

Newly HIV-Infected Gay, Bisexual and other Men Who Have Sex With Men (MSM) in Vancouver, British Columbia: Preliminary Findings of the Momentum Health Study

NJ Lachowsky^{1,2} (nlachowsky@cfenet.ubc.ca), K Stephenson³, A Rich¹, A Lal¹, Z Cui¹, G Colley¹, P Sereda¹, J Brown⁴, J Jollimore⁵, D Hall³, JSG Montaner¹, EA Roth^{4,5}, RS Hogg^{1,6}, DM Moore^{1,2}

1 British Columbia Centre for Excellence in HIV/AIDS, Vancouver, Canada
2 Faculty of Medicine, University of British Columbia, Vancouver, Canada
3 Vancouver Coastal Health, Vancouver, Canada
4 Youth Co Society for HIV and Hep C, Vancouver, Canada
5 Health Initiative for Me, Vancouver, Canada
6 Department of Anthropology, University of Victoria, Victoria, Canada
7 Centre for Addictions Research BC, Victoria, Canada
8 Faculty of Health Sciences, Simon Fraser University, Burnaby, Canada

Background

- In Canada, gay and other men who have sex with men (MSM) have an incidence rate 71 times greater than non-MSM (PHAC, 2014)
- In British Columbia, the number of new HIV diagnoses among MSM has remained relatively stable for the past decade (~140-180 / year)
- We measured HIV incidence among participants in a prospective cohort of MSM in Vancouver, British Columbia and explored characteristics associated with HIV seroconversion.**

Methods

Study Protocol & Participants: The Momentum Health Study is a prospective longitudinal bio-behavioural study of gay and other MSM aged 16+ in Metro Vancouver recruited using respondent-driven sampling from February 2012 to February 2015.

Data: Participants complete in-person study visits every 6 months that last ~90 minutes and include a computer-assisted self-interview (CASI) on demographics, sexual behaviour, substance use, and psychosocial attributes, and a subsequent nurse visit with rapid point-of-care HIV testing and for biological specimen collection for HIV and syphilis serology.

Outcome: Seroconvertors were participants who tested HIV-negative at baseline and HIV-positive at a subsequent study visit or another testing source between visits. Participants report their data of HIV diagnosis, which was used to calculate a prospective HIV incidence rate. We also examine participants who self-reported being HIV-negative at baseline, but tested HIV-positive during the clinical portion of their study visit. A retrospective HIV incidence is calculated using the date of their last reported HIV-negative test result.

Explanatory Variables: Behavioural data are drawn from their most recently completed questionnaire prior to HIV diagnosis, or their last completed questionnaire for participants who remained HIV-negative. Explanatory factors include demographics, sexual behaviour, STI testing and diagnosis history, substance use, and various psychosocial scales:

- HAART Optimism* (Van de Ven et al., 2000; study α =0.82)
- Sexual Sensation Seeking* (Kalichman & Rompa, 1995; study α =0.82)
- Cognitive Escape* (McKirnan et al., 2001; study α =0.88)
- Sexual Altruism – Personal and Communal subscales* (Nimmons & Folkman, 1999; study α =0.83 & 0.89, respectively)
- Self Esteem* (Herek & Glunt, 1995; study α =0.91)
- Hospital Anxiety and Depression subscales* (Zigmond & Snaith, 1983; study α =0.85 & 0.81, respectively).

Statistical Analysis: Incidence rates were calculated both retrospectively and prospectively. The prospective estimates were further stratified by age (<30 years versus older). Descriptive statistics and univariate associations were prepared to compare HIV seroconvertors and those who remained HIV-negative using Poisson regression ($p<0.05$ was considered significant) with adjustments with different lengths of follow-up time. Incidence rate ratios are presented with 95% confidence intervals.

Results (Incidence Rate)

- As of May 30th, 2015, 406 MSM who tested HIV-negative at baseline contributed 664 person-years of follow-up (mean=1.63 years/person).
- At baseline, 3 participants were diagnosed (of 518 with recent test data) that had self-identified as HIV-negative prior. The retrospective incidence rate was 0.58 per 100 person-years (95% CI: 0.19-1.78).
- During follow-up, 6 participants seroconverted. **The prospective incidence rate was 0.90 per 100 person-years** (95% CI: 0.41-2.01).
- The HIV incidence for younger MSM (aged <30 years) was 1.80 per 100 person-years (95% CI: 0.75-4.32) and was marginally statistically higher than older MSM ($p=0.077$; RR=6.92, 95% CI: 0.81-58.94)

Results (Seroconversion Factors)

- Table 1 shows descriptive statistics of seroconvertors ($n=6$) compared with those who remain HIV-negative ($n=400$), including a p-value and univariable measure of association (if possible). **Bold** factors are statistically significant.

TABLE 1. Selected descriptive statistics and univariable associations

	Seroconvertors (n=6)		HIV-Negative (n=400)		RR	95% CI		p
	n	%	n	%				
Aged <30 years (vs. older)	5	83.3	175	43.8	6.92	0.81	58.9	0.08
Gay-identified (vs. not)	6	100.0	332	83.0	--	--	--	0.60
Caucasian (vs. not)	5	83.3	295	73.8	1.61	0.19	13.7	0.66
Born in Canada (vs. not)	3	50.0	307	76.8	0.27	0.06	1.35	0.11
Has Regular Partner (vs. single)	3	50.0	193	48.3	1.09	0.22	5.40	0.92
Anal Sexual Position: Bottom	4	66.7	131	32.8	--	--	--	0.56
Circumcised (vs. not)	3	50.0	219	57.6	0.69	0.14	3.43	0.65
Self-identified as high risk for HIV	3	50.0	29	7.3	12.6	2.53	62.4	<0.01
Any CAI* with HIV-positive partner	3	50.0	44	11.1	7.57	1.53	37.4	0.01
Any CAI* with status unknown partner	3	50.0	176	44.2	1.23	0.25	6.12	0.80
Attended group sex event, P6M	3	50.0	52	13.0	6.76	1.36	33.6	0.02
Crystal methamphetamine use, P6M	2	33.3	26	6.5	8.17	1.49	44.7	0.02
STI tested, lifetime	4	66.7	117	29.5	4.79	0.88	26.1	0.07
STI diagnosed, lifetime	1	16.7	29	7.3	3.51	0.40	30.8	0.26
	median	Q1,Q3	median	Q1,Q3	RR	95% CI		p
Total # male anal sex partners, P6M	11	4, 35	2	1, 4	1.02	1.01	1.03	<0.001
Condom use %, casual partners	62.5	25, 100	90	50, 100	0.99	0.97	1.01	0.36
Condom use %, regular partners	0	0, 50	0	0, 100	0.99	0.97	1.02	0.66
Sexual event-level data:								
# of partners (maximum of 5)	5	5, 5	3	1, 5	3.99	1.40	11.3	<0.01
# of older partners (maximum of 5)	3	1, 4	1	0, 2	1.90	1.21	2.99	<0.01
# of CAI events (maximum of 5)	3	2, 5	1	0, 1	2.39	1.40	4.10	<0.01
# of anal sex events (no maximum)	43.5	15, 83	7	2, 19.5	1.02	1.01	1.03	<0.001
HAART Optimism	32	28, 33	26	23, 29	1.15	0.99	1.33	0.07
Sexual Sensation Seeking	34.5	33, 36	31	28, 33	1.25	1.09	1.42	<0.01
Cognitive Escape	25	23, 30	28	24, 32	0.97	0.84	1.11	0.65
Sexual Altruism - Personal	32	26, 34	32	28, 35	0.95	0.73	1.22	0.66
Sexual Altruism - Communal	19	18, 28	27	24, 30	0.85	0.73	0.99	0.04
Self Esteem	7	3, 11	7	3, 9	1.02	0.84	1.24	0.85
HADS - Anxiety	5	4, 15	7	4, 11	1.04	0.83	1.30	0.74
HADS - Depression	3	1, 5	3	1, 6	0.95	0.75	1.20	0.68

NB: **Bolded** text indicates $p<0.05$; RR=incidence rate ratio; *CAI=condomless anal intercourse; P6M=past 6 months

Conclusions

- 5 of 6 recent HIV seroconvertors in our study were aged <30, which differs from provincial surveillance reports, where approximately 30% of new diagnoses among MSM in 2013 were in this age range.
- Men who seroconverted reported frequent partner change, greater sensation seeking, and greater rates of anal intercourse who appeared to understand that they were at higher risk for HIV acquisition.
- These men were more likely to attend group sex events, have used crystal methamphetamine, report a greater number of older sexual partners, and report condomless anal intercourse with an HIV-positive partner.
- HIV prevention programs should further target such individuals.

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