

# HIV Incidence Rate and Predictors Among Gay and other Men who have Sex with Men (MSM) in Vancouver: Additional Benefit of an Administrative Health Data Linkage

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## Background

- In British Columbia, the number of new HIV diagnoses among MSM has remained relatively stable for the past decade (~140-180 / year)
- We calculated HIV incidence rates and identified seroconversion predictors in a cohort study of MSM in Vancouver, British Columbia (BC)**

## Methods

### Study Protocol & Participants:

- The Momentum Health Study is a prospective longitudinal bio-behavioural study MSM aged 16+ in Metro Vancouver recruited using respondent-driven sampling beginning February 2012.
- Participants completed in-person study visits every 6 months, which lasted ~90 minutes and included a computer-assisted self-interview (CASI) on demographics, sexual behaviour, substance use, and psychosocial attributes
- Each study visit includes nurse-administered HIV testing and specimen collection for HCV and syphilis serology.
- Participants also consented to data linkage with the BC Centre for Excellence in HIV/AIDS's databases containing all HIV viral load and treatment data
- Follow-up study visit data and database linkage to August 31<sup>st</sup>, 2015 was used

### Outcome:

- Seroconvertors were participants who tested HIV-negative at baseline, and 1) tested HIV-positive at a subsequent study visit, 2) tested HIV-positive at another testing source confirmed at a subsequent visit, or 3) had a detectable viral load or started antiretroviral treatment via the database linkage.

### Explanatory Variables:

- Explanatory factors include demographics (age, sexual identity, race/ethnicity, relationship status, country of birth), behavioural risk (condomless anal sex (CAS), injection drug use, crystal methamphetamine use, group sex, sex/escort work), risk assessments (self-perceived using a single item and the US CDC's *HIV Incidence Risk Index for MSM* (HIRI-MSM), which ranges from 0-45 with a cutpoint of  $\geq 10$  used to recommend PrEP), and ARV-related factors (PrEP and PrEP awareness, viral load sorting)

### Statistical Analysis:

- We calculated HIV incidence rates overall, by age-group, and using HIRI-MSM.
- We examined factors associated with HIV seroconversion using univariable and multivariable Poisson regression (adjusted for follow-up time).

## Results

- A total of 497 MSM who tested HIV-negative at enrolment contributed a mean follow-up time of 2.23 years. Of 12 seroconversions recorded, 6 occurred during study follow-up and an additional 6 were identified through data linkage.
- HIV incidence rate was greater with the data linkage at 1.08/100PYs (95%CI: 0.62-1.90) compared with cohort data alone 0.79/100PYs (95%CI:0.35-1.76).
- HIRI-MSM score of  $\geq 10$  identified all HIV seroconversions for an incidence rate of 2.04/100PYs (95%CI:1.16-3.59); a HIRI-MSM cutpoint of  $\geq 25$  captured 7 of 12 seroconversions for an incidence rate of 7.04/100PYs (95%CI:3.34-14.85).
- HIV incidence rates for factors of interest are shown in **Figure 1**. The final multivariable model included three factors (see Figure 1 for \*) and it's ROC is shown in **Figure 2**, with an area under the curve of 0.8024.

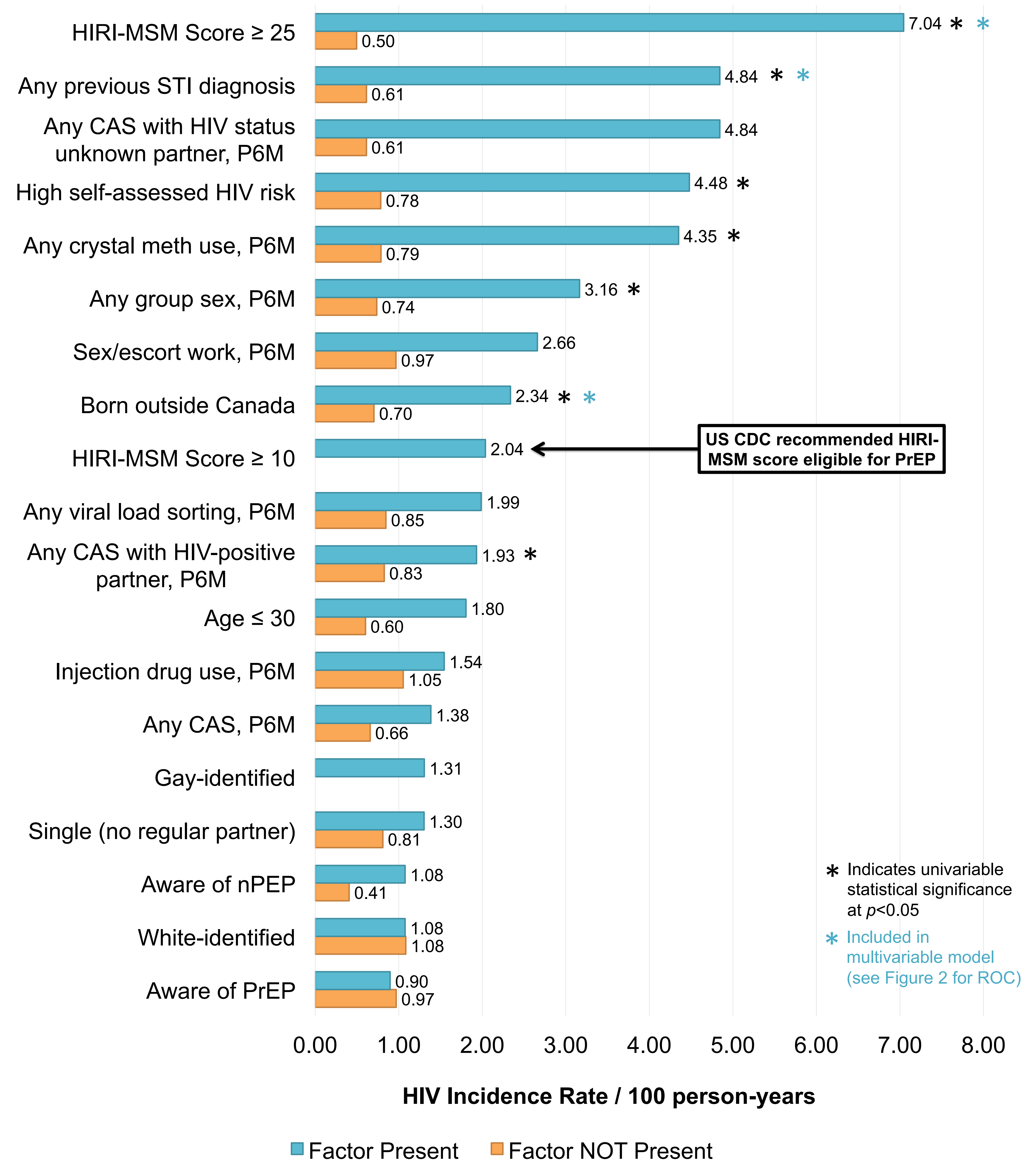


Figure 1. Comparison of HIV incidence rates among MSM

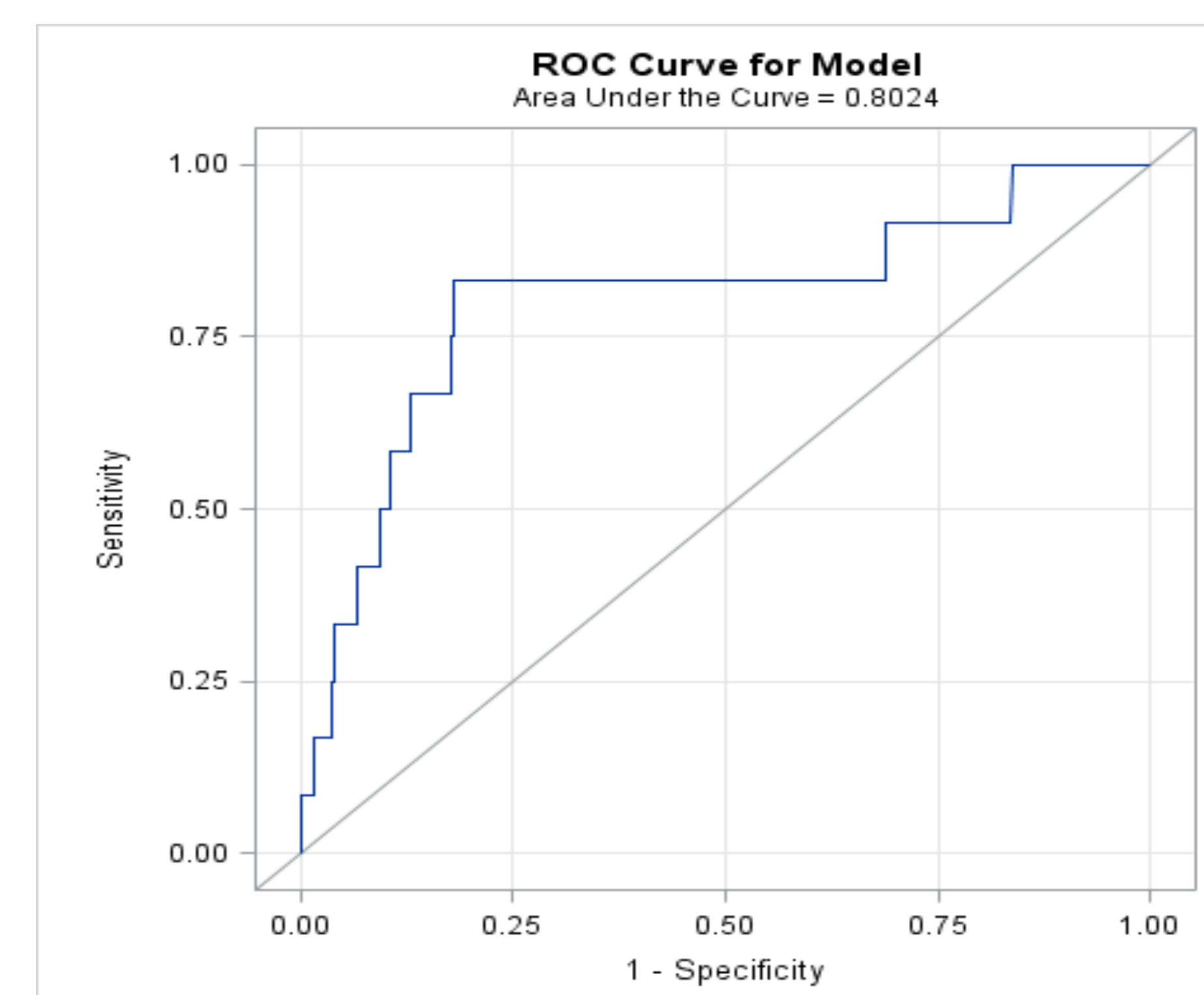


Figure 2. ROC curve for multivariable model predicting HIV seroconversion

## Conclusions

- Findings may help target combination HIV prevention towards MSM most likely to acquire HIV. Notably, high self/objective risk scores, prior STIs, and foreign born.
- Data linkage identified twice as many seroconversions than observational cohort follow-up alone.

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**Reference:** Smith DK, Pals SL, Herbst JH, Shinde S, Carey JW. Development of a clinical screening index predictive of incident HIV infection among men who have sex with men in the United States. *J Acquir Immune Defic Syndr.* 2012;60(4):421-427.

**Conflict of Interest Disclosure:** "I have no conflicts of interest"