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Psycho-social factors related to willingness to use pre-exposure prophylaxis for HIV prevention among Black men who have sex with men attending a community event

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Abstract

OBJECTIVES—In the US, Black men who have sex with men (BMSM) are disproportionately affected by HIV/AIDS. Pre-exposure prophylaxis (PrEP) holds tremendous promise for curbing the HIV/AIDS epidemic among these men. However, many psycho-social components must be addressed in order to effectively implement this prevention tool among BMSM.

METHODS—We assessed PrEP knowledge and use, health care access experiences, race-based medical mistrust, sexual partners and behaviors, and drug and alcohol use among 699 men attending a community event in the southeastern US. We used generalized linear modeling to assess factors associated with their willingness to use PrEP.

RESULTS—Three hundred ninety-eight men reported being BMSM and HIV negative status. Among these men, 60% reported being willing to use PrEP. Lack of being comfortable with talking to a health care provider about having sex with men, not having discussed having sex with a man with a health care provider, race-based medical mistrust, and alcohol consumption and substance use were all identified as barriers to willingness to use PrEP. Sexual risk taking, including number of sex partners and STI diagnosis, was not associated with willingness to use PrEP.

CONCLUSIONS—Findings from the current paper demonstrate the importance of acknowledging the role of various psycho-social factors in the uptake of PrEP. It is imperative that we prioritize research into better understanding these barriers as the failure to do so will impede the tremendous potential of this prevention technology.

Keywords

PrEP; BMSM; medical mistrust; substance use

In the US alone MSM account for 48% of people living with HIV and 53% of incident HIV infections; however, they comprise only 3% of the male population. As such, the rate of HIV diagnosis among MSM is 44 times that of other men.¹ Furthermore, not only do MSM

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experience the greatest burden of HIV infection, recent analyses show that HIV infection among MSM is now increasing at a rate faster than that which occurred in the late 1990s.² Black MSM (BMSM) in particular are the most affected by HIV in the US.^{3,4} The number of young BMSM infected with HIV from 2006–2009 increased by 48% while the number of HIV infections across the US remained stable.⁵ Given what is known about those at greatest risk for HIV in the US, it is imperative that BMSM receive the utmost attention with regards to HIV prevention and treatment efforts.

These data also underscore the urgent need to successfully implement the most effective HIV prevention strategies for BMSM. Considerable attention has been given to a recent breakthrough regarding the use of anti-retrovirals as a form of HIV prevention for HIV negative men, also known as pre-exposure prophylaxis (PrEP).⁶ This strategy holds tremendous promise, yet there are many important psycho-social components to consider in order to effectively implement this strategy among BMSM.^{7–11} The state-of-the-science in regards to PrEP use is ahead of our capacity to implement this breakthrough for many BMSM who are at greatest risk for HIV/AIDS.

Understanding access to health care among BMSM and the relationships BMSM have with providers is likely critical for successful implementation of PrEP. Yet, linkage to health care providers is inadequate or non-existent for many BMSM and we are only reaching a fraction of BMSM in need of care.^{12–14} In Christopoulos' review of health care access for MSM they note that there is a lack of understanding regarding the experiences BMSM have with health care providers and it is known that BMSM tend to show relatively worse rates of retention to care compared to MSM of other races.^{13,15,16} Barriers to care among BMSM are likely driven in part by the history of medical care received by Black men and women in the US and the resulting mistrust towards medical institutions.¹⁷ However, there is little research regarding medical mistrust among BMSM. And no studies have looked at this construct in relation to PrEP.

Furthermore, it appears that many MSM are unaware of PrEP as an HIV prevention option and the extent to which BMSM are aware or willing to use PrEP is largely unknown.^{7,18,19} Also, there is limited data on how risk factors for HIV transmission among BMSM, such as sexual risk taking or substance use, are related to a willingness to use PrEP. In order to effectively implement PrEP we must understand factors that correlate with a desire to use PrEP.

Study Objectives

The focus of this study was to understand PrEP knowledge and willingness to use PrEP among BMSM at a community event. The specific objectives of the study were to: (1) gain an understanding of the extent to which BMSM were aware of PrEP and their interest in using PrEP, (2) assess the relationships between experiences with health care access and willingness to use PrEP, (3) assess the relationships between known risk factors for HIV infection (sexual risk taking, STI history, and substance use) and willingness to use PrEP, and (4) conduct a multivariate model to identify unique predictors associated with willingness to use PrEP among BMSM.

METHOD

Participants and Setting

Surveys were collected using venue intercept procedures.^{20–22} Briefly, potential participants were asked to complete a survey as they walked through the exhibit and display area of a large Black Gay Pride community festival, where two booths were rented for the purpose of this study. Participants were told that the survey was about health related beliefs and behaviors, contained personal question, was anonymous, and would take 15 minutes to complete. Surveys were self-administered (although staff were available as needed) and completed using pencil and paper. Participants' names were not obtained at any time. Participants were offered \$7 for completing the survey and were given the option of donating their incentive payment to a local AIDS service organization. Approximately 80% of men approached agreed to complete a survey. All study procedures were approved by an Institutional Review Board.

Measures

Surveys included measures of demographic information, PrEP knowledge and use items, health care access experiences, race-based medical mistrust, sexual partners and behaviors, and drug and alcohol use items.

Demographic characteristics—Participants were asked their age, years of education, income, zip code (categorized as within vs. outside city limits), ethnicity, whether they identified as gay, bisexual, or heterosexual, and how “out” they are about their sexual orientation. Participants were also asked to report their HIV status and how many times they have been tested.

PrEP knowledge and use—In order address varying levels of awareness of PrEP among participants, we provided participants with a description of PrEP and answered any questions of clarification that participants had. The description included, “The following asks about HIV-negative people taking anti-HIV medications (example - Truvada, Kaletra) to prevent HIV infection. You may have heard of this being referred to as PrEP.” Next, participants answered seven questions regarding PrEP. These items included whether a participant had heard of PrEP prior to that day; if they used PrEP; their willingness to use PrEP, and if they would be willing to use PrEP even if it caused side effects, had to be used with condoms, and meant being tested for HIV every three months. Finally participants were asked how much money they would spend on PrEP on a monthly basis.

Health care access experiences—We asked participants seven items concerning their health care coverage and provider experiences. Participants answered questions regarding their health care coverage, if they had been without coverage at any time in the past two years, whether they had a regular medical provider, if in the past six months they had talked with a medical provider about having sex with men, if they were comfortable talking about sexual health with a provider, when their last physical was, and where they usually went for health care treatment.

Race-based medical mistrust—Six items were adapted from the Group-Based Medical Mistrust scale^{23,24}. Items included, in part, “People of my race cannot trust doctors and health care workers” and “People of my race should be suspicious of information from doctors and health care workers”. These items were treated as a scale (Chronbach’s $\alpha = .85$). Responses were on a four point scale and ranged from “strongly disagree” to “strongly agree”. We present the number of participants who agreed with these numbers in order to facilitate interpretation, however, this variable was treated as a continuous variable in our generalized linear models.

Sex partners and sexually transmitted infections—Participants were asked to report the number of sex partners they had had in the past six months. Next, we asked participants to report numbers of partners with whom they had done the following with: “Anal sex, no condom used, my partner inserted his penis in me”, “Anal sex, no condom used, I inserted my penis in my partner” in the past six months. Open response format was used to avoid answering biases (i.e., participants wrote in number of partners as opposed to selecting from pre-set ranges). Participants were asked to report whether a health care provider had diagnosed them with syphilis, chlamydia, gonorrhea, or other STI in the past year.

Substance use—Alcohol use was assessed using various measures each capturing unique components of alcohol intake.²⁵ We used the following items to assess alcohol use. Alcohol frequency - participants were asked to report how often they have a drink containing alcohol; responses ranged from ‘never’ to ‘more than 4 times a week’. Alcohol consumption - participants reported how many drinks containing alcohol they have on a typical day when they are drinking; responses ranged from ‘I don’t drink’ to ‘10 or more’. For drug use, we asked participants whether they had used nitrate inhalants, cocaine/crack, ecstasy, methamphetamine, or Viagra, Levitra, or Cialis without a prescription in the past six months.

Data Analysis—Participants were 699 men surveyed at the Atlanta Black Gay Pride Festival that occurred in August 2012. Given our focus on factors associated with willingness to use PrEP among BMSM we removed men reporting: (1) heterosexuality and not reporting male sex partners (n=129), (2) reporting race other than African American (n=15), or (3) reporting being HIV positive (n=157). All remaining analysis included 398 HIV negative BMSM. We provide descriptive data including means and standard deviations, or numbers and percentages for all variables. We conducted both univariate and multivariate analyses using generalized linear modeling. Variables were entered into the multivariate model if they were significant ($p < .05$) in univariate analyses. Our dependent variable, willingness to use PrEP, was treated as a dichotomous ‘yes or no’ outcome, and therefore, we specified a binary logistic model. Results are reported as relative rates (RR) for continuous independent variables and odds ratios (OR) for dichotomous independent variables. For test of mean differences we conducted non-parametric analyses due to having non-normal data. We conducted a moderator analysis using centered variables and included both main effects and the interaction term in the model using steps outlined in Aiken and West (1991)²⁶. There were less than 5% missing data for any given variable. For all

analyses, we used $p < .05$ to define statistical significance. PASW Statistics version 18.0 (SPSS Inc., Chicago, IL) was used for all analyses.

RESULTS

Demographics

Participants reported an average age of 35 years and average educational attainment of 13.8, corresponding to some college. A majority of participants had incomes below \$30,000, with incomes of <\$15,000 being most commonly reported. Sixty-two percent of the sample was currently employed. Most participants were gay or bisexual (96%), however, a small number of men reported being heterosexual. These men, as previously stated, also reported having sex with a man and, therefore, were included in analyses. A minority of men (16.1%) reported being completely “closeted” in regards to how out they were about their sexual identity. On average men had tested for HIV 8.2 times (See Table 1).

PrEP knowledge and use

A minority of participants (28%) had heard of PrEP use on a prior occasion (PrEP use was described as part of survey procedures, therefore, we asked participants if they had heard of it prior to the day of the survey). A smaller number reported currently taking PrEP (7%). A little over half of the participants stated they would be willing to take a pill to prevent HIV (60%). Around half of the participants reported side effects (43%), the need to continue to use condoms to be fully protected (56%), and frequent HIV testing (56%) as deterrents to using PrEP. Responses to amount of money willing to be spent on PrEP varied greatly, and among participants interested in using PrEP, \$11–\$20 was most commonly reported (See Table 1).

Health care access

Sixty-nine percent of the sample had current health care coverage, and 43% of the sample had been without coverage at some point in the past two years. A little over half the sample (64%) reported having a regular medical provider that they saw when they were sick. A smaller number of participants had spoken with any medical provider in the past six months about having sex with men (42%). Most men reported being comfortable talking about sexual health (84%), had a physical in the past year (80%), and usually sought care at a private clinic (52%)

Race-based medical mistrust

The average score for this scale was $M=1.67$ ($SD=.69$) corresponding to slightly disagreeing with items. Believing that “people of my race don’t receive as good of care as people of other races” was most frequently agreed with among participants (34%). Around one-in-five participants reported that “people of my race cannot trust doctors and health care workers” (21%), “people of my race should be suspicious of information from doctors and health care workers” (19.2%), and “people of my race should be suspicious of medicine” (19.2%; See Table 2).

Sex partners and sexually transmitted infections

Men reported having an average of 4 sex partners in the past six months including an average of 1.59 sex partners they engaged in unprotected, insertive anal sex and 1.22 sex partners they engaged in unprotected, receptive anal sex. In regards to STI in the past year, 5.4% had been diagnosed with syphilis, 8.5% with chlamydia, 8.2% gonorrhea, and 7.7% other STI (See Table 3).

Substance use

Sixty-percent of the sample had consumed alcohol at least monthly or more often, with 37% of men consuming alcohol on at least a weekly basis. Men most commonly reported consuming 1–2 drinks during a typical drinking session. Eighteen-percent of men reported having 5 or more drinks when drinking alcohol. In regards to drug use, cocaine/crack (16%) and ecstasy (11%) were most commonly reported (See Table 3).

Univariate and multivariate analyses

For univariate analyses we found multiple variables associated with willingness to use PrEP. Being less likely to have talked with a health care provider about having sex with men was associated with being less likely to report a willingness to use PrEP. Likewise, not being comfortable talking about sexual health with a provider was associated with less likelihood of willingness to use PrEP. Greater agreement with race-based medical mistrust items was associated with being less likely to report a willingness to use PrEP. Higher levels of alcohol consumption, nitrate inhalants, cocaine/crack, methamphetamine and sexual stimulant use, and residing within city limits were associated with less likelihood of willingness to use PrEP. In the multivariate model, having talked to one's medical provider about having sex with men and race-based medical mistrust remained significantly associated with willingness to use PrEP (See Table 4).

Given the association between having talked to one's provider about having sex with men and willingness to use PrEP, we tested whether this relationship was related to number of male sex partners. We found that men who had spoken with a provider about sex in the past six months reported more sex partners than men who hadn't spoken with a provider ($Z [398] = 4.30, p < .00$). However, the interaction effect of these two variables was not a significant predictor of willingness to use PrEP ($OR = 1.03 [.96 - 1.10]$). Therefore, the relationship observed between willingness to use PrEP and talking to one's provider about having sex with men was not found to be a function of having multiple sex partners.

DISCUSSION

The current HIV/AIDS prevention landscape is strongly focused on incorporating antiretroviral-based HIV prevention to curb the epidemic. However, this strategy hinges on multiple factors being in place: including having an understanding of PrEP and its availability among potential users, health care coverage, and addressing stigma and medical mistrust, as these factors are relevant to access and uptake of prevention tools among populations at greatest risk for HIV. In our assessment of PrEP knowledge and use among BMSM at a community event, we found that 60% of men reported being willing to use

PrEP. Although it is a positive finding that a majority of men would be willing to use PrEP, 40% of men reported not being willing to use PrEP. This finding highlights the necessity of having multiple prevention options in order to fit the needs of many men. These findings also highlight that we should be prioritizing research into understanding what factors may prevent men from wanting to use PrEP as doing so could remove barriers to uptake of this prevention technology.

Our multivariate model demonstrated important findings regarding willingness to use PrEP. Endorsing race-based medical mistrust remained a significant predictor of our outcome variable even when controlling for other relevant variables. There is a dearth of data on race-based medical mistrust among BMSM in general and, in particular, in understanding engagement and retention in health care. Yet, in the current study this factor emerged as the strongest predictor of a willingness to use PrEP. It is known the medical mistrust is an important deterrent in establishing relationships with providers and in seeking out both routine and urgent medical care^{24,27–29}, however we know little about how this factor affects care among BMSM. Future research should focus on addressing how best to foster positive relationships between BMSM and health care providers, and how to address concerns held about medical providers among BMSM.

Findings from the current study also shed light on the importance of open communication with medical providers. Based on the current data, many men have not recently spoken with a health care provider about having sex with men and this lack of communication is related to willingness to use PrEP. Furthermore, this relationship did not interact with number of sex partners in our moderation analyses suggesting the relationship between lack of communicating about having sex with men and willingness to use PrEP is not simply a function of number of sex partners. These findings suggest that prior experience of having communicated with a provider about having sex with men may serve as an important facilitator in the implementation of PrEP. Taken one step further, it would likely be beneficial in implementing PrEP to prioritize establishing open dialogue about sexual health between medical providers and BMSM over encouraging PrEP uptake. Furthermore, given the changing landscape of health care coverage with the implementation of the Affordable Care Act, prioritizing the development of relationships between BMSM and medical providers can likely be realized. Finally, we note that a large percentage of men reported having a physical exam in the preceding year. This finding was surprising given what is known about engagement in care³⁰. It is possible that men interpreted physical exam as including any contact with a medical provider. The finding highlights two important considerations: (1) further information for areas of health care covered during an appointment appear critical to assess, and (2) there may be multiple opportunities to interact with men in a health care setting outside of a physical exam. Further research in these areas is needed.

We did not observe a relationship between willingness to use PrEP and sexual risk taking factors such as number of sex partners and diagnosis with an STI in the past year. This finding is important when considering what groups to focus on for implementation of PrEP. Although it is intuitive to consider only targeting individuals at perceived greatest risk for HIV/AIDS, this strategy may overlook individuals who would benefit from being on it and

desire access to it, however, report relatively low risk for HIV/AIDS. On the contrary, it is also important to consider that men who report relatively high risk for HIV/AIDS and, therefore, are seemingly ideal candidates for PrEP, may be unwilling to use PrEP for HIV prevention. Finally, assessing number partners and sexual acts may not be sufficient for determining who should or should not access PrEP. It is important to consider relationship factors (consider a man who reports only one sex partner, yet this sex partner is HIV positive) and seroadaptive behaviors (consider a man who reports no condom use, yet also uses serosorting, strategic positioning, or negotiated safety^{31,32}; or whose HIV positive partner has an undetectable viral load) Therefore, it is imperative to have a comprehensive understanding of an individual's sexual risk history when determining if they are a candidate for PrEP.

A small number of men were currently taking PrEP. Although experiences with PrEP use specific to these men were not collected, anecdotal reports gathered during survey administration suggested that some men were obtaining antiretroviral medications from HIV positive persons who were willing to share/sell their medications.³³ It's unknown how common engaging in this behavior is; however, obtaining antiretrovirals for HIV prevention without medical supervision is likely an important area of future study.

The current study was conducted using a convenience sample of men at a gay pride event in a southeastern US city. It is likely that these events under- *and* over-represent certain segments of the BMSM population. Therefore, our results are limited to men who attend and participate in these events. It is likely that this sample under-represents men who are not open enough about their sexual orientation to attend such an event. This study also used a cross-sectional survey method, precluding any inferences of causation regarding PrEP knowledge, health care access and sexual risk behaviors. The survey method also relied on self-report of sensitive and often stigmatized experiences and behaviors. The potential for social desirability influences were minimized by anonymous survey procedures. However, research using more sensitive methods, such as in-depth interviewing techniques, is required to confirm study findings. Significant rates of high risk sexual behavior were reported by participants, which suggest that they were generally honest in their responses. In our study, PrEP was described, in part, as taking a pill once a day to prevent HIV infection. However, it is possible that PrEP will be taken intermittently during times of potential exposure to HIV. This change in definition could encourage more individuals to use PrEP as a prevention strategy. Finally, many men were unaware of the availability of PrEP prior to their partaking in the survey administration. With this finding in mind, it's possible that had men been provided further information on PrEP more men would have reported being willing to use PrEP.

The current study is among the first to highlight important psycho-social components of PrEP uptake. These findings have implications for how PrEP is rolled-out. Furthermore, this study focuses on BMSM, a population arguably at greatest risk for HIV/AIDS in the US; the needs of BMSM must be prioritized if we are to reduce the burden of the AIDS epidemic in the US. PrEP is a promising option and has been established as an effective form of HIV prevention in randomized controlled trials (RCT). However, it will be critical to address

psycho-social components during PrEP implementation in order to observe beneficial effects of PrEP in BSM populations under real world settings.

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Table 1

Demographic characteristics and PrEP knowledge and use among HIV negative BMSM.

	N=398	
	M (median)	SD
Age	35.1 (33)	11.3
Education	13.8 (13)	2.3
Number of times tested for HIV?	8.2 (4)	14.0
	N	%
Income		
\$0 – \$15,000	107	27.9
\$16 – \$30,000	106	27.6
\$31 – \$45,000	78	20.3
\$46 – \$60,000	45	11.7
Over \$60,000	48	12.5
Reside in city limits (yes)	147	36.9
Employed	238	61.5
Sexual Orientation		
Gay/Bisexual	364	96
Heterosexual ^b	15	4
How out of sexual orientation?		
Closeted	52	16.1
Out sometimes	126	39.0
Out	145	44.9
PrEP knowledge and use		
Have you ever heard of PrEP before today?		
Yes	110	27.6
Are you currently taking PrEP?		
Yes	27	6.8
Would you be willing to take a pill every day to prevent HIV infection?		
Yes	240	60.3
Would you take PrEP if it caused mild temporary side effects, such as headache, nausea, etc?		
Yes	164	42.9
Would you take PrEP if you still had to use condoms to be fully protected from HIV?		
Yes	224	56.3

	N=398	
	M (median)	SD
Would you take PrEP if it meant you would have to be tested for HIV every three months?		
Yes	226	56.8
How much money would you be willing to spend on a monthly basis for PrEP?		
\$0	97	24.4
\$1–5	28	7.0
\$6–10	61	15.3
\$11–20	86	21.6
\$21–30	49	12.3
\$31–45	16	4.0
>\$45	46	11.6

^a Corresponds to some college

^b Heterosexual men were included if they reported male sex partners.

Table 2

Health care access and race-based medical mistrust among HIV negative BMSM.

	N=398	
	N	%
Health Care Access		
Currently have health care coverage?		
Yes	263	69.0
Was there any time in the past two years when you were completely without any health insurance coverage?		
Yes	168	43.2
Do you have a doctor or other health professional you usually go to when sick?		
Yes	250	64.4
In the past six months, have you talked to a doctor or nurse about having sex with men?		
Yes	166	41.7
Are you comfortable talking about sexual health with a doctor or nurse?		
Yes	324	83.7
When was the last time you had a physical exam by a doctor or other health professional?		
Past 6 months	215	54.7
Past year	96	24.4
Past 2 years	38	9.7
> 2 years	44	11.2
Where do you usually go when you are sick or in need of health care?		
Doctor's office/private clinic	199	52.2
Community or public health clinic	50	13.1
Hospital outpatient department	48	12.6
Emergency room	71	18.6
Other	13	3.4
Race-based Medical Mistrust		
People of my race cannot trust doctors and health care workers.		
Agree	82	20.9
People of my race should be suspicious of information from doctors and health care workers.		
Agree	75	19.2
People of my race should not confide in doctors and health care workers because it will be used against them.		
Agree	58	14.8
People of my race should be suspicious of medicine.		
Agree	76	19.2
In most hospitals, people of my race don't receive as good of care as people of other races.		
Agree	134	34.3
My health care isn't as good as others' because of my race.		
Agree	62	16.0

Table 3

Sex partners, sexually transmitted infections, and substance use among HIV negative BMSM.

	N=398	
<i>In past six months:</i>	M	SD
Number male sex partners	4.01	8.7
Unprotected, insertive, anal sex partners	1.33	3.61
Unprotected, receptive, anal sex partners	1.02	3.10
<i>In past year, have you been told by a health care provider that you have:</i>		
Syphilis	21	5.4
Chlamydia	33	8.5
Gonorrhea	32	8.2
Other STD	30	7.7
<i>Alcohol Frequency</i>		
How often do you have a drink containing alcohol?		
Never	65	16.7
Monthly or less	92	23.7
2–4 times a month	90	23.1
2–3 times a week	89	22.9
> 4 times per week	53	13.6
<i>Alcohol Consumption</i>		
How many drinks containing alcohol do you have on a typical day when you are drinking?		
0	70	17.6
1–2	148	37.2
3–4	97	24.4
5–6	45	11.3
7–9	14	3.5
>10	14	3.5
<i>Drug use in past six months:</i>		
Nitrate inhalants	37	9.7
Cocaine/Crack	63	16.2
Ecstasy	42	11.0
Methamphetamine	26	7.3
Viagra (without prescription)	39	10.1

Table 4

Items associated with willingness to use PrEP among HIV negative BMSM.

N=398		
	Univariate model OR (RR) (95% CI)	Multivariate model OR (RR) (95% CI)
<i>Age</i>	.98 (.97–1.00)	
<i>Education</i>	.98 (.90–1.07)	
<i>Income</i>	.95 (.83–1.09)	
<i>Reside within city limits</i>	.86 (.78–.95)*	.67 (.42–1.08)
<i>Health care access factors</i>		
Current health care coverage?	.95 (.63–1.54)	
Without health care past two years?	1.20 (.79–1.81)	
Primary care provider?	1.12 (.73–1.71)	
Talked with provider about having sex with men in past six months?	1.72 (1.13–2.61)*	1.85 (1.17–2.94)**
Comfortable talking with doctor or nurse about sexual health?	1.84 (1.07–3.16)*	1.63 (.88–3.05)
When was last physical exam?	.88 (.74–1.05)	
Where do you go for health care?	1.30 (.86–1.96)	
<i>Race-based medical mistrust</i>	.65 (.48–.87)**	.72 (.52–.99)*
<i>Sexual risk factors</i>		
Number male sex partners	1.01 (.98–1.04)	
Unprotected insertive anal sex partners	.99 (.94–1.04)	
Unprotected receptive anal sex partners	.98 (.92–1.05)	
<i>Sexually transmitted infections</i>		
Diagnosed with STI in past year?	1.07 (.59–1.94)	
<i>Substance use</i>		
Alcohol frequency	.94 (.81–1.11)	
Alcohol consumption	.84 (.72–1.00)*	.86 (.72–1.03)

N=398		
	Univariate model OR (RR) (95% CI)	Multivariate model OR (RR) (95% CI)
Nitrate inhalants	.67 (.48-.99)*	1.09 (.63-1.88)
Cocaine/Crack	.63 (.43-.94)*	.94 (.55-1.60)
Ecstasy	.75 (.51-1.10)	
Methamphetamine	.54 (.34-.88)*	.94 (.44-2.03)
Viagra (without prescription)	.60 (.40-.89)*	.65 (.35-1.21)