



# Incidence of HCV infection among gbMSM in British Columbia, Canada: a population-based cohort study



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## Introduction

- Gay, bisexual and other men who have sex with men (gbMSM) are at high risk of HCV infection.
- Monitoring incidence of HCV among gbMSM is critical to achieve hepatitis elimination goals
  - However, there is lack of data from the population-based systems to monitor incidence of HCV among gbMSM.
- In this study, we estimated the incidence of HCV infection among gbMSM in a large population-based cohort in Canada.

## Methods

### The BC Hepatitis Testers Cohort (BC-HTC):

- Includes all individuals tested for HCV (1990-2015) linked with BC Ministry of Health administrative databases (medical visits, hospitalizations, prescription drugs).

### gbMSM:

- gbMSM were identified based on self-report. Status for those with missing information was imputed based on a validated algorithm with 95% specificity.

### Inclusion Criteria:

- gbMSM who tested HCV antibody negative between Jan. 1<sup>st</sup>, 2000 and Dec. 31<sup>st</sup>, 2015, and had ≥1 follow-up test prior to Dec. 31<sup>st</sup>, 2018.

### HCV incidence (outcome):

- Defined as a positive HCV test (antibody, RNA, genotype) following a negative antibody test (mid-point between test dates used to approximate date of infection).

### Analysis:

- Annual incidence rates for HCV infection from 2000 to 2018 were estimated.
- Cox proportional hazards models were used to identify risk factors associated with HCV infection among gbMSM.

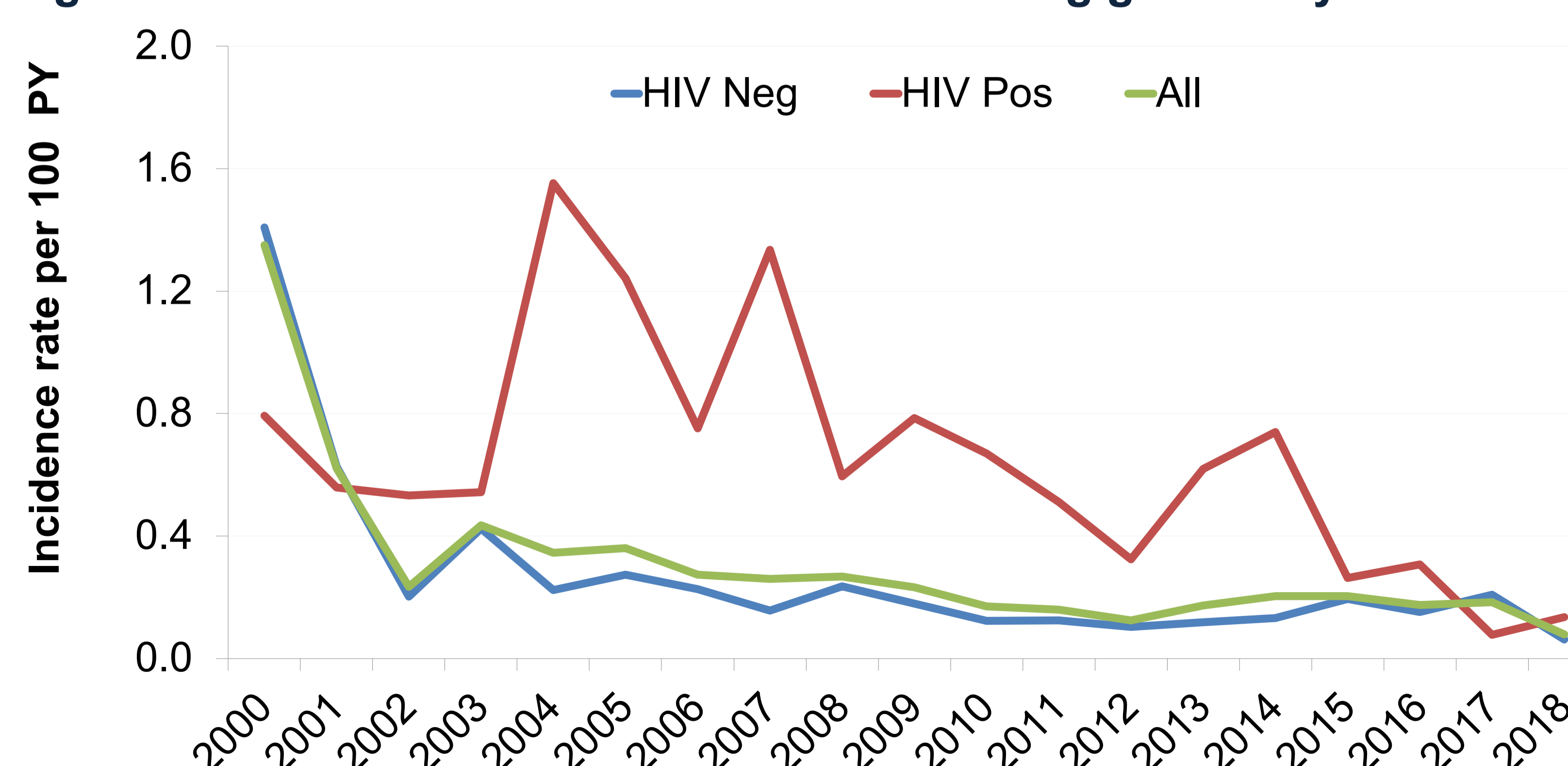
## Results

- Overall, **43,609** repeat HCV testers contributed **286,253 person-years**.
- 641 HCV seroconversions** occurred for an overall incidence rate of 0.22 per 100 person-years (PY).
- Incidence rate was highest for gbMSM with drug misuse (1.44 per 100 PY), particularly opioid misuse (2.45 per 100 PY)
- Between 2000 and 2018, incidence rate declined from 1.3 per 100 PY to 0.08 per 100 PY (Figure 1).

Table 1. Characteristics of gbMSM repeat HCV testers

	n	%
<b>Birth year</b>		
<1945	2,165	5.0%
1945-1964	11,544	26.5%
1965-1974	9,590	22.0%
>1974	20,310	46.6%
<b>Problematic alcohol use</b>	1,875	4.3%
<b>HIV infection</b>	3,920	9.0%
<b>Drug misuse</b>	2,271	5.2%
Opioid misuse	601	1.4%
Stimulant misuse	901	2.0%
<b>Depression</b>	16,112	36.9%
<b>Major mental illness</b>	8,211	18.8%
<b>Social deprivation</b>		
Q1 (least deprived)	3,918	9.0%
Q5 (most deprived)	20,742	47.5%

Figure 1. Trends in annual HCV incidence among gbMSM by HIV status



## Results

Table 2. Multivariable Cox proportional hazards model assessing characteristics associated with HCV seroconversion

	IR (per 100 PY)	aHR (95% CI)
<b>Birth year (vs. &lt;1945)</b>	0.04	
1945-1964	0.18	5.7 (2.4-14.0)
1965-1974	0.26	7.5 (3.1-18.4)
>1974	0.25	13.7 (5.6-33.2)
<b>Problematic alcohol use</b>	0.71	0.8 (0.6-1.1)
<b>HIV infection</b>	0.56	4.4 (3.6-5.3)
<b>Drug misuse</b>	1.44	5.6 (4.4-7.0)
Opioid misuse	2.45	2.1 (1.6-2.7)
Stimulant misuse	1.79	1.2 (0.9-1.5)
<b>Depression</b>	0.26	0.8 (0.7-1.0)
<b>Major mental illness</b>	0.36	1.1 (0.9-1.4)
<b>Social deprivation [vs. Q5 (most deprived)]</b>	0.46	
Q4	0.30	0.7 (0.5-0.9)
Q1 (least deprived)	0.15	0.6 (0.5-0.7)

Notes: IR, incidence rate; aHR, adjusted hazards ratio; PY, person-years; CI, confidence interval

## Conclusions

- Overall incidence rate among gbMSM is low, consistent with previous data, with high incidence among those with drug use.
- Promisingly, HCV incidence among gbMSM has decreased over time and stabilized in recent years, against a background of increasing overall HCV incidence in non-gbMSM population.
- gbMSM with HIV infection, drug misuse (particularly opioid misuse), and greater material deprivation are at higher risk of HCV infection.
- A multi-faceted approach to reduce the risk of HCV infection among higher risk gbMSM subgroups is required.