

# High-Risk Behaviors Among Men Who Have Sex With Men in 6 US Cities: Baseline Data From the EXPLORE Study

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After a decline in rates of HIV infection in the United States among men who have sex with men (MSM) in the late 1980s and early 1990s,<sup>1,2</sup> reports indicate a resurgence in the spread of HIV and other sexually transmitted diseases (STDs) in this population. For example, in San Francisco, cases of rectal gonorrhea increased from 1994 to 1997,<sup>3</sup> and during a period of reintroduction of syphilis in Seattle between 1997 and 2001, more than two thirds of those affected were MSM<sup>4</sup>; a similar outbreak of syphilis occurred in southern California in 2000.<sup>5</sup> Other cities have reported increases in STD rates among MSM.<sup>6</sup> Furthermore, evidence is accumulating that HIV prevalence rates among MSM are high in some cities<sup>7-9</sup> and are increasing from levels observed in the late 1980s and early 1990s.<sup>10-13</sup>

Research on interventions designed to prevent HIV acquisition and transmission actively continues in the areas of preventive vaccines, microbicides, STD control, and antiretroviral therapy. Because in many cases effective forms of these interventions are not yet available, there continues to be a critical need for interventions focused on initiating and maintaining behavior change. Research has been conducted to create and guide the development of behavioral interventions and to assess the efficacy of interventions in changing HIV risk behaviors among MSM.<sup>14,15</sup>

Although extensive changes in risk behaviors have been documented among MSM, large randomized clinical trials in which the study outcome is HIV infection, the most direct measure of an intervention's effect, have not been conducted. To date, we are aware of only 1 trial of an HIV prevention intervention among MSM that involved a biological endpoint.<sup>16</sup> However, that study did not include HIV infection as a study endpoint.

The EXPLORE study is the first randomized trial conducted among MSM in the

**Objectives.** We describe the prevalence of risk behaviors at baseline among men who have sex with men (MSM) who were enrolled in a randomized behavioral intervention trial conducted in 6 US cities.

**Methods.** Data analyses involved MSM who were negative for HIV antibodies and who reported having engaged in anal sex with 1 or more partners in the previous year.

**Results.** Among 4295 men, 48.0% and 54.9%, respectively, reported unprotected receptive and insertive anal sex in the previous 6 months. Unprotected sex was significantly more likely with 1 primary partner or multiple partners than with 1 nonprimary partner. Drug and alcohol use were significantly associated with unprotected anal sex.

**Conclusions.** Our findings support the continued need for effective intervention strategies for MSM that address relationship status, serostatus of partners, and drug and alcohol use. (*Am J Public Health.* 2003;93:926-932)

United States that was designed to test the efficacy of a behavioral intervention in preventing acquisition of HIV by using HIV infection as the endpoint. In this article, we describe risk prevalence rates at baseline among the study's large multisite cohort of MSM in an attempt to identify risk behaviors that may be continuing the HIV epidemic. Furthermore, we present data on relationships of specific HIV risk behaviors to the following known risk factors: type and number of sexual partners and alcohol and drug use. These data, in conjunction with the companion article by Chesney et al.<sup>17</sup> describing the intervention in detail, illustrate the variations in the risk profiles of the study population and support the need for a multifaceted, individually tailored intervention.

## METHODS

### Study Population

From January 1999 to February 2001, men who were negative for HIV antibodies were recruited in 6 US cities: Boston, Chicago, Denver, New York, San Francisco, and Seattle. Men were eligible if they were aged 16 years or older and reported having engaged in anal sex with 1 or more men during the past year. Men were excluded if they reported that they had been involved in a mu-

tually monogamous relationship for 2 or more years with a male partner known to be negative for HIV antibodies. Recruitment strategies varied by city but included advertising; street outreach and outreach at clubs, bars, bathhouses, sex clubs, health clubs, and video arcades; referrals from other cohort studies, current study participants, and community agencies and clinics; and use of Internet sites targeting MSM, community forums, mailings, and a recruitment video.

### Data Collection

Informed consent for screening was obtained at the initial visit. Trained interviewers using standardized questionnaires collected information on respondents' demographic characteristics, reasons for participating in the study, STD history, use of postexposure prophylaxis, and histories of counseling and psychotherapy. Audio computer-assisted self-interviewing (ACASI) technology was used to collect data on attitudes toward safer sex, social activities within the gay community, depression, alcohol and drug use, and sexual behaviors. Participants were asked about sexual behaviors during the previous 6 months with partners of each serostatus type (negative, positive, and unknown). After completing the interviews, participants received HIV pretest counseling. Blood specimens were collected

for HIV antibody testing and stored for herpes simplex virus 2 antibody testing. Urine was collected and a rectal swab taken as part of screening for urethral and rectal gonorrhea, respectively.

Approximately 2 weeks after being screened, participants received their HIV and gonorrhea test results and underwent posttest counseling. Men who were negative for HIV antibodies were asked to enroll in the trial and were randomized to the intervention or control condition. Every 6 months, participants return for a behavioral assessment, HIV pretest counseling, and specimen collection and will do so until study completion (July 2003), each time obtaining test results and posttest counseling within 2 weeks. Participants with positive test results are referred for medical and social services.

### Laboratory Testing

HIV antibodies were detected by enzyme-linked immunosorbent assay. Sera shown to be reactive after a first test were retested in duplicate. Repeatedly reactive samples were confirmed through Western blot assay or immunofluorescence assay. Urine was screened for gonorrhea with the leukocyte esterase test, allowing detection of urethral inflammation; if results were positive, ligase chain reaction was used in conducting tests for gonorrhea. Among men who consented to rectal swabs, gonococcal cultures were taken from rectal specimens.

### Data Management

All case report forms were transmitted to the EXPLORE statistical center via the DataFax system (Clinical DataFax Systems Inc: Hamilton, Ontario). A pair of data control technicians reviewed the data at least twice to identify any errors and make corrections. Data coordinators generated quality control reports on a regular basis for each site, notified sites of errors, and requested corrections.

The statistical center provided each site with a laptop computer containing the ACASI program used to collect baseline risk assessment data. At least once per week, site staff transferred the data, and these files were processed to create SAS (SAS Institute Inc: Cary, NC) data sets. SAS data files were merged with supporting demographic and

other baseline data used in the present analyses.

### Study Monitoring

Data forms, informed consent forms, counseling notes, and data on endpoints were reviewed and monitored on a regular basis by Abt Associates Inc, the domestic master contractor for the HIV Network for Prevention Trials (HIVNET); the Center for AIDS Prevention Studies at the University of California, San Francisco (the intervention coordinating center); and PPD, the monitoring contractor for National Institutes of Health (NIH). The study was reviewed at least every 8 months by the NIH Data Safety and Monitoring Board.

### Statistical Analysis

The goal of this analysis was to describe the risk profile of the study population at baseline and to determine the association between high-risk sexual behaviors and 2 known risk factors: (1) number and type (primary vs nonprimary) of recent male sexual partners and (2) alcohol and recreational drug use. We did not conduct multivariate analyses of sexual risk factors, because our goal was to present a description of the risk within this study sample rather than to identify independent predictors of sexual risk.

We included data collected at the screening and enrollment visits in our analyses. Global

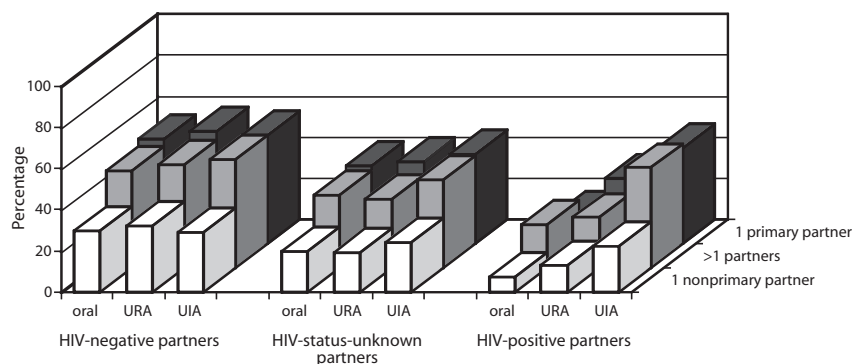
associations are presented for the analyses of alcohol and drug use and sexual risk, because occasions in which substance use and sexual risk were reported in the 6 months before baseline may not have been concurrent. For each classification of partner HIV serostatus, study participants were categorized as (1) having only 1 partner of that serostatus who was their primary partner, (2) having only 1 partner of that serostatus who was not a primary partner, or (3) having multiple partners of that serostatus, regardless of whether 1 of these partners was a primary partner.

We constructed z-score statistics in a pairwise fashion (Figure 1) to test for differences in the percentages of participants reporting sexual risk behaviors (e.g., unprotected receptive anal sex) between these partner categories, within each type of partner HIV status. We compared all other categorical variables using  $\chi^2$  tests for independence. The *P* values reported were not adjusted for multiple comparisons.

## RESULTS

### Screening and Enrollment

Screening visits took place between January 1999 and February 2001. Among the 4862 individuals screened, 4716 (97.0%) were found to be negative for HIV antibodies and eligible for study participation; 4295 (91.1%) enrolled. Men were recruited



Oral = unprotected receptive oral sex with ejaculation; URA = unprotected receptive anal sex; UIA = unprotected insertive anal sex. *P* values for 1 primary partner vs 1 non-primary partner < .02; *P* values for 1 primary partner vs >1 partners all non-significant except for oral with HIV-positive partners (*P* = .02); *P* values for 1 non-primary vs >1 partner < .0001.

**FIGURE 1—Percentages of men reporting sexual risk behaviors at baseline visit, by serostatus of partners and number of partners at baseline visit: EXPLORE, 1999–2001.**

**TABLE 1—Demographics Characteristics, by Enrollment Status: EXPLORE, 1999–2001**

| Characteristic                      | Enrolled<br>(n = 4295), No. (%) | Not Enrolled                                |   |                                |
|-------------------------------------|---------------------------------|---|---|--------------------------------|
|                                     |                                 | Not Eligible at Screen<br>(n = 53), No. (%) | HIV-Positive by Test<br>(n = 93), No. (%) | Eligible<br>(n = 421), No. (%) |
| <b>Age, y*</b>                      |                                 |   |   |                                |
| 16–19                               | 93 (2.2)                        | 2 (3.9)                                     | 2 (2.2)                                   | 19 (4.5)                       |
| 20–25                               | 721 (16.8)                      | 6 (11.5)                                    | 12 (12.9)                                 | 89 (21.1)                      |
| 26–30                               | 913 (21.3)                      | 3 (5.8)                                     | 16 (17.2)                                 | 94 (22.3)                      |
| 31–35                               | 910 (21.2)                      | 10 (19.2)                                   | 25 (26.0)                                 | 71 (16.9)                      |
| 36–40                               | 755 (17.6)                      | 11 (21.2)                                   | 20 (21.5)                                 | 58 (13.8)                      |
| > 40                                | 903 (21.0)                      | 20 (38.5)                                   | 18 (19.4)                                 | 90 (21.4)                      |
| <b>Race/ethnicity*</b>              |                                 |   |   |                                |
| White                               | 3112 (72.5)                     | 30 (56.6)                                   | 35 (37.6)                                 | 243 (57.7)                     |
| Latino                              | 652 (15.2)                      | 9 (17.0)                                    | 26 (28.0)                                 | 75 (17.8)                      |
| Black                               | 281 (6.5)                       | 10 (18.9)                                   | 27 (29.0)                                 | 72 (17.1)                      |
| Other                               | 249 (5.8)                       | 4 (7.6)                                     | 5 (5.4)                                   | 31 (7.4)                       |
| <b>Educational level*</b>           |                                 |   |   |                                |
| high school or less                 | 407 (9.5)                       | 9 (18.0)                                    | 20 (21.5)                                 | 86 (20.2)                      |
| Some college                        | 1129 (26.3)                     | 9 (18.0)                                    | 30 (32.3)                                 | 148 (35.2)                     |
| College                             | 1534 (35.7)                     | 23 (46.0)                                   | 24 (25.8)                                 | 107 (25.5)                     |
| Postcollege                         | 1223 (28.5)                     | 9 (18.0)                                    | 19 (20.4)                                 | 80 (19.1)                      |
| <b>Household annual income, \$*</b> |                                 |   |   |                                |
| < 12 000                            | 562 (13.1)                      | 11 (22.0)                                   | 26 (28.0)                                 | 108 (26.0)                     |
| 12 000–29 999                       | 1166 (27.2)                     | 7 (14.0)                                    | 36 (38.7)                                 | 142 (34.2)                     |
| 30 000–59 999                       | 1656 (38.6)                     | 24 (48.0)                                   | 22 (23.7)                                 | 106 (25.5)                     |
| ≥ 60 000                            | 904 (21.1)                      | 8 (16.0)                                    | 9 (9.7)                                   | 59 (14.2)                      |
| Currently a student                 | 700 (16.3)                      | 8 (16.0)                                    | 14 (15.1)                                 | 77 (18.4)                      |
| <b>Employment status*</b>           |                                 |   |   |                                |
| Full time                           | 3247 (75.6)                     | 29 (58.8)                                   | 57 (61.3)                                 | 262 (62.4)                     |
| Part time                           | 426 (9.9)                       | 7 (14.0)                                    | 16 (17.2)                                 | 68 (16.2)                      |
| Unemployed                          | 427 (9.9)                       | 9 (18.0)                                    | 15 (16.1)                                 | 70 (16.7)                      |
| Other                               | 195 (4.5)                       | 5 (10.0)                                    | 5 (5.4)                                   | 20 (4.8)                       |

Note. Sample sizes may not sum to totals owing to missing data  
\* $P < .05$  (enrolled vs not enrolled).

community, or doing something to honor a person they knew who had HIV or AIDS or who had died of AIDS. Another 21.8% enrolled because they thought that they might feel more motivated to avoid risk-taking behaviors. Twelve percent enrolled to use the free services offered by the study (8.4% for free HIV testing and 3.6% for free counseling), and 3.2% enrolled to obtain current information about HIV research. Only 1.4% enrolled because a partner, friend, or family member wanted them to participate, and only 0.9% enrolled to receive monetary compensation for participating.

Specimens to be used in determining biological endpoints were collected at the screening visit. Blood specimens for HIV antibody testing were collected from all enrolled participants. Almost all of the men (96.9%) donated a urine specimen for the leukocyte esterase test, and 70.8% had a rectal swab taken for rectal gonorrhea testing.

#### Baseline Risk Behaviors and STDs

The median number of male sex partners reported by the enrolled men during the 6 months before screening was 7 (25% quartile: 3; 75% quartile: 18); 42.2% reported having had 10 or more male partners during that period. About half of the men reported that they were involved in a primary relationship with a male sex partner (Table 2). Among these individuals, 13.8% were involved in a primary relationship with a male partner who was HIV positive, and 19.8% had a primary partner whose HIV status was unknown to the participant. Among the 3 different partner serostatus classifications (negative, positive, or unknown), the largest proportion of men reported having partners of unknown status. Furthermore, the largest number of partners was reported for this serostatus type (Table 2).

With regard to specific sexual risk behaviors, 45.2% of the men reported engaging in unprotected receptive oral sex with ejaculation, 48.0% reported engaging in unprotected receptive anal sex, and 54.9% reported engaging in unprotected insertive anal sex. Among combinations of these 3 behaviors, 78.1% of the men reported unprotected receptive oral sex with ejaculation or unprotected anal sex (Table 2). One fifth (21.2%) of

through a variety of methods: outreach to clubs, bars, and other public venues (22.7%); advertising (15.3%); mailings (13.6%); referrals from friends (13.3%); street outreach (10.7%); and referrals from clinics and physicians (10.4%). The remaining 14% of the participants were recruited through referrals from other research studies and community-based organizations and via community forums, the Internet, and a recruitment video.

The demographic characteristics of the population are presented in Table 1. The mean age of the participants was 34.0 years; 40.2% were aged 30 years or younger,

27.5% were members of minority groups, 35.8% had less than a college degree, and 40.3% had an annual household income of less than \$30 000. Men who were not eligible for or not enrolled in the study were significantly more likely than study participants to be in younger age groups, to be Black or Latino, to be at lower education levels, to have low incomes, and to be employed part-time or unemployed (Table 1).

Men enrolled in the study for a variety of reasons. A large percentage (57.5%) enrolled for what we classified as altruistic reasons: helping to stop the AIDS epidemic, believing that the study was important, giving to their

**TABLE 2—Sexual Risk Behaviors in Previous 6 Months at Baseline Visit: EXPLORE, 1999–2001**

| Characteristic   | No. (%)     |
|--|-------------|
| No. of male partners   |             |
| 0  | 42 (1.0)    |
| 1  | 306 (7.1)   |
| 2–5  | 1382 (32.2) |
| 6–9  | 750 (17.5)  |
| ≥10  | 1812 (42.2) |
| Involved in primary relationship   |             |
| No   | 2172 (51.3) |
| With HIV-negative partner  | 1372 (32.4) |
| With partner of unknown status   | 409 (9.7)   |
| With HIV-positive partner  | 285 (6.7)   |
| ≥1 male partner of unknown HIV status  | 3354 (78.2) |
| ≥1 HIV-negative male partner   | 2804 (65.5) |
| ≥1 HIV-positive male partner   | 1215 (28.4) |
| Risk behavior in previous 6 months   |             |
| No unprotected sex   | 927 (21.9)  |
| Unprotected receptive oral sex with ejaculation and unprotected receptive and insertive anal sex | 897 (21.2)  |
| Unprotected insertive anal sex only  | 550 (13.0)  |
| Unprotected receptive and insertive anal sex   | 541 (12.8)  |
| Unprotected receptive oral sex with ejaculation only   | 391 (9.2)   |
| Unprotected receptive oral sex with ejaculation and unprotected insertive anal sex               | 336 (7.9)   |
| Unprotected receptive anal sex only  | 303 (7.2)   |
| Unprotected receptive oral sex with ejaculation and unprotected receptive anal sex               | 292 (6.9)   |

the men reported engaging in all 3 behaviors, and only 9.2% reported engaging in unprotected receptive oral sex with ejaculation but not in anal sex.

The percentages of men who reported sexual risk behaviors varied according to the serostatus of their partners; the largest percentages of men reported each of these behaviors with HIV-negative partners, followed by partners of unknown status (Table 3). Although the percentage of men who reported unprotected sex was lowest for those with HIV-positive partners, 20.9% of men with HIV-positive partners reported

**TABLE 3—Sexual Risk Behaviors in Previous 6 Months at Baseline Visit, by Partner Serostatus: EXPLORE, 1999–2001**

| Characteristic                        | HIV-negative Partners<br>(n = 2804), No. (%) | Partners of Unknown Status<br>(n = 3354), No. (%) | HIV-positive Partners<br>(n = 1215), No. (%) |
|---------------------------------------|--|---|--|
| No. of male partners                  |  |   |  |
| 1                                     | 776 (27.7)                                   | 479 (14.3)  | 724 (59.6)                                   |
| 2–5                                   | 1345 (48.0)                                  | 1129 (33.7)                                       | 415 (34.2)                                   |
| 6–9                                   | 250 (8.9)                                    | 513 (15.3)  | 23 (1.9)                                     |
| ≥10                                   | 433 (15.4)                                   | 1233 (36.8)                                       | 53 (4.4)                                     |
| Risk behavior in previous 6 months    |  |   |  |
| Unprotected oral sex with ejaculation | 1290 (46.0)                                  | 1132 (33.8)                                       | 170 (14.0)                                   |
| Receptive anal sex                    | 2099 (75.0)                                  | 1951 (58.3)                                       | 551 (45.4)                                   |
| Unprotected receptive anal sex        | 1369 (49.1)                                  | 1075 (32.2)                                       | 254 (20.9)                                   |
| Insertive anal sex                    | 2179 (77.9)                                  | 2312 (69.1)                                       | 773 (63.7)                                   |
| Unprotected insertive anal sex        | 1406 (50.3)                                  | 1357 (40.7)                                       | 451 (37.2)                                   |

Note. Sample sizes may not sum to total owing to missing data.

engaging in unprotected receptive anal sex, and 37.2% reported engaging in unprotected insertive anal sex. Among men with partners of positive or unknown serostatus, the percentage who reported unprotected insertive anal sex was higher than the percentage who reported unprotected receptive anal sex (Table 3).

For alcohol and drug use, 26.2% of the men reported drinking alcohol at least 3 days per week, and 10.6% were heavy drinkers (i.e., they consumed at least 4 drinks per day or consumed an amount equal to 6 drinks per occasion). We found that marijuana was the noninjection drug most likely to be used (46.3% of men), followed by poppers (amyl nitrates) (36.6%); hallucinogens, including ecstasy (24.0%); cocaine (19.3%); and amphetamines (12.9%). Ten percent of the men reported recent injection drug use.

Drug use and alcohol use also were examined by geographic region: East Coast (New York and Boston), Midwest/West (Chicago and Denver), and West Coast (San Francisco and Seattle). The largest between-region difference involved amphetamine use. The percentage of men reporting amphetamine use was higher in the West Coast region (20.0%) than in the East Coast (9.2%) or Midwest/West (9.1%) region. The percentage of men reporting heavy alcohol use was significantly higher in the Midwest/West region (14.3%) than in the East Coast (8.6%) or West Coast

(9.2%) region. Between-region differences also were observed for marijuana use (West Coast: 52.4%; East Coast: 44.9%; Midwest/West: 41.3%), cocaine use (East Coast: 22.2%; Midwest/West: 19.2%; West Coast: 16.5%), and use of hallucinogens (West Coast: 27.2%; East Coast: 25.0%; Midwest/West: 19.4%), although these differences were smaller (comparison  $P$ s < .0001). No geographic differences were found in the use of poppers.

Almost 13% of the men reported having had a specific STD in the 6 months before they enrolled in the study. The STD most frequently reported was chlamydia (4.2%), followed by gonorrhea (3.3%), genital or rectal warts (3.1%), and anogenital herpes (2.6%). Nonspecific STD symptoms were reported by 10.6% of the men. The symptoms most frequently reported were burning during urination and discharge from the penis (7.1%). Urine screening (via leukocyte esterase test) for nonspecific inflammation revealed 75 (1.8%) positive specimens; of 71 specimens sent for diagnostic testing for gonorrhea (via ligase chain reaction), however, only 3 were positive. Only 0.7% of the men had positive rectal gonorrhea cultures.

### Situational Factors

To determine whether certain situational factors were associated with risk, we examined the association of sexual risk behaviors

with partner type and number and with use of alcohol and recreational drugs. For each partner serostatus type, we first compared the occurrence of unprotected sex among men reporting only 1 partner who was a primary partner, men reporting 1 partner who was not considered primary, and men reporting multiple partners (Figure 1). In the case of all partner serostatus types, unprotected sex was significantly more likely to be reported with 1 primary partner than with 1 nonprimary partner. Furthermore, men who had multiple partners were significantly more likely than men who had a single nonprimary partner to report sexual risk behaviors. The prevalence of sexual risk behaviors among men who reported multiple partners, however, was not significantly

different from that among men with 1 primary partner (except in the case of unprotected receptive oral sex with a positive partner).

Men who reported having used marijuana, poppers, hallucinogens, cocaine, or amphetamines in the 6 months before study enrollment were significantly more likely than men who did not use such drugs to report unprotected anal sex during that same period, regardless of the HIV serostatus of their partners (Table 4). Heavy alcohol use was significantly associated with unprotected receptive anal sex with partners of unknown status and partners positive for HIV antibodies, as well as with unprotected insertive anal sex with partners of unknown status.

## DISCUSSION

Baseline data from the EXPLORE behavioral intervention trial illustrate a number of features that are critical for the conduct of this trial and that can provide information for the conduct of other intervention trials among MSM. Furthermore, these baseline data underscore that the HIV epidemic among MSM residing in the United States continues to be a major public health issue.

One relevant study feature was the recruitment of a large cohort of high-risk MSM. This recruitment effort was the result of a coordinated effort among and within study sites and a variety of recruitment methods.<sup>18</sup> Almost half of the EXPLORE respondents were recruited via direct street outreach and out-

**TABLE 4—Percentages of Men Reporting Specific Risk Behaviors With Partners of Negative, Unknown, and Positive Serostatus at Baseline Visit, by Drug and Alcohol Use Behaviors at Baseline Visit: EXPLORE, 1999–2001**

|                    | Unprotected Oral Sex With Ejaculation |         |         | Unprotected Receptive Anal Sex |         |         | Unprotected Insertive Anal Sex |         |         |
|--------------------|---------------------------------------|---------|---------|--------------------------------|---------|---------|--------------------------------|---------|---------|
|                    | HIV-, %                               | HIV?, % | HIV+, % | HIV-, %                        | HIV?, % | HIV+, % | HIV-, %                        | HIV?, % | HIV+, % |
| Heavy alcohol use  |                                       |         |         |                                |         |         |                                |         |         |
| No                 | 29.9                                  | 25.4    | 3.6     | 31.8                           | 24.2    | 5.7     | 32.6                           | 30.9    | 10.4    |
| Yes                | 32.1                                  | 35.2**  | 7.5**   | 34.8                           | 33.2**  | 8.2*    | 35.0                           | 38.4**  | 12.2    |
| Marijuana          |                                       |         |         |                                |         |         |                                |         |         |
| No                 | 27.2                                  | 24.8    | 3.0     | 28.3                           | 21.9    | 4.4     | 30.2                           | 28.8    | 8.5     |
| Yes                | 33.5**                                | 28.3**  | 5.1**   | 36.5**                         | 28.9**  | 7.8**   | 36.1**                         | 35.2**  | 12.9**  |
| Poppers            |                                       |         |         |                                |         |         |                                |         |         |
| No                 | 28.2                                  | 23.3    | 3.1     | 29.1                           | 20.9    | 3.9     | 29.7                           | 26.9    | 7.7     |
| Yes                | 33.6**                                | 31.7**  | 5.6**   | 37.2**                         | 32.3**  | 9.5**   | 38.4**                         | 40.3**  | 15.5**  |
| Hallucinogens      |                                       |         |         |                                |         |         |                                |         |         |
| No                 | 28.6                                  | 26.3    | 3.5     | 29.2                           | 22.8    | 5.1     | 30.4                           | 30.4    | 9.5     |
| Yes                | 35.0**                                | 26.7    | 5.6**   | 41.1**                         | 32.7**  | 8.7**   | 41.0**                         | 36.1**  | 13.7**  |
| Cocaine            |                                       |         |         |                                |         |         |                                |         |         |
| No                 | 29.3                                  | 25.7    | 3.7     | 30.4                           | 22.6    | 5.1     | 31.6                           | 29.8    | 9.4     |
| Yes                | 33.9**                                | 29.5*   | 5.2*    | 39.0**                         | 35.6**  | 9.5**   | 38.4**                         | 39.9**  | 15.2**  |
| Amphetamines       |                                       |         |         |                                |         |         |                                |         |         |
| No                 | 29.2                                  | 25.8    | 3.6     | 30.6                           | 23.5    | 5.1     | 31.7                           | 30.4    | 9.4     |
| Yes                | 36.1**                                | 29.8    | 6.3**   | 41.6**                         | 35.7**  | 11.6**  | 41.4**                         | 40.7**  | 18.1**  |
| Crack cocaine      |                                       |         |         |                                |         |         |                                |         |         |
| No                 | 30.1                                  | 25.9    | 3.8     | 32.0                           | 24.8    | 5.6     | 33.0                           | 31.5    | 10.1    |
| Yes                | 31.3                                  | 38.7**  | 9.4**   | 34.6                           | 33.2*   | 13.8**  | 31.3                           | 36.1    | 21.0**  |
| Injection drug use |                                       |         |         |                                |         |         |                                |         |         |
| No                 | 30.4                                  | 26.1    | 3.8     | 32.6                           | 25.0    | 5.8     | 33.5                           | 31.6    | 10.5    |
| Yes                | 27.9                                  | 28.8    | 6.0*    | 27.9*                          | 26.1    | 7.6     | 27.9*                          | 33.1    | 11.3    |

Note. HIV? = unknown serostatus; HIV+ = HIV antibody positive; HIV- = HIV antibody negative.

\*.01 < P < .05; \*\*P < .01 (comparing percentages reporting specific sexual behaviors × drug use within specific partner serostatus categories).

reach at venues frequented by MSM, in conjunction with advertising efforts. The remainder of the cohort was recruited by means of a variety of strategies that were necessary to facilitate the recruitment of younger men and minority men, important subpopulations of MSM at particular risk.

One of the challenges in developing an effective intervention is to ensure that it is relevant to population subgroups and their circumstances. Previous studies have shown that MSM base their choice of whether to engage in unprotected anal sex on several partner or relationship characteristics, including known or perceived partner serostatus, relationship status (e.g., regular vs casual), and number of partners.<sup>19–22</sup> Most researchers have found that elevated risks are associated with primary partners. In contrast, the EXPLORE baseline data indicate that men with multiple partners of unknown and positive status were engaging in just as much unprotected anal sex as were men with only 1 primary partner. This finding is of particular concern, as such situations carry risks of disease acquisition from partners who are HIV positive, a group that includes recently infected men who may report that they are HIV negative but who in fact may be highly infectious.

EXPLORE also showed that men with multiple partners positive for HIV antibodies were more likely to report unprotected insertive anal sex than unprotected receptive anal sex. From a risk reduction perspective, these men may be taking a calculated risk, in that unprotected insertive anal sex carries a significant but lower risk of HIV acquisition relative to unprotected receptive anal sex.<sup>23</sup> Almost 25% of men with multiple partners positive for HIV antibodies reported unprotected receptive anal sex, a percentage only slightly lower than that observed among men with 1 primary positive partner. Clearly, this is a situation involving high risk of HIV transmission.

Finally, there is the possibility that “negotiated safety” discussions are occurring among these men and their antibody-negative partners,<sup>20,22</sup> although this aspect of relationships was not assessed in the EXPLORE study. About half of the men with 1 primary HIV-negative partner reported unprotected sex.

These data support the need to understand the relationship status and known or perceived serostatus of potential partners before counseling MSM about sexual risk.

Interventions targeted at MSM also need to directly address use of alcohol and drugs. Of particular concern is the high proportion of EXPLORE men who reported drug use and engaging in unprotected receptive anal sex with partners of positive and unknown status, the sexual behavior with the highest risk. Although the present analysis demonstrates only the correlation between sexual risk and substance use, this combination has been observed in numerous studies conducted among MSM<sup>24–26</sup> and continues to be an important factor in defining sexual risks in this population. Furthermore, given that 10% of the study population reported recently injecting drugs, interventions must inquire about injection drug use and provide guidance for prevention strategies.

Finally, and of significant concern, this contemporary cohort of MSM is at high risk of HIV infection. The largest US observational cohort investigation of MSM preceding the EXPLORE study was the first HIVNET Vaccine Preparedness Study (VPS-1), which was conducted from 1995 to 1997 at the same study sites as EXPLORE. The VPS-1 cohort exhibited an HIV incidence rate of 1.55 per 100 person-years, a high incidence.<sup>27</sup> The level of baseline risk behaviors in the EXPLORE cohort was higher than that of the VPS-1 cohort (unpublished HIVNET data), owing in part to differences in mode of questionnaire administration (ACASI vs interview) but also as a consequence in part of EXPLORE’s efforts to increase the proportions of younger men and minority men in the cohort. The EXPLORE baseline data, in conjunction with information on the ongoing resurgence of STDs, increased HIV incidence rates, and changes in risk behaviors among MSM in many US cities, emphasize the continued need for effective behavioral strategies designed to prevent HIV infection among MSM. ■

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#### Contributors

B.A. Koblin, M.A. Chesney, and T.J. Coates conceived the study and oversaw all aspects of its implementation. M.J. Husnik and Y. Huang performed the data analyses. S. Bozeman was responsible for protocol implementation. B.A. Koblin, C.L. Celum, S. Buchbinder, K. Mayer, D. McKirnan, and F.N. Judson supervised all aspects of study implementation at the individual research sites. All of the authors helped to conceptualize ideas, interpret findings, and review drafts of the article.

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### Human Participant Protection

This study was approved by the institutional review boards of all institutions involved. Written informed consent was obtained from all participants.

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