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Willingness to Take PrEP and Potential for Risk Compensation Among Highly Sexually Active Gay and Bisexual Men

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Abstract

Once-daily Truvada (Emtricitabine/Tenofovir) as a method of pre-exposure prophylaxis (PrEP) is one of the most promising biomedical interventions to eliminate new HIV infections; however, uptake among gay, bisexual, and other men who have sex with men has been slow amidst growing concern in popular/social media that PrEP use will result in reduced condom use (i.e., risk compensation). We investigated demographic, behavioral, and psychosocial differences in willingness to use PrEP as well as the perceived impact of PrEP on participants' condom use in a sample of 206 highly sexually active HIV-negative gay and bisexual men. Nearly half (46.1 %) said they would be willing to take PrEP if it were provided at no cost. Although men willing to take PrEP (vs. others) reported similar numbers of recent casual male partners (<6 weeks), they had higher odds of recent receptive condomless anal sex (CAS)—i.e., those already at high risk of contracting HIV were more willing to take PrEP. Neither age, race/ethnicity, nor income were associated with willingness to take PrEP, suggesting equal acceptability among subpopulations that are experiencing disparities in HIV incidence. There was limited evidence to suggest men would risk compensate. Only 10 % of men who had not engaged in recent CAS felt that PrEP would result in them starting to have CAS. Men who had not tested for HIV recently were also significantly more likely than others to indicate willingness to take PrEP. Offering PrEP to men

who test infrequently may serve to engage them more in routine HIV/STI testing and create a continued dialogue around sexual health between patient and provider in order to prevent HIV infection.

Keywords

PrEP; Gay and bisexual men; Risk compensation; PrEP acceptability; Truvada

Introduction

More than three decades into the HIV/AIDS epidemic, researchers have described our HIV prevention efforts as stalled [1]. In spite of representing between 2 and 5 % of the population [2], gay, bisexual, and other men who have sex with men (GBMSM) make up an estimated 65 % of new HIV infections [3]. In recent years, incidence has plateaued among GBMSM overall; however, in some subpopulations such as GBMSM of color, it has increased dramatically [4]. In 2010, the Iniciativa Profilaxis Pre-Exposición (iPrEX) study released the first set of results from their ongoing trial of once-daily Truvada (Emtricitabine/Tenofovir) as a method of pre-exposure prophylaxis (PrEP). These initial results found PrEP to reduce the likelihood of HIV infection in GBMSM by 44 % [5]. However, further examination of the results has noted that, among those with detectable levels of the drug in their system, HIV infections were reduced by 92 % [5]. All said, PrEP remains one of the most promising biomedical interventions to eliminate new HIV infections in populations who are at high risk of contracting HIV [6]. In a simulation study, PrEP was shown to prevent 29 % of new HIV infections over a 20-year time horizon [7]. Both the CDC and WHO have recommended that GBMSM consider PrEP as part of their HIV prevention plan [8, 9]. Specifically, the CDC has recommended PrEP to GBMSM at high risk of acquiring HIV [9], whereas, WHO recommended that all GBMSM consider the use of PrEP while still continuing to use condoms [8].

Since the Food and Drug Administration (FDA) approved PrEP for HIV prevention in the United States in 2012, popular media has indicated that awareness of PrEP has been low and roll out has been slow [6, 10, 11]. Although studies have reported that PrEP naïve GBMSM are interested in using PrEP once they are educated about the HIV prevention tool [12, 13], a 2014 study reported that after educating 416 HIV-negative GBMSM about PrEP at a testing facility, only 2 (0.47 %) accepted the offer of a prescription [14]. Between January, 2011 and March 2013, only 1774 HIV-negative people in the U.S. had filled prescriptions for PrEP, many of which were women [15].

Several reasons have been proposed for the slow uptake of PrEP, though limited empirical evidence exists. Some have suggested it may be due to cost concerns [16, 17], given that an annual prescription of Truvada can exceed \$12,000 for those without health insurance or prescription coverage. In addition, even for those with insurance, high copayments may also serve as a deterrent [18]. Others have suggested it may be a combination of lack of awareness that one may be an appropriate candidate for PrEP [19] coupled with the belief that PrEP is only for men who are very risky [19]. GBMSM have also expressed a concern

about social stigma attached to taking PrEP—fear of what family or friends may think about the choice to take the medication [7, 20-22]. Provider-initiated barriers have also been proposed as responsible for the slow uptake [23]. To our knowledge, educational attainment is the only demographic characteristic to be associated with acceptability of PrEP. In prior research, higher educational attainment was positively correlated with PrEP acceptability [6, 24].

For providers, researchers, and among gay and bisexual communities, there is an ongoing question as to whether taking PrEP will result in GBMSM reducing their condom use [20, 25] via risk compensation (i.e., biological risks are decreased by PrEP and so behavioral risks are increased). In contrast to messages being spread via popular and social media [26], empirical data suggest the potential for risk compensation is low. For example, when a sample of GBMSM, all of whom had reported condomless anal sex (CAS), were presented with hypothetical situations about PrEP use, 35.5 % of men said they would reduce their condom use if PrEP was 80 % effective [24].

For the current study, we investigated demographic, behavioral, and psychosocial differences in willingness to use PrEP, as well as the perceived impact of PrEP on participants' condom use. Our sample included highly sexually active gay and bisexual men—individuals who meet WHO and CDC recommendations as candidates for PrEP. To our knowledge, there are no published studies on willingness to use PrEP as well as the perceived impact of PrEP on condom use with this population. As an exploratory study, we did not have a priori hypotheses. With the continued expansion and uptake of PrEP among populations at high risk of HIV acquisition, such findings can be useful for providers and research both in terms of the characteristics associated with willingness to use PrEP, as well as perceived impact of PrEP on future condom use.

Method

Analyses for this manuscript were conducted on data from *The Pillow Talk Project*, a longitudinal study of highly sexually active (i.e., 9 male partners in 90 days) gay and bisexual men in New York City (NYC) [27]. For the purposes of this project, we operationalized highly sexually active as having at least 9 sexual partners in the 90 days prior to enrollment. This criterion was based on prior research [28-30] including a probability-based sample of urban GBMSM [31, 32] that found nine partners was two to three times the average number of sexual partners among sexually active GBMSM. By definition, every participant for the present analysis would have met eligibility criteria for the iPrEX trial, as well as CDC and WHO recommendations for starting PrEP.

Recruitment procedures have been described elsewhere [33]. In brief, we utilized a combination of strategies: (1) respondent-driven sampling; (2) Internet-based advertisements on social and sexual networking websites; (3) email blasts through New York City gay sex party listservs; and (4), active recruitment in New York City venues such as gay bars/clubs, concentrated gay neighborhoods, and ongoing gay community events.

Enrollment began in February, 2011 and closed in June, 2013. The project enrolled both HIV-negative and HIV-positive men, though the analyses for this manuscript were limited to HIV-negative men. Of the 377 men who enrolled in the project, 208 (55.2 %) were confirmed to be HIV-negative with a rapid HIV antibody test during their assessment. Two of these men were missing responses on key variables for this study; thus, the present analysis focused on the remaining 206 HIV-negative gay and bisexual men.

Participants and Procedures

Participants completed a phone-based screening interview to assess eligibility, which was defined as: at least 18 years of age; biologically male and self-identified as male; nine or more male sexual partners in the prior 90 days; self-identification as gay, bisexual, or some other non-hetero-sexual identity (e.g., queer); and daily access to the internet (which was required for a portion of the study not discussed in this manuscript). Participants who met preliminary eligibility were emailed a link to an internet-based computer-assisted self-interview (CASI), which included informed consent procedures. Men completed this one-hour online survey at home followed by an in-person baseline appointment. Final eligibility and enrollment was confirmed during the in-person appointment.

All procedures were reviewed and approved by the Institutional Review Board of the City University of New York.

Measures

Measures used for this manuscript were taken from the baseline assessment. Using a computer-assisted survey, participants reported demographic characteristics, including sexual identity, age, race/ethnicity, education, and relationship status. Participants completed the Hypersexual Disorder Screening Inventory (HDSI, $\alpha = 0.89$) [34], the Temptation for Unsafe Sex Scale ($\alpha = 0.95$) [34], the Safer Sex Self-Efficacy Questionnaire ($\alpha = 0.97$) [20, 35], and the Decisional Balance (Pros & Cons) for Sex Without Condoms [36-38] which includes a subscale to measure perceived benefits to not using condoms (e.g., *sex without a condom is more spontaneous*, $\alpha = 0.86$), and a subscale to measure perceived negative consequences from not using condoms (e.g., *having sex without a condom could cause me to get an STD*, $\alpha = 0.81$). The HSDI [39] is a seven item scale divided into two sections. Both sections include the prompt "Please rate how often each item is true or how accurately it describes your sexual behavior during the last 6 months." Section A contains five items measuring recurrent and intense sexual fantasies, urges, and behaviors. Section B consists of two items measuring distress and impairment as a result of these fantasies, urges, and behaviors. Responses (0 = *Never true* to 4 = *Almost always true*) were summed to provide a score ranging from 0 to 28. Responses of 3 or 4 are recoded as endorsement whereas 0, 1, or 2 are coded as non-endorsement. Participants were considered to have screened positive for hypersexual disorder if they endorsed at least four items in Section A and at least one item in Section B.

Sexual Behavior—During the in-person assessment, participants completed an interviewer-administered structured timeline follow-back (TLFB) interview [40, 41] which involved completing a detailed calendar of their sexual events in the 42 days (6 weeks) prior

to the study visit. We generated summary scores for a variety of sexual behaviors (e.g., number of male partners, number of male serodiscordant partners, insertive anal sex without a condom (yes, no), receptive anal sex without a condom (yes, no)).

Pre-exposure Prophylaxis—Participants were presented with the following brief summary of PrEP:

PrEP (pre-exposure prophylaxis) is a new biochemical strategy to prevent HIV infection. PrEP involves HIV-negative guys taking anti-HIV medications (for example, Truvada) once a day, every day to reduce the likelihood of HIV infection if they were exposed to the virus. The first clinical trial of PrEP indicated that it reduced the likelihood of HIV infection when used in combination with other preventative methods, such as condoms.

Participants then responded to a series of questions including, how likely they would be to take PrEP if it were offered to them for free (*would definitely, would probably, might, would probably not, would definitely not*), and how familiar they were with PrEP (dichotomized into 0 = never heard of before, 1 = heard of before). Those who said they would probably or definitely take it were coded as having a high willingness to take PrEP in these analyses (0 = no, 1 = yes).

Men were also asked if taking PrEP would influence their condom use (*significantly more likely, somewhat more likely, would not change, somewhat less likely, significantly less likely*). This variable was trichotomized (−1 = decrease use, 0 = no change, 1 = increase use).

Analytic Plan

In the first set of analyses, we compared men who were willing versus unwilling to take PrEP. In the second set, we compared the perceived impact of PrEP on men's condom use (i.e., risk compensation). For both sets of analyses participants were compared based on demographic characteristics, psychosocial measures, and sexual behavior. When appropriate, Chi square, *t* tests, Mann–Whitney *U*, and Kruskal–Wallis tests were used. Finally, we conducted a forward and backward logistic regression to determine independent associations with the belief that PrEP would reduce one's condom use (1 = yes, 0 = no). Variables selected for the model were taken from those that were significant ($p < 0.05$) at the bivariate level (shown in Table 3).

Results

As can be seen in Table 1, the sample was diverse with regards to race and ethnicity, employment status, and educational achievement, while a majority of the sample was gay-identified and single. Average age was 34 ($SD = 11.8$). Eighteen percent were currently in a relationship and two-thirds of the sample self-reported a lifetime STI diagnosis, with gonorrhea, chlamydia, and genital warts being the most common. Participants reported a median of 11 casual male partners (IQR 7 to 17) in the last 42 days (6 weeks).

Participants' familiarity with PrEP was significantly associated with the year in which they enrolled: nearly half (47.0 %) of participants enrolled in 2011 said they had never heard of PrEP, compared with 37.8 % among men enrolled in 2012, and only 27.6 % in 2013, Mantel-Haenszel $\chi^2(1) = 6.06, p = 0.01$; Pearson $\chi^2(4) = 9.61, p = 0.047$. However, willingness to take PrEP if it was provided for free ($p = 0.97$) and the perceived impact of PrEP on one's condom use ($p = 0.26$) did not significantly change over time. Overall, nearly half (46.1 %) of participants said they would be willing to take PrEP if it was provided for free. And, 23.1 % said they believed it would decrease their condom use, 62.6 % said their condom use would stay the same, and 14.1 % said they would increase their condom use if on PrEP. Six men (2.9 %) said they had taken PrEP at one point in their lives (Fig. 1).

Table 2 displays factors associated with willingness to take PrEP if it were provided at no cost and Table 3 reports on the perceived impact of PrEP on condom use. Willingness to take PrEP was not significantly associated with age, race/ethnicity, income, being in a relationship, anal sexual role (e.g., top, bottom, versatile), self-identifying as a barebacker, temptations for CAS, perceptions of the drawbacks of CAS, self-efficacy for condom use, or the number of male sex partners in the last 42 days. Men who indicated willingness to take PrEP perceived significantly greater benefits of engaging in CAS. Compared with men who indicated low willingness to take PrEP, a significantly larger proportion of men willing to take PrEP last tested for HIV more than 6 months ago, reported recent receptive CAS, and screened positive for hypersexual disorder. Compared with men who indicated low willingness to take PrEP, a significantly smaller proportion of men who indicated willingness to take PrEP had a college education. Although not significant ($p = 0.06$), there was a trend between perceived impact of PrEP on condom use and willingness to start PrEP—in total, 65.5 % of men who said PrEP would increase their condom use expressed willingness to take PrEP compared with only 47.9 % of those who felt that PrEP would decrease their condom use and 41.1 % of men who felt that PrEP would have no impact on their condom use.

The perceived impact of PrEP on condom use was not significantly associated with being in a relationship, recency of HIV testing, hypersexual disorder, or anal sexual role. It was associated with age, race/ethnicity, and income (see Table 3). Men who believed PrEP would decrease their condom use also reported significantly higher levels of temptation to engage in CAS and higher perceived benefits to engaging in CAS, and lower perceived drawbacks to engaging in CAS. Compared to men who felt PrEP would have no impact on their condom use, men who believed PrEP would decrease their condom use also reported a greater number of male partners. Furthermore, one-third of men who engaged in recent CAS believed that PrEP would decrease their condom use, compared to only 10 % of men who did not report recent CAS. Men who perceived that PrEP would have no impact on their condom use reported significantly higher levels of self-efficacy for condom use.

Finally, we conducted both forward and backward logistic regression to determine independent associations with the belief that PrEP would reduce one's condom use (1 = yes, 0 = no). Variables selected for the model were taken from those that were significant ($p < 0.05$) at the bivariate level (shown in Table 3). Both models converged on the same two

variables: (1) CAS in the prior 42 days (AOR = 2.96, 95 % CI 1.82–6.85), and (2) increased scores on the Temptation for Unsafe Sex Scale (AOR = 1.04, 95 % CI 1.01–1.07).

Discussion

Pillow Talk is a study of highly sexually active gay and bisexual men—individuals who, by definition, meet WHO and CDC criteria/guidelines for PrEP treatment [9, 19]. In this study, nearly half of men said they would be willing to take PrEP if it were offered at no cost to them. Although men willing to take PrEP reported similar number of male partners in the prior 6 weeks, they had higher odds of reporting recent receptive CAS. In essence, those *already* at high risk of contracting HIV were significantly more willing to take PrEP. These men also had higher odds of screening positive for hypersexual disorder, suggesting that they might be ideal targets for offering PrEP, as uptake among these men may be higher.

This study found marked increase in knowledge of PrEP over time consistent with historical events (e.g., the release of iPrex results in 2011, FDA approval in 2012, and social media campaigns both for and against PrEP in 2013) [20–22]. Interestingly, although awareness of PrEP increased over time, willingness to use PrEP and the perceived impact of PrEP on condom use did not change in this study. These findings suggest that although awareness of PrEP is increasing, willingness to use PrEP is not. It may be that stagnant willingness to start PrEP could be a result of individuals not recognizing that they would be appropriate candidates to start PrEP [19], or stigma attached to using PrEP [42]. Likewise, the perceived impact of PrEP on condom use did not change over time. This too suggests that although awareness of PrEP is increasing, this increased knowledge about PrEP has not altered men's attitudes about condom use.

Neither age, race/ethnicity, nor income were associated with willingness to take PrEP, suggesting equal PrEP acceptability among GBMSM subpopulations that are experiencing disparities in HIV incidence (e.g., younger men, men of color). That being said, the question assessing willingness to take PrEP was phrased regarding PrEP if it was available for *free*. Although many US insurance plans, including Medicaid, cover Truvada and, at the moment, Gilead (the manufacturer of Truvada) provides a coupon that will cover much—if not all—of a person's copayment (gileadcopay.com). It is unclear how many men in this study may have been dissuaded from starting PrEP due to cost concerns. The reality is that PrEP may effectively be free or low cost for many individuals in the US; however, it remains important to ensure individuals are properly engaged in primary care and are aware of the avenues by which PrEP is available to them at low cost or for free.

Men with less than a college education were more likely than others to consider taking PrEP, which is inconsistent with prior research [6, 24]. It may be that those with more education are reading more about PrEP and have greater concerns regarding efficacy, adherence, and stigma. Alternately, this may be a result of the unique nature of the population from which we sampled (highly sexually active). In either event, our findings highlight the need to investigate the association between education and willingness to use PrEP. As a biomedical strategy, PrEP involves navigating health care systems (e.g., primary care, testing for HIV and kidney function, prescription coverage) coupled with behavioral

methods of HIV and STI prevention (e.g., condom use). Level of education is related to health literacy [37] and thus should be monitored with regard to PrEP uptake, adherence, and effectiveness.

Men who had not tested recently were also more likely to indicate willingness to take PrEP than others. Present guidelines for PrEP treatment indicate that providers retest for HIV every three to four months before they renew a patient's prescription, along with providing behavioral risk reduction support, assessment for both side effects and STI symptoms, and medication adherence counseling [9]. Offering PrEP to men who test infrequently may serve to engage them more in routine HIV and STI testing, create a continued dialogue around sexual health between patient and provider, and prevent HIV infection.

In popular and social media there has been significant debate about the impact of PrEP on CAS, often suggesting that men's condom use will decrease as a result of initiating PrEP [20, 21, 43]. In contrast to these hypotheses regarding the potential for risk compensation, this study builds on prior work refuting risk compensation. For example, a previous study of GBMSM reporting CAS in NYC [24], found that only 35.5 % of men would reduce their condom use if PrEP was 80 % effective, and only 23.3 % of men in our study believed their condom use would decrease. Further, our results suggest that only 10 % of men who had not engaged in recent CAS felt that PrEP would result in them *starting* to have CAS. That is, 90 % of men who abstained from CAS felt their condom use would remain the same or increase.

Importantly, those who felt their risk behaviors may increase as a result of PrEP were overwhelmingly those who were already engaging in behaviors that put them at risk for HIV. This suggests that PrEP may be a more effective HIV prevention option for these men regardless of potential increases in CAS given the already inconsistent nature of their condom use. With adequate medication adherence, these men would be protected both during times when they are already engaging in risk behavior, as well as during any potential additional risk behavior resulting from PrEP initiation, whereas they are presently completely unprotected during all acts of risk behavior (hold for viral suppression among any undetectable HIV-positive partners). To protect these men from contracting and transmitting STIs, it would be additionally vital to regularly test and treat for the full range of STIs, (including blood, urethral, rectal, and pharyngeal screening), as well as vaccinate for HPV and hepatitis A and B. Further, it remains unknown as to whether the presence of an STI—which serves as a highly effective route for HIV to pass between partners—would decrease the ability of PrEP to prevent seroconversion by virtue of greater exposure to the virus at a given time.

Our study found that the perceived impact of PrEP on condom use was associated with several important demographic characteristics including age, race, income, and education. With the exception of age, the associations observed with other demographic characteristics suggest that the most vulnerable men would not change their condom use or, in fact, would increase it. This includes men of color, men with lower income, and men with less than a college education. We did find, however, that men under the age of 40 were more likely than those over 40 to say that their condom use would decrease. This may be a generational effect

related to the history of the HIV epidemic. Men over 40 came of age during the height of the epidemic, while those under 40 came of age at a time when it was known how HIV was transmitted and effective treatment options were available [44].

Limitations

The results of this study should be understood in light of their limitations. To be eligible for the *Pillow Talk* study, men had to report at least nine male partners in the prior 90 days. This sample represents, by definition, ideal targets for PrEP; however, these men do not represent all gay and bisexual men. We used a variety of non-probability methods to recruit participants and, although respondent-driven sampling was among our methods, we lacked statistical power to assess for homophily or differences by recruitment method. Some measures were collected via online survey, which allowed men to complete the survey from the comfort of their homes and on their own schedule; however, we cannot know what types of distractions might have been drawing their attention away from the survey while they completed it. Data used in this analysis were cross-sectional, and behavioral measures were captured via the TLFB interview, which has demonstrated strong reliability and validity with a variety of populations. However, as a face-to-face interview, there is the potential for bias due to socially desirable responses. We do not have data on reasons why individuals were unwilling to go on PrEP and our findings indicate the prevalence is large enough to warrant further consideration, perhaps through qualitative methods like semi-structured interviews and/or focus groups. The results of this study concerned hypothetical PrEP initiation. As PrEP continues to diffuse as a new prevention strategy, it is important to continue to investigate how gay and bisexual men who represent ideal targets for PrEP perceive its impact on their own sexual behavior.

Conclusion

In a sample of highly sexually active gay and bisexual men, we found that knowledge of PrEP increased markedly between 2011 and 2013, however willingness to use PrEP as well as the perceived impact of PrEP on one's own sexual behavior did not change. Willingness to use PrEP was not significantly associated with a number of key demographic characteristics, suggesting that GBMSM subpopulations that are disproportionally impacted by HIV (e.g., young men of color) would be equally likely to consider PrEP. Nearly two-thirds of participants believed that their condom use would not change were they on PrEP, and a minority felt their condom use would decrease. Because being on PrEP requires one to see their care provider every 3 months, this can serve as an important opportunity to engage men in sexual health discussions and interventions to prevent onward STI transmission. Those who felt their risk behaviors may increase as a result of PrEP were overwhelmingly those who were already engaging in some degree of HIV transmission risk behavior. This suggests that PrEP may be a highly effective HIV prevention option for these men regardless of potential increases in CAS given their ongoing inconsistent condom use.

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Fig. 1.
Changes in PrEP familiarity, uptake, and the perceived impact of PrEP on condom use between 2011 and 2013

Table 1

Demographic characteristics

	<i>n</i>	%
Race or ethnicity		
Black	28	13.6
Latino	23	11.2
White	124	60.2
Other	31	15.0
Income		
<\$30,000	91	44.2
\$30,000+	115	55.8
Employment status		
Full-time	83	40.3
Part-time	66	32.0
Unemployed/student/disability	57	27.7
Education		
Some high school/GED or less	13	6.3
Some college, associates degree, or currently in college	46	22.3
4-year college degree	84	40.8
Graduate school	63	30.6
Relationship status		
In a relationship (e.g., married, boyfriend, lover)	38	18.4
I am casually dating	49	23.8
I am single	119	57.8
Ever experienced an STI (yes)	136	66.0
Chlamydia	56	27.2
Gonorrhea	68	33.0
Anal/genital warts/HPV	52	25.2
Genital herpes (HSV1/HSV2)	34	16.5
Syphilis	19	9.2
Hepatitis C	2	1.0
Hepatitis B	8	3.9
Urethritis	26	12.6

Table 2

Willingness to take PrEP if it were free

High willingness to take PrEP if it were free		No ^a		Yes ^b		χ^2	p
		n = 111		n = 95			
		n	%	n	%		
Age							
18–29	45	50.6	44	49.4	1.61	0.66	
30–39	33	55.9	26	44.1			
40–49	20	62.5	12	37.5			
50+	13	50	13	50			
Race or ethnicity							
Black	17	60.7	11	39.3	2.06	0.56	
Latino	10	43.5	13	56.5			
White	69	55.6	55	44.4			
Other	15	48.4	16	51.6			
Income \$30K							
No	44	48.4	47	51.6	2.07	0.16	
Yes	67	58.3	48	41.7			
4-year college education							
No	24	40.7	35	59.3	5.80	0.02	
Yes	87	59.2	60	40.8			
Currently in a relationship							
Yes	22	57.9	16	42.1	0.30	0.58	
Recency of last HIV test							
Less than 3 months	66	62.9	39	37.1	7.09	0.03	
3–6 months ago	21	46.7	24	53.3			
Greater than 6 months	24	42.9	32	57.1			
Anal sexual role							
Top or versatile top	51	55.4	41	44.6	0.16	0.92	
Versatile	22	52.4	20	47.6			
Bottom or versatile bottom	38	52.8	34	47.2			
Self-identified as a barebacker							
Yes	5	45.5	6	54.5	0.32	0.56	
Hypersexual disorder screening inventory (HDSI) diagnosis							
Yes	9	32.1	19	67.9	6.16	0.01	
Perceived impact of PrEP on my condom use							
Decrease	25	52.1	23	47.9	5.77	0.06	
No change	76	58.9	53	41.1			
Increase	10	34.5	19	65.5			
Sexual behavior, last 42 days (6 weeks)	Mdn	IQR	Mdn	IQR	U	p	
Total # male partners	10	7–18	11	8–17	5476	0.63	

Sexual behavior, last 42 days (6 weeks)	Mdn	IQR	Mdn	IQR	<i>U</i>	<i>p</i>
Total # male serodiscordant partners ^c	4	2–10	4	1–9	5101	0.69

	<i>n</i>	%	<i>n</i>	%	χ^2	<i>p</i>
Sexual behavior, last 42 days (6 weeks)						
Anal insertive, no condom						
No	60	54.5	50	45.5	0.04	0.84
Yes	51	53.1	45	46.9		
Anal receptive, no condom						
No	85	59	59	41	5.1	0.02
Yes	26	41.9	36	58.1		
Any condomless anal sex						
No	51	57.3	38	42.7	0.74	0.39
Yes	60	51.3	57	48.7		

	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>t</i>	<i>p</i>
Temptation for unsafe sex scale, range 13–65	30.00	13.10	32.3	13.30	1.31	0.19
Decisional balance for sex without a condom (Pro), range 1–5	2.41	0.84	2.73	1.00	2.46	0.02
Decisional balance for sex without a condom (Con), range 1–5	3.56	0.85	3.72	0.89	1.29	0.20
Safer Sex Self-Efficacy Questionnaire, range 13–65	49.25	14.76	48.36	13.81	0.45	0.66

U Mann-Whitney *U*, *IQR* interquartile range, *Mdn* Median

^a“Might,” “Probably not,” “Definitely not”

^b“Probably would,” “Definitely would”

^cSerodiscordant includes partners who were believed to be HIV-positive or of unknown HIV status

Table 3

Perceived impact of PrEP on condom use

Perceived impact of PrEP on my condom use	Decrease		No change		Increase			
	<i>n</i> = 48		<i>n</i> = 129		<i>n</i> = 29			
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	χ^2	<i>p</i>
Age								
18–29	21	23.6	49	55.1	19	21.3	-	
30–39	17	28.8	36	61	6	10.2		
40–49	7	21.9	23	71.9	2	6.3		
50+	3	11.5	21	80.8	2	7.7		
Age								
18–39	38	25.7	85	57.4	25	16.9	6.49	0.04
40+	10	17.2	44	75.9	4	6.9		
Race or ethnicity								
Black	3	10.7	20	71.4	5	17.9	-	
Latino	4	17.4	12	52.2	7	30.4		
White	32	25.8	87	70.2	5	4.0		
Other	9	29	10	32.3	12	38.7		
Race or ethnicity								
Non-white	16	19.5	42	51.2	34	29.3	26.00	<0.001
White	32	25.8	87	70.2	5	4.0		
Income \$30K								
No	18	19.8	52	57.1	21	23.1	11.03	0.004
Yes	30	26.1	77	67.0	8	7.0		
4-year college education								
No	10	16.9	30	50.8	19	32.2	22.56	<0.001
Yes	38	25.9	99	67.3	10	6.8		
Currently in a relationship								
Yes	6	15.8	26	68.4	6	15.8	1.48	0.48
Recency of last HIV test								
Less than 3 months	28	26.7	60	57.1	17	16.2	3.02	0.55
3–6 months ago	10	22.2	30	66.7	5	11.1		
Greater than 6 months	10	17.9	39	69.6	7	12.5		
Anal sexual role								
Top or versatile top	20	21.7	60	65.2	12	13	0.58	0.97
Versatile	11	26.2	25	59.5	6	14.3		
Bottom or versatile bottom	17	23.6	44	61.1	11	15.3		
Self-identified as a barebacker								
Yes	3	27.3	7	63.6	1	9.1	–	
Hypersexual disorder screening inventory (HDSI) diagnosis								
Yes	4	14.3	14	50.0	10	35.7	–	

Sexual behavior, last 42 days (6 weeks)	Mdn	IQR	Mdn	IQR	Mdn	IQR	K-W	<i>p</i>	post hoc
Total # male partners	14	10–18	10	7–17	9	6–12.5	7.769	0.02	A B
Total # male serodiscordant partners ^a	4	2–9	4	1–11	4	1.5–8.5	0.163	0.92	

Sexual behavior, last 42 days (6 weeks)	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	χ^2	<i>p</i>
Anal insertive, no condom								
No	17	15.1	79	71.8	14	12.7	9.73	0.01
Yes	31	32.3	50	52.1	15	15.6		
Anal receptive, no condom								
No	28	19.4	93	64.6	23	16.0	4.57	0.10
Yes	20	32.3	36	58.1	6	9.7		
Any condomless anal sex								
No	9	10.1	67	75.3	13	14.6	15.74	<0.001
Yes	39	33.3	62	53.0	16	13.7		

	Group A		Group B		Group C				
	M	SD	M	SD	M	SD	F	p	Post hoc
Temptation for unsafe sex scale, range 13–65	38.12	10.10	27.98	12.71	33.17	15.40	11.83	<0.001	A B
Decisional balance for sex without a condom (Pro), range 1–5	2.97	0.82	2.36	0.77	2.76	1.09	8.90	<0.001	A B
Decisional balance for sex without a condom (Con), range 1–5	3.45	0.74	3.63	0.90	3.98	0.84	3.45	0.03	A C
Safer sex self-efficacy questionnaire, range 13–65	44.35	10.83	51.61	14.43	43.93	15.98	6.86	0.001	B A, C

K-W Kruskal-Wallis, *IQR* interquartile range, *Mdn* Median

– Chi-square cannot be interpreted, expected counts fall below 5 in one or more cells

^aSerodiscordant includes partners who were believed to be HIV-positive or of unknown HIV status