Event Level Analysis of Sexual Risk Behaviours and Substance Use among Gay/bisexual/ and other Men Who Have Sex with Men (MSM)

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Sex, Stigma and Substance Use: Gay Men and Risk
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momentum
moving men's health research forward

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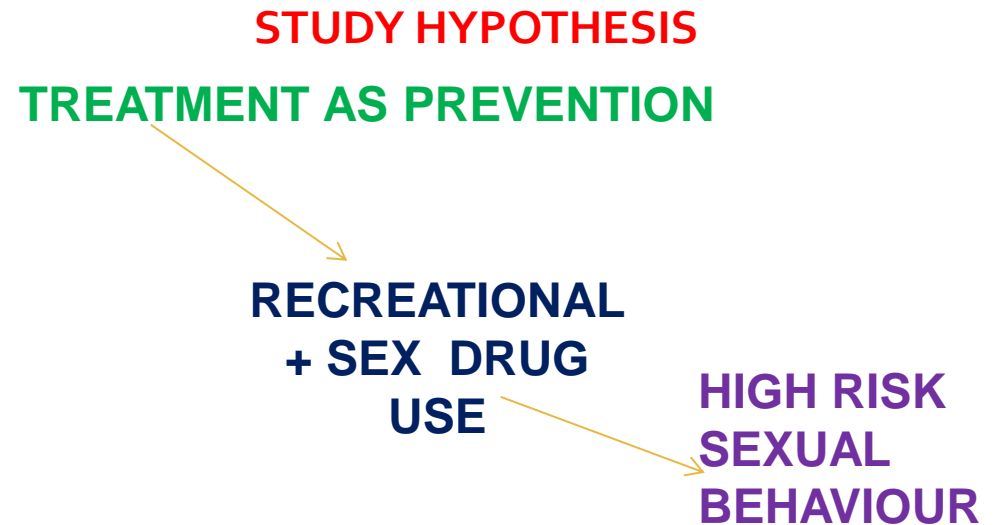Canadian Institutes of Health Research   Instituts de recherche en santé du Canada

OHTN 2013 RESEARCH CONFERENCE
NOVEMBER 17-19, 2013

CHANGING THE COURSE OF THE HIV PREVENTION, ENGAGEMENT AND TREATMENT CASCADE

HOW DO BELIEFS AND BEHAVIOURS CONCERNING SEXUAL HEALTH AND DRUG USE CHANGE OVER TIME FOR VANCOUVER GAY MEN IN LIGHT OF THE RECENT PROVINCIAL EXPANSION OF HIV/AIDS TREATMENT (HAART) AND THE CONCEPT OF "TREATMENT AS PREVENTION" ?

STUDY HYPOTHESIS

TREATMENT AS PREVENTION

RECREATIONAL + SEX DRUG USE

HIGH RISK SEXUAL BEHAVIOUR

Substance Use and MSM

Reports of doubled, or even tripled, HIV/AIDS incidence levels for MSM who use substances vs. those who do not[1]

Substance use and HIV/AIDS considered "interactive epidemics in the Syndemic Theory[2] of Urban Gay's Men's Health and is an important factor in Resilience Theory[3]

Problem is how to measure the association of substance use and sexual behaviour?

[1]Buchacz, K. et al. 2005. Amphetamine use is associated with increased HIV incidence among men who have sex with men in San Francisco. AIDS, 19:1423-4.

[2]Stall, R. et. al 2008. Interacting epidemics and gay men's health: A theory of syndemic production among urban gay men. In *Unequal Opportunity: Health Disparities Affecting Gay and Bisexual Men in the United States.* R. Wolitiski et al. editors. Oxford: Oxford University Press. Pages 251-274.

[3]Lim, S. et al. 2012. Changes in stimulant drug use over time in the MACS: Evidence for resilience against stimulant drug use among Men Who Have Sex with Men. AIDS and Behavior, 16:151–158.

Associations Between Substance Use and Sexual Behaviour

1. **Global Measures** - amount or frequency of substance use and of unprotected sex recalled over some prior period[1]

   May not be linked to sex, because same substance may be taken for different purposes, e.g. crystal meth[2]:

   "… you can have a hard-on that goes on for six hours"

   "I would be cleaning my home, I'd be doing dinner, [things] I usually don't do because I don't have the energy for it…"

[1]Gillmore, M. et al. . 2002. Does "high"=high risk? An event-based analysis of the relationship between substance use and unprotected anal sex among gay and bisexual men. *AIDS and Behavior*, 6(4):361-370.

[2] Diaz, R. 2007. Methamphetamine use and its relation to HIV risk: Data from Latino gay men in San Francisco. Pages 545-604 in *The Health of Sexual Minorities: Public Health Perspectives on Lesbian, Gay, Bisexual and Transgender Populations.* I. Meyer and M. Northridge, editors. Springer: New York.

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Associations Between Substance Use and Sexual Behaviour

Other substances closely aligned with specific sexual behaviour

"Sex Drugs" vs. "Recreational Drugs"

1) **Poppers (Amyl Nitrates) – Associated with receptive anal intercourse because of muscle relaxant property[1]**

2) **Viagra®/ Cialis® - Associated with insertive anal intercourse[2,3]**

[1]Vosburgh, H. et al. 2012. A review of the literature on event-level substance use and sexual risk behavior among men who have sex with men." *AIDS and Behavior* 16.6 :1394-1410.

[2]Fisher, D et al. 2011. Methamphetamine and Viagra use: Relationship to sexual risk behaviors. *Archives of sexual behavior* 40(2): 273-279.

[3]Mansergh G, et al. 2006. Methamphetamine and sildenafil (Viagra) use are linked to unprotected receptive and insertive anal sex, respectively, in a sample of men who have sex with men. *Sexually Transmitted Infections.* *8*2:131–134.

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Associations Between Substance Use and Sexual Behaviour

2. Event Level Data – records substance use within 2 hours or during sexual activity

Prospective – Diaries[1]

Retrospective - Recalled from past events[2]

Second method used in Momentum Health Study

[1]Gillmore, M. et al. . 2002. Does "high"=high risk? An event-based analysis of the relationship between substance use and unprotected anal sex among gay and bisexual men. *AIDS and Behavior*, 6(4):361-370.

[2]Snowden,J. et al. 2009. Prevalence of seroadaptive behaviours of men who have sex with men, San Francisco, 2004. *Sexually Transmitted Infections,* 85(6): 469-476.

Sexual Behaviour
FIVE MOST RECENT SEX PARTNERS IN PAST 6 MONTHS

Show Help

We would like to ask you some questions about <u>regular</u> and <u>casual</u> MALE partners you have had sex with in the <u>past 6 months</u>.

Please DO NOT INCLUDE partners you had sex with <u>only at a sex party or in a darkroom</u>.

To help with asking these questions we will use a <u>nickname</u> to refer to each partner.

One option for a nickname is to use the first three letters of the person's first name, or you could pick a nickname that describes something memorable about the guy; e.g. "hot blonde tiger tattoo" or "furry Commercial Drive daddy with Harley motorbike":

Please enter the nicknames of up to 5 sexual partners you have had sex with in the <u>past 6 months</u>. If there are more than 5 then enter the 5 ones you <u>most recently</u> had sex with:
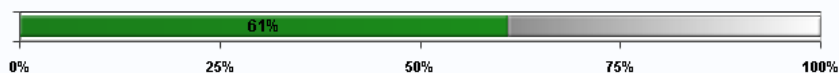
(Most recent)   1: _____
                 2: _____
                 3: _____
                 4: _____
                 5: _____

If you have <u>not had sex</u> with anyone in the past 6 months then check this box: ☐

Previous

Sections: I   II   III   IV   **V**   VI   VII

61%

0%   25%   50%   75%   100%

Show Help

Partner Name:

The most recent time you had sex with the partner named above, did YOU use any of the following drugs in the two hours before or during sex?

Alcohol	○ No ○ Yes	Clear my answer
Cannabis/Marijuana	○ No ○ Yes	Clear my answer
Viagra/Cialis/Levitra	○ No ○ Yes	Clear my answer
Poppers (Amyl nitrate)	○ No ○ Yes	Clear my answer
Any other drugs	○ No ⦿ Yes	Clear my answer

Please select each other drug from the lists provided:

Other drug 1: [▾]
Other drug 2: [▾]
Other drug 3: [▾]
Other drug 4: [▾]

The most recent time you had sex with the partner named above, did YOUR PARTNER use any of the following drugs in the two hours before or during sex?

Alcohol	○ No ○ Yes ○ I don't know	Clear my answer
Cannabis/Marijuana	○ No ○ Yes ○ I don't know	Clear my answer
Viagra/Cialis/Levitra	○ No ○ Yes ○ I don't know	Clear my answer
Poppers (Amyl nitrate)	○ No ○ Yes ○ I don't know	Clear my answer
Any other drugs	○ No ⦿ Yes ○ I don't know	Clear my answer

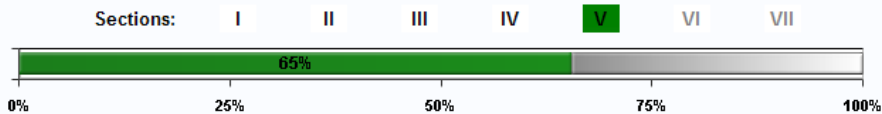**Please select each other drug from the lists provided:**

Other drug 1: [▾]
Other drug 2: [▾]
Other drug 2: [▾]
Other drug 4: [▾]

Previous

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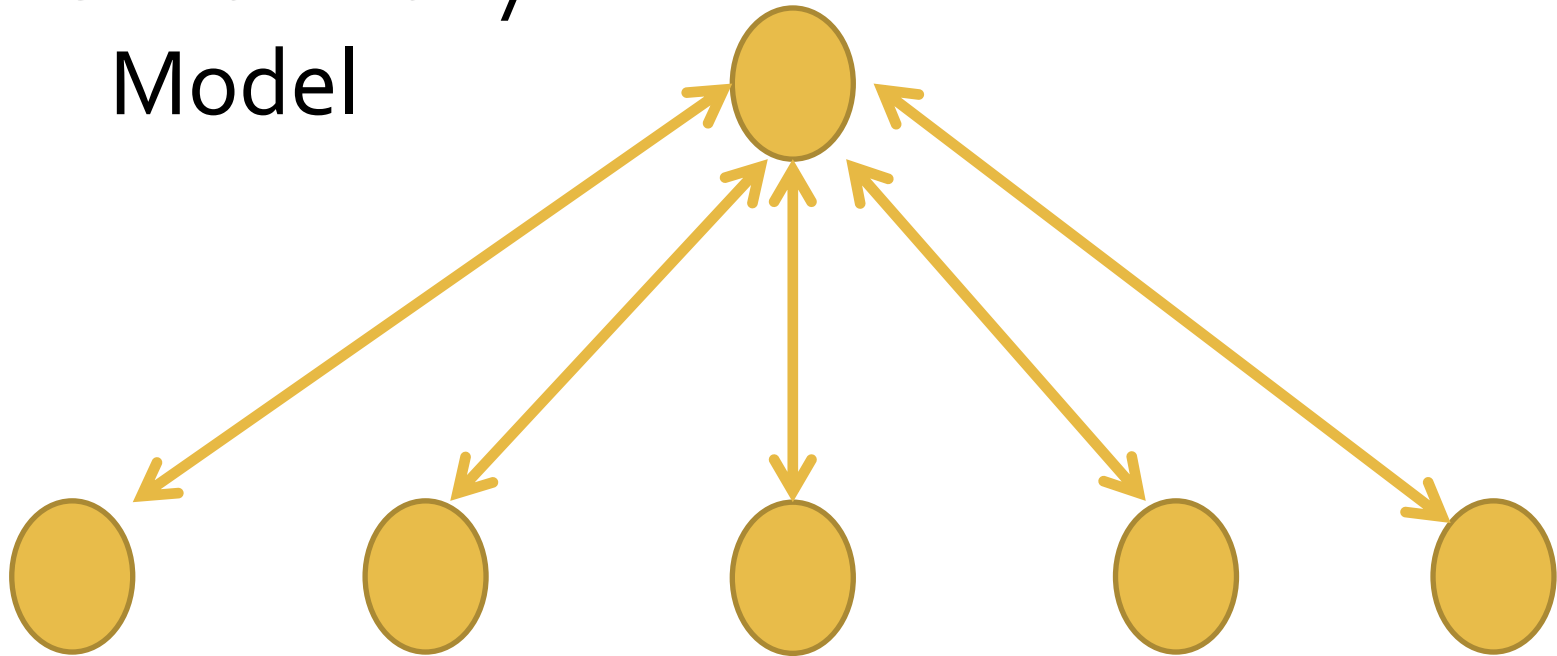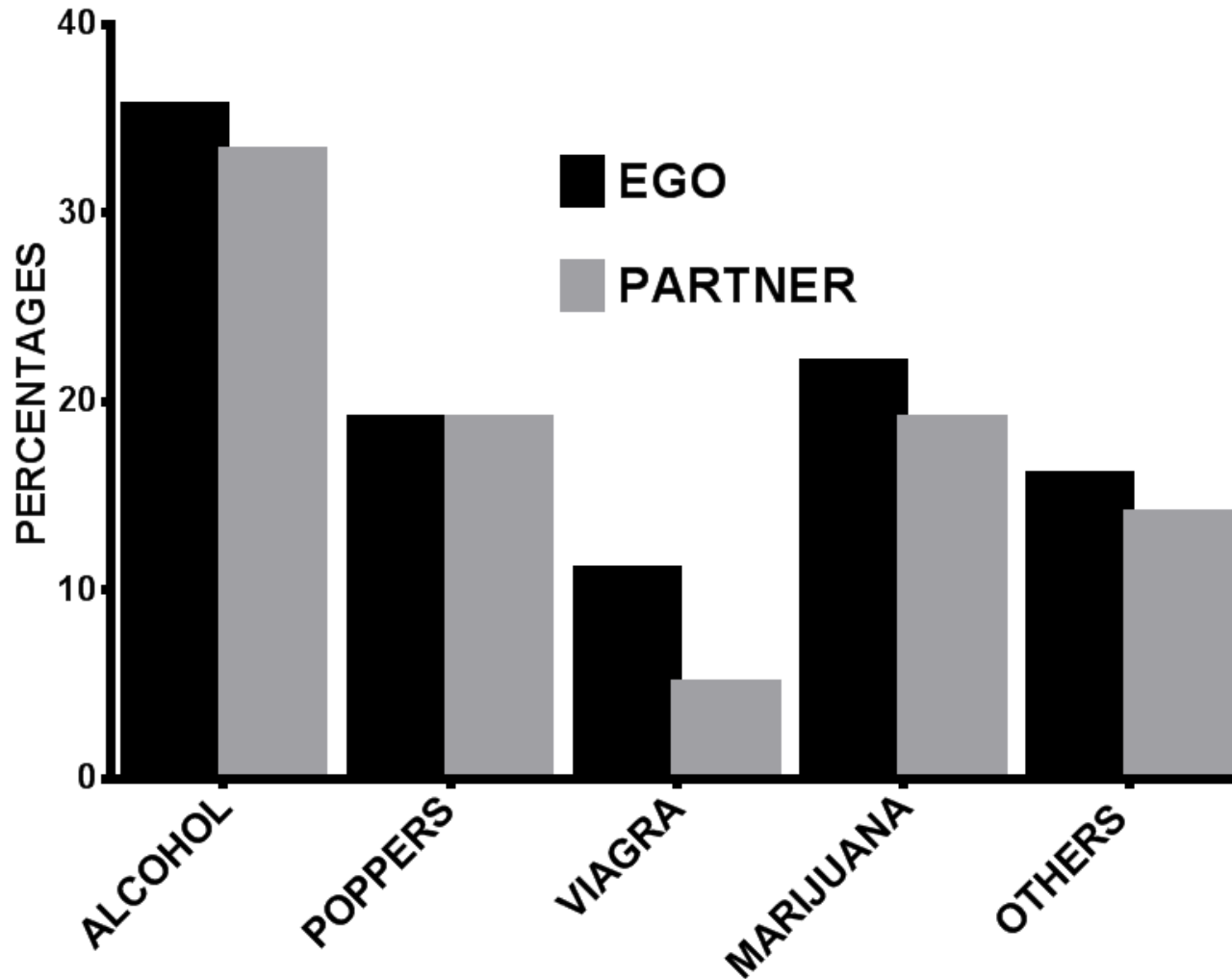| 65%			
0%	25%	50%	75%	100%

"One with Many" Model

EGO

PARTNERS

Initial Event-Level Analysis

Two Objectives:

1) **Assess association of substance use with sexual acts**

2) **Test for sex drug orientation –**

   Viagra®/ Cialis® - Insertive Anal Intercourse

   Poppers – Receptive Anal Intercourse

RESULTS

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SAS® PROC GLIMMIX

Mixed Model Logistic Regression[1]
Random Slopes Model

Unit of Analysis = sexual event
n. Participant = 483   n. sexual events = 1706

2 Models
1) Insertive Anal Intercourse Yes (660)/No (1046)
2) Receptive Anal Intercourse Yes (689)/No (1017)

Hypothesis$_1$: Insertive Anal Intercourse + Viagra
Hypothesis$_2$: Receptive Anal Intercourse + Poppers

[1] **Allison, P. 2012.** *Logistic Regression Using SAS®: Theory and Application*. **2nd Edition. SAS Press: Cary, NC.**

SUBSTANCE USE EGOS AND PARTNERS RECEPTIVE ANAL INTERCOURSE

VARIABLE (YES)	UNIVARIATE ODDS RATIO	95% CI	MULTIVARIATE ODDS RATIO	95% CI
USED ALCOHOL	0.999	0.770-1.295	Not Selected	
USED MARIJUANA	1.301	0.944-1.793	Not Selected	
USED VIAGRA	1.744	1.131-2.688	1.437	0.917-2.252
USED POPPERS	2.454	1.761-3.420	2.357	1.679 -3.310
OTHER DRUGS	1.566	1.00- 2.231	Not Selected	
PARTNER ALCOHOL	0.945	0.795-1.124	0.820	0.669-1.004
PARTNER MARIJUANA	1.080	0.920 -1.267	Not Selected	
PARTNER VIAGRA	1.137	0.954 -1.356	1.173	0.975-1.411
PARTNER POPPERS	1.165	0.998 – 1.360	Not Selected	
PARTNER OTHER DRUGS	1.098	0.940 -1.282	Not Selected	

SUBSTANCE USE EGOS AND PARTNER INSERTIVE ANAL INTERCOURSE

VARIABLE (YES)	UNIVARIATE ODDS RATIO	95% CI	MULTIVARIATE ODDS RATIO	95% CI
USED ALCOHOL	0.954	0.734-1.236	Not Selected	
USED MARIJUANA	1.215	0.882-1.673	Not Selected	
USED VIAGRA	2.416	1.574-3.709	2.711	0.917-2.252
USED POPPERS	1.253	0.902-1.741	Not Selected	
OTHER DRUGS	1.192	0.833-1.705	Not Selected	
PARTNER ALCOHOL	0.926	0.778-1.101	Not Selected	
PARTNER MARIJUANA	0.941	0.799 -1.107	Not Selected	
PARTNER VIAGRA	0.930	0.778 -1.112	0.785	0.666-0.927
PARTNER POPPERS	0.856	0.998 -1.360	Not Selected	
PARTNER OTHER DRUGS	0.889	0.940-1.282	Not Selected	

SUMMARY: RESULTS

1. **General** – **Substantial association of recreational drugs and sexual acts reported by egos and for partners**

2. **Specific** – **As predicted, significant association of Viagra with insertive anal intercourse, poppers with receptive intercourse – reinforces distinction between recreational and sex drugs**

1. **Rerun model after recruitment closes end of December, sample now > 600 men**

2. **Unpack "Other Drugs" – contains data on crystal meth which is important recreational and sex drug**

3. **Expand model to include demographic (age, ethnicity) and psycho-social scales (Sensation Seeking, Cognitive Escape)**

4. **Include HIV status and condom use to identify high risk sexual behaviour and associations with specific substances.**

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Thank you. Questions, suggestions?

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