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MAJOR ARTICLE

# Hepatitis C Virus Seroprevalence, Incidence, and Screening Patterns in Ontario Preexposure Prophylaxis Users

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***Background.*** Hepatitis C virus (HCV) has emerged as a sexually transmitted infection in gay, bisexual, and other men who have sex with men (GBM). We estimated the seroprevalence and incidence of HCV infection and examined patterns of HCV testing among GBM using human immunodeficiency virus preexposure prophylaxis (PrEP) in Ontario, Canada.

***Methods.*** We analyzed data from the Ontario PrEP Cohort Study (ON-PrEP), a prospective cohort of PrEP users from 10 Ontario clinics. Participants completed an online questionnaire and study staff collected clinical information into a study database biannually for 2 years. We estimated the baseline seroprevalence and incidence of HCV infection and examined patterns of HCV testing during follow-up. We further explored differences in sociodemographic/clinical variables between those with and without prevalent/incident HCV infection through bivariate analysis.

***Results.*** Among 557 eligible PrEP users, 382 (68.6%) underwent baseline HCV antibody testing, of whom 5 tested HCV seropositive, giving a seroprevalence of 1.3% (95% confidence interval [CI], .43%–3.03%). Only 245 (43.9%) participants underwent HCV antibody testing after baseline, and median time to participants' first follow-up test was 245 days. During follow-up, 2 participants tested newly HCV seropositive, giving an incidence of 0.47/100 person-years (95% CI, .06–1.69) over 428.9 years of follow-up. Participants with prevalent/incident HCV infection during the study appeared more likely to report giving money, drugs, gifts, or services for sex in the 3 months preceding enrollment compared to those who never tested HCV seropositive ($P = .02$).

***Conclusions.*** HCV seroprevalence and incidence were low but not negligible among Ontario PrEP users. HCV antibody and RNA testing were suboptimal.

**Keywords.** cohort analysis; hepatitis C virus; incidence; preexposure prophylaxis; seroprevalence.

Hepatitis C virus (HCV) is a major global health issue, with an estimated 71.1 million individuals with chronic infection worldwide and an international incidence of 23.7 cases per 100 000 population in 2015 [1]. Without early detection, HCV can cause acute hepatitis and is a risk factor for cirrhosis, liver failure, and hepatocellular carcinoma [2].

Gay, bisexual, and other men who have sex with men (GBM) are a priority population for HCV treatment and prevention. Although blood exposure (mainly through injection drug use) remains the most common route of HCV transmission, sexual transmission has been observed in GBM, particularly those with human immunodeficiency virus (HIV), since the early 2000s [3]. Specifically, the presence of ulcerative sexually transmitted infections and sexual practices such as condomless anal sex, group sex, and fisting have been linked to sexual transmission of HCV in GBM with HIV [4, 5]. Recently, HCV has emerged as a sexually transmitted infection among GBM who use HIV preexposure prophylaxis (PrEP), likely related to overlapping sexual networks with GBM with HIV [6–8]. However, few studies have examined HCV among PrEP users in North America and existing data suggest that HCV incidence rates are lower among PrEP users in North America than in Europe [9]. Our objectives were to (1) estimate the

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seroprevalence and incidence of HCV infection in Ontario PrEP users; (2) examine patterns of HCV testing among PrEP users; and (3) explore differences between those with and without prevalent/incident HCV infection during the study.

## METHODS

### Study Design

We analyzed data from the Ontario PrEP Cohort Study (ON-PrEP), a prospective cohort of PrEP users. Starting in February 2018, we recruited participants from 10 Ontario PrEP clinics (5 in Toronto, 1 in each of Guelph, Hamilton, London, Ottawa, and Sudbury). In Ontario, PrEP is typically prescribed in accordance with Canadian guidelines [10]. Medication costs are fully covered for those with access to a public drug formulary called the Ontario Drug Benefit, which is available to all Ontarians aged <25 or ≥65 years, on social assistance, receiving home care, or living in long-term care facilities [11]. Other residents of Ontario can apply for partial PrEP coverage through a subsidy program called Trillium [11]. Those eligible for ON-PrEP were initiating/using any PrEP regimen, aged ≥16 years, HIV negative within 3 months before enrollment, and deemed to have sufficient English language proficiency. Because GBM experience the greatest burden of HCV infections when compared to other PrEP-seeking populations (eg, cisgender women), we restricted our analysis to those who were assigned male sex at birth and excluded participants with missing sex/gender data. At the time of data extraction (12 July 2023), 557 participants were eligible for inclusion.

ON-PrEP involved biannual study visits over 2 years, during which participants completed an online questionnaire and study staff collected clinical information (eg, HCV test data) into a study database. Because laboratory testing was not prescribed by the study protocol and participants may have undergone testing at facilities other than ON-PrEP study sites, we sought participants' permission to access testing data from the Public Health Ontario Laboratory (PHOL), a provincially run service that performs virtually all HCV testing in Ontario, and 82.8% of all ON-PrEP participants consented. We combined PHOL and ON-PrEP data using deterministic linkage by provincial health card number. Since clinical guidelines recommend HCV screening annually [10], we included PHOL data starting 9 months before study enrollment (because those lacking HCV results within this window would not be recommended to repeat testing until 3 months later) plus the entire study duration.

### Statistical Analysis

For our first objective, we calculated HCV seroprevalence as the number of participants who tested HCV seropositive at baseline divided by the total number of participants who underwent baseline HCV antibody testing, with 95% confidence interval (CI). We calculated HCV incidence as the number of newly positive HCV antibody tests after baseline per 100 person-years (PY) of follow-up for those who were HCV antibody negative at baseline. In part because reflex HCV RNA testing of newly HCV antibody–positive samples was not introduced in Ontario until April 2023, we did not require these individuals to also have a positive HCV RNA confirmatory test to be classified as an incident HCV infection. We further included HCV reinfections within our estimates of HCV incidence. Since HCV seropositivity is lifelong even if infection is spontaneously cleared or successfully treated, we considered those testing HCV seropositive with undetectable HCV RNA to be susceptible to reinfection, defined as a newly positive HCV RNA test. One participant who had evidence of cleared HCV infection 7 years before enrollment did not undergo any HCV RNA testing during follow-up and was therefore excluded from our incidence estimates as we could not ascertain whether they experienced HCV reinfection during follow-up.

For our second objective, we reported the frequency of HCV antibody testing at baseline and during follow-up among all participants included in the present analysis. Moreover, we used cumulative incidence functions to quantify the likelihood of HCV antibody testing over the study duration among all eligible participants. We reported cumulative probabilities at both 1 year and 2 years, since Canadian clinical guidelines recommend HCV antibody testing annually for PrEP users [10]. Those who were lost to follow-up were censored at their last date of observation. Finally, we calculated the median number of HCV antibody tests completed per year of follow-up in addition to the median number of days between participants' baseline HCV antibody test and first follow-up test for those testing at least once.

For our third objective, we explored differences in sociodemographic and clinical variables between those with and without prevalent/incident HCV infection (ie, ever vs never) through bivariate analysis, using Fisher exact test for categorical variables and Kruskal-Wallis rank-sum test for continuous variables. In post hoc exploratory analyses, we compared sociodemographic and behavioral variables between those who did versus those who did not undergo HCV antibody testing at any point over the study period using the same methods. Analyses were conducted in Excel 16.75.2 and RStudio 2024.04.2+764.

### Patient Consent Statement

All participants were given detailed oral and written information about the study, including the study procedures, anticipated benefits, and potential risks. Participants voluntarily signed and dated an informed consent document that was approved by a participating center's research ethics board (REB) prior to any procedures that were done specifically for the study.

ON-PrEP received ethical approval from the following REBs: Hamilton Integrated (HiREB Project #4513), Ottawa Health Science Network (Protocol #20180306-01H), Public Health Ontario (File Number 2020-045.01), St Michael's Hospital (REB #17-281), University Health Network (19-5062), and University of Toronto (RIS Protocol #35597). The present study was conducted in accordance with the International Conference for Harmonization and Good Clinical Practice regulations and guidelines in addition to the current revision of the Declaration of Helsinki.

## RESULTS

Of 557 ON-PrEP participants who were assigned male sex at birth (Table 1), the vast majority self-identified as cisgender men (n = 540 [96.9%]) and the remainder identified as either transgender women (n = 6 [1.1%]) or another gender identity including nonbinary, genderqueer, or Indigenous Two-Spirit (n = 11 [2.0%]). Most were born in Canada (n = 389 [69.8%]) and living in Toronto (n = 292 [52.4%]) and self-identified as gay (n = 500 [89.8%]) and White (n = 375 [67.3%]). Median age was 36 years (quartile 1 [Q1] = 30, quartile 3 [Q3] = 45). Most had initiated PrEP before entering ON-PrEP (n = 388 [69.7%]), with a median PrEP duration of 0.52 years (Q1 = 0, Q3 = 1.63), and the remainder started taking PrEP within a week of enrollment (n = 169 [30.3%]).

At baseline, 382 (68.6%) participants underwent HCV antibody testing and 5 tested HCV seropositive, giving a seroprevalence of 1.3% (95% CI, .43%–3.03%). Of these 5 participants, 4 underwent HCV RNA testing, 2 of whom had HCV RNA detected. The timing of these HCV RNA tests ranged from 0 to 131 days after the positive HCV antibody test. Both participants with active HCV infection completed subsequent HCV RNA tests; 1 participant underwent 2 tests at 113 and 198 days after diagnosis, both of which were positive, while the other only completed 1 test 276 days after diagnosis, which was negative.

The 557 participants included in our analysis contributed a cumulative 664.7 PY of follow-up over the study period, with a median follow-up time of 1.26 (Q1 = 0.37, Q3 = 1.27) years. After baseline, a total of 245 (43.9%) participants underwent HCV antibody testing, 113 (20.2%) only once and 132 (23.7%) more than once. The likelihood of HCV testing increased steadily over time (Figure 1). The cumulative probability of follow-up HCV antibody testing was 0.48 after 1 year and 0.70 after 2 years. The cumulative probability of any HCV antibody testing (ie, including baseline testing) was 0.85 after 1 year and 0.89 after 2 years. Participants underwent a median of 0.50 (Q1 = 0, Q3 = 1.42) follow-up HCV antibody tests/year. The median time to participants' first follow-up HCV antibody test was 245 (Q1 = 182, Q3 = 366) days.

Two (0.8%) participants tested newly HCV seropositive during the study. The 245 participants who completed HCV antibody testing at least once after baseline contributed 428.9 PY of follow-up (median follow-up time, 1.94 years; Q1 = 1.42, Q3 = 2.07), giving an incidence of 0.47 per 100 PY (95% CI, .06–1.69). Only 1 of the 2 participants with incident HCV infection underwent HCV RNA testing, 6 days after the positive HCV antibody test, which was positive. This participant also completed 4 subsequent HCV RNA tests, the first 2 coming back positive at 7 and 43 days after diagnosis, and the latter 2 coming back negative at 98 and 123 days after diagnosis.

Among the 7 participants who ever tested HCV seropositive without a negative HCV RNA test to document resolution of infection, none had evidence of receiving HCV-specific therapy in the study database. Follow-up HCV RNA testing was completed by only 5 of these 7 participants, despite their median duration of follow-up being 679 (Q1 = 498, Q3 = 735) days. Among the 2 participants with available data, both had HCV genotype 1.

We found no association between history of injection drug use and ever testing HCV seropositive (Table 2; $P = .75$). Additionally, none of the eligible participants reported sharing a straw or other device for snorting drugs throughout the entire study duration.

Participants who ever tested HCV seropositive appeared more likely to report giving (but not receiving) money, drugs, gifts, or services for sex in the 3 months preceding enrollment compared to those who never tested HCV seropositive ($P = .02$ for giving, $P = .80$ for receiving). Of 26 other participants who also reported giving goods/services for sex, 7 (27%) did not undergo HCV testing at baseline but were screened during follow-up, and 4 (15%) were never screened at all.

In post hoc exploratory analyses, we found that participants who never underwent any HCV antibody testing over the study period appeared more likely to live in Ontario cities other than Toronto ($P = .01$), to self-identify as White ($P = .03$), to have no casual partners ($P = .02$), to have fewer male sexual partners in the previous 6 months ($P = .01$), and to have initiated PrEP before enrolling in the cohort ($P = .01$).

## DISCUSSION

We found baseline HCV seroprevalence to be 1.3% (95% CI, .43%–3.03%) and incidence to be 0.47 per 100 PY (95% CI, .06%–1.69%) in this cohort of Ontario PrEP users. All observed infections occurring in GBM with no history of injection drug use or sharing straws/snorting equipment suggests sexual activity as the likely mode of transmission.

Our findings reflect those of other North American studies. Among 344 PrEP users attending a Toronto clinic between 2012 and 2019, baseline HCV seroprevalence was 1.5% and incidence was 0.7 per 100 PY [12]. A San Francisco study observed an HCV incidence of 0.7 per 100 PY (95% CI, .08–2.4) among 485 GBM taking PrEP [13]. Similar to these studies,

**Table 1. Sociodemographic and Clinical Characteristics of Participants in the Ontario PrEP Cohort Study Stratified by History of Hepatitis C Virus Infection (n = 557)**

| Characteristics | Never HCV Positive (n = 550) | Ever HCV Positive (n = 7) | *P* Value[a] |
|---|---|---|---|
| City of residence | | | .16 |
| Toronto | 286 (52.0) | 6 (85.7) | |
| Other | 264 (48.0) | 1 (14.3) | |
| Age, y, median (Q1, Q3) | 36 (30, 45) | 40 (35, 42) | .63 |
| Born in Canada | | | .74 |
| Yes | 385 (70.0) | 4 (57.1) | |
| No | 164 (26.9) | 3 (42.9) | |
| Missing | 2 (0.4) | 0 (0.0) | |
| Race | | | .84 |
| Racialized[b] | 178 (32.4) | 3 (42.9) | |
| White | 371 (67.5) | 4 (57.1) | |
| Missing | 1 (0.2) | 0 (0.0) | |
| Gender identity | | | .89 |
| Cisgender man | 533 (96.9) | 7 (100.0) | |
| Transgender woman | 6 (1.1) | 0 (0.0) | |
| Other[c] | 11 (2.0) | 0 (0.0) | |
| Employment status | | | .56 |
| Employed | 466 (84.7) | 7 (100.0) | |
| Unemployed | 84 (15.3) | 0 (0.0) | |
| Annual income | | | .40 |
| <$60 000 | 186 (33.8) | 4 (57.1) | |
| ≥$60 000 | 336 (61.1) | 3 (42.9) | |
| Missing | 28 (5.1) | 0 (0.0) | |
| Primary partner | | | .22 |
| Yes | 259 (47.1) | 1 (14.3) | |
| No | 289 (52.5) | 6 (85.7) | |
| Missing | 2 (0.4) | 0 (0.0) | |
| Casual partners | | | 1.00 |
| Yes | 484 (88.0) | 6 (85.7) | |
| No | 66 (12.0) | 1 (14.3) | |
| No. of male sex partners in past 6 mo, median (Q1, Q3) | 9 (4, 20) | 12 (3.5, 20) | .78 |
| No. of male sex partners with HIV in past 6 mo, median (Q1, Q3) | 0 (0, 1) | 0 (0, 1.5) | .91 |
| Group sex in past 3 mo | | | .36 |
| Yes | 211 (38.4) | 1 (14.3) | |
| No | 326 (59.2) | 6 (85.7) | |
| Missing | 13 (2.4) | 0 (0.0) | |
| Received money, drugs, gifts, or services for sex in past 3 mo | | | .80 |
| Yes | 21 (3.8) | 0 (0.0) | |
| No | 517 (94.0) | 7 (100.5) | |
| Missing | 12 (2.2) | 0 (0.0) | |
| Given money, drugs, gifts, or services for sex in past 3 mo | | | .02 |
| Yes | 26 (4.7) | 2 (28.6) | |
| No | 512 (93.1) | 5 (71.4) | |
| Missing | 12 (2.2) | 0 (0.0) | |
| Frequency of being drunk/high during condomless anal sex in past 3 mo, median (Q1, Q3) | 0 (0, 3) | 0 (0, 0) | .07 |
| History of injection drug use | | | .75 |
| Yes | 7 (1.3) | 0 (0.0) | |
| No | 377 (68.5) | 4 (57.1) | |
| Missing | 166 (30.2) | 3 (42.9) | |
| PrEP status | | | .26 |
| Started PrEP prior to enrollment | 438 (70.0) | 3 (42.9) | |
| Started PrEP within a week after enrollment | 165 (30.0) | 4 (57.1) | |

Data are presented as No. (%) unless otherwise indicated.

Abbreviations: HCV, hepatitis C virus; HIV, human immunodeficiency virus; PrEP, preexposure prophylaxis; Q1, quartile 1; Q3, quartile 3.

[a]Kruskal-Wallis rank-sum test for continuous variables and Fisher exact test for categorical variables.

[b]Racialized category includes East, South, and Southeast Asian; African, Caribbean, and North American Black; First Nations, Inuit, Metis, Indigenous; Caribbean Indian; Latin American; and Middle Eastern.

[c]Other gender identities include nonbinary, genderqueer, or Indigenous Two-Spirit.

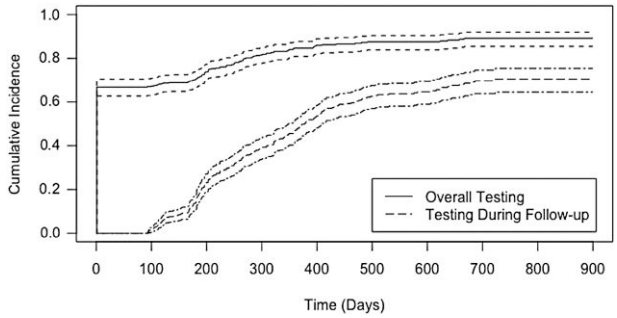


**Figure 1.** Cumulative incidence function (CIF) for hepatitis C virus antibody testing, both including baseline data and restricted to follow-up only, among eligible participants in the Ontario PrEP Cohort Study (n = 557). CIFs for the entire study (ie, including baseline data) and restricted to follow-up only were superimposed. Dotted bands represent the 95% confidence intervals. Cumulative probabilities were reported from baseline to longest length of individual follow-up. Participants who were lost to follow-up were censored at their last date of observation.

our results suggest that HCV incidence remains higher in male PrEP users compared to the general population; HCV incidence was 0.04 per 100 PY among all Ontarians in 2018 [14].

Our study provides further evidence that the rate of HCV infection among PrEP users is lower in North America than in Europe. For example, a recent meta-analysis estimated the pooled incidence of HCV to be 0.29 per 100 PY (95% CI, .13–.46) among Canadian PrEP users compared to 2.30 per 100 PY (95% CI, 1.39–3.79) in the Netherlands and 2.93 per 100 PY (95% CI, 1.53–5.64) in Belgium [9]. Phylogenetic data suggest that sexually acquired HCV infection in PrEP users stems from overlapping sexual networks with GBM with HIV (who are at an increased risk of HCV due to impaired immunity and elevated HCV viral RNA levels) [6, 15]. The prevalence/incidence of HCV infection in PrEP users is thus expected to be linked to rates of HCV in those with HIV. While studies on the prevalence of HCV among North American GBM with HIV are scarce, a recent meta-analysis suggests it to be lower than in Europe, the continent where prevalence is highest at 7.76% (95% CI, 4.35%–13.45%) [16]. Expanded use of direct-acting antiviral agents for the treatment of HCV among GBM with HIV may also contribute to low rates among PrEP-using GBM, although Canadian data suggest that only 28.3% of eligible persons with both HIV and HCV initiated a second-generation DAA [17].

It is worth noting that HCV is a rare outcome even in populations at increased risk, which makes it difficult to draw definitive conclusions from studies with smaller sample sizes such as ours. Recent, larger studies have in fact reported lower rates of HCV than earlier, smaller studies. For instance, only 66 of 10 563 (0.6%) PrEP users enrolled in the Dutch National PrEP Program initiated in 2019 demonstrated evidence of past or current HCV infection [18]. Likewise, among 3202 PrEP users in Victoria, Australia, baseline prevalence of active HCV infection was 0.22% (95% CI, .09%–.45%) and incidence was 0.38 per 100 PY over 2111 PY of follow-up [19].

We found that HCV antibody testing was suboptimal, although a sizeable portion of the ON-PrEP follow-up period coincided with the coronavirus disease 2019 (COVID-19) pandemic, which may have played a role. Despite clinical guidelines recommending HCV screening when initiating PrEP and annually thereafter, 31.4% of participants did not undergo baseline HCV screening and participants completed a median of only 0.50 tests per year. This low rate of HCV antibody testing is similar to another Canadian study, where only 47.8% of GBM participating in the British Columbia PrEP Program underwent serial HCV antibody testing over the study period [20]. Likewise, an Australian study found that 55% of GBM with HIV underwent HCV antibody testing annually from 2016 to 2019 but testing rates declined from 79.4% to 69.4% among GBM prescribed PrEP in the same timeframe [21]. These suboptimal rates of HCV antibody testing should serve as a note of caution when interpreting the observed low HCV seroprevalence and incidence. Nevertheless, we found that median time to participants' first follow-up test was 236 days, suggesting that HCV antibody testing followed the recommended annual schedule for those testing at least once.

We also found that HCV RNA testing was not performed in 2 of 7 individuals who ever tested HCV seropositive over the course of the study, generating ambiguity regarding their HCV status. During ON-PrEP, Ontario used a 2-step testing approach, which required a separate HCV RNA test to be ordered after individuals tested HCV seropositive, thus creating opportunities for such gaps in screening [22]. We anticipate that Ontario's recent adoption of HCV RNA reflex testing of all first-time samples positive for HCV antibody will resolve these inconsistencies in the future [23].

Through bivariate analysis, we found that participants who ever tested HCV seropositive appeared more likely to report giving goods/services for sex, although this observation should be considered hypothesis-generating only, given the small sample size. Future investigators should consider examining giving good/services for sex as a potential risk factor for HCV.

Our study was not without its limitations. First, we were unable to rule out the possibility that 4 of the 7 participants who ever tested HCV seropositive may have had false-positive tests, since 2 of them did not demonstrate viremia and 2 did not undergo any HCV RNA testing. Second, our analysis may have underestimated the rates of HCV testing, as ON-PrEP took place during the COVID-19 pandemic, which imposed challenges for participant follow-up and laboratory screening [24]. Third, participants were mostly gay, White, men who were born in Canada and lived in urban Ontario, such that generalizability to other populations remains uncertain. Fourth,

**Table 2. Sociodemographic and Clinical Characteristics of Participants in the Ontario PrEP Cohort Study Stratified by History of Hepatitis C Virus Antibody Testing (n = 557)**

| Characteristic | Never HCV Antibody Tested (n = 89) | Ever HCV Antibody Tested (n = 468) | *P* Value[a] |
|---|---|---|---|
| City of residence | | | .01 |
| Toronto | 31 (34.8) | 261 (55.8) | |
| Other | 58 (65.2) | 207 (44.2) | |
| Age, y, median (Q1, Q3) | 37 (31, 49) | 36 (30, 45) | .35 |
| Born in Canada | | | .82 |
| Yes | 63 (70.8) | 326 (69.7) | |
| No | 26 (29.2) | 140 (29.9) | |
| Missing | 0 (0.0) | 2 (0.4) | |
| Race | | | .03 |
| Racialized[b] | 23 (25.8) | 310 (66.2) | |
| White | 65 (73.0) | 158 (33.8) | |
| Missing | 1 (1.1) | 0 (0.0) | |
| Gender identity | | | .98 |
| Cisgender man | 86 (96.9) | 454 (97.0) | |
| Transgender woman | 1 (1.1) | 5 (1.1) | |
| Other[c] | 2 (2.2) | 9 (1.9) | |
| Employment status | | | .20 |
| Employed | 71 (79.8) | 402 (85.9) | |
| Unemployed | 18 (20.2) | 66 (14.1) | |
| Annual income | | | .24 |
| <$60 000 | 27 (30.3) | 163 (34.8) | |
| ≥$60 000 | 60 (67.4) | 279 (59.6) | |
| Missing | 2 (2.2) | 26 (5.6) | |
| Primary partner | | | .39 |
| Yes | 43 (48.3) | 217 (46.4) | |
| No | 45 (50.6) | 250 (53.4) | |
| Missing | 1 (1.1) | 1 (0.2) | |
| Casual partners | | | .02 |
| Yes | 71 (79.8) | 419 (89.5) | |
| No | 18 (20.2) | 49 (10.5) | |
| No. of male sex partners in past 6 mo, median (Q1, Q3) | 6 (2.5, 15) | 10 (4, 20) | .01 |
| No. of male sex partners with HIV in past 6 mo, median (Q1, Q3) | 0 (0, 1) | 0 (0, 1) | .42 |
| Group sex in past 3 mo | | | .73 |
| Yes | 32 (36.0) | 180 (38.5) | |
| No | 54 (60.7) | 278 (59.4) | |
| Missing | 3 (3.4) | 10 (2.1) | |
| Received money, drugs, gifts, or services for sex in past 3 mo | | | .26 |
| Yes | 1 (1.1) | 20 (4.3) | |
| No | 85 (95.5) | 439 (93.8) | |
| Missing | 3 (3.4) | 9 (1.9) | |
| Given money, drugs, gifts, or services for sex in past 3 mo | | | .67 |
| Yes | 4 (4.5) | 24 (5.1) | |
| No | 82 (92.1) | 435 (92.9) | |
| Missing | 3 (3.4) | 9 (1.9) | |
| Frequency of being drunk/high during condomless anal sex in past 3 mo, median (Q1, Q3) | 0 (0, 2) | 0 (0, 3) | .08 |
| History of injection drug use | | | .96 |
| Yes | 1 (1.1) | 6 (1.3) | |
| No | 60 (67.4) | 321 (68.6) | |
| Missing | 28 (31.5) | 141 (30.1) | |
| PrEP status | | | .01 |
| Started PrEP prior to enrollment | 76 (85.4) | 312 (66.7) | |
| Started PrEP within a week after enrollment | 13 (14.6) | 156 (33.3) | |

Data are presented as No. (%) unless otherwise indicated.

Abbreviations: HCV, hepatitis C virus; HIV, human immunodeficiency virus; PrEP, preexposure prophylaxis; Q1, quartile 1; Q3, quartile 3.

[a]Kruskal-Wallis rank-sum test for continuous variables and Fisher exact test for categorical variables.

[b]Racialized category includes East, South, and Southeast Asian; African, Caribbean, and North American Black; First Nations, Inuit, Metis, Indigenous; Caribbean Indian; Latin American; and Middle Eastern.

[c]Other gender identities include nonbinary, genderqueer, or Indigenous Two-Spirit.

our analysis of differences between those who ever versus never tested HCV seropositive was limited to bivariate rather than multivariable modeling due to the small sample size. Fifth, our bivariate analyses relied on self-reported data, which may introduce recall and social desirability biases.

In conclusion, HCV seroprevalence and incidence were low but not negligible among Ontario PrEP users. HCV antibody testing was suboptimal, although screening frequency followed the recommended annual schedule for those testing at least once. Further research should consider giving goods/services for sex as a potential risk factor for HCV.

## Notes

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***Authors contributions.*** M. W. M. contributed to data collection, designed and implemented the statistical analysis, and wrote the first version of the manuscript. R. L. contributed to protocol development, project administration, and data collection/recruiting study participants. P. M., D. K., K. S. W., J. R., J. M., I. I. B., D. C., M. J. B., and S. T. S. partook in data collection and/or recruited study participants. A. T. W. L. and A. N. B. shared their expertise to inform the study methodology. D. H. S. T. conceived the study, secured funding, and oversaw study conduct. All authors critically reviewed and approved the final manuscript.

***Data availability.*** Research data are not publicly available as participants were informed during informed consent processes that only the study team would have access to the study data.

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