Elevated HIV Prevalence Despite Lower Rates of Sexual Risk Behaviors Among Black Men in the District of Columbia Who Have Sex with Men

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Abstract

The District of Columbia (DC) has among the highest HIV/AIDS rates in the United States, with 3.2% of the population and 7.1% of black men living with HIV/AIDS. The purpose of this study was to examine HIV risk behaviors in a community-based sample of men who have sex with men (MSM) in DC. Data were from the National HIV Behavioral Surveillance system. MSM who were 18 years were recruited via venue-based sampling between July 2008 and December 2008. Behavioral surveys and rapid oral HIV screening with OraQuick ADVANCE ½ (OraSure Technologies, Inc., Bethlehem, PA) with Western blot confirmation on positives were collected. Factors associated with HIV positivity and unprotected anal intercourse were identified. Of 500 MSM, 35.6% were black. Of all men, 14.1% were confirmed HIV positive; 41.8% of these were newly identified HIV positive. Black men (26.0%) were more likely to be HIV positive than white (7.9%) or Latino/Asian/other (6.5%) men ($p < 0.001$). Black men had fewer male sex partners than non-black, fewer had ever engaged in intentional unprotected anal sex, and more used condoms at last anal sex. Black men were less likely to have health insurance, have been tested for HIV, and disclose MSM status to health care providers. Despite significantly higher HIV/AIDS rates, black MSM in DC reported fewer sexual risks than non-black. These findings suggest that among black MSM, the primary risk of HIV infection results from nontraditional sexual risk factors, and may include barriers to disclosing MSM status and HIV testing. There remains a critical need for more information regarding reasons for elevated HIV among black MSM in order to inform prevention programming.

Introduction

THE DISTRICT OF COLUMBIA (DC) has among the highest newly diagnosed AIDS case rate in the United States (102.8 cases per 100,000 population¹), with 7.1% of all black men living with HIV/AIDS,¹⁻³ and rates of newly reported AIDS cases higher than those found in similarly sized cities such as Baltimore, Maryland; Philadelphia, Pennsylvania; New York City, Detroit, Michigan; and Chicago, Illinois.¹⁻³ In DC, heterosexual transmission is the leading mode of exposure for new AIDS cases among black men (30.6%),¹ differing from most locations in the United States, where MSM is the most common mode of transmission among men. Although the heterosexual epidemic has grown in DC among the black population, the MSM epidemic has not waned: MSM behav-

ior remains a significant source of HIV/AIDS among black men. Black MSM represent nearly a quarter (21.4%) of all persons living with HIV/AIDS and almost half (42.7%) of reported HIV/AIDS cases among black men through 2008 were attributed to MSM behavior.¹

Little research has been conducted in DC among black MSM, presenting challenges in interpreting the local epidemic and developing effective prevention strategies. In view of the unique and developing epidemic in DC that is becoming generalized among communities of heterosexuals,⁴ a greater understanding of predisposing factors for HIV among black MSM is critical. Outside of DC, multiple studies have demonstrated increased HIV infection and unrecognized HIV among black MSM adults and adolescents and identified factors associated with HIV.⁵⁻¹⁵ Millet et al.¹⁶ conducted a

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critical review to examine 12 hypotheses that may explain the greater risk for HIV among black MSM, including reduced health care access and HIV testing, high prevalence of sexually transmitted infections (STI), lack of disclosure of sexual orientation and behaviors, illicit drug use, and incarceration. Paradoxically, sexual risk behaviors have not consistently been found to be higher among black MSM compared to MSM of other races. In a subsequent meta-analysis, Millet et al.¹⁷ found black MSM had fewer sexual partners, less substance abuse, and less antiretroviral use than white counterparts, and no difference in unprotected anal intercourse behavior. Harawa et al.¹⁸ similarly found that young black MSM were less likely to engage in HIV-related risk behaviors than young white MSM. Finally, Raymond et al.¹³ found more insular sexual networks with increased same-race MSM partnering among black MSM, in part due to ongoing negative attitudes among other MSM toward black MSM. This prior research suggests that a better characterization of the sexual (and other) behaviors of black MSM may be able to illuminate reasons for the elevated HIV/AIDS prevalence among this population in DC. Especially in the context of a rapidly growing epidemic among black individuals, understanding factors that put black MSM at greater risk for HIV/AIDS is critical. The purpose of this analysis was to describe and compare HIV prevalence and sexual risk behaviors in a racially diverse, community-based sample of MSM in DC.

Methods

Data were obtained through the Centers for Disease Control and Prevention (CDC)-sponsored National HIV Behavioral Surveillance (NHBS) Washington, DC site. NHBS methods have been described elsewhere.^{8,11,12,19–24} Briefly, cross-sectional data from MSM, injection drug users (IDU), and heterosexuals at high risk of HIV infection are collected in repeated annual cycles. Recruitment for the second round of NHBS-MSM was conducted between July 2008 and December 2008. The protocol-specified venue-based sampling (VBS) technique involved random time-space sampling. In this approach, a universe of venues with greater than 75% expected proportion of MSM attendees was created, and venues, days, and times were randomly selected each month during the recruitment period. The George Washington University Washington Outreach Research Drive to Understand Prevention (WORD UP) study van was taken to randomly selected venues by trained George Washington University (GWU) staff. During 4-h blocks of time, men leaving the venues and crossing a predetermined line were approached to be recruited. Times were based on safety, feasibility, and appropriateness to each venue and ranged from daytime hours for retail establishments to early morning hours for clubs and bars. In order to participate, volunteers had to self-identify as male, be 18 years or older, live in DC metropolitan statistical area (MSA), participate in English or Spanish, and provide informed consent. Neither sexual orientation nor sexual behavior was assessed in the eligibility screener. This was to ensure that the sample would include persons who may be unwilling to disclose MSM sex on screening and males who were non-gay-identified. If eligible for the study, participants completed an interviewer-administered 30- to 40-min anonymous survey and an anonymous rapid oral HIV (OraQuick ADVANCE 1/2, OraSure Technologies, Bethlehem, PA)

screening test.²⁵ The survey asked about sexual, drug use, and health-seeking behaviors, including HIV testing and utilization of HIV prevention and treatment services. Anyone who screened positive for HIV was immediately referred to care and an oral sample for a Western blot (WB) confirmation test was collected (OraSure Technologies, Inc.). As per CDC protocol, in order to have WB confirmation on all positives and avoid relying on self-report for HIV status determination, persons self-reporting as HIV-positive also provided an oral sample for WB confirmation. Recruitment continued until the final sample size of 500 men who disclosed sex with men in the past 12 months was reached. Participants received \$25 for completing the interview and \$10 for taking the HIV test. All study protocols and instruments were approved by the GWU and the DC Department of Health Institutional Review Boards.

Statistical methods

Variables addressing the primary research question were collected on the NHBS questionnaire, which is a well-documented tool to measure sexual and drug-using behavior among at-risk populations.^{8,11,12,19–24} Dependent variables included WB HIV confirmation and self-report of condom use at last episode of anal intercourse. Independent variables of interest included demographic variables (self-identified race, age, educational attainment, health insurance [including Medicaid or Medicare], sexual orientation, and being circumcised); HIV testing behavior (ever tested for HIV, and if saw health care provider in the last 12 months, was offered HIV test at that visit); HIV-related risk behaviors (ever been incarcerated, noninjection drug use in the past 12 months, age at MSM sexual debut, ever had intentional unprotected anal intercourse (UAI), also known as barebacking, whether the last sexual partner was main, casual, or exchange, older), and disclosure of MSM status to family members, non-gay identified friends, and health care provider. After describing characteristics of participants, differences between white, black, and Latino/Asian/other race/ethnicity were assessed using χ^2 tests. Participant demographic and behavioral characteristics were compared with respect to HIV status and UAI using unadjusted and adjusted odds ratios from logistic regression. Variables significant at $\alpha = 0.05$ in bivariate analyses were tested for inclusion in the multivariable models and remained if they were statistically significant or if addition or removal resulted in a change of $\pm 5\%$ in the estimates. Stata 10.0se (StataCorp, College Station, TX) was used for analysis.

Findings

Of 543 participants completing the core questionnaire, 500 (92.1%) disclosed having had sex with another man in the last year and were included in the analysis. As shown in Table 1, the majority of participants (60.0%) was 25–34 years of age and more than half (51.2%) were individuals of color, with 35.6% black. Most self-identified as gay or homosexual (85.0%), had a college degree or higher (56.0%), and had health insurance (83.4%). Of all participants, 68 (14.1%) were WB-confirmed HIV positive; 28 (41.8%) of these were newly identified positives. Nearly all participants (95.6%) had ever tested for HIV, and over three quarters had tested in the past year (data not shown). Nearly one fifth of participants had ever been in jail or the corrections system, 51.8% had used

TABLE 1. CHARACTERISTICS OF STUDY PARTICIPANTS (N=500)

	Black n=178		White n=244		Latino/Asian/other n=78		Total N=500	
	n	%	n	%	n	%	N	%
<i>Demographics</i>								
Age (years) ^a								
18–24	64	36.0	40	16.4	28	35.9	132	26.4
25–34	64	36.0	95	38.9	30	38.5	189	37.8
35–44	34	19.1	60	24.6	17	21.8	111	22.2
45+	16	9.0	49	20.1	3	3.9	68	13.6
Sexual orientation ^a								
Homosexual	131	74.0	230	94.3	63	80.8	424	85.0
Bisexual or heterosexual	46	26.0	14	5.7	15	19.2	75	15.0
Educational attainment ^a								
Less than college	128	71.9	58	23.8	34	43.6	220	44.0
College	31	17.4	96	39.3	28	35.9	155	31.0
More than college	19	10.7	90	36.9	16	20.5	125	25.0
Health Insurance ^b								
Have current health insurance	141	79.2	215	88.1	61	78.2	417	83.4
<i>HIV testing</i>								
NHBS Western Blot confirmed test results (n = 484 tested)								
Positive ^{a,c}	44	26.0	19	7.9	5	6.5	68	14.1
New positive ^{d,e}	20	11.2	6	2.5	2	2.6	28	5.6
HIV testing history								
Ever HIV tested previously ^b	167	93.8	239	98.0	72	92.3	478	95.6
Saw health care provider, last 12 months	147	82.6	211	86.5	64	82.1	422	84.4
If yes, offered an HIV test	83	56.5	127	60.5	33	51.6	243	57.7
<i>HIV-related risk factors</i>								
Ever been to jail, prison, or juvenile detention ^d	40	25.5	26	11.2	12	17.4	78	17.0
Non injection drug use within past 12 months ^f	87	48.9	132	54.1	40	51.3	259	51.8
Age at MSM sexual debut (years) ^a								
<18	97	54.5	86	35.3	42	53.9	221	44.6
≥18	81	45.5	158	64.8	36	46.2	275	55.4
Number of male sex partners, past 12 months ^d								
1 to 5	140	78.7	145	59.4	54	69.2	339	67.8
6 to 11	21	11.8	45	18.4	13	16.7	79	15.8
12+	17	9.6	54	22.1	11	14.1	82	16.4
Ever barebacked ^d	86	55.1	171	73.4	45	65.2	302	65.9
Type of partner at last sex								
Main	41	31.1	70	33.3	21	33.3	132	32.6
Casual or exchange	91	68.9	140	66.7	42	66.7	273	67.4
Condom use behavior at last anal sex								
Unprotected receptive anal intercourse ^{a,g}	19	25.3	51	56.7	12	41.4	82	42.3
Unprotected insertive anal intercourse ^{d,g}	29	29.0	53	51.0	12	32.4	94	39.0
Any unprotected anal intercourse ^{a,g}	40	27.2	81	51.6	19	35.2	140	39.1
Partner is older ^d	87	49.2	80	32.9	36	46.8	203	40.9
Circumcision ^a	149	83.7	224	91.8	42	53.9	415	83.0
<i>Disclosure Characteristics</i>								
Have told family members MSM ^a	137	85.1	229	94.6	55	75.3	421	88.5
Have told non-gay-identified friends that MSM ^a	139	86.3	238	98.4	68	93.2	445	93.5
Have told health care provider MSM ^d	116	72.1	208	86.3	55	76.4	379	80.0

^ap < 0.001.^bp < 0.05.^cProportion HIV-positive: black vs. white p < 0.0001; black vs. Latino/Asian/other p < 0.002; white vs. Latino/Asian/other ns.^dp < 0.01.^eProportion HIV-positive: black vs. white p < 0.001; black vs. Latino/Asian/other ns; white vs. Latino/Asian/other ns.^fIncludes all noninjected drugs, such as crack, cocaine, methamphetamine, ecstasy, hallucinogens, downers, prescription drugs used not as directed such as painkillers, noninjected opiate drugs, other noninjected drugs.^gShown as a % of those engaging in that behavior. n = 195 had receptive anal at last sex, 242 insertive, and 359 any anal sex.

MSM, men who have sex with men.

noninjection drugs in the past year, and 44.6% had their MSM sexual debut at younger than 18 years of age. Two thirds of participants reported one to five male sex partners in the past 12 months; nearly one fifth reported having 12 or more part-

ners. Two thirds disclosed ever having barebacked (having intentional UAI). Two thirds reported that their last sexual partner was a casual partner. Three quarters had anal sex and 39.1% of last anal intercourse sex was unprotected. The

majority (83.0%) of the men were circumcised. Most (83.4%) participants had visited a health care provider in the last 12 months. Fifty-seven percent of those who were not previously diagnosed as HIV positive were offered an HIV test at their last health care visit. Of those who were newly diagnosed positive by the study, 10 (50.0%) were offered an HIV test at their last health care visit.

As shown in Table 1, there were multiple differences associated with race/ethnicity on bivariate analysis. White participants were older than black and Latino/Asian/other participants, more likely to self identify as homosexual or gay, have a college degree or more, and have health insurance. Of the 484 men tested, Black men were significantly more likely to be diagnosed as HIV positive ($n = 68$) than the other racial categories of men (by race: 26.0% of black men versus 7.9% white versus 6.5% Latino/Asian/other; black versus white $p < 0.0001$; black versus Latino/Asian/other $p < 0.002$; white versus Latino/Asian/other ns). They were also more likely to be newly diagnosed HIV positive ($n = 28$; by race: 11.2% of black men versus 2.5% white versus 2.6% Latino/Asian/other; proportion HIV positive: black versus white $p < 0.001$; black versus Latino/Asian/other $p < 0.001$; white versus Latino/Asian/other ns). Of all black HIV-positive men, almost half (44.5%) were newly diagnosed (data not shown in table). Black and Latino/Asian/other men were significantly less likely to have been ever tested for HIV. There was no significant difference between races with respect to having seen a health care provider in the last 12 months and, if seen, being offered an HIV test.

Behavioral HIV-related risk factors differed significantly for black and white men. Black men were significantly more likely to have experienced time in corrections, and more likely

to have had their MSM sexual debut at younger than 18 years of age. Black men reported fewer male sex partners in the past 12 months than non-black men, fewer had ever barebacked, and more used condoms at last receptive or insertive anal sex. Black men were more likely to report having an older male partner at last sex. White men were more likely to report being circumcised. Latino/Asian/other men were significantly less likely to have disclosed their sexual orientation to family members. Black and Latino/Asian/other men were less likely than white men to disclose their status to non-gay-identified friends. Black men were less likely to inform health care providers that they engaged in MSM behavior.

As shown in Table 2, after adjustment for covariates in the model, black men (odds ratio [OR] 4.53; 95% confidence interval [CI] 2.15–9.54), men with sexual debut younger than 18 years of age, those who had not achieved a college degree, and those with four or more sexual partners in the past year were more likely to be HIV positive; younger men were less likely to be HIV positive. When examining newly identified positives—those unaware of their status prior to entering the study—participants who were black (OR 3.29 [95% CI 1.14–9.54]), younger, and did not have college degrees were more likely to be positive. When examining the outcome of unprotected intercourse at last anal sex (UAI), after adjusting for confounders in the model, both black (OR 0.28 [95% CI 0.16–0.49]) and Latino/Asian/other (OR 0.49 [95% CI 0.25–0.93]) men were less likely to report UAI than white participants.

Table 3 displays characteristics associated with HIV infection in the multivariable analysis by race for black and white men separately; because of insufficient sample size, predictors of infection among Latin/Asian/other men were not explored. Among white MSM, being younger and having an

TABLE 2. ADJUSTED CHARACTERISTICS ASSOCIATED WITH HIV POSITIVITY, NEW DIAGNOSIS OF HIV, AND UNPROTECTED ANAL INTERCOURSE AT LAST SEX ($N = 500$)

	Confirmed HIV-positive adjusted OR ^a (95% CI)	Newly diagnosed Positive Adjusted OR ^a (95% CI)	Unprotected Anal intercourse at last sex adjusted OR ^a (95% CI)
Race			
White	1.00	1.00	1.00
Black	4.53 (2.15–9.54)^b	3.29 (1.14–9.45)^c	0.28 (0.16–0.49)^b
Latino/other	1.28 (0.46–3.61)	1.11 (0.21–5.94)	0.49 (0.25–0.93)^c
Age (years)			
≥35	1.00	1.00	1.00
18 to 34	0.17 (0.09–0.34)^b	0.49 (0.21–1.17)	1.39 (0.83–2.27)
Age at MSM sexual debut (years)			
≥18	1.00	1.00	1.00
<18	2.62 (1.38–4.97)^d	3.19 (1.21–8.41)^c	1.32 (0.83–2.10)
Educational attainment			
≥college	1.00	1.00	1.00
<college	2.98 (1.47–6.07)^d	4.04 (1.34–12.18)^d	1.51 (0.90–2.54)
Number of male sex partners, last 12 months			
1 to 4	1.00	1.00	1.00
4+	1.82 (0.99–3.36)	1.01 (0.44–2.36)	0.96 (0.61–1.52)
Ever barebacked			
No	1.00	1.00	
Yes	1.89 (0.95–3.77)	2.31 (0.89–6.16)	

^aIncludes all other variables listed in column.

^b $p < 0.001$.

^c $p < 0.05$.

^d $p < 0.01$.

OR, odds ratio; CI, confidence interval.

TABLE 3. ADJUSTED CHARACTERISTICS ASSOCIATED WITH HIV POSITIVITY, BY RACE, FOR BLACK AND WHITE MEN (N=422)

	<i>Black men confirmed HIV-positive adjusted OR^a (95% CI) (n=177)</i>	<i>White men confirmed HIV-positive adjusted OR^a (95% CI) (n=245)</i>
Age (years)		
≥35	1.00	1.00
18 to 34	0.30 (0.17–0.55)^b	0.13 (0.03–0.61)^c
Ever been to jail, prison, or juvenile detention		
No	1.00	1.00
Yes	1.34 (0.79–2.25)	5.49 (1.27–23.7)^d
Unprotected anal intercourse at last sex		
No	1.00	1.00
Yes	0.97 (0.35–2.74)	3.34 (1.17–9.51)^d
Last sex partner older than participant		
No	1.00	1.00
Yes	0.72 (0.41–1.28)	1.77 (0.48–6.48)
Number of male sex partners last 12 months (every partner increase)	1.03 (0.98–1.07)	1.01 (0.98–1.04)
Age at MSM sexual debut (every year increase)	0.91 (0.81–1.03)	0.87 (0.81–0.94)^b

^aIncludes all other variables listed in column.

^b $p < 0.001$.

^c $p < 0.01$.

^d $p < 0.05$.

OR, odds ratio; CI, confidence interval; MSM, men who have sex with men.

older age of MSM sexual debut were associated with lower odds of HIV infection, while experience in jail, and UAI at last sex were associated with greater odds of HIV infection. Among black MSM, only younger age (less than 35 years old) was associated with lower odds of infection after adjusting for other characteristics in the model.

Discussion

This study offers the first non-clinic-based community estimate of sexual behaviors and HIV-prevalence among venue-attending MSM in DC. Echoing surveillance data, there was a striking disparity between races, with a disproportionate number of HIV-infected persons being MSM of color, particularly Black MSM. HIV prevalence differed between race/ethnicity categories, with black men significantly more likely to be HIV positive than others. Despite a significantly higher proportion of HIV among black men, levels of reported risk behavior were less than that of white participants, who reported having more sexual partners and were more likely to report UAI and barebacking. Black men were more likely to have had their MSM sexual debut at 18 years or younger. Black MSM were no more likely than white MSM to engage in drug use or substance use with sex.

In evaluating race-specific predictors of HIV infection, white men demonstrated more traditional individual-level risk behaviors than black men, including experience in jail, unprotected anal intercourse, younger MSM debut, and older age. Only older age was associated with greater odds of HIV infection among black men, and this was in the same direction as found for white men. Other research similarly suggests that black MSM engage in fewer HIV-related risk behaviors than their white counterparts, while having elevated HIV prevalence and newly diagnosed HIV.^{8–10,14–18,26,27} Other authors have found some increased specific risk behaviors among youth, while other lifetime risk behaviors are elevated as age

accrues,^{28–33} although we did not find that replicated in this analysis. Other authors have reported increased prevalence of older partners among black MSM as well as increased concurrency, where we found the former and not the latter.^{6,7} In this sample, it may be that health care access, population- or network-based characteristics, including prevalence of HIV within sexual networks, play a larger role in HIV transmission than individual-level behaviors as has been found in other studies^{13,34,35}; this study was not able to assess sexual networks to address this question.

As other authors have found,^{9,14,16,17,36–38} patterns of MSM disclosure were differential with respect to race/ethnicity, with black MSM being less likely to disclose MSM behavior to family members, non-gay-identified friends, and health care providers. Differences in disclosure of MSM behavior even after adjustment for age may represent differing cultural norms between groups. Despite less disclosure of MSM behavior among men of color compared to white men, condom use at last anal sex remained high, suggesting that disclosure may be associated with HIV testing behavior but not condom use. Stigma and barriers to health care as well as to HIV and STI testing may play an important role in the observed racial disparity in HIV. Barriers found in this study include less health care insurance as well as reduction in disclosure of MSM status to health care providers. These may represent unique missed opportunities for prevention efforts among MSM. Routine HIV testing paired with increased access to health care through removal of barriers to such care may be an especially important prevention tool for black MSM.

There are several limitations to this study. The use of VBS does not allow for generalizability of study findings to the overall MSM population in DC. These estimates are only generalizable to persons attending a distribution of venues similar to those sampled. In the case of MSM, the sample is likely not generalizable to the overall MSM population in DC because many MSM (including non-gay-identified men) do

not attend the venues that would make them eligible for participation. In addition, these data suggest that VBS does not yield a sample representative of all MSM in DC with respect to education or income. Thus, it is important to interpret these estimates in the context of the methodology from which they are derived. Future studies are needed that can access populations of MSM who are not readily identified through venue-based approaches. Future studies in DC examining MSM through other methodologies (e.g., respondent-driven sampling, sexual network studies) are needed to provide insight into the causes of higher HIV prevalence among black MSM, given that individual-level characteristics do not explain the differences entirely. Given the high prevalence of HIV among black MSM, more knowledge about the venue-attending as well as non-venue-attending MSM is needed. Use of a respondent-driven or targeted sampling approach may complement findings from this study. As a cross-sectional study we cannot infer temporality or causality. As with most studies of sexual and other HIV-risk behavior, the majority of information is obtained via self-report, subjecting it to social desirability bias.^{39–41} As an interviewer-administered questionnaire, it is possible that there were inter- and/or in-trainerviewer differences in the reading of the questions, as well as errors in recording. Extensive interviewer training was conducted, and ongoing quality assurance and supervision were performed in order to avoid interviewer bias; however, these errors remain possible anytime information is obtained through a face-to-face interview. Computer-assisted interview techniques^{39–41} may be a way to overcome this in the future, but were not feasible due to multisite protocol specification. Characteristics of sex partners were not confirmed by the partner interviewed, and must be interpreted cautiously. The assessment of barebacking referred to lifetime behavior, which introduced difficulty in interpreting against the other more recent recall periods. In addition, differentiation between intentional and unintentional unprotected anal intercourse may reveal more about the participant's post hoc view of the behavior, and less about the behavior itself—or the risks associated with it—than can be discerned. Given the relatively small proportion who were HIV positive, this study did not have sufficient power to examine interactions. Finally, when dichotomizing based on race, it is essential to recall the incomplete nature of this self-reported proxy variable. Studies using mixed methods that can more fully examine contexts for race, stigma, social barriers, and their interface with sexual behavior are necessary.⁴²

Conclusion

In spite of the complexities and limitations of VBS, it is uniquely suited to provide estimates of extensive behavioral characteristics from a large, non-clinic or prevention organization-based sample from the community. This study offers the first evaluation of a community-based estimate of risk behaviors and HIV serostatus among MSM in DC, allowing for an assessment of characteristics that may put MSM at risk for HIV infection and racial disparities within this population. Information gained through this study will be useful in developing future studies as well as local interventions that can address some of the risks that are being taken in DC. NHBS offers critical insight into behavior antecedent to HIV-infection among annual community-based samples of populations

at highest risk for HIV. These findings may be used to develop future interventions for MSM, particularly black MSM, at risk due to elevated HIV prevalence in the community. Future studies are required to better understand non-venue-attending MSM, non-gay-identified MSM, and a broader cross-section of MSM in DC in order to better comprehend prevention needs. Findings from this study are critical in designing and disseminating targeted HIV prevention strategies for this at-risk population.

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Author Disclosure Statement

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