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## Predictors of Identifying as a Barebacker among High-Risk New England HIV Seronegative Men Who Have Sex with Men

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**ABSTRACT** *Studies have found that between 14% and 46% of US men who have sex with men (MSM) consistently report “barebacking” behavior (i.e., intentional unprotected anal intercourse) with other men. This is of public health significance because MSM continue to constitute more than 50% of new HIV infections in the USA. Men who self-identify as barebackers may represent a different and unique subset of MSM with distinct HIV prevention needs. In 2007, 227 HIV seronegative MSM recruited through modified respondent-driven sampling completed an interviewer-administered survey which assessed barebacker identity (i.e., personally identifying with the barebacker scene), demographics, sexual risk behaviors, psychosocial variables, and drug/alcohol use. Bivariate and multivariable logistic regression procedures were used to examine predictors of barebacker identity in relation to HIV risk behavior. Overall, 31% of participants identified as a barebacker. In bivariate analyses, lower education (OR=1.76; 95% CI=0.99–3.13;  $p<0.05$ ), a current drinking problem (OR=2.34, 95% CI=1.29–4.23;  $p<0.01$ ), higher levels of HIV treatment optimism (OR=1.06; 95% CI=1.01–1.12;  $p<0.05$ ), meeting sexual partners at private sex parties (OR=2.47; 95% CI=1.28–4.74;  $p<0.01$ ) or at bars/cubs (OR=1.97; 95% CI=1.10–3.52;  $p<0.05$ ), and engaging in serodiscordant unprotected insertive anal sex (OR=3.42; 95% CI=1.27–9.21;  $p<0.01$ ) significantly predicted barebacker identification compared to those with no barebacker identification. In a multivariable model, barebackers were more likely to screen in for alcohol abuse (adjusted OR=2.16; 95% CI=1.09–4.27;  $p<0.05$ ) and engage in serodiscordant unprotected insertive anal sex (adjusted OR=3.17; 95% CI=1.09–9.20;  $p<0.05$ ) compared to their non-barebacker counterparts. No significant differences were found in serodiscordant unprotected receptive anal sex between barebackers and non-barebackers. These findings suggest that barebacker identity is related to intentional HIV sexual risk taking and alcohol abuse. Furthermore, strategic positioning (i.e., engaging in insertive rather than receptive sex) might be associated with barebacker identification and may indicate a harm-reduction strategy being used among some HIV-uninfected MSM to reduce their risk of becoming infected. Additional research is warranted to understand the social identity of barebacking among MSM in order to develop more nuanced prevention strategies.*

**KEYWORDS** HIV/AIDS, STIs, MSM, Bareback, Prevention

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## INTRODUCTION

Intentional unprotected anal intercourse, known as “barebacking,” has received widespread attention among researchers investigating HIV prevention and interventions among men who have sex with men (MSM). MSM represented 67% of new HIV infections among US men and 49% of all persons living with HIV/AIDS in recent years.<sup>1</sup> Understanding the sociocultural phenomenon of barebacking, in particular the demographic, psychosocial, and behavioral predictors of barebacker identity, may prove useful to design more effective HIV behavioral interventions for MSM at high risk of infection.

The majority of prior research on barebacking has focused on the prevalence and predictors of barebacking *behavior*. Studies with samples of mixed HIV-infected and uninfected MSM have found high rates of intentional unprotected anal intercourse, ranging from 14% to 46%.<sup>2–6</sup> Previous research has also shown HIV-infected MSM to be significantly more likely than HIV-uninfected MSM to report barebacking behavior.<sup>5,6</sup> In studies exclusively of HIV-infected MSM, the frequency of barebacking has been shown to be as high as 84%.<sup>7,8</sup>

Among mixed serostatus samples, barebackers have been found to be more likely to use the Internet to meet sexual partners<sup>2</sup> and spent significantly more time on the Internet looking for sexual partners<sup>3,4</sup>; reported significantly higher peer norms accepting unprotected sex<sup>2</sup>; were more likely to use alcohol in sexual contexts<sup>2</sup>; and were more likely to have reported engaging in both unprotected insertive and receptive anal sex.<sup>2</sup> Studies have also found evidence of strategic positioning (i.e., engaging in insertive rather than receptive sex) and serosorting (i.e., engaging in sex with individuals of the same known HIV serostatus) among MSM who report barebacking behavior.<sup>3–6</sup> Some researchers point to these findings as evidence of complex, harm-reduction decision-making informed by scientific evidence about the dynamics of HIV transmission and sexual risk among MSM.<sup>9–11</sup>

However, focusing on barebacking behavior does not necessarily provide insight into barebacking as an *identity*. Importantly, from a public health perspective, men who identify as barebackers may represent a different and unique subset of MSM who engage in bareback sex with distinct HIV prevention needs.<sup>8</sup> Consequently, some studies have begun to differentiate barebacking behavior from the social identity of “barebacker.” For example, among a sample of exclusively HIV seropositive MSM ( $n=1,167$ ), 27% self-identified as barebackers; these men were less likely to be men of color, were slightly younger, were more likely to report drug use, and were more likely to have engaged in unprotected insertive and receptive anal intercourse with all partners, regardless of partner serostatus.<sup>8</sup> Another study with 687 mixed serostatus MSM found that 12% identified as barebackers, who reported significantly more use of crystal methamphetamine and higher peer norms for unprotected sex.<sup>12</sup>

Thus far, no studies to date have been conducted exploring the frequency of bareback identification and correlates of barebacking identity among an exclusively HIV seronegative MSM sample. The current analysis sought to: (1) examine what constitutes “barebacking” for HIV-uninfected MSM (i.e., what sexual behaviors these men consider to be part of “barebacking”); and (2) investigate the demographic, psychosocial, and behavioral predictors of barebacker identity (e.g., identifying as a barebacker versus simply engaging in unsafe sex). We hypothesized that self-identified HIV-uninfected barebackers would be younger, would report more drug use, would have higher peer norms for unprotected sex, and would have

a higher prevalence of unprotected anal sex. Investigating barebacking identity among HIV seronegative MSM is critical to understanding how best to target primary HIV prevention efforts for the riskiest MSM with an aim of curbing rising rates of HIV infection.

## **METHODS**

### **Participants and Procedures**

Between January and October 2007, 227 participants completed an interviewer-administered quantitative survey. Participants were eligible if they met the following four criteria: (1) were born biologically male (males at birth); (2) were between age 18 and 60; (3) were HIV seronegative by self-report; and (4) reported anal sex with a man in the preceding 12 months. All study activities took place at Fenway Community Health (FCH), a freestanding health care and research facility specializing in HIV/AIDS care and serving the needs of the lesbian, gay, bisexual, and transgender community in the greater Boston area. The FCH Institutional Review Board approved the study, and each study participant completed an informed consent process with trained research staff.

### **Recruitment**

The study utilized a modified respondent-driven sampling (RDS) method<sup>13</sup> which has been used successfully in previous studies of MSM in the Boston area<sup>14</sup> to recruit a diverse sample of MSM. To begin, four participants were selected to function as recruiter seeds, two from a popular Boston public sex environment and two others via a partner-seeking Internet website. To efficiently recruit a sufficiently large sample, 29 additional seeds were selected through the course of the study from MSM partner-seeking websites, FCH referrals, and community outreach. Seeds were evaluated for their commitment to the goals of the study and motivation to recruit up to three eligible peers within their social network, who in turn were asked to recruit a subsequent wave of up to three participants, and so on, until the study sample size had been reached. Modifications to the traditional RDS technique included: adding many seeds to expedite the recruitment process; ending recruitment prior to the achievement of equilibrium to harness the in-group recruitment tendencies of seeds; and using the process to attain a hard-to-reach population but not weighting the final sample according to the population being studied. Participants were compensated 25 dollars for their participation in the study, as well as 20 dollars for each eligible participant they recruited who subsequently completed a study survey.

### **Measures**

*Demographic, Sexual Behavior, Substance Use, and Sexually Transmitted Infection History.* Demographic, sexual behavior/sexual partner history, drug use, and sexually transmitted infection (STI) history questions were adapted from the Centers for Disease Control and Prevention's HIV Behavioral Surveillance Survey, MSM cycle.<sup>15</sup> Questions assessed sexual behavior in the 12 months prior to study enrollment, including examining frequency of serodiscordant unprotected insertive anal sex and serodiscordant unprotected receptive anal sex. Men were also asked where they met their sexual partners (including venues such as at a private sex party, bar/club, on the Internet). With respect to substance use, club drug use (use of crystal

methamphetamine, cocaine, ecstasy, gamma-hydroxybutyrate (GHB), and ketamine) and popper use during sex in the prior 12 months were assessed. For STI history, participants were asked whether they had ever been diagnosed with an STI at some time in the past.

*Barebacking.* Participants were asked, “Have you heard the words ‘bareback’ or ‘barebacking’ in relation to sex?” They were then given four situations and asked to indicate which would qualify as barebacking to them: (a) “having anal sex with someone and deliberately not using condoms although you are not absolutely sure you are both HIV-uninfected”; (b) “having anal sex with condoms but the condom breaks”; (c) “two people who are in an exclusive (monogamous) relationship and both are HIV-uninfected, having anal sex without condoms”; (d) “having sex without condoms”. Participants were given the option to “check all that apply”. They were then asked how frequently they engaged in bareback sex (never, seldom, frequently, or always). Participants were also asked about whether or not they identify with the barebacking scene: “Men who have sex with men may identify or participate with different ‘scenes’ or communities that share similar interests or activities. Regardless of the kinds of sex you have, are you part of or do you identify with the bareback scene?” Participants who answered “yes” to this final question were considered to identify as barebackers; those who answered “no” were not.

*Alcoholism.* The CAGE questionnaire, a clinical screening instrument for alcoholism (Cronbach’s  $\alpha=0.69$ ), was used to assess alcohol use where a score of two or more indicated probable alcohol abuse.<sup>16–18</sup>

*Depressive Symptoms.* Depressive symptoms were assessed with the Center for Epidemiologic Studies Depression Scale (CES-D), a validated survey of clinically significant distress as a marker for clinical depression (coefficient  $\alpha=0.90$ ; Cronbach’s  $\alpha=0.89$ ).<sup>19</sup> The 20 items were scored on a four-point Likert scale from 0 to 3, with a score of 16 or greater indicative of depressive symptoms.

*HIV Treatment Optimism.* The HIV Optimism/Skepticism scale was used to assess participant attitudes toward current HIV treatments, with lower scores indicating greater optimism due to the way we scaled this measure (Cronbach’s  $\alpha=0.79$ ).<sup>20</sup>

*Condom Use Norms.* To assess condom use norms, participants were asked two questions taken from previous research on this topic: (1) “Most of my friends think that condoms are just too much of a hassle to use”; and (2) “Most of my friends think you should always use a condom when having sex with a new person”.<sup>21</sup> Responses were scored on a four-point Likert scale from “strongly agree” to “strongly disagree”; item two was reverse scored, and scores were summed to produce a mean scale score.

## Data Analysis

For the present analysis, SAS version 9.1.3 (Cary, NC) statistical software was used to perform each analysis, where statistical significance was determined at  $p<0.05$ . The distribution and range of each variable, including demographics by barebacker identification (yes/no) was assessed. Chi-square global tests of independence were used to test independent associations between variables. Bivariate logistic regression

procedures were conducted to assess the association of barebacker identification with other variables.

*Primary Outcome of Interest.* The primary outcome of interest was barebacker identification. Participants were asked: “Men who have sex with men may identify or participate with different ‘scenes’ or communities that share similar interests or activities. Regardless of the kinds of sex you have, are you part of or do you identify with the bareback scene?” Participants who answered “yes” were considered to identify as barebackers; those who answered “no” were not.

*Predictors of Barebacker Identification.* Multivariable logistic regression analysis was performed to determine the relationship between multiple predictors and barebacker identification. Variables with a  $p$  value  $<0.05$  in the bivariate models were retained in the final multivariable model.<sup>22</sup> Although barebacker identification was robustly associated with both insertive and receptive unprotected sex, we chose to utilize serodiscordant insertive and receptive sex in our final model even though cell sizes were limited because it represents the greatest HIV transmission risk behavior among seronegative MSM. All models were controlled for age and race/ethnicity.

## RESULTS

### Descriptive Statistics

*Demographics.* Participant demographics, stratified by barebacker identification ( $n=70$ ) versus non-barebacker identification ( $n=157$ ), are depicted in Table 1.

*Barebacking.* Almost one third (30.8%) of the participants identified as barebackers. The majority (84%) of participants had heard the words “bareback” or “barebacking” in relation to sex at some time. When given four situations and asked to indicate which would qualify as barebacking, 97% thought barebacking included having anal sex with someone and deliberately not using condoms without being absolutely sure that both partners were HIV uninfected; 36% felt barebacking included having anal sex with condoms but the condom breaks; 87% indicated that barebacking included two people who are in an exclusive (monogamous) relationship and both are HIV-uninfected, having anal sex without condoms; and 90% thought barebacking was having sex without condoms.

### Bivariate Logistic Regression: Demographic, Psychosocial, and Behavioral Predictors of Barebacker Identification

*Demographics.* In bivariate analyses, men with less education were significantly more likely to identify as barebackers; men having completed high school or below (OR=1.76; 95% CI=0.99–3.13;  $p<0.05$ ) were more likely to identify as barebackers than men who received a college degree or above. No significant differences were observed in age, race, sexual identity, and health insurance status (Table 2).

*Psychosocial Factors.* With respect to psychosocial variables, men who identified as barebackers were more likely to screen in for alcohol abuse (OR=2.34, 95% CI=1.29–4.23;  $p<0.01$ ) and to have lower scores on the HIV Optimism/Skepticism

**TABLE 1** Demographics by barebacker identification ( $n=70$ ) versus non-barebacker identification ( $n=157$ )

	Barebackers ( $n=70$ )	Non-barebackers ( $n=157$ )	Total sample ( $n=227$ )
	Mean (SD)	Mean (SD)	Mean (SD)
Age	43.09 (8.04)	42.20 (9.56)	40.84 (9.10)
# male partners in past 12 months	18.80 (44.75)	21.99 (65.70)	21.01 (59.94)
# HIV seropositive male partners in past 12 months	3.36 (16.15)	0.85 (2.78)	1.66 (9.50)
Treatment optimism (HIV optimism/skepticism)*	32.73 (4.95)	34.90 (4.75)	33.71 (4.85)
Peer condom use norms	4.44 (1.10)	4.55 (0.98)	4.52 (1.02)
	<i>n</i> (%)	<i>n</i> (%)	<i>n</i> (%)
<b>Sexual identity</b>			
Gay	29 (42)	65 (42)	94 (42)
Bisexual	29 (42)	67 (43)	96 (43)
Not specified	12 (18)	25 (16)	37 (17)
<b>Race</b>			
White	29 (42)	74 (48)	103 (46)
Non-white	41 (59)	83 (53)	124 (55)
<b>Education</b>			
High school diploma or below*	44 (63)	77 (50)	121 (54)
College education or above	26 (38)	80 (51)	106 (47)
<b>Health insurance</b>			
Insured	65 (93)	138 (88)	203 (90)
Not insured	5 (8)	18 (12)	23 (11)
<b>Psychosocial factors</b>			
STD history	22 (32)	46 (30)	68 (30)
Depression (CES-D) score 16+	37 (53)	72 (46)	109 (49)
Drinking problem (CAGE)**	46 (66)	71 (46)	117 (52)
Internet	20 (29)	42 (27)	62 (28)
Bar/club*	47 (68)	82 (53)	129 (57)
Private sex party**	23 (33)	26 (17)	49 (22)
<b>Sexual risk in past 12 months</b>			
Serodiscordant unprotected <i>receptive</i> anal sex	3 (5)	5 (4)	8 (4)
Serodiscordant unprotected <i>insertive</i> anal sex**	10 (15)	8 (6)	18 (8)
Unprotected <i>receptive</i> anal sex*	16 (23)	18 (12)	34 (15)
Unprotected <i>insertive</i> anal sex**	35 (50)	22 (15)	57 (26)
<b>Substance use during sex in past 12 months</b>			
Club drug use	12 (18)	27 (18)	39 (18)
Crystal methamphetamine	11 (16)	22 (15)	33 (15)
Ecstasy	15 (22)	24 (16)	39 (18)
GHB	7 (10)	8 (6)	15 (7)
Cocaine	44 (63)	83 (53)	127 (56)
Ketamine	8 (12)	9 (6)	17 (8)
Poppers	11 (16)	22 (15)	33 (15)
Alcohol (sex while drunk)*	57 (82)	104 (67)	161 (71)
<b>Barebacking</b>			
Heard of barebacking**	70 (100)	122 (78)	192 (85)
Having anal sex with someone and deliberately not using condoms although you are not absolutely sure you are both HIV-uninfected	66 (95)	112 (72)	178 (79)
Having anal sex with condoms but the condom breaks	27 (39)	38 (25)	65 (29)

**TABLE 1 (continued)**

	Barebackers ( <i>n</i> =70)	Non-barebackers ( <i>n</i> =157)	Total sample ( <i>n</i> =227)
Two people who are in an exclusive (monogamous) relationship and both are HIV-uninfected, having anal sex without condoms	60 (86)	100 (64)	160 (71)
Having sex without condoms	64 (92)	104 (67)	168 (75)

\*\**p*<0.01

\**p*<0.05

scale, indicating higher levels of HIV treatment optimism (OR=1.06; 95% CI=1.01–1.12; *p*<0.05) than non-barebackers. No differences were observed in depression, club drug use (use of crystal methamphetamine, cocaine, ecstasy, GHB, or ketamine), popper use, or condom use norms.

*STI History.* No significant differences were observed in STI history between barebacker identified and non-barebacker identified participants.

*Sexual Risk.* In the past 12 months, men who identified as barebackers were more likely to have engaged in serodiscordant unprotected *insertive* anal sex than their non-barebacking counterparts (OR=3.42; 95% CI=1.27–9.21; *p*<0.01). Interestingly, however, no significant differences were found in serodiscordant unprotected *receptive* anal sex between barebackers and non-barebackers. Barebackers were more likely to report having met their sexual partners at private sex parties (OR=2.47; 95% CI=1.28–4.74; *p*<0.01) or at bars/cubs (OR=1.97; 95% CI=1.10–3.52; *p*<0.05) than men who did not identify as barebackers. No differences were observed on having met partners via Internet sites.

### **Multivariable Logistic Regression Model: Predictors of Barebacker Identification**

In a multivariable model controlling for age and race/ethnicity, significant unique predictors of barebacker identity were: (1) screening in for alcohol abuse (adjusted OR=2.16; 95% CI=1.09–4.27; *p*<0.05); and (2) engaging in serodiscordant unprotected *insertive* anal sex (adjusted OR=3.17; 95% CI=1.09–9.20; *p*<0.05).

### **DISCUSSION**

In the current study, nearly one third (31%) of HIV seronegative MSM in the sample self-identified as barebackers. For these MSM, barebacking included a variety of behaviors, most commonly having anal sex with someone and deliberately not using condoms (although not absolutely sure both are HIV-uninfected) as well as just having sex without condoms. Notably, bivariate and multivariable analyses revealed that MSM who identified as barebackers were significantly more likely to have engaged in serodiscordant unprotected insertive anal sex; however, no difference was observed on serodiscordant unprotected receptive anal sex. Similarly, no significant differences were found in STI history between barebackers and non-barebackers, a recognized indicator of past risk behavior. Together, these findings

**TABLE 2 Predictors of barebacker identification: bivariate and multivariable logistic regression of barebacking in relation to demographic, psychosocial, and behavioral variables**

	Unadjusted odds ratios	95% CI	Adjusted odds ratios <sup>a</sup>	95% CI
<b>Demographics</b>				
Age	1.01	0.98–1.04		
Non-gay identified MSM (bisexual, straight, other)	1.00			
Gay Identified MSM	1.05	0.56–1.95		
Non-white	1.00			
White	0.79	0.45–1.40		
College education or above	1.00			
High school diploma or below	1.76*	0.99–3.13	1.67	0.84–3.32
No health insurance	1.00			
Health insurance	1.70	0.60–4.77		
<b>Psychosocial factors</b>				
No alcohol problem	1.00			
Alcohol problem (CAGE score 3+)	2.34**	1.29–4.23	2.16*	1.09–4.27
No club drug use	1.00			
Club drug use (crystal, coke, ecstasy, GHB, ketamine)	0.99	0.47–2.10		
No poppers	1.00			
Poppers	1.14	0.52–2.51		
No depression	1.00			
Depression (CES-D score 16+)	1.32	0.75–2.33		
Higher treatment optimism (i.e., lower HIV optimism/skepticism scores)	1.06*	1.01–1.12	1.05	0.98–1.14
Higher peer condom/use norms	0.90	0.68–1.19		
<b>Sexual risk</b>				
No serodiscordant unprotected <i>insertive</i> anal sex	1.00			
Serodiscordant unprotected <i>insertive</i> anal sex	3.42**	1.27–9.21	3.17*	1.09–9.20
No serodiscordant unprotected <i>receptive</i> anal sex	1.00			
Serodiscordant unprotected <i>receptive</i> anal sex	1.41	0.33–6.12		
No private sex party	1.00			
Private sex party	2.47**	1.28–4.74	1.41	0.64–3.15



TABLE 2 (continued)

	Unadjusted odds ratios	95% CI	Adjusted odds ratios <sup>a</sup>	95% CI
No bar/club	1.00			
Bar/club	1.97*	1.10–3.52	1.30	0.65–2.60
No internet	1.00			
Internet	1.10	0.59–2.06		
No STD history	1.00			
STD history	1.11	0.60–2.04		

\*\* $p < 0.01$

\* $p < 0.05$

<sup>a</sup>Multivariable model adjusted for age, race/ethnicity, education, having a drinking problem, HIV optimism skepticism, meeting sex partners at a private sex party or bar/club, and engaging in serodiscordant unprotected insertive anal sex

suggests that some MSM may be employing strategic positioning (i.e., unprotected insertive rather than receptive anal intercourse) to reduce their perceived risk of HIV/STI acquisition and is consistent with previous work documenting the practice as a harm-reduction strategy among MSM who practice unprotected sex.<sup>3–6</sup>

It has been suggested that, for some gay men, condomless sex may be a manifestation of a need to assert the transgressional aspect of their non-mainstream sexuality.<sup>23</sup> Placing transgression or resistance at the core of understanding barebacker identity—where identifying against norms constitutes a type of power over normative structures—is consistent with the cultural and historical emergence of gay male identity which rose in opposition to mainstream heterosexuality during the gay liberation movement.<sup>23,24</sup> Seen in this light, contemporary health promotion and education may actually be instrumental in creating those conditions that encourage and perpetuate barebacking.<sup>25</sup> For a certain subset of MSM, self-identifying as barebackers may be a means of contesting community standards by resisting or transgressing safer sex messages communicated via HIV prevention and health promotion activities. For others, a reason for barebacking (whether behavior or identity) may be that sex without condoms “feels better” both physically and psychologically. Vincke et al. note that: “Sexual acts constitute an emotional and symbolic language.”<sup>26</sup> Research is warranted to understand the “language” of not only barebacking behavior, but also the social identity<sup>27,28</sup> of barebacking among MSM.

Consistent with previous studies of barebacking behavior,<sup>2</sup> alcohol abuse was the primary substance use problem among participants identifying as barebackers in this study. Alcohol abuse is associated with HIV-risk taking in MSM.<sup>29,30</sup> The overwhelming majority (82%) of self-identified barebackers in this study reported having had sex while drunk in the past 12 months. Moreover, bivariate and multivariable analyses revealed that, compared to non-barebacking MSM, barebackers were more than twice as likely to screen in for a problem with alcohol. These findings suggest that alcohol treatment may represent a potential intervention strategy to assist barebacking MSM.

Several findings from this study diverge from prior research on barebacking identity. Whereas previous work has documented the significant association of

younger, white seropositive MSM and barebacking,<sup>8</sup> only lower education was predictive of bareback identity in this study of HIV seronegative MSM. Moreover, contrary to prior research and our hypotheses before initiating the study,<sup>12</sup> barebackers were not more likely than non-barebackers to have used club drugs or poppers in this sample. Also dissimilar from prior barebacking studies,<sup>12</sup> condom use norms (e.g., higher peer norms for unprotected sex) were not significantly associated with barebacker identity. These dissimilarities across studies may point to broader differences in barebacker identity by HIV serostatus and merits further investigation.

Previous research has found a significant association between barebacking behavior and meeting sexual partners via the Internet,<sup>2-4</sup> but this was not seen in the current study. It may be that the relatively high number of study participants reporting lower education levels (i.e., 54% had a high school education or less) contributed to infrequency of Internet use in the sample overall (only 28% had met sexual partners via the Internet in the previous 12 months). In the current study, meeting sex partners at private sex parties and bars/clubs in the prior 12 months was associated with barebacking identification. Barebacking at private sex parties has been previously documented among HIV seropositive MSM<sup>31</sup>; future research should prospectively investigate the association between private sex parties and barebacker identity among HIV seronegative MSM.

Advances in HIV treatment have been shown to impact the sexual behavior of MSM by decreasing the perceived severity and consequences of HIV transmission.<sup>32-35</sup> The current study found that self-identified barebackers had higher levels of HIV treatment optimism than MSM who did not identify as barebackers. Suarez and Miller have differentiated “rational” from “irrational” risk takers, asserting that some MSM consider risky sexual behavior to be “rational” insofar as they perceive benefits derived from unsafe sex outweigh the possible risk of contracting HIV.<sup>36</sup> Further research is warranted to investigate barebacker identity, including the cognitive processes underlying “rational” risk-taking and the role of HIV treatment optimism and positive beliefs about the effects of antiretroviral treatments in decision-making processes among this subset of MSM who engage in risky sex.

Several limitations pertaining to recruitment methodology and data collection are noteworthy. First, as a cross-sectional study, data are subject to the limitations of a study design which descriptively measures exposure and disease status at the same point in time, not allowing for inferences in causality to be made. Second, since the survey was interviewer administered, responses could have been biased towards social desirability. Third, in contrast to traditional RDS, this study did not weight the final sample according to the population being studied, and the nonrandom selection of initial recruits potentially informed the characteristics of subsequent recruits. Furthermore, the use and level of incentives may have contributed to a sample of more socially marginalized group of MSM, limiting generalizability. Fourth, the survey did not assess familiarity with sexual partners (i.e., anonymous versus repeat casual partner, etc.). Finally, our focus on barebacker identity instead of barebacking behavior means that findings must be considered in the context of how we defined and assessed self-identification (e.g., “Are you part of or do you identify with any of the bareback scene?”). Because this question was not psychometrically standardized or validated, the question was left open to interpretation by participants.

Limitations notwithstanding, this is the first study of which we are aware to document barebacker identity among an exclusively HIV seronegative sample of

MSM. Findings show significant associations of barebacking identity to serodiscordant unprotected insertive anal sex and suggest that encouraging harm-reduction strategies, in particular strategic positioning, may be an appropriate intervention technique to employ with self-identified barebacking MSM who may not respond to the prevention goal of completely eliminating unsafe sex.<sup>12</sup> Moreover, preceding studies have documented willingness to use rectal microbicides,<sup>37,38</sup> and post-exposure prophylaxis (PEP) or pre-exposure prophylaxis (PrEP)<sup>39-41</sup> among HIV seronegative MSM. Recent research has begun to explore the acceptability of alternative HIV biomedical products (microbicides, vaccines, PEP, and PrEP) with MSM who engage in unsafe sex.<sup>42</sup> Extending this research to MSM who self-identify as barebackers may yield important insight to increase the utilization and acceptability of biomedical products to prevent HIV infection among this subset of at-risk MSM who sometimes or always do not use condoms.

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