Prevention Strategies During Anal Intercourse and Prevention-Related Attitudes of HIV-Positive Gay, Bisexual and Other MSM in Vancouver, British Columbia

NJ Lachowsky[1,2] (nlachowsky@cfenet.ubc.ca), T Howard[3], Z Cui[1], P Sereda[1], A Rich[1], A Lal[1], , EA Roth[4,5] , RS Hogg[1,6], DM Moore[1,2]

1. British Columbia Centre for Excellence in HIV/AIDS, Vancouver, BC
2. Faculty of Medicine, University of British Columbia, Vancouver, BC
3. Positive Living British Columbia, Vancouver, BC
4. Department of Anthropology, Faculty of Social Sciences, University of Victoria, Victoria, BC
5. Centre for Addictions Research BC, University of Victoria, Victoria, BC
6. Faculty of Health Sciences, Simon Fraser University, Burnaby, BC

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 has remained stable for the past decade (~140-180 per year). Early treatment and viral suppression are promoted for clinical and prevention benefit.
- With two aims, we sought to understand the sexual practices of HIV-positive MSM to inform sexual health promotion and STI prevention:
  1. **To identify factors associated with condom use during anal intercourse among HIV-positive MSM**
  2. **To determine the preventive attitudes and alternative strategies employed by HIV-positive MSM who didn't use condoms**

Methods

Study Protocol & Participants: The Momentum Health Study is a longitudinal bio-behavioural study of gay and other MSM aged 16+ in Metro Vancouver recruited using respondent-driven sampling from February 2012 to February 2014.

Data: Collected during an in-person study visit that lasted ~90 minutes, which included a computer-assisted self-interview (CASI) regarding demographics, sexual behaviour, substance use, and psychosocial attributes, and a subsequent nurse visit for biological specimen collection and a clinical questionnaire. We limited this analysis to self-identified HIV-positive participants.

Outcome: Condom use versus non-use during anal intercourse as measured for individual sexual encounters (i.e., event-level data). During the CASI, participants completed a "partner matrix", which included a repeating set of questions, for their last sexual encounter with each of up to their five most recent sexual partners within the past six months (event-level factors, see below). We excluded sexual encounters that did not include anal intercourse.

Explanatory Variables: Explanatory factors in *Model 1* included event-level factors (substance use, partner's HIV status, sexual history with partner, sexual position) and individual-level factors (demographics and psychosocial scales, see below). *Model 2* included sexual strategies and attitudes related to HIV prevention.

- **HAART Optimism** (Van de Ven et al., 2000): less fear of HIV disease and probability of HIV infection
- **Sexual Sensation Seeking** (Kalichman & Rompa, 1995): need for varied, novel, and complex sexual experiences and willingness to take personal physical and social risks to enhance sexual sensations
- **Cognitive Escape** (McKirnan et al., 2001): escape-related alcohol and drug use, which assesses sexual disinhibition expectancies from consuming alcohol and drugs
- **Sexual Altruism** (Nimmons & Folkman, 1999): regarding HIV prevention, personal subscale regarding their own or their partner's sexual health, and communal subscale regarding collective well-being of the gay community and one's role as part of that

Statistical Analysis: Descriptive statistics and multivariable models were prepared to explain condom use and non-use for all sexual encounters where anal intercourse was reported. For *Model 1*, factors associated with condom use versus non-use were determined using multivariable generalised linear mixed models with a random effect for participant. For *Model 2,* the outcome was inverted. Model selection used Type III p-values and AIC minimization to select the optimal factors to retain in the final models ($p<0.05$ was considered significant)

Results

- **Figure 1** outlines the basic descriptive statistics regarding anal intercourse and condom use at the individual- and event-level
- **Table 1** presents independent psychosocial and event-level factors associated with condom use versus non-use during anal intercourse
- **Table 2** presents independent sexual strategy and attitudinal factors associated with condom non-use versus use during anal intercourse

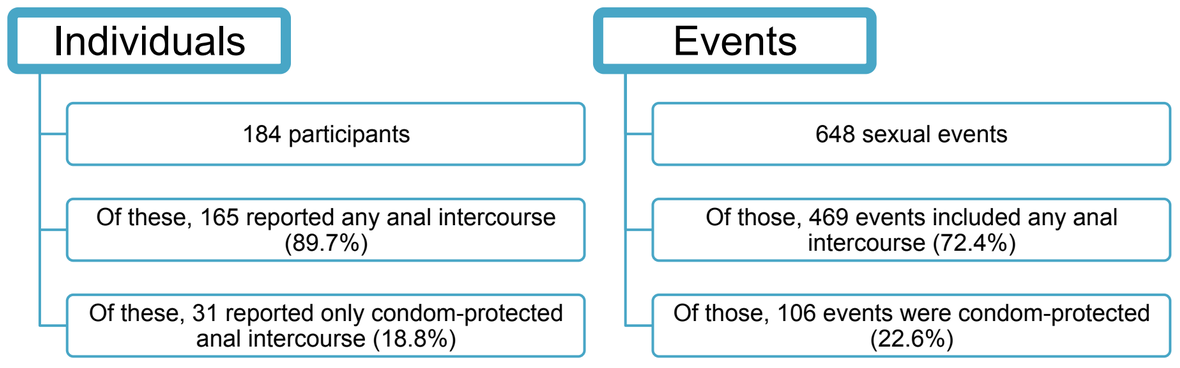

FIGURE 1. Description of individual- and event-level data regarding anal intercourse and associated condom use for HIV-positive MSM in Vancouver, BC

TABLE 1. Factors independently association with condom use (vs. non-use)

	# CU events / # events	% CU events	aOR	95% CI	
PYSCHOSOCIAL FACTORS					
Sexual Sensation Seeking ↓	n/a	n/a	**0.86**	0.78	0.94
Cognitive Escape ↓	n/a	n/a	**0.93**	0.88	0.99
Sexual Altruism – Communal ↑	n/a	n/a	**3.32**	2.00	5.50
EVENT-LEVEL FACTORS					
Number of times of anal sex in P6M	n/a	n/a	**0.86**	0.77	0.97
Awareness of partner's HIV status					
No, I did not know his status	36/102	**35.3**	**1.00**		
Yes, I was certain he was HIV-negative	28/75	37.3	0.88	0.30	2.65
Yes, I think he was HIV-negative	10/30	33.3	0.65	0.13	3.15
Yes, I was certain he was HIV-positive ↓	28/241	**11.6**	**0.28**	0.11	0.73
Yes, I think he was HIV-positive	4/21	19.0	1.24	0.21	7.46
GHB substance use by participant					
GHB not used	104/406	**25.6**	**1.00**		
GHB was used ↓	2/63	**3.2**	**0.12**	0.02	0.77

CU = condom use; aOR = adjusted odds ratio; 95% CI = 95% confidence interval
Model controls for sexual identity, sexual position, and participant MDMA use

TABLE 2. Factors independently association with condom non-use (vs. use)

	aOR	95% CI	
SEXUAL STRATEGIES (mutually exclusive, referent: not used)			
Sero-sorting "Having sex without condoms only with guys I know are HIV-positive"	**3.64**	1.78	7.43
TasP-informed "Having sex without condoms if my viral load is low or I'm on HIV treatment"	**2.32**	1.12	4.80
Ask Status "Asking my sex partners about their HIV status before sex"	**3.43**	1.71	6.91
ATTITUDES (mutually exclusive, referent: disagree)			
(Sero-sorting)…Agree "Having condomless sex only with guys who have the same HIV status as you is an effective means of safer sex"	**2.27**	1.09	4.72
(TasP-informed)…Agree "Knowing a sex partner's viral load is just as important as knowing their HIV status"	**2.39**	1.09	5.21
(Ask Status)… Agree "If my sex partner does not ask me about my HIV status then that means they mostly likely have HIV"	**2.30**	1.09	4.87

aOR = adjusted odds ratio; 95% CI = 95% confidence interval

Conclusions

- **Many HIV-positive men have condomless anal sex during which they consider their own and ask their partners' HIV statuses and viral loads.**
- **Greater sexual sensation seeking and cognitive escape were associated with less condom use, as was GHB substance use.**
- **In lieu of condoms, men make informed and reasoned decisions to sero- and viral load sort. These alternative strategies used do not appear to consider other sexually transmitted infections (e.g., syphilis).**

Acknowledgements

This work was supported by the Canadian Institutes for Health Research [107544]; National Institutes for Health, National Institute for Drug Abuse [R01DA031055] and Health Canada. We thank our community colleagues at the Health Initiative for Men, YouthCO HIV & HepC Society of BC, and Positive Living BC for their support. We also thank the research participants for sharing their important data with the Momentum Health Study. DMM is supported by a Scholar Award from the Michael Smith Foundation for Health Research.

I have no conflicts of interest.