

# Characteristics of the HIV cascade of care and unsuppressed viral load among HIV positive gbMSM across three Canadian cities

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## Introduction

- Treatment as prevention strategies have been variously applied across provinces in Canada.
- We estimated **HIV cascade of care indicators** among samples of gay, bisexual and other men who have sex with men (gbMSM) recruited in Vancouver, Toronto and Montreal.

## Methods

- Sexually active gbMSM, aged  $\geq 16$  years, were recruited through respondent-driven sampling (RDS) from February 2017 to July 2019.
- Computer-Assisted Self-Interview captured sociodemographic factors, sexual and substance use behaviours, mental health symptoms (using the Hospital Anxiety and Depression Scale [HADS]) and diagnoses, and access to health services
- AUDIT-C scores  $\geq 4$  indicate high risk for hazardous drinking
- Participants were also tested for HIV and other sexually transmitted and blood borne infections
- We conducted bivariate analyses comparing RDS-adjusted proportions across cities
- P values  $< 0.05$  indicate statistically significant differences between cities
- We used multivariable logistic regression analysis to examine factors associated with having an unsuppressed viral load (VL) ( $\geq 200$  copies/mL), with data pooled from all three cities
- Odds ratios (ORs)  $< 1$  indicate protective effects

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Across the three cities 96-99% of HIV positive gbMSM were diagnosed; 93-96% were on ART and 90-97% were virologically suppressed

## Factors associated with having a VL $\geq 200$ copies/mL among HIV positive participants

	Unadjusted Odds Ratio	95% CI		Adjusted Odds Ratio	95% CI	
<b>Demographics</b>						
Age	0.94	0.91	0.97	0.93	0.89	0.97
Annual Income						
<\$30,000	Ref					
$\geq$ \$30,000	1.04	0.45	2.39			
Ethnicity - Canadian or European						
Yes	Ref					
No	1.06	0.44	2.56			
Born in Canada						
No	Ref					
Yes	0.52	0.23	1.17			
City						
Montreal	Ref			Ref		
Toronto	0.36	0.12	1.10	0.27	0.07	1.03
Vancouver	0.22	0.07	0.73	0.23	0.06	0.82
<b>Health services</b>						
Has a primary healthcare provider						
No	Ref			Ref		
Yes	0.08	0.02	0.25	0.11	0.02	0.57
Tested for STIs in past 2 years						
No	Ref					
Yes	1.12	0.44	2.82			
Ever diagnosed with an STI						
No	Ref			Ref		
Yes	0.16	0.07	0.35	0.12	0.04	0.32
<b>Mental Health</b>						
HADS score Anxiety sub-scale	1.11	1.03	1.19			
HADS score Depression sub-scale	1.09	0.99	1.18			
<b>Substance use</b>						
Has used marijuana in past six months						
No	Ref.					
Yes	0.61	0.27	1.38			
Has used methamphetamines in past six months						
No	Ref					
Yes	1.04	0.41	2.64			
<b>AUDIT C Scale</b>						
Low Risk (score $< 4$ )	Ref			Ref		
High Risk (score $\geq 4$ )	0.23	0.07	0.75	0.19	0.05	0.70

## Results:

- We recruited a 1179 participants in Montreal, 517 in Toronto and 753 in Vancouver
- HIV prevalence was 14.2% in Montreal; 22.1% in Toronto, and 20.4% in Vancouver ( $p < 0.001$ ).
- Of participants who were found to be HIV negative at enrollment, 70.4% in Montreal reported having **tested for HIV in the previous year**, 67.5% in Toronto, and 69.4% in Vancouver ( $p = 0.010$ )
- Of participants with confirmed HIV infection, 3.3% were **previously undiagnosed** in Montreal, 3.2% undiagnosed in Toronto and 0.2% in Vancouver ( $p = 0.154$ ).
- In Montreal, 87.6% of GBM living with HIV were **receiving antiretroviral therapy (ART)** and 10.6% had an **unsuppressed VL**; in Toronto, 82.6% were receiving ART and 4.0% were unsuppressed; in Vancouver, 88.5% were receiving ART and 2.6% were unsuppressed ( $p < 0.001$  and 0.009, respectively).
- In our **multivariable model**, unsuppressed VL was associated with a lower odds of:
  - **Living in Vancouver** (AOR=0.23) compared to Montreal;
  - **Increasing age** (AOR 0.93 per year)
  - **High-risk for hazardous drinking** (AOR=0.19)
  - **Having a primary care provider** (AOR=0.11)
  - **Ever diagnosed with STIs other than HIV** (AOR=0.12)
- The other factors we examined were not independently associated with unsuppressed VL

## Conclusions:

- GBM living in Montreal, Toronto and Vancouver are highly engaged in HIV testing and treatment.
- Nevertheless, we identified disparities which can be used to identify GBM who may require additional interventions to maximize HIV treatment benefits, in particular **younger men** and **those without a regular primary care provider**.