored interventions are needed to address inequities in HIV outcomes that disproportionally impact BWAD in HICs. Tackling the multilevel determinants of the effectiveness of BWAD-focused HIV interventions using SEF is critical to reducing the burden of the HIV disease and low health outcomes among BWAD.
The SEF can provide a lens of understanding diverse context and equity-driven policy and practice to address inequitable HIV outcomes.

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HIV Pre-Exposure Prophylaxis Medication Persistence in a Population-Level Program in British Columbia

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Background:
Publicly-funded, centrally-distributed HIV PrEP with emtricitabine-tenofovir has been available in British Columbia (BC) since 1-Jan-2018. We utilized longitudinal prescription data to evaluate PrEP persistence amongst provincial PrEP program participants.

Methods:
PrEP participants dispensed ≥1 PrEP prescription between 1-Jan-2018 and 30-Jun-2022 with ≥1 year follow-up opportunity were included. Baseline demographics were described, and PrEP persistence characterized by 1, 2 or ≥3 prescriptions. Between-group comparisons were made using Chi-square and Kruskal-Wallis Tests. A multinomial logistic model was used to obtain the adjusted odds ratio (aOR) comparing demographic and clinical variables amongst PrEP persistence groups (2 and ≥3 prescriptions vs. 1).

Results:
Of 9375 participants, 80% persisted with ≥3 PrEP prescriptions, 11% received 2, and 9% had only 1. Groups differed in baseline characteristics (Table). Significant differences in the odds of PrEP persisting ≥3 vs. 1 prescription was observed for several subgroups: age category ≤28 years (Ref. >48 years) (aOR 0.67 [95% CI, 0.53-0.83]); gender cis-women (Ref. cis-men) (aOR 0.22 [0.12-0.40]); trans-women (aOR 0.30 [0.19-0.46]); trans-men (aOR 0.41 [0.19-0.86]); no prior PrEP (Ref. prior PrEP) (aOR 0.72 [0.56-0.92]); PrEP mailed (Ref. central pharmacy pick-up) (aOR 0.64 [0.54-0.75]); prescribed on-demand PrEP (Ref. daily PrEP) (aOR 3.30 [1.99-5.47]); and HIRI-MSM score ≥25 (Ref.10-24) (aOR 1.41 [1.15-1.73]).

Conclusions:
In BC's PrEP program, 80% of participants demonstrated high PrEP prescription persistence. Persistence was associated with a higher HIRI-MSM score, and being prescribed on-demand PrEP. Support may be warranted for younger, non-cis-men starting PrEP, and those receiving PrEP medication remotely.

Supporting Document

Table: BC PrEP participant characteristics by PrEP persistence (January 1, 2018 to June 30, 2022)

	Overall (N=9375)	Dispensed once (N=869)	Dispensed twice (N=986)	Dispensed 3 or more (N=7520)	p-value
Variables	**n (%)**	**n (%)**	**n (%)**	**n (%)**	
Age (years)					<.0001
≤28	3157 (33.7)	371 (42.7)	421 (42.7)	2365 (31.5)	
29-40	3779 (40.3)	299 (34.4)	362 (36.7)	3118 (41.5)	
41-48	984 (10.5)	71 (8.2)	107 (10.9)	806 (10.7)	
>48	1455 (15.5)	128 (14.7)	96 (9.7)	1231 (16.4)	
Gender Identity					<.0001
Cisgender man	9097 (97.0)	798 (91.8)	946 (95.9)	7353 (97.8)	
Cisgender woman	85 (0.9)	29 (3.3)	13 (1.3)	43 (0.6)	
Transgender woman	121 (1.3)	29 (3.3)	19 (1.9)	73 (1.0)	

Transgender man	45 (0.5)	<10 (<1.2)	<10 (<1.0)	30 (0.4)	
Other/unspecified	27 (0.3)	<5 (<0.6)	<5 (<0.5)	21 (0.3)	
Client residence					<.0001
Vancouver	5133 (54.8)	395 (45.5)	473 (48.0)	4265 (56.7)	
Greater Vancouver (except Van.)	2338 (24.9)	236 (27.2)	261 (26.5)	1841 (24.5)	
Outside Greater Vancouver	1879 (20.0)	230 (26.5)	247 (25.1)	1402 (18.6)	
Unknown	25 (0.3)	8 (0.9)	5 (0.5)	12 (0.2)	
Pick-up site					<.0001
Central pharmacy	7188 (76.7)	584 (67.2)	693 (70.3)	5911 (78.6)	
Mail out	2187 (23.3)	285 (32.8)	293 (29.7)	1609 (21.4)	
HIRI-MSM score					<.0001
10-24	7124 (76.0)	667 (76.8)	750 (76.1)	5707 (75.9)	
≥25	1753 (18.7)	130 (15.0)	178 (18.1)	1445 (19.2)	
Not applicable	498 (5.3)	72 (8.3)	58 (5.9)	368 (4.9)	
Ever prescribed on-demand PrEP*					<.0001
No	8807 (93.9)	852 (98.0)	950 (96.3)	7005 (93.2)	
Yes	568 (6.1)	17 (2.0)	36 (3.7)	515 (6.8)	
Prior PrEP use					<.0001
No	7917 (84.4)	762 (87.7)	854 (86.6)	6301 (83.8)	
Yes	1234 (13.2)	75 (8.6)	100 (10.1)	1059 (14.1)	
Unknown	224 (2.4)	32 (3.7)	32 (3.2)	160 (2.1)	
Year of first PrEP dispensation					<.0001
2018	3186 (34.0)	139 (16.0)	195 (19.8)	2852 (37.9)	
2019	2244 (23.9)	179 (20.6)	255 (25.9)	1810 (24.1)	
2020	1297 (13.8)	169 (19.4)	131 (13.3)	997 (13.3)	
2021	1594 (17.0)	227 (26.1)	241 (24.4)	1126 (15.0)	
2022	1054 (11.2)	155 (17.8)	164 (16.6)	735 (9.8)	

PrEP, Pre-Exposure Prophylaxis; HIRI-MSM, HIV incidence risk index score for men who have sex with men.
*Formally prescribed on-demand PrEP.
Some variable cells have been masked for privacy reasons. Study follow-up until June 30, 2023.

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Sex Differences in Hospitalization Rates Among People With and Without HIV in British Columbia

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Objectives:
We assessed sex differences in hospitalization rates among people with HIV (PWH) and people without HIV (PWoH) in British Columbia (BC).

Methods:
PWH and a 10% random sample of PwoH in BC aged ≥19 were followed from 04/01/2002 to 03/31/2020, using linked administrative data from the Comparative Outcomes and Service Utilization Trends (COAST) study. All-cause hospitalizations were identified using ICD-codes. Using Poisson regression, we modelled the association between sex, HIV-status, their interaction, and hospitalization rates adjusting for confounders.

Results:
We analyzed 12,635 PWH (17.81% females) and 548,992 PwoH (49.34% females) with 462,627 hospitalizations. Age-adjusted hospitalization rates per 100 person-years were highest among females (incidence rate [IR] 34.25, 95% CI:33.02-35.49), followed by males with HIV (IR 21.49, 95% CI:21.04-21.94), and females and males without HIV (IR 7.10, 95% CI:7.07-7.13 and 7.06, 95% CI:7.03-7.09, respectively). Adjusted for socio-structural factors, being male (RR 1.92) or female with HIV (RR 2.66) was significantly associated with a higher hospitalization rate compared to males without HIV (Table, Model 1). Among PWH, additionally adjusting for HIV- and disease-related factors, female sex remained significantly associated with a higher hospitalization rate (Table, Model 2a-c).

Conclusion:
We found a higher hospitalization rate among PWH than PwoH in BC, with the highest rate among females with HIV. This could, in part, be explained by socio-structural and health-related factors. These findings underscore the necessity for further investigation into the factors contributing to disparities and emphasize the importance of addressing social determinants of health to enhance health outcomes for women with HIV.

Supporting Document

Table: Poisson regression models estimating the relationship between hospitalization rates, sex, and HIV status adjusted for confounding variables.

Model 1	**HIV status*Sex Interaction Model for PWH and PWoH**	
	Adjusted rate ratio	95% CI
Males without HIV (ref)	1.00	-
Females without HIV	1.07	1.05, 1.08
Males with HIV	1.92	1.85, 2.00
Females with HIV	2.66	2.49, 2.85
Adjusted for rurality, neighbourhood level social and material deprivation, living in Downtown Eastside neighbourhood in Vancouver (DTES), and substance use[1]		
Model 2a, b, c	**Hospitalization rates and sex, for PWH**	
	Model 2a, unadjusted rate ratio	95% CI
Males (ref)	1.00	-
Females	1.78	1.64,1.93
	Model 2b, adjusted ratio ratio*	95% CI
Males (ref)	1.00	-

Females	1.29	1.20,1.39
*Adjusted for rurality, neighbourhood level social and material deprivation, living in DTES, and substance use[1]		
	Model 2c, adjusted ratio ratio**	95% CI
Males (ref)	1.00	-
Females	1.23	1.14, 1.33
**Adjusted for rurality, neighbourhood level social and material deprivation, living in DTES, substance use, CD4 count, Hepatitis C coinfection, Viral Load <200 copies/mL, and Charlson Comorbidity Index[1]		
[1]Variables are updated to the time of hospitalization for people with hospitalizations and to the time at end of follow-up for people without hospitalizations.		

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Adoption and Implementation of Injectable ART at Specialized HIV Clinics in Ontario

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Background
Long-acting cabotegravir/rilpivirine (CAB/RPV-LA) is the first injectable regimen for maintenance of HIV treatment, with benefits over oral antiretroviral therapy (ART) related to adherence, convenience and privacy. New medical technologies are often met with hesitancy in adoption and implementation challenges. As part of a larger study using the RE-AIM implementation framework, we surveyed healthcare professionals at specialized HIV clinics in Ontario to assess CAB/RPV-LA Adoption and Implementation.

Methods
We conducted an 18-question, anonymous, electronic survey of physicians, nurses, and pharmacists at the Ontario HIV Clinics Network (OCN). Targeting at least one participant from each of the 21 clinics, the survey covered three domains: Clinic/Respondent Details, Clinical Practices related to CAB/RPV-LA, and Barriers/Facilitators to CAB/RPV-LA implementation at the patient-, provider-, and settings-levels. The survey was active between 12/2022-12/2023. We averaged clinic-level responses and reported median (interquartile range) for clinic-level variables and weighted averages for patient-level variables.

Results
We received 27 responses from 16/21 clinics. Respondents were 45% nurses (n=12), 22% pharmacists (n=12), and 33% physicians (n=9). Clinics were staffed by a median (IQR) of 4 (2-7) clinicians with 20 (7.5-30) years of HIV experience, and cared for 637 (170-1100) patients. An estimated 63% of clinicians prescribed CAB/RPV-LA. Respondents estimated that 3.2% of patients receive CAB/RPV-LA, of whom 91% followed an 8-weekly dosing schedule and 60% received injections off-site (weighted averages). Most of respondents' reported CAB/RPV-LA patients (244/329=74%) attended clinics in Toronto and Ottawa, where they accounted for 4% (vs. 2% elsewhere) of patients. Common implementation challenges were related to the logistics of administration, injection hesitancy and concerns about risk of resistance for non-adherent patients.

Conclusion
Initial findings shows concentrated CAB/RPV-LA usage in Toronto and Ottawa, with most users following an 8-weekly schedule and opting for off-site injections. Addressing the systems-level barriers to administration might improve uptake of CAB/RPV-LA, particularly in sub-urban and rural Ontario.

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HIV epidemiology in the Prairie Provinces between 1985 – 2022

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Introduction: Despite the overall decrease in Canadian HIV incidence from 10.0 people newly diagnosed per 100,000 population in 1995 to 4.7 in 2022, a noteworthy surge in HIV cases within the prairie provinces of Manitoba, Saskatchewan, and Alberta underscore the necessity for region-specific interventions and tailored public health strategies. This study aims to investigate the evolution of the HIV epidemiology in the Canadian prairie provinces since 1985.

Methods: We conducted an ecological study using publicly available data released by the Governments of Manitoba, Saskatchewan, and Alberta, spanning the timeline from the first reported cases of HIV diagnosis up to the latest available information. We observed the general HIV incidence, as well as the proportion of people diagnosed according to sex.

Results: Despite an overall reduction in Canadian HIV incidence over time the prairie provinces exhibited alarming increases, with HIV incidence rates up to four times higher than the national average in 2022 Newly reported cases rose from 0.3 people per 100,000 population in 1985 to 18.9 in 2022 in Manitoba, 1.7 in 1985 to 20.1 in 2021 in Saskatchewan, and 4.9 to 6.3 in 2022 in Alberta. A notable increase over time was seen among women in Manitoba (5.7% in 1987 to 44.3% in 2021) and Saskatchewan (30.2% in 1997 to 47.2% in 2021), compare to Canada (17.7% in 1995 to 28.6% in 2020).

Conclusion: This study highlights key differences in the rates of HIV and affected populations in the Canadian prairie provinces when compared to the rest of Canada. To stem the rapid rise in cases, urgent and targeted strategies are required from policymakers, public health, and healthcare professionals.

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Overdose-Related Hospitalizations among People with HIV in Canada

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BACKGROUND
We examined overdose-related hospitalizations among people living with HIV (PLWH) across Canadian provinces.

METHODS
We used data from the Canadian HIV healthcare use study (CHESS). This study contains hospitalization records for adults (≥20 years) with HIV in Canada who had at least one hospitalization between 2006-2020 during which HIV was documented in any of the discharge diagnosis fields. A hospitalization was classified as overdose-related if any of the following fields in a hospitalization record—most responsible diagnosis, pre-admission comorbidity, post-admission comorbidity, or service transfer diagnosis—contained an ICD-10-CA code indicative of drug poisoning. We estimated the rates of opioid, stimulant, and total overdose hospitalizations, using publicly available population estimates of PLWH by province to calculate person-years of follow-up between 01/04/2015-31/03/2020. Rate ratios were calculated using the hospitalization rates for Canada as the denominator.

RESULTS
We identified 855 overdose-related hospitalizations, of which 61.5% (526) were opioid-related and 29.4% (251) were stimulant-related. The highest rates of opioid, stimulant, and overall overdose hospitalizations among PWH were observed in Saskatchewan (Table 1). Higher rates of opioid, stimulant, and total overdose hospitalizations were also seen in the western-most provinces (British Columbia, Alberta, and Saskatchewan) compared to the national averages.

CONCLUSION
Our findings demonstrated that rates of opioid, stimulant, and overall overdose hospitalizations among PWH were highest in the western-most provinces. The rates may even be higher because our study did not account for hospitalizations of PWH who never had at least one HIV-related record in any of their previous hospitalizations throughout the study period.

Supporting Document

TABLE 1: Hospitalization rates for all overdose, opioid, and stimulant overdose among PLWH for the between April 1, 2015, and March 31, 2020.

Province	Rate per 1000 person years (all overdose hospitalizations)	Rate Ratio	Rate per 1000 person years (opioid overdose hospitalizations)	Rate Ratio	Rate per 1000 person years (stimulant overdose hospitalization)	Rate Ratio
Canada	2.87	**1.00**	1.76	**1.00**	0.84	**1.00**
British Columbia	3.27	**1.14**(0.96 - 1.34)	2.46	**1.40**(1.15 -1.70)	0.75	**0.89**(0.63 - 1.25)
Alberta	3.89	**1.36**(1.13 - 1.62)	2.51	**1.42**(1.13 - 1.78)	1.05	**1.25**(0.86 - 1.76)
Saskatchewan	10.16	**3.54**(2.92 - 4.27)	7.70	**4.37**(3.48 - 5.43)	3.10	**3.68**(2.55 - 5.17)

Manitoba	1.55	**0.54**(0.32 - 0.85)	0.41	**0.23**(0.07 - 0.54)	0.49	**0.58**(0.21 - 1.29)
Ontario	3.25	**1.13**(0.99 - 1.29)	1.85	**1.05**(0.88 - 1.24)	1.18	**1.40**(1.11 - 1.76)
Quebec	0.82	**0.29**(0.22 - 0.36)	0.24	**0.14**(0.09 - 0.21)	0.18	**0.21**(0.12 - 0.36)

Sources of HIV estimates:

- **Canada:** *HIV Prevalence - Estimated number of people living with HIV in Canada, Text description(Figure 5),* https://www.canada.ca/en/public-health/services/publications/diseases-conditions/estimates-hiv-incidence-prevalence-canada-meeting-90-90-90-targets-2020.html#a3
- **British Columbia:** *HIV/AIDS Annual Report***:** http://www.bccdc.ca/health-professionals/data-reports/hiv-aids-reports#1728
- **Alberta:** *Alberta sexually transmitted infections and HIV*: https://open.alberta.ca/publications/9781460145449#summary
- **Saskatchewan:** *HIV AIDS Annual Reports and Infographics*, https://publications.saskatchewan.ca/#/products/121486
- **Manitoba:** *Annual Reports, Statistical Update on HIV/AIDS*, https://www.gov.mb.ca/health/publichealth/surveillance/hivaids/index.html
- **Ontario**: *HIV care cascade in Ontario (page 33)* https://www.ohesi.ca/wp-content/uploads/2022/01/2018-HIV-care-cascade-Ontario-report.pdf
- **Quebec:** https://www.inspq.qc.ca/publications?title=vih&committee=All&type_pub=All&collection=All&lang1%5B%5D=fr]

Note: Data for Yukon, the Northwest Territories, Nunavut, New Brunswick, Prince Edward Island, Nova Scotia, and Newfoundland and Labrador were not reported because overdose counts were less than 10.

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Identifying social-structural factors associated with eviction in a cohort of women living with HIV/AIDS in Vancouver, Canada

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Background: Housing instability is a social determinant of health that influences the wellbeing of women living with HIV(WLWH), who may be particularly at risk due to gendered disparities in housing equity. Eviction is an extreme form of housing instability; however, there is little research on eviction among WLWH, despite high prevalence of housing instability. Our study therefore examined the associations between social-structural factors and eviction amongst WLWH in Metro Vancouver.

Methods: Data was drawn from the Sexual Health & HIV/AIDS Longitudinal Women's Needs Assessment (SHAWNA), a longitudinal community-based cohort study of women living with and accessing HIV care in Metro Vancouver (2014-2022). Bivariate and multivariable logistic regression models, with generalized estimating equations for repeated measures over time, were used to identify associations between social-structural factors and eviction, all self-reported in the last six months. Backwards model selection using AIC was used to select the final model. Adjusted odds ratios (AOR) and 95% confidence intervals are reported.

Results: Overall, 344 women contributed 2309 observations over the study period; 12.5% reported a minoritized gender; 55.9% reported being Indigenous, 34.6% White, and 9.9% otherwise racialized/women of colour. During the study, 13.7% reported eviction (n=47) and of these, 38% reported >one eviction in the study period (n=18). In the final multivariable logistic regression with GEE, gender minority identities [AOR:2.24[1.11-4.51], removal from parents as a child [AOR:2.06[1.05-4.03], and heightened HIV stigma [AOR:1.07[1.03-1.10], were significantly associated with eviction.

Conclusion: Our study identified key social-structural factors associated with greater odds of eviction, including gender minority identity, removal from parents as a child, and HIV stigma. Interventions are needed to address eviction, including short-term approaches such as free legal advice for those facing unfair notices, and longer-term policies for the creation of low-barrier, affordable housing tailored for and with WLWH who may be at elevated eviction risk.

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Sex differences in COVID-19 vaccine confidence in People with HIV in Canada

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Background: We previously reported that uptake of COVID-19 vaccine was similar by sex and gender identity in an online survey of PLWH in Canada during winter 2022 (AIDS and Behav 2023). Here, we examined vaccine attitudes and beliefs based on biological sex.

Methods: Between February-May 2022, PLWH across Canada were recruited via social media and community-based organizations to complete an online survey consisting of a modified Vaccine Hesitancy Scale questionnaire with items from the National Advisory Committee on Immunization Acceptability Matrix. Unadjusted proportions were used to summarize attitudes and beliefs, stratified by sex.

Results: Of 259 PWH, 27% were females and 73% males. Median age (SD) was 47 ±14 years and 53% had HIV ≥ 15 years. More males than females believed that COVID-19 vaccination was: 1) important for his/her own health (86 vs 70%, *p<0.05); 2) a good way to protect themselves from infection (86 vs 67%, **p=0.01; 3) that getting the COVID-19 vaccine was important for the health of others in his/her community (90 male vs 78% female, *p<0.05); 4) believed recommendations by their doctor/health care provider about COVID-19 vaccines (88 vs 78%, *p<0.05); 5) that information about COVID-19 vaccines from public health officials was reliable and trustworthy (75 vs 55%, *p<0.05); and 6) that all COVID-19 vaccines offered by government programs in their communities were important for good health (87 vs 69%, **p=0.01).

Conclusions: Among PLWH, males more often than females believed that COVID-19 vaccines had health benefits at both the personal and societal level and that recommendations made by their doctor/health care provider and public health officials is reliable and trustworthy. These sex differences may be confounded by other factors (e.g., race/ethnicity, sexual orientation and other social determinants of health). Educational interventions targeted toward females living with HIV are especially needed to increase confidence towards vaccination.

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Infective Endocarditis in Women Who Inject Drugs

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Importance: In the USA and Canada women make up approximately 1/3 of people who inject drugs (PWID), but the clinical characteristics and outcomes of intravenous drug use complications in women are poorly described.

Objective: To identify clinical characteristics and outcomes of infective endocarditis (IE) in women who inject drugs (WWID).

Design: A retrospective cohort study of PWID with modified Dukes criteria definite IE admitted between April 5, 2007 and March 15 2018. Data was analyzed between June 1, 2023 and Sept 15, 2023. Descriptive analyses were conducted for baseline characteristics at time of first hospital admission and stratified by patient sex. Multivariable time-dependent Cox proportional hazards regression analyses were conducted for variables of clinical significance to evaluate one-year and five-year mortality. Fully conditional specification was used to handle missing data.

Setting: Five tertiary care hospitals in London, Ontario and Regina, Saskatchewan, Canada.

Measures: Difference in one-year and five-year survival probability between men and women PWID with IE.

Results: Women made up 51.2% (220/430) of PWID with IE and 30.4% (101/332) of non-PWID with IE. Women who inject drugs (WWID) with IE were younger than men (P<.001), and 5.0% were pregnant at admission. Women were also more likely to have right-sided IE (P<.001). WWID with IE living in urban areas had a significantly higher rate of five-year mortality than those in rural areas (P=.01). Addictions counselling was associated with lower mortality (P<.001), and mortality was lower in centres with inpatient addiction counselling when compared to those offering only post-discharge referrals (P<.001).

Conclusions and Relevance: Despite making up a minority of PWID, women are overrepresented amongst cohorts of PWID with IE. The reasons for women's increased susceptibility to IE needs further study. Inpatient addiction support services, reproductive counselling, and enhanced social support of WWID living in urban areas need to be prioritized.

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From the Margins to the Center: Tackling Stigma and Poor Mental Wellbeing as the Key Global Barriers to Living Well with HIV, a Multinational and Multi-community Position

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Introduction: The global HIV Community Council (HCC), a group of ten leaders of diverse, under-represented groups of people with HIV, prioritized stigma, and poor mental wellbeing as critical barriers to successfully living well with HIV. The HCC has developed a set of recommendations to address these critical barriers.

Description: The HCC achieved consensus on six global recommendations through offline and online meetings, a comprehensive literature review, and the sharing of examples of successful practical solutions to address stigma and poor mental wellbeing. The HCC selected the two recommendations that, based on their experience, would have the greatest impact, and provided guidance on their implementation.

Lessons learned: To address HIV-related stigma, the HCC recommended harnessing the ‘power of one’s own story’ using incubator programs, that provide access to mentorship and collaboration opportunities, to disseminate engaging, culturally appropriate, and relatable stories that challenge stigma across various settings, including social media. Supported by talent scouts to identify potential partners, build relationships, and facilitate collaborations between influencers and brands or organizations, these programs provide influencers with the resources and support to create and share accurate and culturally competent information about HIV across community-appropriate platforms. To address mental wellbeing, the HCC recommends partnering with expert organizations to equip leaders of peer-support groups with Mental Health First Aid training to enable staff of community organizations to identify and screen for mental health needs such as anxiety and depression and connect individuals with mental health services in crisis and non-crisis situations.

Recommendations: The HCC calls for action to implement community-endorsed, culturally appropriate, and practical solutions to tackle stigma and mental wellbeing and improve HIV care in a way that reflects the unique local lens of each community.

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Burdens Upon Burdens: Agonies of Indigenous Women living with HIV in Northern BC

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As Frontline Service Providers (FSPs), working with the people living with HIV (PLWHIV) in Northern British Columbia (BC), we observed the majority of PLWHIV are Indigenous women. The plight of these indicate that there is a need to address deficiencies in the delivery of supportive services and health care in rural and remote parts of Northern BC. The purpose of this qualitative study is to develop a greater understanding of the burdens, oppressions, and discriminations experienced by Indigenous women due to their HIV status and geographic locations. Based on our hypothesis, there is a lingering difference between the demography of women living with HIV (WLHIV) in urban/metropolitan and rural/northern localities. Indigenous women living with HIV can be disproportionately affected because of intersections of multiple forms of oppression, including racism, poverty and trauma. More adversely affected by mental health disorders are WLHIV who use substances due to the inadequate services in healthcare and support services. The methodology of this research will be mainly based on auto-ethnography, as a result of our self-reflections on our firsthand experiences as FSPs to PLWHIV in Northern BC. We also intend to use close-ended surveys involving WLHIV. All of the methods used in this research will be based on the feminist principals and methodologies. The findings are organized around four themes; stigma, oppression, poverty and inadequate services, which are reflected in the close-ended surveys and auto-ethnographic analysis. It is anticipated that the findings from the study will be used to inform provincial-level decision making regarding the development and delivery of appropriate, responsive, and accessible policies and programs that will support Indigenous women who are living with HIV/AIDS in Northern BC. This study also will be a platform for further research on WLHIV in rural and remote parts of Canada.

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A retrospective chart review and thematic analysis of patients seeking mpox vaccination during the initial outbreak in 2022-2023: Evaluation of access, motivations, and stigma

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Background: Mpox was identified in many non-endemic countries, including Canada, in of May 2022. In response to the increase in cases in Canada, and more specifically the province of Ontario, the vaccine Imvamune was rolled out. Eligibility was governed by provincial health authorities, and the response varied greatly by region. In addition, because of the nature of the language used to describe those eligible, there was potential for harm. The aim of this study was to explore the experiences of Mpox vaccine recipients.

Methods: As a part of routine care, a clinic in downtown Toronto, began hosting Mpox immunizations clinics between July of 2022 and March of 2023 with a standard set of clinical intake questions. Following this period, we conducted a retrospective chart review of 113 Imvamune vaccine recipients. Both descriptive quantitative data and thematic qualitative analysis was completed.

Results: 113 patients received one or two doses of Imvamune between July 2022 and March 2023. The average age was 49 (range 17-78). Through descriptive thematic analysis, this study found the following recurrent themes mentioned by patients in the data set: 1) eligibility and motivations, 2) rollout and access, 3) mis/information in the media, 4) stigma and community support.

Conclusions: There is little research in Canada on Mpox vaccine rollout beyond epidemiologic and cohort information. Understanding the difficulties and stigma that were faced by vaccine recipients is crucial to ensure that when a public health initiative is facilitated, that past traumas are not replicated. This study provides valuable patient perspectives in how to improve ongoing rollout, as well as how a campaign that includes a sexual health component may be more sensitively considered in the future.

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The Social Structural Determinants of Health, Including HIV-Related Stigma Impacting the sub-Saharan African Migrant Women Living With HIV in Canada

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Introduction: There is paucity of research on social structural determinants of health (SSDoH) impacting sub-Saharan African women migrants living with HIV (SSAWMLH), a key population in Canada. Our research objective was to explore the SSDoH, including HIV-related stigma, and their influence on SSAMWLH in Canada, including participant's viewpoints on how to improve their health outcomes and social concerns.

Methods: Between December 2022 and June 2023, we applied an intersectional framework and community-based research (CBR) approach to engage SSAMWLH across British Columbia in photographic methods. We employed mobile phone cameras from 12 participants to generate images (average 8 images per participant) using a hybrid-mode of discussions within videoconference-mediated technology for our focus group discussions (average length of 86 minutes). Then, 9 of 12 participants additionally agreed to complete our photo-elimination semi-structured interviews (average length of 53 minutes). Photos and verbatim transcripts were analyzed in NVivo.

Results: We had 11 cisgender women and one transgender woman participant (n=12), who have lived with HIV for an average of 14 years. Half of the women were landed immigrants, more than 50% have lived over 10 years in Canada, and more than 90% of participants lived in Metro Vancouver. We identified the following themes: i) negative and positive experiences while linked to health and social services; ii) gendered experiences; iii) stigmatizing and discriminatory experiences; and iv) barriers and facilitators to use of HIV prevention efforts, including U=U.

Conclusion: Culturally responsive participatory photographic methods can promote interactions with disprivileged women, help to interpret their experiences of social structural determinants of health and HIV-related stigma. Fostering CBR principles and intersectionality (re)commit researchers to health equity that can progressively respond to and result in social transformation. Further, new multi-level knowledge is co-constructed that can (re)produce and (re)design community-based interventions to help destigmatize HIV in this distinct important community.

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Hard Time (Continued): An Analysis of Harm Reduction Programs within Canada's Provincial and Federal Prisons

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Background: People in prison are disproportionately affected by HIV and other STBBIs. This is, in part, the result of the criminalization of those who are already disproportionately affected by STBBIs, such a people who inject drugs. This is also, however, the result of inadequate healthcare services in prisons, distinct from that provided in the community.

Description: In 2007, the Legal Network published 'Hard Time: HIV and Hepatitis C Prevention Programming for Prisoners in Canada', analyzing harm reduction measures in prisons across Canada. The present study explores how those measures have evolved since. Between January and October 2023, the research team conducted interviews with 27 key informants, including people who have been incarcerated, community organizations, and prison staff, and identified and analyzed relevant policies.

Lessons Learned: The study revealed harm reduction policies and programs across federal, provincial, and territorial prisons in Canada, that vary widely in practice. In some prisons, practices mirror promising community efforts. In others, significant gaps remain, which are particularly harmful to Indigenous and other communities that are overrepresented in Canada's prisons. At the federal level, for instance, Correctional Services Canada has policies regarding Opioid Agonist Treatment (OAT), a Prison Needle Exchange Program, Overdose Prevention Services, naloxone, STBBI testing and treatment, safer sex materials, and Indigenous programming, with disparities in practice between institutions. At the provincial level, greater gaps and variations exist. Most provinces provide OAT, naloxone, STBBI testing and treatment, and Indigenous programming. In some provinces, such as Manitoba and Ontario, harm reduction practices are particularly limited.

Next Steps: The study revealed several promising practices to improve health outcomes, such as transferring the responsibility of healthcare in prison to provincial health ministries and offering timely STBBI testing to all upon entry into prison. These practices are key to providing comprehensive healthcare in prison, equivalent to the community.

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Towards Access for All: A Study of Low-Barrier, Harm Reduction, Violence Against Women Shelters in Canada

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Background: Violence against women (VAW) is the most pervasive health risk to women and gender-diverse people in Canada, particularly for certain communities, including Indigenous women and 2SLGBTQ+ individuals. Studies have repeatedly confirmed that those who experience violence are more likely to use drugs. Yet, in Canada, services for women and gender-diverse people fleeing violence are severely restricted for those who use drugs.

Description: The study examines policies and practices aimed at improving VAW shelter access to women and gender-diverse people who use drugs, based on desk research, community engagement, and a roundtable discussion. Specifically, in October 2023, the Legal Network conducted a roundtable with 22 representatives from 14 shelters across Canada. The shelters were selected based on their stated commitments to serving women and gender-diverse people who use drugs. The representatives included front-line staff, management, and people with experience living in shelters and/or using drugs.

Lessons Learned: An increasing number of VAW shelters have moved towards low-barrier, harm reduction models. Yet, gaps remain. Many provincial and territorial policies allow, or require, service refusal based on drug use. Even where women and gender-diverse people who use drugs are not denied access, several barriers restrict access. At the roundtable, participants identified the most pressing barriers as deeply entrenched stigma around drug use, shelter rules that punish drug use and related behaviours, harmful interactions with state authorities, and inconsistent and incomplete harm reduction measures.

Next Steps: The roundtable participants were united in calling for low-barrier VAW shelters centered on harm reduction. During the roundtable, participants shared their best and promising practices to enact low-barrier harm reduction models. Their practices centered on maintaining low-barrier admissions, creating flexible, participant-centered expectations (rather than rules), fostering a trusting environment, recognizing women's intersectional identities, and providing comprehensive, non-judgmental harm reduction supports.

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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.

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The Expansion of Supervised Consumption Services in Canada: Progress and Challenges

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Background
Canada has been experiencing a relentless overdose crisis since 2016. One response is increased access to supervised consumption services (SCS). In 2019, the HIV Legal Network (LN) published a report on SCS in Canada and concluded that there was an urgent need to remove legal and political barriers that prevented their expansion. In 2023, the LN took stock of the progress made in the past four years and remaining challenges.

Methodology
Literature review supplemented by 11 interviews with key informants. An advisory committee of three Canadian experts in SCS reviewed the report.

Results
SCS have expanded rapidly in recent years, from 2 sites in 2016 to more than 80 supervised consumption and overdose prevention sites by 2023 in 9 provinces and territories. SCSs take many forms: permanent or temporary services, and dedicated sites or integrated services. The range of services offered at sites has also diversified with greater access to peer assisted injection and drug testing services, for example. But access to SCS remains limited to certain provinces and urban centers and does not meet the crying need for supervised inhalation services. While the expansion of SCSs has been facilitated by more flexibility at the federal level around exemptions, certain provincial policies and legislation and lack of funding threaten and even prevent their implementation.

Conclusions
While Canada has the most SCS in the world, access to harm reduction and harm reduction services remains largely dependent on the political context. Legislative and regulatory reforms and funding are needed at both federal and provincial levels to safeguard the gains made and meet the needs of people who use drugs.

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Addressing Organizational Stigma: The Evolution of a Tool to Promote more Supportive and Inclusive Sexual Health, Harm Reduction and HIV/STBBI Services

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Background
Stigma continues to represent a major and persistent barrier to the access of safe, supportive and inclusive services for HIV/STBBI prevention, testing and treatment. In 2022, the Canadian Public Health Association (CPHA) and Centre for Sexuality (C4S) began scoping efforts to inform updates to its 2017 Organizational Assessment Tool for Sexually Transmitted and Blood-borne infections (STBBIs) and Stigma (the Tool), to keep pace with evolving understandings of HIV/STBBI stigma, its intersections with other forms of oppression, and opportunities for intervention within health and social service (HSS) organizations in Canada.

Methods
Initial scoping efforts included: four virtual community conversations involving 29 people with lived experience of STBBI stigma (fall 2022); a literature scan on promising practices for addressing stigma at an organizational level (fall 2022); an online survey of 73 HSS professionals exploring current efforts, attitudes, and facilitators/barriers toward addressing stigma (winter 2023). Based on findings, a new draft of indicators and actions for the updated Tool were developed and shared for feedback with ten individuals with personal and/or professional experience of STBBI stigma (fall 2023).

Results
Significant improvements were made to the tool to reflect the following emergent themes: 1) creating more robust mechanisms for feedback, accountability, follow-through and transparency; 2) deepening opportunities for people with lived/living experience to occupy roles of influence and decision-making; 3) reinforcing the importance of structural level advocacy and intervention; and 4) viewing stigma reduction interventions as supportive of staff/volunteers alongside service users.

Conclusions
HIV/STBBI stigma reduction is a priority for many HSS organizations, but operationalizing, actioning and resourcing improvements is an ongoing challenge. With new insights from community members, professionals, and academic and grey literature, the updated Tool (anticipated fall 2025) will support HSS organizations in Canada to identify areas for improvement and tangible actions toward safer, more supportive and inclusive HIV/STBBI services.

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Qualitative Analysis of Tele-Coaching Participants' Experiences in Physical Activity: Results from the Tex Study

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Objective: This study evaluated the impact of a 12-month online exercise program for HIV-positive adults. It combined live and recorded content with tele-coaching from Toronto Central YMCA, aiming to assess its effectiveness.

Methods: Using thematic analysis, the study investigated tele-coaching's influence on goal setting, mindset, and exercise adherence, considering COVID-19's impact. Participants included nine individuals (two cisgender females, one non-binary, six gay cisgender males) who were interviewed at start, mid-point, and 6-months after exercise intervention.

Results:
1. Goal-setting: Participants modified their initial exercise goals for greater realism and adaptability, with notable improvements in mindset, that is, showing a positive attitude shift towards physical activity, driven by personal challenges and motivations.
2. Accountability and Support: Consistent support from coaches and peers was essential for commitment and overcoming barriers like stigma and fatigue.
3. Technology and Convenience: While online resources and home-delivered equipment were appreciated, they didn't always increase usage.
4. Transitions and Intentions: Shifting from tele-coaching to independent exercise highlighted the need for self-motivation and coping with external factors.
6. Gender-specific Challenges: The program revealed extra hurdles for HIV-positive women, especially in balancing gender roles such as caring for others.
7. Complexities of Study Participation: The study's demands, like learning Fitbit usage and time management were challenging aspects of the intervention.

Conclusions and Recommendations: The study emphasizes the importance of mindset shifts and habit formation in exercise programs for HIV-positive people. Reducing stigma, both self-imposed and societal, and blending accessible exercise options with technology and flexible scheduling are key. This includes providing informative sessions to facilitate these changes.
Implications: Implications: The analysis revealing that people ageing with HIV encounter similar obstacles as older people with ongoing physical, cognitive, and stigmatized conditions underscores the need to adopt a comprehensive approach to disability and uphold disability justice in our physical intervention strategies.

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Considerations for Recruiting and Engaging Heterosexual-Identified Men who have Sex with Men: A Scoping Review

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Background: Engaging heterosexual-identified men who have sex with men (H-MSM) is a priority for HIV research, especially as they may engage in behaviors that increase risk for HIV. H-MSM have the tendency to conceal their sexual encounters with other men and are difficult to identify and recruit for research and practice. This scoping review synthesized literature to offer recommendations for engaging with H-MSM in HIV research.

Methods: Articles published since 2000 were retrieved from 13 databases. Two reviewers screened 3,617 titles and abstracts along with the full texts of 269 articles that passed the title and abstract screening. Ultimately, 160 articles were included in this study. Thematic analysis was employed whereby five independent coders each reviewed a selection of articles, then met to achieve consensus on themes related to recruitment considerations for H-MSM.

Results: The samples from each study were examined to provide an estimate of the percentage of heterosexual men that are H-MSM and to describe common recruitment strategies. Approximately 0.1-5.0% of heterosexual men are H-MSM. The most common sampling strategies included social media-based recruitment, snowball sampling, and venue-based recruitment from HIV clinics, parks, and gay bars. Further analyses revealed three themes related to recruitment considerations: locations of sexual encounters; cultural backgrounds; and engagement with health services. H-MSM reported meeting sexual partners at bars, in bathhouses, online, and other venues. H-MSM typically aim to remain invisible, prefer discreet health services, and avoid gay-specific venues.

Conclusions: This presentation will highlight strategies to engage H-MSM in research and practice. Future researchers and practitioners, for instance, should consider recruiting and targeting H-MSM from multiple platforms and venues. They should offer heightened levels of privacy and avoid the use of stereotypical caricatures of gay and bisexual men in advertisements. These steps may facilitate H-MSM research engagement, leading to more knowledge of the population.

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The HIV Case Management Acuity Assessment Tool: HICMAAT

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Background
People living with HIV have many competing concerns that prevent them from getting and using care. These issues are particularly pronounced in Black people living with HIV in Ontario. Case management is an approach to HIV care that considers all these issues, in addition to medical care. Black people living with HIV have different care needs, therefore their cases must be managed differently.

Objective
To develop and test a tool for identifying and 301ategorizing case management needs among Black people living with HIV in Ontario.

Methods
We employed a sequential exploratory mixed methods design to develop the HIV Case Management Acuity Assessment tool (HICMAAT). This is a two-phase design that begins with a qualitative phase followed by a quantitative phase. Using purposive sampling we recruited eligible participants who were asked about the relevance of 22 potential items in assessing the HIV case management acuity of a Black person living with HIV. We completed a thematic analysis of the interview transcripts and used those themes to generate variables for our quantitative phase.

Results
We conducted 27 qualitative interviews.The top 10 items reported by participants were: culture or language; mental health; support system; medication adherence; health insurance or medical care coverage; financial; experiences of racism and unfair treatment; experiences of HIV-related stigma, domestic violence or intimate partner violence and immigration. Participants identified family situation (e.g. family separation, dependents) and transitional care (whether the individual is transitioning from youth to adult care) as additional items.

Conclusions
Qualitative data suggests 24 items are relevant to the case management of Black people with HIV. These items will be ratified in the quantitative portion of this work and used to inform the development of HICMAAT.

Limitations
All interviews were conducted virtually due to COVID-19 which may have limited the participation of potential participants.

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Arts-based approaches to sexual consent education among precariously housed youth in Toronto, Canada

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Background:
Learning about sexual consent can be empowering, rights affirming and improve youth sexual health. Arts-based approaches have shown promise in sexual health programming with groups at higher risk of HIV acquisition, yet knowledge gaps exist among their applicability to sexual consent education, and with youth experiencing homelessness.

Method:
Focus group discussions (FDG) and in-depth, semi-structured interviews with precariously housed youth aged 18-24 in Toronto, Canada in 2021/2022 (n=13 youth; n=3 FGDs; n=5 interviews). FGD and in-depth, semi-structured interviews (n=10 participants; n=1 FGD; n=4 interviews) with youth workers with expertise in arts-based programming with precariously housed youth.

Participants provided feedback on two forms of art-based consent education: (1) poetry-based approaches; (2) comic scenarios: a visual tool designed as part of a sexual consent education programme for school-going youth. Both approaches were assessed for their likeability, relatability and applicability to the sexual consent education needs of precariously housed youth.

Findings and Discussion:
In discussing comic scenarios, youth participants stressed the importance of space and place in consent programming for precariously housed youth. While a comic depicting a house party was considered relevant and appropriate, participants further suggested other placed-based scenarios relevant to precariously housed youth to include cars and public spaces (e.g., under a bridge). Scenarios addressing digital technologies and consent (e.g., picture sharing, sexting) were considered highly applicable. Youth participants also suggested that alcohol, marijuana and illegal drugs were an oft-present feature of place-based sexual violence and should feature in sexual consent programming.

Second, poetry was considered an empowering and accessible medium by all participants, who suggested it focus not only on sexual consent education but also healing, survivorship and solidarity. Third, findings from youth workers highlight the need for dedicated programming for 2SLGBTQ+ precariously housed youth, given their exclusion from largely heterosexual- and cisgender- focused sexual consent programming.

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Gay, Bisexual and Queer Men's Understanding of Personal HIV Risk and its Impact on PrEP Use in British Columbia

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In 2018, British Columbia began providing HIV pre-exposure prophylaxis (PrEP) for those who meet clinical eligibility criteria at no direct cost to participants. Provincial clinical guidelines provide guidance on daily and on-demand dose schedules for gay, bisexual, queer and other men who have sex with men (GBQm). We sought to understand why GBQm defined as high risk for acquiring HIV, according to clinical guidelines, do not access PrEP.

Between January and March 2023, we conducted targeted recruitment of Momentum II/Engage Study participants (sexually active GBQm aged >16) in Vancouver who were clinically eligible for PrEP based on survey responses but reported never using PrEP. We conducted semi-structured interviews in English and focused on participants perspectives on PrEP, HIV risk, healthcare preferences, and their openness to different PrEP modalities. The data were coded and analyzed using thematic analysis.

We recruited 18 GBQm between the ages of 23 and 73 years old. Participants identified sexually as gay or queer and one gender identified as nonbinary. Participants identified ethnoracially as European, Canadian, or Asian. Most participants did not see their sexual behaviours as being high risk for acquiring HIV. Participants identified short time periods of risk which they weighed against their concerns about the perceived risk of long-term side effects of daily PrEP use. While some participants were aware of on demand dosing, many reported no knowledge about it. Once on demand dosing was explained during the interview, many felt It was a valuable strategy to prevent HIV acquisition during periods of higher risk.

Our research has identified a gap between clinical guidelines and the ways that GBQm understand HIV risk and prevention. This highlights the importance of multiple PrEP modalities within prescriber and health promotion practices to address the pragmatic ways that GBQm navigate sex and HIV in their lives.

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Experiences of HIV Stigma Among a Cohort of People Living with HIV in Ontario Canada

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Background: HIV stigma is a barrier to testing, treatment, and an optimal life for people living with HIV (PLHIV). In order to better understand experiences of stigma for people living with HIV in Ontario and its relationship to health outcomes, we asked PLHIV about stigma and examined specific covariates in the OHTN Cohort Study (OCS).

Methods: The OCS is a cohort of PLHIV receiving care in 15 clinics across Ontario. Participants are administered an annual questionnaire, including a standardized HIV stigma tool (perceived and experienced). This sample includes 2,652 participants (from 2019-2022), and stigma was analyzed by demographics and HIV risk factors, and self-rated health. Stigma was categorized in very high, high, low, very low, and dichotomized (high vs low) in a multivariable logistic regression.

Results: The sample represented the cohort and key populations of PLHIV in Ontario; 5% Indigenous, 30% African, Caribbean and Black (ACB), 69% gay or bisexual men (GBMSM), 24% women, and 4.7% people who use injection drugs. Very low stigma scores were greater in the East (33.5%) and North (50%), as compared to Toronto (29.8%) and Southwest (26.1%). In a multivariable model, each year since HIV diagnosis decreased stigma (OR 0.98, 95% CI: 0.96, 0.99, p=0.009). Stigma was higher for ACB participants (OR 1.76, 95% CI: 1.22, 2.54, p=0.002) and women (OR 1.74, 95% CI: 1.15, 2.63, p=0.008). No association was found between high stigma score and age, immigration, employment, or for GBMSM. Very low stigma scores were more frequent among those with higher self-rated health (excellent/very good: 36% vs fair/poor 22.3%).

Conclusions: These results indicate that HIV stigma decreases the longer a person is living with HIV. Disparities exist, with women and ACB people experiencing greater stigma. Stigma is associated with health, and therefore must be addressed in order to ensure PLHIV experience optimal health.

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Life Experiences Pre and Post Migration for People Living With HIV in Ontario, Canada

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Background: For people living with and at risk for HIV, migration requires adjustment not only to a new culture and country, but also a rapid transition into needed healthcare. HIV outcomes are related to economic stability and social support, which can be challenging post-migration.

Methods: The OHTN Cohort Study (OCS) enrols people living with HIV (PLWH) receiving care in 15 clinics across Ontario. From 2020-2022, questions regarding experiences pre- and post-migration were included in the annual interviewer administered questionnaire. Individual responses were tracked to determine changes pre- and post-migration, and a sign test was used for significance testing. Positive (Pos) and negative (Neg) pre-post migration changes are reported.

Results: Among 329 respondents, 62% were diagnosed in another country, 36% in Ontario and 2% elsewhere in Canada. 52% were women, 37% gay bisexual men (GBMSM) and 11% heterosexual men. 48% came from an African country, 15% Caribbean, 14% Asia, 9% North America, 6% Europe and 9% South/Central America. 12% had been living in Canada 0-2 years, 49% 3-5 years, and 39% 6-10 years. Overall, participants experienced a positive change post migration for access to basic needs (food, clothing etc.) (Pos:47%,Neg:21%;$p<0.001$), feeling of safety (Pos:74%,Neg:3%;$p<0.001$), access to employment (Pos:61%, Neg:14%;$p<0.001$), access to lab testing (Pos:70%, Neg:3%;$p<0.001$), access to medical care (Pos:74%,Neg:4%;$p<0.001$) and improved mental health (Pos:50%,Neg:15%;$p<0.001$). Negative changes post migration were found for connection to friends (Pos:22%,Neg:35%; $p=0.005$) and connection to family (Pos:25%,Neg:33%; $p=0.03$). Mental health improved most for women (85.1% vs 76.5% heterosexual men and 69% GBMSM). Connection to HIV care improved over time with 83.3% improved 0-2 years post migration compared 98% after 3 years.

Conclusions: Overall PLHIV in Ontario showed positive experiences post migration, however, to support health for immigrants, additional supports are required to ensure that PLHIV have connections to community and social supports.

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ACCESS Study: Anal CanCer Equity in Screening Services

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Background: People living with HIV are at highest risk for anal cancer. The International Anal Neoplasia Society (IANS) recently released the first-ever anal cancer screening guidelines. Yet, anal screening has not been adopted into HIV care, health system barriers may thus need to be overcome for widespread adoption.

Objectives: The ACCESS Study aims to gather evidence for implementation of equitable anal screening for people living with HIV in Ontario. Specific aims are to: 1) assess individual, healthcare provider, and system needs for adoption of anal screening; 2) co-create implementation strategies for screening that are feasible and acceptable to deliverers and recipients; and 3) evaluate strategies for reach, effectiveness, adoption, and implementation outcomes.

Methods: ACCESS will use a three-phase, mixed-methods design. The exploration phase includes focus groups and key informant interviews, informed by the Theoretical Domains Framework and the Consolidated Framework for Implementation Research. The preparation phase will assemble toolkits informed by the Expert Recommendations for Implementing Change. The implementation phase will use a quasi-experimental design using data from field notes, electronic medical records, and qualitative interviews to measure implementation outcomes, informed by the RE-AIM framework (Reach, Effectiveness, Adoption, Implementation, Maintenance).

Expected outcomes: Documentation of health system needs for implementation will support robust screening referral networks in which anal screening is equitable and cost-effective. Documentation of practice and clinic-level needs, preferences, and evaluation of early implementation efforts can help screening deliverers achieve competence and inform how to integrate this screening into routine HIV care. Learning recipient needs and preferences ensures that anal screening remains anchored in the experiences of people living with HIV for cancer prevention and improvement of quality of life.

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Recommendations for improving HIV prevention and care from people living with HIV in Manitoba, Canada: a mixed methods study

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Manitoba (MB) reported its highest increase in new HIV diagnoses in 2022. Marginalized groups, especially women and people who inject drugs, were overrepresented in new diagnoses, and are less likely to return for regular care upon diagnosis. We investigated the recommendations that People Living with HIV (PLHIV) have to improve HIV care.

Informed by people with lived experience (PLHIV, racialized, criminalized people), this mixed methods study draws upon semi-structured interviews and three questionnaires with 32 PLHIV in MB. Our findings focus on changes to HIV care and knowledge translation strategies for STBBIs.

Participants recommended two broad areas for improvement 1) meeting people ‘where they are at;’ and 2) education. Participants emphasized that PLHIV not engaged with HIV care face various challenges, which may include substance use, houselessness, and poverty. Accordingly, they suggested a dedicated street-based outreach HIV team to bring health services to the places marginalized PLHIV frequent (e.g., shelters).

Participants also recommended more low-barrier social groups, transportation support, emergency housing and peer support for people newly diagnosed, and HIV care outside regular clinic hours. The other recommendation is for an education strategy focused on HIV prevention, treatment, and stigma reduction. Participants suggest posters and billboards in areas where social services are concentrated would make HIV information accessible for those experiencing houselessness and addictions. Participants also recommended ‘open mic’ educational peer meetings where PLHIV can learn from each other, particularly for those newly diagnosed. Education in schools and social media was suggested to reach younger populations.

Many participants in this study had lived experiences of substance use dependence, houselessness and being in-and-out of HIV care. Incorporating their recommendations to create more person-centred HIV care and expand HIV education may improve HIV care for all and in particular reach those not linked to care and/or who face multiple forms of disadvantage.

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Advancing Health Equity in Social Work Education: A Case Study on Specialized Curriculum Design for HIV and Chronic Pain

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Background: People living with HIV often experience co-occurring chronic pain that exacerbates marginalization. However, social workers may lack knowledge and skills to address this complex interplay. There is a need to advance health equity through specialized educational initiatives aligned with community priorities.

Methods: The presenters detail the developmental process for a new 12-week advanced practice social work course on HIV and chronic pain at a Canadian university. The team conducted a needs assessment, reviewed texts/frameworks, and aligned objectives, topics, and assignments to core priorities in HIV care.
Relevance: This work builds on existing Canadian research and addresses current challenges in the HIV care continuum for key populations with complex co-occurring conditions. It informs training to enhance social work roles in community-based HIV care and support.

Results: The five learning objectives were carefully mapped to corresponding course topics and content. This intentional sequencing and alignment of learning objectives, units/topics, and curricular content with course assignments reinforces an integrated and comprehensive approach to building student skills in advancing health equity for those with HIV and chronic pain.

Conclusion: This case study provides a model for expanding social work education through specialized curriculum targeting knowledge and skills to equip students for ethical, anti-oppressive and anti-privilege practice to improve the HIV care and advance health justice for people living with HIV and co-occurring chronic pain.

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Women* & HIV Prevention: Amplifying the Voices of Women across Ontario

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In 2021 / 2022 WHAI conducted consultations with 501 women* across Ontario who face systemic and structural risk factors related to HIV. Four consultation tools were used to ensure that communities had options for how they could share their experiences and feedback, and to foster de-colonial, trauma informed and participatory approaches to knowledge sharing. This work 309ocused primarily on amplifying the experiences and wisdom of cis, Trans, Non-Binary and 2-Spirited Femme people who are living with HIV, who identify as Black, Indigenous, newcomer, who use drugs or substances, have experienced violence and/or incarceration, and/or who sex work.

One of the six key themes that emerged through the consultation process was HIV Education, Prevention, Care & Support. In particular, women identified a need for increased awareness and access to HIV testing (including self-testing), HIV prevention tools such as PrEP, PEP and PIP, and increased awareness about U=U in the context of women's lives.

Moving forward, WHAI is working to strengthen our work across Ontario based on the wisdom shared by women. We are committed to facilitating community capacity building, knowledge exchange, and resource development about women's needs and rights to autonomy in HIV prevention tools, to cultivating spaces that amplify women's leadership and wisdom, and to working to strengthen accessible, supportive and thoughtful pathways to HIV prevention tools including HIV testing, PrEP, PEP and PIP, and what U=U means in the context of our priority populations.

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Collective Action Community Change: A province wide consultation

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In 2021 / 2022 WHAI embarked on a process of conducting accessible and inclusive consultations with women and community organizations across Ontario to inform our future work. Focussing on women who face structural barriers to health, our priority was cis, Trans, Non-Binary and 2-Spirit people who are living with HIV identify as Black, Indigenous, newcomer, who use drugs or substances, have experienced violence and/or incarceration, and/or who sex work.

The consultation process included 1) engagement with community knowledge holders to inform the development of accessible, creative and participatory consultation tools; 2) building team capacity to use the tools; 3) implementing the consultation process in 16 regions; and 4) collaboratively synthesizing findings into a key themes to inform our provincial work.

The consultations 310ocused on HIV, HIV prevention and more broadly, barriers and facilitators to wellness through a health equity lens. Throughout, it was imperative to centre the voices of those often excluded or marginalized, and this required careful thought around the tools developed. Four tools that applied storytelling techniques, art, one-on-one interaction and group discussions, were used to ensure flexibility towards public health restrictions, accessibility, cater to different styles of engagement, and center anti-racist, decolonial approaches for sharing knowledge and affecting community change.

In addition to 501 women engaged across Ontario, 317 workers from community organizations/networks were engaged to validate the knowledge / augment findings. This breadth of invaluable community sharing of stories, wisdom and expertise was synthesized into six key themes to inform future work at WHAI. Themes included HIV Education, Prevention, Care & Support; Community Connection, Economic Autonomy, Women Centred Harm Reduction, Safety, and Wholistic Care. Overall, these key themes demonstrate a strong, collaborative, community driven and participatory process which will be foundational for community led change.

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Minority stressors and resilience factors among East Asian bisexual young adults in Canada

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Background: Racialized 2SLGBTQIA+ individuals face minority stressors (e.g., racism, heterosexism, cissexism) that exacerbate risk for physical and mental health outcomes (e.g., HIV, anxiety, depression). During the COVID-19 pandemic, 2SLGBTQIA+ Asian individuals experienced unprecedented anti-Asian discrimination and syndemic mental and physical health challenges. Young adults were uniquely impacted. This study qualitatively explored minority stressors and protective resilience factors among East Asian bisexual young adults in Canada during COVID-19.

Methods: One-hour, online individual interviews discussed participants' intersectional lived experiences, including challenges, coping strategies, and sources of resilience. Purposive sampling recruited young adults (18–29) self-identified as East Asian, bisexual, and residing in Canada. Two independent coders used constructivist grounded theory to analyze transcripts. Participant (n=10) demographics included age (M=25.50, SD=2.32), ethnicity (8 Chinese, 2 Mixed-Race), migration history (8 born in Canada, 2 immigrants), gender (7 women, 2 men, 1 nonbinary), and geography (8 Ontario, 1 Alberta, 1 BC/Ontario).

Results:
Ten interviews were conducted in December 2021. Participants discussed minority stressors that impacted well-being, particularly stigma-based stressors (e.g., sexual fetishization, bisexual erasure). These challenges shaped participants' identities as East Asian bisexual youth. Coping strategies included personal actions (e.g., selective disclosure of identities) and support from social networks. They described interpersonal sources of stress and resilience (e.g., family of origin, friends, partners) and highlighted the importance of intersectional community spaces. Participants conveyed unique qualities (e.g., freedom of self-expression) engendering pride and resilience. A mid-level theory was created to illustrate factors shaping participants' lived experiences and well-being.

Conclusion: Given the physical and mental health disparities faced by 2SLGBTQIA+ Asian young adults, particularly in syndemic conditions (e.g., COVID-19, HIV, identity-based stigma), public health interventions must address specific psychosocial factors that undermine versus promote well-being for this diverse population. Understanding these factors is critical for developing interventions (e.g., HIV prevention) that are culturally sensitive and community-based.

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Perceptions of PrEP and relationship with healthcare providers among Gay, Bisexual, and other Men who have sex with men who are PrEP eligible but have not used PrEP

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Background: HIV Pre-Exposure Prophylaxis (PrEP) is a highly effective intervention used to prevent HIV. Since 2018, the BC HIV Drug Treatment Program has provided HIV PrEP free-of-charge to people who meet clinical eligibility criteria. Despite this, many gay, bisexual, and other men who have sex with men (GBM) at high risk of acquiring HIV are not using PrEP. We examined why GBM who are eligible for PrEP are not taking PrEP.

Methods: From December 2022 – May 2023, we recruited HIV-negative participants from the Momentum II/Engage Study in Metro Vancouver whose survey responses indicated that they hadn't been on PrEP in the last 6 months or had never used PrEP and met BC eligibility criteria for doing so. We conducted one-hour semi-structured interviews on topics such as sexual behaviour, perceptions of HIV and STI risk, healthcare access, and PrEP knowledge. Interview recordings were transcribed verbatim and analyzed using an inductive thematic approach by dual coders.

Results: Of the 18 interview participants, 89% identified as gay, 83% identified as Canadian or European, and 22% were below the age of 30. GBM with one sexual partner (45%) perceived their likelihood of acquiring HIV as low and choose not to be on PrEP because of their trust in their partner. 72% of participants reported having a family doctor, but out of those participants only 46% felt comfortable discussing their sexual health with their family doctors and the rest were hesitant due to stigma. Participants reported a lack of knowledge about PrEP among their family doctors as another barrier to PrEP.

Conclusions: Many PrEP-eligible GBM who were not using PrEP reported individual- and provider-level barriers affecting access. Enhancing HIV risk assessment tools and strengthening relationships between GBM patients and their healthcare providers can support informed decisions about HIV prevention and could increase PrEP uptake.

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Developing a Patient-Provider Communication Tool for Women-Centred HIV Care: Insights from the Formative Phase

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Background: The Women-Centred HIV Care (WCHC) toolkits, designed to inform care delivery for women with HIV, have been well received since their launch in 2020. In response to community feedback, we aimed to create an innovative, interactive booklet based on the WCHC model to improve patient-provider communication and support women with HIV's self-advocacy in healthcare settings.

Methods: We conducted one-on-one stakeholder consultations to gather ideas on desired format, content, evaluation, and implementation. Detailed notes were recorded during each interview, and content analysis was conducted. Preliminary content was developed and reviewed by four community members and the core interdisciplinary team.

Results: Stakeholder consultations were held with 25 experts in Ontario and British Columbia, including community members and various healthcare professionals. There was a preference for a user-friendly, colourful, and interactive pocket-sized paper booklet, that could potentially be translated into a mobile app. Priorities included practical features like appointment planning and sample phrases for self-advocacy. To assess the tool, stakeholders recommended evaluating user satisfaction with providers, communication, and overall experience, along with factors like autonomy, engagement, and potential clinical measures such as health-related quality of life. Implementation recommendations encompassed leveraging partnerships with existing HIV networks, developing a provider accompaniment, prioritizing urban and rural dissemination, and expanding translation to other languages. Using this input, we finalized content and collaborated with a graphic design company to create the WCHC Pocketbook prototype.

Conclusion: Integrating feedback from a broad range of stakeholders led to the creation of a relevant Pocketbook prototype, representing a novel resource in the field of women and HIV. The next phase of this project will involve conducting usability testing with women and providers to inform the final version. Subsequently, we hope to conduct an implementation study in care settings to assess the potential of the Pocketbook to impact real-world patient-provider interactions.

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Internalized (sexual) stigma and social support shape the loneliness and sexual health of urban gay, bisexual, and other men who have sex with men (GBM).

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Background: Gay, bisexual, and other men who have sex with men (GBM) are more likely to report loneliness, partly due to their experiences of heterosexist stigma. According to the Loneliness and Sexual Risk Model, loneliness among GBM is associated with engaging in behaviours that increase risk for sexually transmitted blood born infection (STBBI) transmission. We examined the association between internalized homonegativity, being open about one's sexual identity (i.e., being out), loneliness, and the protective effects of social support. Lastly, we examined the association between loneliness and recent engagement in condomless anal sex (CAS).

Methods: Data were drawn from the third and fourth study visits of participants in Engage Cohort Study (n=1166) of GBM in Montreal, Toronto, and Vancouver. Using a moderated mediation analysis (Heys' model 15), we examined whether outness mediated the relationship between internalized homonegativity and loneliness, and whether social support moderated these relationships. Separately, we used logistic regression to examine whether loneliness was associated with CAS in the past six months among participants who reported 2 or more sex partners and no primary relationship partner (n=489). Analyses controlled for age, education, financial strain, depression, and HIV status.

Results: Internalized homonegativity was positively associated with loneliness (beta=.240, p<.001) and outness (beta=.109, p=.005). Social support moderated the association between internalized stigma and loneliness, but outness was not a significant mediator. Among GBM who reported having two or more recent sex partners and no primary partner, loneliness was not significantly associated with recently engaging in CAS (p=.836).

Conclusion: Internalized stigma was associated with increased loneliness six months later, particularly among GBM who also reported less social support. However, as loneliness was not associated with recent condomless anal sex, it seems the potential association between loneliness and behaviours that increase STBBI risk among GBM is not as clear-cut as theory would suggest.

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Facteurs associés au recours systématique à des 315revention de 315revention315 des hommes (cis et trans) et des femmes trans effectuant du sexe transactionnel en ligne

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Contexte:
Le sexe transactionnel en ligne (STL; échange de services sexuels contre de l'argent, des 315reventi des services en utilisant Internet pour trouver des clients) est de plus en plus 315revent parmi les hommes et les femmes trans. Cependant, ces populations restent sous-représentées dans les études et les interventions visant les populations clés. Cette analyse préliminaire vise à identifier les facteurs associés à l'utilisation non systématique des méthodes de 315revention du VIH et des autres ITSS.

Méthodes:
L'étude ANRS SEXTRA, portée par Coalition PLUS et l'IpDH-Bolivie, est un projet 315revention315315e et exploratoire visant à identifier les besoins en santé sexuelle des hommes cis et trans et des femmes trans impliqué·es dans le STL dans 8 pays. Au Canada, la collecte de données a eu lieu via un questionnaire en ligne (août 2021–mai 2022). Une 315revention logistique multivariée a été utilisée pour identifier les facteurs associés à l'utilisation systématique d'outils de 315revention, c'est-à-dire les participants ayant déclaré 315reventi toujours des condoms, la PrEP et/ou le TasP avec leurs client·es.

Résultats:
L'analyse a été menée auprès de 96 participants. Parmi eux, 57,3% ont déclaré une 315revention315 systématique des méthodes de 315revention. L'analyse multivariée montre une 315revention315 moins fréquente parmi les personnes vivant avec le VIH (aOR[95%IC]: 0,19[0,04–0,85]), les personnes ayant eu besoin de soutien moral dans les 12 derniers mois (0,31[0,10–0,97]), et les personnes qui ne sont pas nées au Canada (0,19[0,04–0,94]).

Conclusion:
Cette étude 315revention aux recherches limitées sur les besoins, pratiques et accès à la 315revention et aux soins des hommes et les femmes trans impliquées dans le STL. Les résultats préliminaires montrent qu'une grande proportion de la population visée n'utilise pas de protection avec leurs client·es. Les facteurs associés au manque de protection mis en 315reventio permettront d'adapter des campagnes de 315revention pour cette population.

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Social-ecological Factors Associated with Safer Sex Self-Efficacy Among Northern and Indigenous Adolescents in the Northwest Territories, Canada: Implications for Arts-Based and Resilience-Building School-based Interventions.

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Background: Northern and Indigenous adolescents in the Northwest Territories (NWT), Canada, experience social and health disparities that elevate exposure to sexually transmitted infections (STI), including HIV. Safer-sex self-efficacy is an important marker of sexual agency and sexual wellbeing and associated with uptake of safer sex practices. Yet there are limited studies on how to nurture safer-sex self-efficacy (SSSE) among this population. To address this knowledge gap, we explored associations between social-ecological factors (intrapersonal level: resilience; organizational level: arts-based sexual health workshop participation) and SSSE among adolescents aged 13-18 in the NWT.

Methods: A Northern and Indigenous youth agency conducted pre-and post-test surveys alongside arts-based sexual health workshops that addressed HIV, STI, and healthy relationships, in secondary-schools with adolescents aged 13–17 in 17 NWT communities. Pre-test (baseline) surveys explored socio-demographic variables, resilience, and prior participation in the arts-based workshop. We conducted descriptive analyses of baseline data, followed by multiple linear regression analyses to estimate associations between resilience and prior workshop participation with SSSE. We conducted unadjusted analyses followed by analyses adjusted for age, and gender.

Results: Among the 296 participants (mean age: 23.5, standard deviation: SD: 1.4; cisgender men: n=161, 55.3 %; cisgender women: n=117, 40.2 %; transgender/non-binary: n=13, 4.5 %), three-quarters were Indigenous (n=211; 73.3%). Over one-third (n=126; 42.6%) had previously attended one of the arts-based sexual health workshops. Adjusted multiple linear regression analysis revealed that previous workshop attendance (β=0.09; 95% confidence interval [CI]: 0.03-0.16, p=0.007) and higher resilience scores (β=1.68; 95% CI: 0.12- 3.24, p=0.035), were associated with higher SSSE.

Conclusions: Findings demonstrate the role of multi-level factors, including resilience and arts-based sexual health workshops, in building SSSE. Findings suggest that arts-based intervention benefits may persist over time. Future research can focus on arts-based, resilience enhancing youth sexual health interventions to increase sexual agency.

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Expanding Point-of-Care Testing to include HIV and STBBIs in Underserved Populations across Canada

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In response to the COVID-19 Pandemic, the Public Health Agency of Canada's (PHAC) National Microbiology Laboratory Branch (NMLB) made a significant capital investment in point-of-care testing (POCT) technologies. The objective was to bridge healthcare inequities by building capacity for POCT in northern, remote, and isolated (NRI) communities, thereby increasing access to diagnostic testing and linkage-to-care. Known as the "NRI Initiative", this signified a paradigm shift in both approach to pandemic response and provision of diagnostic testing in which barriers to health services previously experienced by underserved populations were overcome through community-led, decentralized testing.

Working in full partnership with Indigenous leaders, community-led pandemic response teams, and in collaboration with all levels of F/P/T governance, POCT technologies were deployed to NRI communities across the country. NMLB provided a multi-faceted on-boarding process that included equipment and site verification, training test operators, biosafety guidance, ongoing technical support, and quality oversight through an external quality assessment program, QASI (Quality Assessment and Standardization of Indicators). This partnership has led to a transformed landscape of over 400 POCT sites across the country, where approximately 250 have GeneXpert instruments.

This POCT network can be used to support testing for HIV and other sexually transmitted blood borne infections (STBBI). A community led approach to HIV POCT services could reduce stigma and discrimination associated with HIV infections, the burden of travelling to major centers for testing, allowing for earlier detection of HIV infections, and ongoing monitoring of HIV antiretroviral therapy.

The success of community-led, decentralized testing provides an opportunity to leverage the existing POCT network for HIV testing and other infectious diseases affecting historically underserved populations.

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Engaging Female Sex Workers in Their Health Care Through Stakeholder Mapping and Participatory Analysis in Buenos Aires, Argentina

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Cis and trans female sex workers (FSW) face marginalization and struggle to access sexual and reproductive health and rights (SRHR) services. The COVID-19 pandemic worsened these disparities.

January-April 2023, we conducted stakeholder mapping (SM) with SRHR policies and programs decision-makers, implementers and users in Buenos Aires, Argentina. This strategy aims to identify, classify and categorize stakeholders based on the power and agreement level of SRHR policies and plans implemented during the pandemic. A qualitative study was conducted through focus groups with FSW and interviews with healthcare providers analyzed with the DEPICT model (methodology for collaborative data interpretation with the community) to investigate facilitators and barriers from their perspectives.

Considering the challenges in identifying the appropriate stakeholders, this approach became crucial. The landscape is dynamic, influenced by the sociopolitical context, and recent shifts in government. Following SM, we categorized 150 stakeholders Supporters (69%) and promoters (15%) outnumbered blockers (8%), observers (6%) and neutral (2%) in implementing new policies aimed at SRHR services for FSW. The qualitative interviews revealed barriers including the pervasive impact of intersectional stigma and discrimination, violence, failures in intersectoral articulation and coordination, and difficulties in scheduling of appointments for SRHR services. Facilitators identified improvements in transgender healthcare services in the last decade and the emergence of community assets as pivotal, particularly during the pandemic.

SM was invaluable for identifying and characterizing the priorities of key stakeholders for designing policies affecting SRHR services. The inclusion of community perspective, while challenging, enriched our understanding of barriers and facilitators while empowering the community to express their needs. Despite structural barriers and challenges posed by the pandemic, community organizations have displayed resilience, emerging as a vital support system for FSW. We highlight the importance of collaborative efforts and comprehensive approaches in addressing the unique needs of FSW in Argentina and similar contexts.

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The Global Task Force for Chronic Pain in People with HIV Research Priorities: Implications of differentiated rankings amongst Canadians living with HIV and/or chronic pain and Ally Stakeholders

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BACKGROUND: The Global Task Force for Chronic Pain in People with HIV (GTFCP+) is comprised of people living with HIV (PLWH) and/or chronic pain as well as an international team of researchers and co-developed seven research priorities in 2023. The Canadian HIV/AIDS Chronic Pain Society composed of PLWH organized a CAHR2023 Ancillary Session on HIV and Chronic Pain.

METHODS: Participants (n=27) were asked to rank the seven GTFCP+ research priorities during the event (via Slido) and again in the post-event evaluation survey (19/27 response rate). This analysis is based on the post-event evaluation survey and stratifies participants into two groups. Results were stratified into two groups: 1) people living with HIV and/or chronic pain, and 2) ally stakeholders without lived experiences (researchers/healthcare providers/trainees).

FINDINGS: Both groups had similar rankings for the top four research priorities i) Establish best medical/non-medical approaches for HIV chronic pain (CP+) management; ii) Learn how CP+ can be prevented; iii) Determine the etiology of CP+ and if they differ from seronegative population; and iv) Understand how to individualize CP+ management. Differentiated rankings were observed for the following: v) Establish incidence of CP+; vi) Understand the most effective approaches to CP+ management; and vii) Learn how mental health and social factors impact the experience and management of CP+. PWH prioritized domains v), vii), vi) as the bottom three priorities, whereas ally stakeholders prioritized vii), v), and vi) as the lowest priorities.

CONCLUSION: 1: Given the ever-increasing competitive funding landscape and pressure on organizations to offer a multitude of services to support PLWH, the survey offered GTFCP+ its top four research priorities to focus on. Differentiated rankings for the lower three priorities revealed divergence between the two groups and the need for ally stakeholders to ensure research, programmatic and policy priorities follow the guidance of PLWH.

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Examining the roles and experiences of Community Adolescent Treatment Supporters (CATS) in Kumasi, Ghana

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In 2021, Ghana Health Service (GHS) devised a peer mentorship program to support adolescents and young adults living with HIV/AIDS with getting on to and adhering to anti-retroviral treatment (ART). Community adolescent treatment supporters (CATS) are adolescents living with HIV who have demonstrated exemplary behaviour in medication adherence, and connection and dedication to improving their communities. There are less than 15 CATS working in Kumasi, resulting in large caseloads. Partnering with GHS, this study sought to gain a more comprehensive understanding of the roles and experiences of the CATS working in Kumasi.

Data were collected through semi-structured interviews at three different HIV clinics in Kumasi. A total of five CATS were interviewed for this project, in addition to 15 peers who have direct interaction with a CATS. Aside from the peers and CATS, seven key informants working in the HIV clinics were interviewed to gain a better understanding of the CATS roles and overall treatment strategies for their clinics. Data were transcribed verbatim and coded using thematic analysis in NVivo 14 software.

The results demonstrate that the work of the CATS is integral to the well-being and maintenance of treatment amongst newly diagnosed adolescents and young adults. CATS work to facilitate appointment scheduling and treatment reminders, as well as providing psychosocial support and education to their peers. CATS expressed mostly positive experiences in their roles, resulting in increased confidence, community-building capacity, educational awareness, and better personal treatment outcomes.

Results from this study demonstrate the importance and need for increased enrollment of CATS. Acting as an extension of the work being done by staff at ART clinics, CATS serve as resources to adolescents and young adults living with HIV. Further work is needed to decrease the current workloads on the existing CATS, which will increase relationship building and ultimately treatment outcomes.

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Characterization of Patient Information on Anal Cancer Screening for Use by People Living with HIV

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Background: New guidelines recommend anal cancer screening among people living with HIV, given their 20-90 times greater risk compared to the general population. We synthesized and characterized existing patient-/public-facing materials about anal cancer screening for potential use by people living with HIV.

Methods: We carried out PubMed searches to identify studies on patient perceptions, attitudes, and knowledge of anal cancer and/or anal cancer screening. Next, we contacted authors, supplemented with Internet searches, to gather publicly available materials used to promote anal cancer screening, diagnosis, and treatment. We thematically analysed the content of media, applying the Theoretical Domains Framework (TDF), and characterized their language, imagery, and formatting.

Results: As of 01/2024, we collected 23 materials from North America: pamphlets (7), videos (3), websites (3), posters (4), and social media posts and campaigns (5). Their intended purposes were education on anal cancer (7), screening (6), and diagnostic processes (4). Content included descriptions of anal cancer (11), screening methods (6), risk factors (2), and treatment options (1). Most targeted a general audience; few incorporated tailored messaging. While 6 materials mentioned specific groups at higher risk (e.g., men who have sex with men, people living with HIV), none incorporated aspects of gender, sexuality, or race/ethnicity in their messaging or imagery. Materials focused on overcoming knowledge barriers via information provision about cancer risks and the testing process. None addressed other potential barriers and facilitators according to the TDF (e.g., peer influences, emotions, or beliefs about capabilities or consequences).

Discussion: This work contributes to a resource library of patient education materials. Findings suggest potential needs for refinements to messaging, such as encouragement to seek screening and normalizing anal cancer screening. Materials will be used in future evaluation in focus groups with people living with HIV to support the eventual, broader implementation of anal cancer screening.

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Assessing the Capacity of Community-Based HIV/HCV/STBBI Organizations to Respond to the Sexuality and Sexual Health Education and Support Needs of Older Adults and People Living with Disabilities

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Background: Ageism and ableism are increasingly acknowledged as impediments to an effective and inclusive HIV/HCV/STBBI response, but personnel in community-based HIV/HCV/STBBI organizations (CBHOs) often lack the data, resources, and the “know-how” to address these issues.

Methods: Realize conducted a multi-lingual survey of decision-makers and front-line staff in Canadian CBHOs to assess factors impacting their capacity to plan or implement policies and programs that respond to the sexual health education and HIV/HCV/STBBI prevention and support needs of older adults/seniors (OA/S), people living with disabilities and/or the d/Deaf community (PWD/D). The University of Toronto provided REB approval.

Results: Over 12 weeks in 2023, personalized invitations and reminders were sent to 179 individuals; 30 (17%) responded, including 11 decision-makers, and 19 front-line staff.

Most decision-makers indicated it was within their organization’s mandate to share information about sexuality, sexual health and/or STBBI prevention with individuals (n=8, 80%) and reported receiving such requests from OA (n=5, 62.5%), seniors (n=3, 37.5%) and PWD/D (n=4, 50%). Even so, most (n=6, 60%) had not recently provided staff training on how best to meet the needs of these populations.

Front-line staff rated their knowledge of clients’ disability-related issues as moderate (n=8, 50%) or good (n=7, 44%), and aging-related issues as good (n=11, 73%); however, comparatively fewer were aware of HIV/HCV/STBBI prevention resources tailored for PWD/D (n=5, 33%) or OA/S (n=7, 47%). Less than a third had received training on how best to meet the sexual and reproductive health or STBBI prevention information or resource needs of OA/S or PWD/D; the majority said receiving more (or any) training would help.

Conclusion: Findings indicate a need for education on the sexual and reproductive health and STBBI prevention and support needs of OA/S and PWD/D among CBHO staff to increase sexual health and reproductive justice. Realize is developing evidence-based curricula in response.

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Arriving at the intersection of two pandemics: investigating the impacts of COVID-19 restrictions on individuals living with HIV/AIDS in Ontario

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This study examines the experiences of people living with HIV (PLWH) in relation to the closure of AIDS Service Organizations (ASOs) during the COVID-19 pandemic in Ontario, Canada. This study sought to understand the health and social implications of lockdown measures, and the adversities endured due to closures of services essential to maintaining positive health outcomes among PLWH.

Data were collected through semi-structured interviews. A total of eight service users from a Kingston, Ontario-based ASO were invited to participate and share their experiences of being HIV-positive and navigating service access throughout the pandemic. In addition to PLWH, eight ASOs from across the province of Ontario were included, with key informants interviewed to better understand the changes in operations that occurred to adhere to lockdown measures. Data were transcribed verbatim and coded utilizing thematic analysis in NVivo 12 software.

The results show that ASOs are integral to the health and well-being of PLWH, acting as resource centres for their social, physical, and financial needs. The inability of PLWH to access ASOs during the COVID-19 pandemic resulted in worsening health outcomes, increased feelings of isolation, disruption in medical care, and an increased inability to access resources. Service providers at ASOs felt that changes in their mode of service delivery and barriers to client management led to staff fatigue and moral distress.

The results from this study demonstrate the need for reimagining HIV/AIDS and other service provisions during pandemics to ensure that resources remain accessible for PLWH and other marginalized populations. Further, the results from this study will assist and inform future policy recommendations to ensure that the health and well-being of marginalized populations are at the forefront of public health policy decisions during pandemic situations.

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Examining Factors Influencing Self-Rated Health Among Black Canadians: A Cross-Sectional Study

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Background: Self-rated health (SRH) has been shown to be a strong predictor of morbidity, functional decline, and mortality outcomes. This paper investigates the association between sociodemographic variables (e.g., employment, education, sex) and SRH among Black Canadians.
Methods: We used cross-sectional survey data (n=1380) from the A/C Study of first and second-generation Black Canadians in Toronto and Ottawa. Participants were invited to complete an electronic survey questionnaire in English and French in 2018–2019. Generalized linear models analyses were used to evaluate the associations among sociodemographic factors and self-rated quality of health.
Results: A total of 1380 self-identified Black individuals completed the survey and were included in the analysis. The majority of participants were under the age of 60 (89.7%), females (63.4%), born outside of Canada (75.1%) and resided in Toronto, Ontario (61.9%). The strongest association with poor SRH was found for experiences of racism, substance misuse/disorder, and lack of social support following adjustment for age group, sex, other socioeconomic conditions, and lifestyle factors. Sociodemographic factors contributed a 6% criterion variance in SRH ($F=3.086$, $p<.001$, $R2=0.057$). In subsequent models, health-related dimension (e.g., health care access and access to basic needs) and perceived social support accounted for a 14% variance in SRH ($F=4.031$, $p<.001$, $R2=0.148$; $F=3.906$, $p<.001$, $R2=0.145$, respectively).
Conclusion: Our findings underscore the importance of improving the social determinants of health as a conduit to improving the general health status and the quality of life of Black Canadians. Access to health care and meeting basic needs were strong predictors of quality of self-rated health. Despite the multiple social, psychological, and health-related challenges and alarming inequalities that many minority groups experience in Canada, Black Canadians overall reported good SRH. Our findings revealed that Black Canadians may demonstrate high resilience levels in circumventing their current social circumstances and structural disadvantages to live the best quality of life. Understanding sociodemographic and socio-structural barriers that Black people face is essential to reducing vulnerabilities to poor outcomes (e.g., inequities in the HIV care cascade), and improving their health and well-being.

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The Dire Health and Socio-Economic State of Saskatchewan: Implications for HIV Research

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Background: Saskatchewan is in a dire health and socio-economic state, falling last in the country on numerous indicators of health, education, and public safety, while performing moderately in economy. Extant research has found that these indicators are social, structural, and systemic drivers of HIV. Rates of new HIV infections have been double the national average in Saskatchewan for over five years, and recently over five times the national average. While studies have reported provincial HIV epidemiology, no known study has examined the overarching state of the province, including drivers of HIV.

Methods: Informed by The Human Development Index and Statistics Canada's Quality of Life Framework, secondary data analysis was conducted on publicly available data pertaining to categories of economy, education, health, and public safety in Saskatchewan. For each category, a mean score was calculated to summarize Saskatchewan's state relative to Canada's other nine provinces.

Results: Refer to figure 1 for study findings. Many indicators have been worse than triple national averages for multiple years. HIV-related indicators—number of physicians, opioid toxicity deaths, and intimate partner violence—are also in a sustained crisis state in Saskatchewan.

Conclusion: This study provides a startling perspective on the health and socio-economic state of Saskatchewan, presenting dire statistics on quality of life indicators. Understanding these indicators' unique contexts may be critical to turning the tide on the HIV epidemic in Saskatchewan. This presentation will discuss how these indicators may be directly related to HIV in the province, with implications for intersectional and interdisciplinary research.

Supporting Document

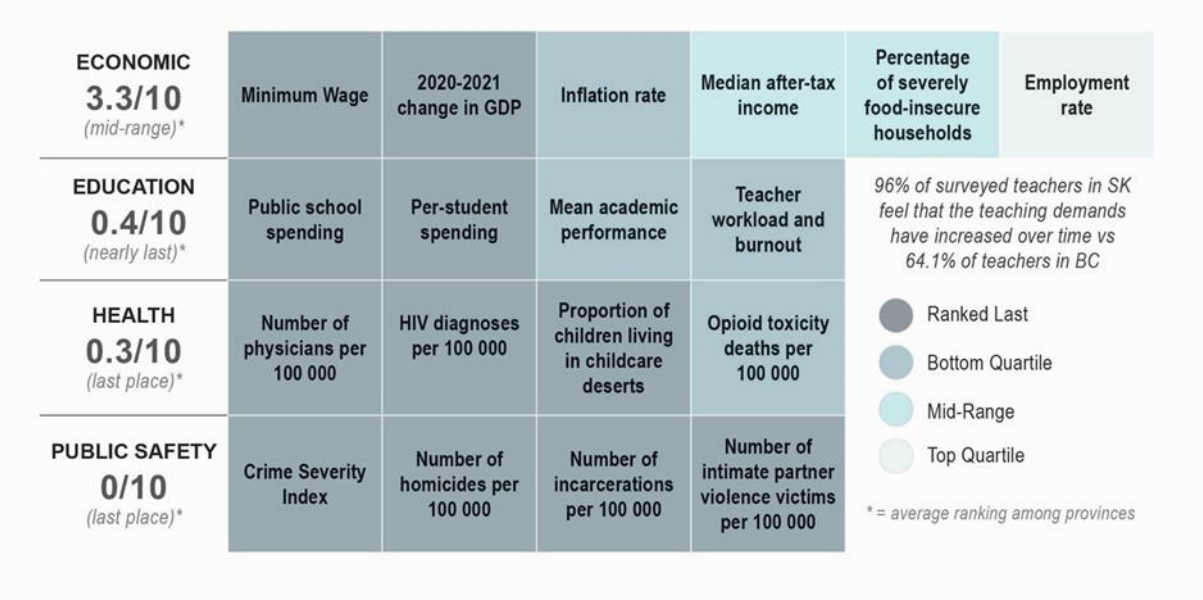

Figure 1: The dire health socio-economic state of Saskatchewan

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The role of sexual relationship power in the relationship between intimate partner violence and depression. Advancing an understanding of relational contexts of depression with urban refugee youth in Kampala, Uganda

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Intimate partner violence (IPV) can have long lasting negative health impacts, and reducing IPV risk and experiences is critical for long-term physical, mental, and sexual wellbeing. This is particularly salient among refugee youth as experiences of IPV are more common compared with non-refugee counterparts and has been linked to depression and HIV risk. However, having higher sexual relationship power (SRP) may mitigate the risks of IPV among refugee youth. Yet, imbalances in SRP can influence sexual decision making and limit the ability for those with lesser power to negotiate engagement in safer sexual behaviours increasing the risk of HIV and IPV. Understanding how SRP affects IPV among refugee youth could influence interventions to reduce IPV, lower HIV risk, and promote mental and sexual health. To deepen this understanding, we explored the associations between IPV and depression and examined the mediation effects of SRP. Cross sectional data was collected from urban refugee youth in Kampala and structural equation modeling was used to test relationships between depression, IPV, and SRP. Results indicated that SRP, measured by the relationship control subscale mediated the relationship between IPV and depression. IPV was found to have direct effects on depression. These findings suggest that IPV both directly affects depression, as well as reducing sexual agency and relationship power that in turn also contributes to depression and increases HIV risk. It further underscores the urgent need for IPV prevention and gender-based violence prevention, as well as integrating of sexual relationship empowerment within larger programming for promoting healthy relationships and mental and sexual health.

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: "Interweaving Narratives: Afrocentric Insights into the Complexities of IPV and HIV in ACB Women"

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This research addressed the widespread concern of Intimate Partner Violence (IPV), often labeled the silent pandemic, disproportionately impacting women and girls globally. This impact was magnified when intertwined with HIV, particularly for African, Caribbean, and Black (ACB) women. The study centered on ACB women in Ontario's Greater Toronto Area (GTA), delving into the profound repercussions of IPV and HIV within this specific demographic.

Informed by the Afrocentric approach and symbolically utilizing the Kente cloth, Kiondo (basket), and Water Carrier concepts deeply ingrained in African cultural symbolism, the research sought to illustrate the challenges confronted by ACB women. These symbols served as metaphors reflecting the challenges faced by ACB women and emphasized the empowerment derived from sisterhood. The primary objective of this abstract was to shed light on the specific challenges encountered by ACB women living with HIV within the context of IPV. Through synthesizing Afrocentric methodologies, Black Feminist Thought, and the Water Carrier concept, the research sought a comprehensive understanding of the intersections between IPV and HIV within Ontario's GTA, Canada. Utilizing Community-Based Research (CBR) qualitative analysis, the study incorporated perspectives from IPV survivors, Health Care Professionals (HCP), and social service providers to unveil nuanced insights. These insights served as the foundation for tailored interventions, policies, and support systems, empowering ACB women to navigate the intricacies of their experiences, fostering resilience, and promoting overall well-being in the face of the dual challenges posed by IPV and HIV.

In collaboration with Women's Health in Women's Hands CHC and Roots Community Services, the research engaged in a partnership involving a community elder through the utilization of Talking Circles and one-on-one interviews. Embracing a postcolonial Indigenous worldview, where circles symbolized the equity of participants, the study embodied Afrocentric principles of ujamaa (familyhood), kujichagulia (self-determination), utulivu (patience), and Imani (faith), rooted in the spirit of ubuntu. This comprehensive approach aimed to centralize and amplify the voices of African, Caribbean, and Black (ACB) women, fostering awareness and cultural sensitivity in addressing the interconnected challenges of IPV and HIV in the Greater Toronto Area (GTA).

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Documenting the Process and Impact of Community Academic Collaborations within a Project Focused on the Health Impacts of Nonfatal Overdoses Among People Living with and without HIV

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Background: The most impactful learnings of community-based research studies often lay within the undocumented processes surrounding community-academic collaborations. Our collaborative project aimed to understand the health-impacts of nonfatal overdoses. We conducted focus group discussions (FGD) with people who use drugs (PWUD) with and without HIV in Vancouver, British Columbia. We document key contributions of peer team members with lived/living experience in common with the study population – people with HIV and PWUD – and their project impact.

Community-Based Approach: In the project development phase, peers voiced support, informed key aspects of study design (e.g. establishing FGD for Indigenous-identifying PWUD), facilitated recruitment, and reviewed multiple iterations of the FGD guide. In the data collection phase, peer and academic team members collaboratively reflected on initial FGD to identify missing voices (e.g. women and gender-diverse individuals), gaps in discussions (e.g. HIV-specific issues), and address language issues. Recruitment methods, research design, and data collection tools were then revised. The analysis phase will entail peer guidance by team members through discussions of preliminary findings at community organizations.

Progress: We conducted 13 FGD comprising 74 PWUD across community organizations in Downtown Vancouver; each included a peer co-facilitator and peer support person. As a direct result of modifying recruitment methods, a significant number of women participated in women-only FGD, addressing an important knowledge gap.

Lessons learned: Our community-academic collaboration led to a project directly relevant and immediately responsive to community-identified issues. Identifying diverse expertise at community and research levels, and facilitating early, on-going, and respectful engagement between these groups was pivotal to all phases and enabled multi-directional co-learning. Involvement of allied academic and peer researchers facilitated meaningful relationships with targeted communities. Success hinged on an openness to a fluid research process, marked by iterative review of procedures and materials, and adapting accordingly to identified gaps.

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Collective Care: Violence- and Trauma-Informed Care in Virtual Collaborative Harm Reduction Spaces

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Issue: The COVID-19 pandemic spurred a surge in virtual collaborative spaces within the HIV and harm reduction sector. The confluences of the pandemic, the drug toxicity crisis, grief, and loss within the sector, have contributed to a fragile system that may create challenging virtual spaces for participating communities.

Description: The Dr. Peter Centre (DPC) has a long history of hosting virtual communities of practice, training, and developing innovative digital knowledge translation products to build the capacity of health and social service providers to address emerging issues within the sector and promote the leadership of people with lived and living experience of drug use (PWLLE). The Urgent Public Health Needs Sites (UPHNS) HUB Community of Practice was created to address these issues during COVID-19.

Lessons Learned: When given the platform and safe space to widely share knowledge and expertise, innovation happens organically. This presentation will share lessons learned on leveraging digital tools and participatory design to lift the voices of PWLLE and facilitate equitable violence- and trauma-informed virtual spaces to inform policy and practice change. It will also highlight ways in which creative digital tools can bridge federal, provincial, municipal, and community responses towards putting an end to the toxic drug supply crisis and promoting stigma reduction efforts on HIV and substance use nationally.

Recommendations: This project underscores the transformative power of digital platforms in fostering equitable, informed, and collaborative spaces within the HIV and harm reduction sector. Harm reduction strategies embedded into the UPHNS HUB project are known HIV prevention strategies. Moving forward, what remains is to identify from a social science research lens to comprehensively understand the impact of virtual communities of practice. By examining the intersections between digital spaces, community engagement, and harm reduction strategies, we aim to outline pathways for more effective policy and practice change.

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YSMENA Survey: Barriers to HIV/STI Testing and HIV Risk Assessment in a Large Sample of Gay, Bisexual and Transgender Middle Eastern and North African Youth in Ontario and British Columbia

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INTRODUCTION:
Research on sexual health practices of Middle Eastern and North African (MENA) youth in Canada is lacking, despite increased immigration. Gay, bisexual, cis men who have sex with men (MSM), and trans MENA youth bear disproportionate burden of STIs and HIV. YSMENA community-based research study aimed to determine meaningful HIV and STI prevention interventions for MENA youth in Canada.

METHOD:
A quantitative survey was administered to MENA youth, ages 18-29 years in Ontario and British Columbia (BC). The survey was developed by a community-based team, including MENA youth, clinicians, researchers, and community leaders with feedback from MENA HIV experts. The survey was pilot-tested with MENA youth and revised before administering online via Qualtrics. MENA Peer Research Associates helped recruit hard-to-reach participants.

RESULTS:
A total of 239 youth from Ontario (77.8%) and BC (22.2%) completed the survey, with no significant differences on background characteristics noted. Average age was 24.67 years (SD=3.39). Almost 50% identified as gay/bi/MSM (n=89, 37.2%,) or trans (n=21, 8.8%). Interestingly, 85% were newcomers, and most trans youth spent 3 years in Canada. Majority of gay/bi/MSM and trans youth (82%) were aware of PrEP, yet usage was low: 33.3% vs 18%, respectively. Concerns about side effects, stigma, and accessibility were reported. About 50% had limited knowledge of PEP, with a significant proportion reporting access uncertainty. Apprehension about HIV/STI testing was notable in gay/bi/MSM youth due to fear of positive results and stigmatization, whereas 60% of trans youth were uncertain about accessing HIV/STI testing. HIV Incidence Risk Index (HIRI) for HIV-negative participants indicates gay/bi/MSM (63%) and trans youth (28%) had HIRI scores of 10 or higher, denoting increased risk of acquiring HIV.

CONCLUSION:
There is a need for culturally-relevant, tailored HIV/STI prevention programming aimed at addressing barriers facing Gay/bi/MSM and trans MENA youth in accessing sexual health services.

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Shift: Documenting the Employment Experiences of Community HIV Researchers During the COVID-19 Pandemic and Reflecting on Opportunities for Change

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Community researchers living with HIV are central to the research process, yet often face precarious working conditions. During the COVID-19 pandemic, many research projects were put on hold, causing disruptions. The objective of this arts-based community-based research (CBR) project was to explore how COVID-19 impacted the employment experiences of community HIV researchers. We conducted 6 object-elicited focus groups with 25 community researchers living with HIV in Canada who worked during the COVID-19 pandemic, or whose work was interrupted by COVID-19. Focus groups included 10 Indigenous people, 3 people who were Black Canadian, Middle Eastern, or East Asian, 2 people who were Jewish, and 13 people who were white. The average age was 54.3 (range 32-69) with 13 women, 10 men, 3 Two-Spirit people, and 3 gender diverse people. The team used a collaborative approach to thematic analysis, double-coding each transcript. Community researchers identified technology and communication challenges that impacted their ability to work during the COVID-19 pandemic. While technology was a barrier for some, it facilitated access to employment for others. Many shared feeling they were “fumbling in the dark” due to lack of information about the status of research projects. Community researchers identified the following key recommendations for employers: 1) improve access to technology and equipment for work, communication, and team connection, 2) prioritize the health and well-being of team members, especially in relation to isolation and loss, 3) compensate community researchers for training and professional development, 4) involve community members as collaborators in research decision-making processes, 5) foster open, adaptable, and timely communication channels between community researchers, participants, and research teams, and 6) ensure equitable compensation including attention to cost of living and additional expenses (e.g. childcare, internet access). Attending to these suggestions will help to improve the working conditions of community researchers.

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Centering Diaspora Middle Eastern and North African (MENA) Youth in Ontario and British Columbia: Findings from The YSMENA Canadian HIV Survey

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INTRODUCTION:
There is a dearth of research on unique challenges Middle Eastern and North African (MENA) youth face when accessing sexual health services in Canada. YSMENA is the first community-based research to identify effective interventions to reducing HIV vulnerabilities among MENA youth in Canada.

METHOD:
MENA youth, clinicians, researchers, and community leaders led survey development, with feedback from MENA HIV experts. MENA youth pilot-tested the survey, which was then administered online via Qualtrics from March-July, 2023. Survey had 80 questions covering socio-demographics, sexual health, stigma and discrimination, HIV/STI prevention interventions, mental health, and resilience.

RESULTS:
A large sample of MENA youth (N=239), ages 18-29 years (average=24.67, SD=3.39) from Ontario (78.8%) and British Columbia (22.2%) completed the survey. Sub-groups included: gay/bi/MSM (37.2%), heterosexual women (28%) and men (16.7%), trans-identifying youth (8.8%), and lesbian/bisexual/queer (LBQ) women (7.9%). Most participants were newcomers, with 70% having lived 9 years or less in Canada. About 67% had post-graduate or undergraduate education. Half of participants reported fair to extreme difficulty in meeting their monthly housing costs. Using DASS-21 scale, 11% reported mild to moderate stress levels, while almost half (46%) reported mild to extremely severe anxiety levels and one-third (33%) reported mild to severe depression levels. Gender-focused and culturally-relevant programs and creating safe spaces for gender and sexual minority youth were ranked first. Newcomer orientation on sexual health and sex-positive spaces were highlighted. Interventions, including improving medical access, training for health care workers, and media campaigns were ranked second. Interventions for enhancing accessibility for PrEP and testing were crucial for all groups, especially for trans youth (57.1%), heterosexual youth (31.8%), LBQ women (26.3%) and gay/bi/MSM (18.5%) to promote health-seeking behaviour.

CONCLUSION:
Knowledge gained addresses important gaps concerning this growing community in Canada and highlights youth-informed sexual health interventions that can guide policy and practical measures.

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Living with HIV and Chronic Pain in Canada: The Protocol of a Community-Based, Mixed-Methods, Multi-Sectoral, Interdisciplinary, and Intersectional Study

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Background
The experience of pain is a prevalent co-occurring condition, arising as a complex consequence of HIV infection itself and as a side effect of antiretroviral therapy among the 60,000 Canadian individuals living with HIV/AIDS (PLHAs), adversely affecting PLHAs' sleep, mood, cognition, emotional health, social and workplace participation, and overall quality of life. The International Association for the Study of Pain (IASP 2020) defines chronic pain as a distressful sensation linked to tissue harm, persisting for over three months. To cope with pain, PLHAs utilize a range of approaches, including standard medical care, alternative healing methods, and body-mind practices. The research protocol we plan to present at CAHR 2024 is the result of extensive participatory work involving peer researchers, clinicians, social behaviorists, and educators.

Objectives
1) Form, educate, and support a team of Peer Researchers (PRAs) to work alongside researchers and partners in all facets of the study; 2) Carry out a bilingual online survey with 500 PLHAs from a non-probabilistic sample to explore their chronic pain experiences, access, and impacts; 3) Apply the Q-sorting technique to prioritize survey results based on the most pressing needs of those enduring pain and HIV.

Study Design
This investigation adopts an Exploratory Sequential Design mixed-methods approach, beginning with a bilingual nationwide online survey and followed by a series of national workshops employing Q-sorting to categorize and prioritize statements based on participant agreement and relevance.

Participant Recruitment and Eligibility
Using our extensive combined network, we will recruit up to 500 diverse participants self-identifying with the IASP definition of chronic pain (i.e., pain > 3 months) and consenting to fill out a self-report questionnaire with a stipend offered.

Funding
The Canadian Institutes of Health Research and the HIV/AIDS and STBBI Community-Based Research Program [483727] fund this study, with approval from the University of Toronto REB.

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Generating knowledge to mobilize HIV Championship in racialized immigrant communities

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Introduction:
Racialized immigrants and refugees in Canada bear a disproportionate burden of HIV. Over 45% of HIV cases in Canada with a known race/ethnicity were reported as visible minority. In addition to systemic social and economic inequities, HIV stigma and discrimination reinforces HIV vulnerability by creating unsafe environments that deter people from testing and disclosure, resulting in isolation, depression, delayed diagnosis and linkage to treatment and care, and poor health outcomes.

Methods:
The Acceptance and Commitment to Empowerment (ACE) Study is a multi-phase project being undertaken in six Canadian cities – Calgary, Edmonton, London, Niagara, Ottawa, and Toronto. Our study objectives are to examine the contextual determinants of HIV stigma in racialized immigrant communities, generate inclusive knowledge to inform accessible, effective and sustainable interventions; and mobilize leadership among community members living with and/or affected by HIV-stigma. Phase One focuses on identifying the different types of stigma and lived experiences in the local contexts. We used focus groups to engage 30 service providers/community leaders and 60 community members living with or affected by HIV related stigma.

Results:
In this presentation, we report on the perspectives and experiences of affected members in racialized immigrant and LGBTQ communities. Participants indicated that: (1) deep-rooted prejudices and misconceptions about HIV have persisted in their communities; (2) invisibility of people living with HIV reinforces silence and community denial; (3) gender-based violence heightened HIV vulnerabilities and stigma; (4) experiences of HIV stigma are intertwined with experience of racism and homophobia; and (5) HIV disclosure to trusted family, friends and health care providers as a strategy to resist stigma.

Conclusion:
Visible leadership of racialized people living with HIV is critical to stigma reduction. Effective HIV responses must integrated intersectional analysis of gender-based inequities, racism, homophobia and other systemic marginalization. Results will inform refinement of our Phase Two intervention.

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HIV Research in the Age of Big Data: Developing a Framework for Community-Led Big Data Research through the Eng/aging Project

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Background:
Active participation by People Living with HIV (PLHIV) has been pivotal to HIV research historically; yet the recent surge of big data in HIV research often circumscribes PLHIV. Our Eng/aging team piloted a framework to authentically engage PLHIV (peer researchers) in administrative health data research.

Our Community-Based Approach:
Eng/aging is a community-led project including peer researchers, data scientists, clinicians and social scientists. Eng/aging involves two integrated elements: 1. Community-led administrative health data research using data from the "Comparative Outcomes and Service Utilization Trends (COAST) study" focused on aging and HIV; 2. Collective reflexive examination of our COAST research process to build a framework that engages peer researchers. To bridge capacity, we formed our diverse team and co-produced knowledge translation (KT) tools to collectively understand COAST/administrative health data, and research interests. We then used a peer-facilitated process to identify important COAST questions, and co-wrote and submitted a data analysis request complete with an analysis plan. We are currently co-analyzing results to inform our findings KT plan. Through the335esearchh process, we have collectively conducted participant observation and critical reflexive dialogue through "Gathering Wisdom" discussions.

Lessons learned:
Co-creating less technical, visually-based KT tools and presentations and having regular conversations was effective in achieving a project whereby peer researchers felt empowered to lead and develop a strengths-based research perspective. Involving peers with varying levels of experience was essential; this enabled community capacity to work through the complex analytic approach required of administrative data research. Full team commitment to community-based research principles is necessary. In-person time (e.g. a 3-day retreat) has been critical to our progress and requires coordinating complicated schedules.

Conclusion:
Community-led big data research is not only ethically sound but can also strengthen the veracity of big data HIV research by being human-centered—infused with lived/experiences and reflective of community priorities.

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Harmonizing Histories: Synergizing Lessons Learned from the AIDS Epidemic to Illuminate Pathways for Addressing the Toxic Drug Crisis

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Background: The AIDS epidemic of the late 20th century represented a critical juncture in global public health, triggering unprecedented responses to infectious diseases. The multifaceted strategies developed during this period continue to inform public health approaches today. This research explored the valuable lessons learned from the AIDS epidemic and evaluated their potential application to address the contemporary challenges of the toxic drug crisis. While the nature of these crises differs, a comparative analysis reveals common principles and strategies that can enhance the effectiveness of responses to the toxic drug crisis.

Methods: A thorough study of the literature was conducted to identify important lessons learned from the AIDS epidemic. These lessons were then evaluated to determine their relevance and applicability to the current toxic drug crisis, creating a strong foundation for comparison. Through a comprehensive literature review, historical data, and case studies related to both public health crises, this comparative analysis used a qualitative approach to extract insights and parallels.

Results: Among potential solutions to address the complex challenges posed by the toxic drug crisis, the AIDS epidemic highlighted the importance of adopting wholistic and comprehensive approaches, harm reduction strategies, combating stigma, activism and community-driven responses, decriminalization, access to treatment, and public awareness campaigns. Harm reduction supplies and needle distribution sites, for example, proved successful in controlling HIV transmission and emerged as a crucial lesson applicable to mitigating the adverse impacts of the toxic drug crisis.

Conclusions: By utilizing the knowledge and experiences gained from the AIDS epidemic, people living with HIV/AIDS, clinicians, researchers, and service providers can work together to create more effective, empathetic, and person-centred strategies to better support people who use drugs. Incorporating this knowledge synthesis into current practices can lead to more resilient and adaptable systems that tackle the complex challenges posed by the toxic drug crisis.

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Material and relational stressors of frontline providers in the paediatric-adolescent HIV response: Insights from twelve high HIV-prevalence countries in Africa

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Background: Children and adolescents living with HIV in sub-Saharan Africa experience poor outcomes across the HIV cascade of care. Paediatric and adolescent-friendly HIV services are crucial to their wellbeing, and recent years have seen a call for urgent service improvements. While frontline health workers are responsible for delivering these services, less attention has been given to their contextual realities, challenges and what constitutes an enabling service delivery environment.

Method: Data were collected across 24 sites in 2022 at a convening of key service providers on the frontline of the paediatric-adolescent HIV response in twelve high HIV-burden African countries (eSwatini, Kenya, Malawi, Mozambique, South Africa, Tanzania, Uganda, Zambia, Cameroon, Ethiopia, Nigeria and Zimbabwe). Service providers included nurses, doctors, peers supporters, community health workers, and psychosocial support workers.

Results: Inadequate material and human resources were among the most commonly cited and 337rioritized difficulties. In discussing material challenges, participant described multi-level stressors related to patient health, their relationships with patients, and their own well-being. First, resource-related challenges were described as diminishing of efforts of children and adolescents living with HIV – and the frontline providers who support them – to adhere to HIV medicines and be retained in the HIV cascade of care. Second, resource-related challenges was described as stressful to frontline providers, who tried to buffer these structural and supply-chain barriers through resource prioritization, and in some cases, through supporting patients personally.Third, stock-outs and long wait times were reported as eroding patient trust in health products and services, as well as trust in frontline providers themselves. Frontline providers described this as difficult, stressful and demoralizing.

Conclusion: Findings suggest that the provision of frontline paediatric and adolescent HIV care – and the relational wellbeing of frontline providers themselves – is influenced by structural, institutional, relational and material contexts in which frontline providers work.

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If We Build it We Will Come: Creating the Foundation for a Primary Healthcare HIV Clinic for African Caribbean and Black (ACB) Communities in the Greater Toronto Area.

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Background: The Greater Toronto Area (GTA) is the epicenter of the ACB HIV epidemic in Ontario. The GTA alone accounted for 60% of the HIV diagnoses among ACB people. Despite this, we have limited access to culturally and racially effective HIV primary healthcare services to improve health and well-being and reduce HIV infections. Within this context, the Aya Circle of Care program located at TAIBU Community Health Centre is being created as the first intensive HIV case management primary healthcare program for ACB communities in the GTA.

Objective: To understand the strengths, challenges, and perceived impact of implementing an intensive HIV case management program within a primary healthcare clinic for ACB community members.

Method: We conducted a descriptive qualitative study using face-to-face semi-structured key informant interviews (N=20) with policymakers, researchers, service providers, and healthcare providers with expertise with HIV and ACB communities. A majority of the informants identified as living with HIV (55%). Data was analyzed using conventional content analysis.

Results: Informants proposed key themes for the foundation of the program. The program should centralize the social determinants of health and address health disparities experienced by ACB populations. The program should develop effective pathways to increase the timeliness of linking to primary healthcare, retention in care, adherence to treatment and maintaining viral suppression. The program should be geographically focused, grounded in Africentric principles, and focus on navigating the effects of structural anti-Black racism. Services should be led by Black providers within Black-focused organizations, address HIV stigma, provide services for family units and support those at risk for HIV.

Conclusion: Increasing access to intensive case management and primary healthcare services that are comprehensive and culturally, and racially appropriate is crucial for improving health and well-being among ACB populations living with HIV in Ontario.

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Knowledge Acquisition, Perception, and Engagement Level of Islamic Religious Leaders in HIV/AIDS in Toronto, Ontario, Canada

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This qualitative descriptive study investigates perceptions, knowledge, and attitudes of 30 Muslim religious leaders (male, female, and youth) in Toronto regarding AIDS prevention and their views on people living with HIV/AIDS (PLWHA). Employing audio interviews, a content analysis approach was used for data analysis. Results indicate that these leaders don't consider AIDS a significant health issue within Toronto's Islamic community, attributing lowered risk behaviors to adherence to Islamic values.

While responses to PLWHA varied, there was consensus among leaders about their responsibility in preventing HIV/AIDS, emphasizing the role of sex education in fostering healthy behaviors and preventing HIV transmission. The study addresses a gap in existing research, which focuses on Christian leaders in Canada, neglecting the broader population and religious sites.

Examining the role of Islamic Religious Leaders (IRLs) in the Greater Toronto Area, the study reveals a mean age of 49 years, with 67% being male. Their primary source of information on HIV/AIDS was mass media (98%). While knowledge scores averaged 6.7%, 60% demonstrated good knowledge, and 56% could not correctly identify HIV as a cause of AIDS. Abstinence as a was strongly endorsed (98%), with 99.5% perceiving HIV/AIDS as a threat to social well-being.

Despite acknowledging the vulnerability of Muslims to HIV, 66.6% believed IRLs play crucial roles in prevention. However, limited training on HIV/AIDS was observed. Barriers to organizing educational programs included lack of knowledge (16.7%) and limited access to educational materials (12%). Most respondents (80%) expressed willingness for training on HIV.

In conclusion, the study underscores the fair knowledge of HIV/AIDS among IRLs but highlights their limited involvement in prevention programs. To address this, formal training, advocacy, and technical support are recommended, with an emphasis on capacity-building and materials.