

# Perceived STI seriousness and subsequent acquisition of chlamydia, gonorrhoea or syphilis among urban gay, bisexual and other men who have sex with men in Canada

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## Introduction and objective

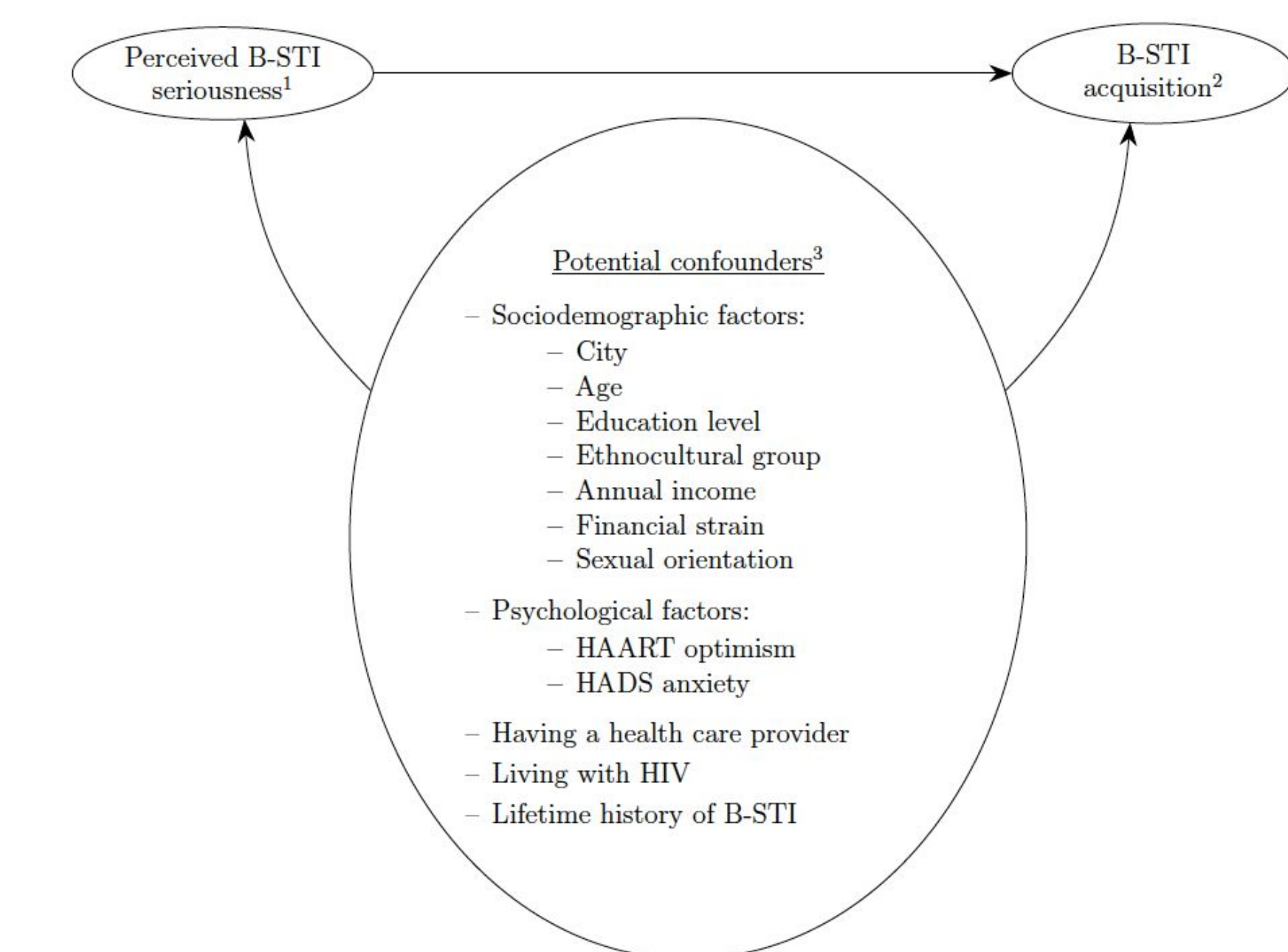
- The Health Belief Model (HBM) posits that individuals are more likely to adopt preventive health behaviours when they perceive themselves as susceptible to a condition and view that condition as serious<sup>1</sup>.
- Among gay, bisexual, and other men who have sex with men (GBM), perceptions of chlamydia (CT), gonorrhoea (NG), and syphilis may shape health behaviours and related outcomes.
- Bacterial STIs (B-STI) may be perceived as less serious, particularly among GBM with a history of STIs, who may view regular screening as a sufficient prevention strategy<sup>2,3</sup>.
- Few studies have prospectively examined whether perceived seriousness of B-STI is associated with risk of acquisition.

Using data from the Engage Study we examined B-STI seriousness perceptions and the impact on B-STI acquisition.

## Methods

- Engage is a cohort of sexually active GBM aged 16+ recruited using respondent driven sampling (RDS) in Canada's three largest cities (Montreal, Toronto, and Vancouver; 2017-2024).
- Participants completed behavioural questionnaires and were tested for CT, NG, and syphilis at baseline and every 6–12 months.
- Perceived seriousness of each B-STI was assessed with the question:
  - "During the next year, how serious would it be for you to get ... (chlamydia/gonorrhoea/syphilis)"
  - Responses were dichotomized (serious/somewhat serious versus neutral/somewhat not serious/not serious)
- The analytic sample included participants who answered the seriousness question and had ≥1 subsequent follow-up visit (N=1142). This sample includes visits conducted between 2020 and 2022.
- Crude proportions of perceived seriousness of each B-STI as well as rates of infections observed were calculated. Poisson regressions with robust standard errors estimated the effect (rate ratios and 95% confidence intervals) of perceived CT, NG and syphilis seriousness on one-year B-STI-specific acquisition rate. The syphilis outcome was defined as either a first infection or a reinfection.
- Models were weighted to account for RDS recruitment (RDS-II weights), loss-to-follow-up (inverse probability of censoring weights) and confounding (inverse probability of treatment weights).
- See **Figure** for potential confounders. Common mediators (e.g. condomless sex, number of partners) were excluded from the analysis.

**Figure:** Causal diagram of the effect of perceived chlamydia, gonorrhoea and syphilis seriousness on the acquisition of that B-STI within one year



<sup>1</sup>Measured using the question "During the next year, how serious would it be for you to get... (chlamydia, gonorrhoea, syphilis)" at follow-up.  
<sup>2</sup>Median time from baseline was 31 months.  
<sup>3</sup>Measured at follow-up visits within one year of B-STI perception measurement.  
<sup>4</sup>Measured at baseline visit.

## Results

### Perceived seriousness of chlamydia, gonorrhoea, and syphilis and its impact on B-STI acquisition risk among Engage Cohort Study participants (N=1142), 2020-2022

B-STI	Perceived the B-STI as "serious" or "somewhat serious"	Participants n (%)	Infections n (%)	Incidence rate per 100 PY	Risk of acquiring the B-STI, adjusted** RR (95%CI)
Chlamydia*	No	639 (56.0%)	78 (69.7%)	12.7	Ref
	Yes	503 (44.0%)	34 (30.3%)	6.9	0.7 (0.4–1.1)
Gonorrhoea*	No	625 (54.7%)	68 (66.7%)	11.2	Ref
	Yes	517 (45.3%)	34 (33.3%)	6.7	0.8 (0.5–1.3)
Syphilis	No	499 (43.7%)	15 (68.2%)	3.0	Ref
	Yes	643 (56.3%)	7 (31.8%)	1.1	0.3 (0.1–0.7)

\*Laboratory confirmed infections detected at study visits were counted as well as self-reported diagnoses received from a doctor or nurse in the 6 months preceding the study visit  
 \*\*Models weighted to account for the recruitment method (RDS-II weights), loss-to-follow-up (inverse probability of censoring weights) and confounding (inverse probability of treatment weights)

- Participants appeared to perceive syphilis as more serious than gonorrhoea and chlamydia.
- Perceiving syphilis as serious or somewhat serious was associated with a lower risk of acquiring syphilis within one year but the effect was inconclusive for chlamydia or gonorrhoea.

Of 1142 participants included, 54% lived in Montreal, 18% in Toronto, and 28% in Vancouver. Most were aged 30–49 (55%), had a Bachelor's degree or higher education (56%), and identified as gay (85%). One-third (34%) reported an income under \$30,000 CAD, and 67% were born in Canada.

## Conclusions

- Perceiving syphilis as serious or somewhat serious appears to lower the risk of acquiring syphilis threefold within one year among GBM.
- Perceptions of STI seriousness are known to be shaped by upstream influences, including psychosocial factors, STI-specific knowledge, previous diagnoses and treatment, and HIV status<sup>2,3,4,5</sup>.
- These perceptions are dynamic and reinforced over time through personal and social experiences. The Health Belief Model supports this view particularly through constructs like perceived severity, susceptibility, cues to action, and self-efficacy, all of which can evolve with experience<sup>2,6,7</sup>.
- Health education efforts should be adaptive and value-neutral, providing accurate, timely information that supports individuals in developing informed and personally meaningful understandings of STI risk and seriousness.

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