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HIV Prevalence and Unrecognized HIV Infection Among Men Who Have Sex With Men: Chicago HIV Behavioral Surveillance, 2008

Exploring Racial/Ethnic Disparities in Levels of HIV Infection

Abstract

Background and Methods: The Chicago Department of Public Health's Office of HIV Behavioral Surveillance conducted a survey with 570 men who have sex with men (MSM) during 2008. The survey aimed to describe HIV prevalence rates, rates of unrecognized HIV infection, sex and drug behaviors and prevention utilization among MSM in Chicago. MSM were randomly recruited from randomly selected venues where MSM congregate.

Results: 91 of 524 (17.4%) MSM tested HIV-positive at the time of the survey. HIV prevalence among Black MSM (30.1%) was at least twice the rate of White (11.3%) and Hispanic MSM (12.0%). Despite observed disparity in HIV prevalence, individual-level sex and drug use behaviors (condom use, knowledge or partner status, etc.) did not differ significantly by race/ethnicity. Fifty percent (50%) were unaware of their HIV infection at the time of the survey. Many persons who were unaware of their HIV infection at the time of the survey had acquired their infection in the past year and were engaged in HIV testing and medical care at similar rates as other MSM. Among those who had not tested for HIV in the past year, fear of testing positive and conversely, perceiving oneself to be 'low risk' were the most common reasons cited for not testing.

Conclusions: Levels of sex and drug use behaviors, and consequently, HIV prevalence rates remain high across MSM racial/ethnic groups in Chicago. Continued focus on individual-level risk behaviors and HIV testing will only have a limited impact on reducing racial disparities in levels of HIV infection. Rate of new infections among Black MSM, the background community HIV prevalence among Black Chicagoans, and MSM sexual mixing patterns may be contributing factors to racial disparities in HIV prevalence and need to be addressed in future research and prevention efforts.

Background

Well into the third decade of the human immunodeficiency virus (HIV) epidemic, rates of HIV infection in Chicago remain high, especially among men who have sex with men (MSM). Of 1,557 newly diagnosed HIV infections in Chicago during 2006, the Chicago Department of Public Health (CDPH) estimates that approximately 62% were among MSM[1]. Forty-two percent (42%) of these MSM diagnoses were among Blacks, 36% were among Whites, 17% were among Hispanics and 5% were among other races. Through 2006, there were 21,367 persons living with HIV in Chicago; of those, 54.7%, or 11,697, were MSM[2].

To assess sexual and drug use risk behaviors and HIV prevalence among MSM, CDPH analyzed data from the National HIV Behavioral Surveillance (NHBS-Chicago) system in Chicago. This report summarizes preliminary findings from the NHBS-Chicago (2008), which indicated that, HIV prevalence[a] among MSM was 17.4% (of 524 MSM tested, 91 MSM tested HIV-positive) and that 50% of MSM who tested positive were unaware of their HIV infection at the time of the survey. This report aims to describe rates of HIV prevalence and of unrecognized infection in detail, and explore the differences in rates among racial/ethnic groups of MSM in Chicago.

Methods

NHBS is a national, ongoing surveillance system that collects cross-sectional data in 21 US cities among populations at high risk for acquiring HIV, including MSM, injection-drug users, and heterosexuals-at-high-risk. This system is known in Chicago as Project CHAT. For the MSM cycle conducted in Chicago during 2008, men were sampled systematically from randomly selected venues where MSM congregate (e.g., bars/dance clubs, athletic leagues, professional groups, hobby/special interest organizations, public sex environments, gay pride events, retail stores, and street locations). Formative research was conducted from January through July 2008 to garner community support, and identify venues, as well as days and times when MSM frequented these venues. Data collection took place from August through December 2008. Men attending venues were randomly approached and were asked if they were interested in participating and undergoing eligibility screening. Men eligible for the survey were aged $\geq$18 years and residents of the Chicago metropolitan statistical area (MSA). Using a standardized questionnaire, men were interviewed about their sexual and drug-use behaviors, HIV-testing behavior, and use of HIV-prevention services. Eligible participants were also offered HIV testing following the survey. Participants were compensated up to $50 for the time and effort required for taking the survey and HIV test.

[a] HIV prevalence is defined as the proportion of people within a specific population that are currently living with HIV.

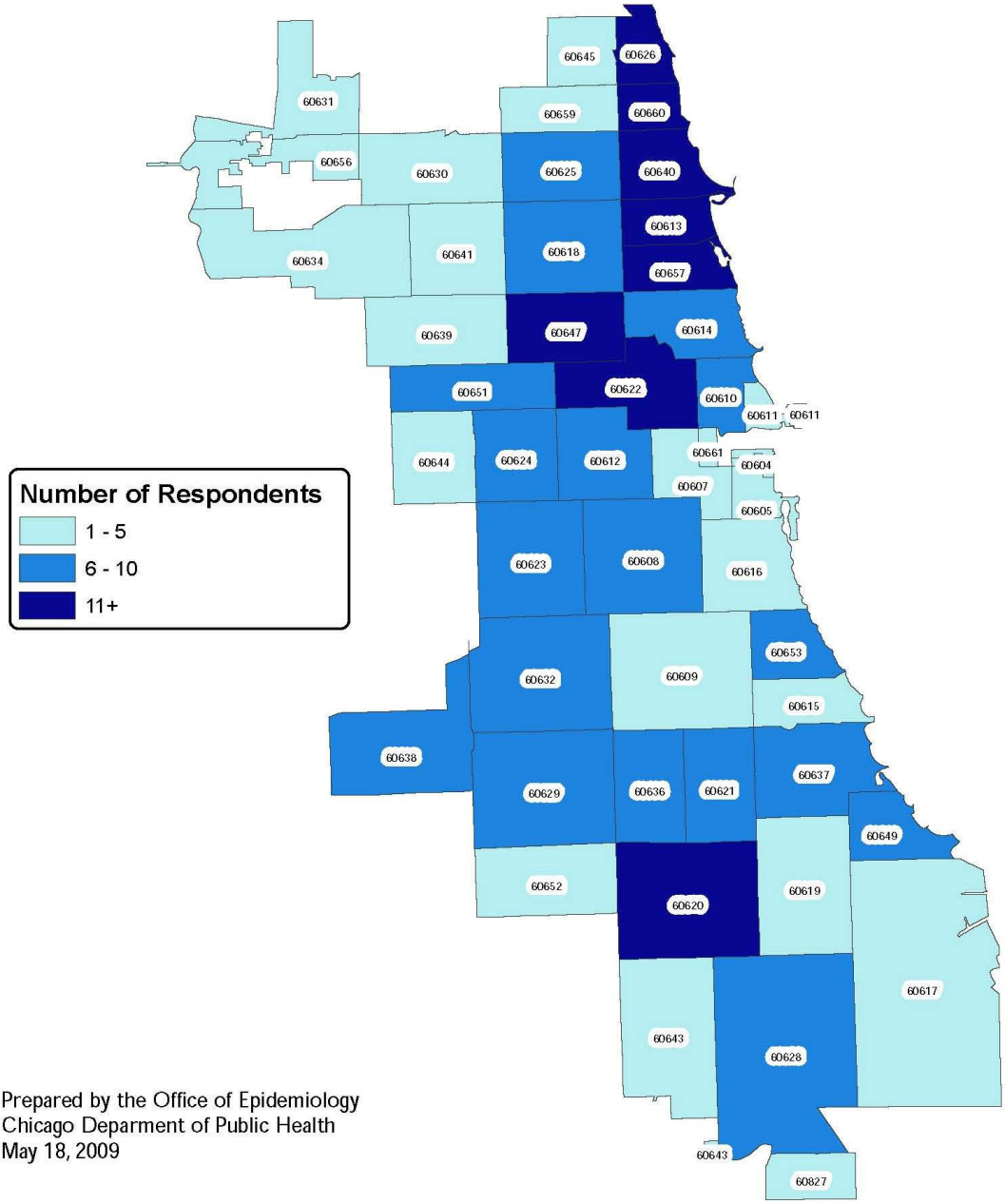
The OraSure® HIV test was used to screen blood specimens for HIV antibodies. Initially-reactive specimens were tested by Western blot for confirmation at the Illinois Department of Public Health laboratories. Participants were asked about the date and result of their most recent HIV test before being tested for HIV as part of NHBS. If a participant reported having tested HIV-positive prior to the survey, they were asked the date of their most recent HIV-*negative* test. Men who had not been HIV tested during the year prior to the survey were asked about their reasons for not testing.

Results

Demographics In Chicago, 669 men sampled from 57 different venues participated in NHBS-Chicago. A total of 570 men reported having had one or more male sex partners in the past year. Of these 570 participants, the mean age was 32 years (range: 18-70 years); 27% were Black, 44% were White, 22% Hispanic, 3% Asian/Pacific Islander, and 3% reported Multiracial or Other. Overall, respondents in the sample were relatively evenly distributed by annual household income. Twenty-seven percent (27%) of respondents had annual incomes between $0 and $19,999, 37% had annual incomes between $20,000 and $49,999, and 34% of respondents had incomes over $50,000. The majority (77%) of respondents in the sample were high-school graduates or higher (Table 1). Each of Chicago's zip codes were represented by at least one survey participant. There were 3 geographical areas of the city that represented the largest concentration of participants: 1) Lakeview/Uptown/Edgewater, 2) Auburn-Gresham, and 3) Logan Square/ West Town. Fifty-nine respondents (10%) reported residence outside of the city (Figure 1).

TABLE 1. Demographic Characteristics (National HIV Behavioral Surveillance System, Men Who Have Sex With Men, Chicago, August 2008 - December 2008) (n=570)		
	(#)	(%)
Race/Ethnicity		
Black	156	27
White	251	44
Hispanic	126	22
American Indian/Alaskan Native	2	<1
Asian	17	3
Native Hawaiian/Pacific Islander	1	<1
Other	16	3
Age (years)		
18 — 24	152	27
25 — 34	206	36
35 — 44	148	26
45 — 54	51	9
55+	13	2
Annual Household Income ($)		
0 - 19,999	155	27
20,000 – 49,999	213	37
50,000+	191	34
Highest Level of Education		
HS Grad or Less	131	23
Some College or Higher	438	77

FIGURE 1. Map of Respondent ZIP Codes of Residence
(National HIV Behavioral Surveillance System, Men Who Have Sex With Men, Chicago, August 2008 – December 2008) (n=511)
(59 respondents reside outside of city boundaries)



Participants were recruited at venues where MSM comprised at least 75% of the attendees. These included: bars (41%), dance clubs (20%), social organizations (14%), street locations (12%), sex environments (6%), gay pride events (5%), and retail stores (3%). Examples of social organizations were athletic leagues, hobby/special interest group meetings, and church services. Sex environments consisted of bathhouses, parks, beaches, and back rooms of bars where sexual activity took place. Recruitment on sidewalk corridors occurred in areas of the city that are well-known neighborhoods where MSM live and congregate.

HIV Prevalence Ninety-two percent (92%) of survey participants agreed to be tested for HIV. Of the 524 MSM tested for HIV during the 2008 NHBS survey, 91 men tested HIV-positive. Thus, the overall HIV prevalence rate among participants was 17.4%. HIV prevalence increased stepwise by each age category. Among MSM 18-24 years of age, the prevalence rate was 13.6%. For those older than 45 years of age, the prevalence rate was 22%.

The examination of prevalence rates among MSM by race/ethnicity revealed stark disparities between groups. The HIV prevalence rate among all Black MSM in the sample was 30.1% (44 positives out of 146 tested). This rate was almost three times that of White MSM (11.3%, 26 positives out of 229 tested), and two-and-a-half times that of Hispanic MSM (12.0%, 14 positives out of 117 tested) (Table 2).

Reliable prevalence rates were unable to be calculated for other racial/ethnic groups due to the small numbers surveyed. The remainder of this report, which aims to explore the implications of these prevalence rates, will focus only on MSM who reported Black or White race, or Hispanic ethnicity.

TABLE 2. HIV Prevalence of Respondents Tested by Race/Ethnicity and Age Category (National HIV Behavioral Surveillance System, Men Who Have Sex With Men, Chicago, August 2008 - December 2008) (n=492)

	Tested	HIV Positive	
Race/Ethnicity	(#)	(#)	(%)
Black	**146**	**44**	**30.1**
White	**229**	**26**	**11.4**
Hispanic	**117**	**14**	**12.0**
Age (years)	(#)	(#)	(%)
18 — 24	**140**	**19**	**13.6**
25 — 34	**175**	**29**	**16.6**
35 — 44	**120**	**24**	**20.0**
≥45	**57**	**12**	**21.1**
TOTAL	**492**	**84**	**17.1**

HIV Prevalence (continued) The racial/ethnic disparity becomes particularly pronounced when comparing HIV prevalence rates among younger MSM. Thirty percent (30%) of Black MSM under 35 years of age tested HIV-positive compared to 4.2% of White MSM and 11.6% of Hispanic MSM in the same age category (Table 3).

TABLE 3. HIV Prevalence of Respondents Tested by Race/Ethnicity by Age Category (National HIV Behavioral Surveillance System, Men Who Have Sex With Men, Chicago, August 2008 - December 2008) (n=492)

	Total (#)	HIV+ (#)	(%)	
Black				
18-24	66	16	24.2	30.0%
25-34	45	17	37.8	
35-44	29	9	31.0	
45+	6	2	33.3	
Black Total	**146**	**44**	**30.1**	
White				
18-24	43	1	2.3	4.2%
25-34	75	4	5.3	
35-44	66	11	16.6	
45+	45	10	22.2	
White Total	**229**	**26**	**11.4**	
Hispanic				
18-24	31	2	6.5	11.6%
25-34	55	8	14.5	
35-44	25	4	16.0	
45+	6	0	0.0	
Hispanic Total	**117**	**14**	**12.0**	

Unrecognized Infection Half of all MSM (50%) who tested positive for HIV during the survey were unaware of their HIV infection. An individual who was "unaware" of his HIV infection was defined as someone who tested HIV-positive at the time of survey and had either reported their most recent HIV test result to be negative, or who reported no lifetime HIV test, or that they did not receive the results of their most recent HIV test and have not received a previous positive HIV test result. Sixty-six percent (66%) of Black MSM who tested positive in the sample were unaware of their HIV infection, 50% of Hispanic MSM, and nearly one-quarter of White MSM (23%) were unaware of their HIV infection at the time of the survey (Table 4).

TABLE 4. Respondents Unaware of their HIV Positive Status by Race/Ethnicity (National HIV Behavioral Surveillance System, Men Who Have Sex With Men, Chicago, August 2008 - December 2008) (n=84)

	Total HIV+ (#)(n=84)	Unaware HIV+ (#) (n=42)	%
Black	**44**	**29**	**66**
White	**26**	**6**	**23**
Hispanic	**14**	**7**	**50**
TOTAL	**84**	**42**	**50**

HIV Testing and Health Behaviors of MSM Unaware of Their HIV Infection HIV testing behaviors are, overall, similar among MSM who were unaware of their HIV infection and those MSM who tested HIV negative during the survey. Eighty-eight percent (88%) of the men who were unaware of their HIV infection had been tested for HIV in their lifetime (compared to 92% of HIV- negative MSM). Sixty-one percent (61%) of MSM who were unaware of their HIV infection had reported taking at least two HIV tests in the past two years (compared to 67% of HIV negative MSM in the sample) (Table 5).

Over half (62%) of MSM who were unaware of their HIV-positive status reported taking an HIV test in the past 12 months. For the 17 MSM who were unaware of their infection and had not tested in the past year, the most commonly reported main reason for not testing was that they were, "afraid of finding out the result". The second most common reason cited was, "I think I'm at low risk for HIV".

None of the MSM who were unaware of their infection reported that they 'didn't know where to go to get tested' as a reason for not getting tested for HIV.

The majority of HIV-positive MSM who were unaware of their HIV infection reported being currently insured and were receiving medical care. Sixty percent (60%) of those unaware of their HIV infection reported currently having some form of health insurance (compared to 72% of HIV-negative MSM), while 82% had reported visiting a health care provider for medical care in the past year (compared to 79% of HIV-negative MSM) (Table 5).

TABLE 5. HIV Testing and Health Behaviors by HIV Status and Unrecognized HIV Infection (National HIV Behavioral Surveillance System Men Who Have Sex With Men, Chicago, August 2008 - December 2008) (n=475)

	Unaware HIV+ (n=42) (%)	NHBS HIV Negative (n=433) (%)
Ever tested for HIV	**88**	**92**
2+ HIV tests in past 2 years	**61**	**67**
Currently insured	**60**	**72**
Seen a health care provider in past 12 months	**82**	**79**

Recently Acquired HIV Infection The data on HIV testing behaviors also revealed that a majority of Black and Hispanic MSM who were unaware of their HIV infection at the time of the survey likely acquired their HIV infection within 12 months prior to the survey. Sixty-nine (69%) percent of Black MSM and 57% of Hispanic MSM who were unaware of their infection tested HIV-negative less than 12 months prior to the survey. This compares to 33% of White MSM who reported an HIV-negative test result within 12 months of the survey (Table 6).

TABLE 6. HIV Acquisition in the past 12 Months among HIV+ Men Unaware of Their Infection (National HIV Behavioral Surveillance System, Men Who Have Sex With Men, Chicago, August 2008 - December 2008) (n=42)

	Total Unaware HIV+ (#) (n=42)	Infected in Past 12 Months (#)	%
Black	**29**	**20**	**69**
White	**6**	**2**	**33**
Hispanic	**7**	**4**	**57**
TOTAL	**42**	**26**	**62**

Sexual Risk Behaviors of HIV-negative and MSM Unaware of Their HIV Infection After excluding MSM who reported being HIV-positive, 449 MSM participants reported a median number of three male sex partners in the 12 months prior to the survey. This value was identical between Black, White and Hispanic MSM. Approximately half (51%) of these MSM reported engaging in unprotected anal intercourse (UAI) with a male partner in the past 12 months; there was virtually no difference between Black, White and Hispanic MSM in this respect. Overall, almost one-third of MSM reported not knowing the HIV status of their most recent sex partner (32%). Thirty-nine percent (39%) of MSM reported concurrent (overlapping) sexual relationships with two or more men including their most recent male sex partner. Neither of these risk behaviors differed significantly in frequency by race/ethnicity. Drug and alcohol use occurred before or during the most recent sexual encounter with a male in less than half (41%) of MSM, with no apparent differences by race/ethnicity (Table 7).

TABLE 7. Sexual Risk Behaviors by Race/Ethnicity
All MSM, Excluding Men Who Are Aware of Their HIV Infection
(National HIV Behavioral Surveillance System, Men Who Have Sex With Men, Chicago, August 2008 - December 2008) (n=449)

All MSM excluding those aware of their HIV infection	Black (n=112)	White (n=225)	Hispanic (n=112)	TOTAL (n=449)
	(%)	(%)	(%)	(%)
Unprotected anal sex with a man - past 12 months	50	49	54	52
Don't know HIV status of most recent sex partner	38	26	36	33
Drug and/or alcohol use before or during most recent sex	40	39	43	40
Concurrent sexual partners	38	39	43	43
# Male sex partners (median past 12 months)	3	3	3	3

Sexual Risk Behaviors of HIV-negative and MSM Unaware of Their HIV Infection (continued) Younger White MSM (less than 35 years of age) had a median of 4 male sex partners in the past 12 months, compared to 2 partners among younger Hispanic MSM, and 3 partners among younger Black MSM. Similar to older MSM, there were no other significant differences reported between racial/ethnic groups for the analyzed sexual risk behaviors (Table 8).

TABLE 8. Sexual Risk Behaviors by Race/Ethnicity
MSM under the age of 35 Years, Excluding Men Who Are Aware of Their HIV Infection
(National HIV Behavioral Surveillance System, Men Who Have Sex With Men, Chicago, August 2008 - December 2008) (n=293)

All MSM under 35 years of age (excluding those aware of their HIV infection)	Black (n=99)	White (n=114)	Hispanic (n=80)	TOTAL (n=293)
	(%)	(%)	(%)	(%)
Unprotected anal sex with a man - past 12 months	50	55	56	54
Didn't know HIV status of most recent sex partner	34	25	31	30
Drug and/or alcohol use before or during most recent sex	38	37	46	40
Concurrent sexual partners	45	42	36	42
# Male Sex Partners (median past 12 months)	3	4	2	3

Sexual Risk Behaviors of MSM Unaware of Their HIV Infection The 42 MSM who were unaware of their HIV infection reported higher rates of unprotected anal sex and lower rates of knowledge of most recent partner's HIV status than HIV-negative MSM. Variations were observed across race/ethnicity. Among Black MSM, 59% did not know the status of their most recent male sex partner compared to 33% of White MSM and 43% of Hispanic MSM. At the same time, White MSM were more likely to be having concurrent sexual relationships than either Black or Hispanic MSM (67% vs. 41% and 29%, respectively) (Table 9).

TABLE 9. Sexual Risk Behaviors of Men Who Are Unaware of Their HIV Status by Race/Ethnicity (National HIV Behavioral Surveillance System, Men Who Have Sex With Men, Chicago, August 2008 - December 2008) (n=42)

MSM Unaware of their HIV Infection	Black (n=29)	White (n=6)	Hispanic (n=7)	TOTAL (n=42)
	(%)	(%)	(%)	(%)
Unprotected anal sex with a man - past 12 months	59	67	43	57
Didn't know HIV status of most recent sex partner	59	33	43	52
Drug and/or alcohol use before or during most recent sex	31	33	43	33
Concurrent sexual partners	41	67	29	43
# Male Sex Partners (median past 12 months)	3	3	2	3

Sexual Risk Behaviors of MSM Aware of Their HIV Infection A total of 42 MSM were diagnosed with HIV prior to the survey and were aware of their infection at the time of the survey. Over half of these MSM (52%) reported that their most recent male sex partner was either of negative or unknown status. This rate was similar by the three race/ethnicity groups (Table 10). Among the 22 men, unprotected anal sex with a man in the last 12 months was at least twice as common among Hispanic MSM compared with Black and White MSM (50% compared with 13% and 30% respectively). Concurrent sexual relationships occurred among 50% of both White and Hispanic men in this group, while it occurred among only 25% of Black MSM. Drug and alcohol use before or during sex varied widely between races within this group. Seventy percent (70%) of White HIV-positive men with a sex partner of negative or unknown HIV status reported drug or alcohol use before or during sex. This compared with 25% of Hispanic MSM and 38% of Black MSM (Table 11).

TABLE 10 - Men Aware of Their HIV Infection Who Report Having Sex with HIV-Negative Men (National HIV Behavioral Surveillance System, Men Who Have Sex With Men, Chicago, August 2008 - December 2008) (n=42)

MSM Aware of HIV Infection	Black (n=15)	White (n=20)	Hispanic (n=7)
	(%)	(%)	(%)
Most Recent Sex Partner HIV-Negative or Unknown	53	50	57

TABLE 11 - Sexual Risk Behaviors of Men Aware of Their HIV Infection Who Report Having Sex with HIV-Negative Men (National HIV Behavioral Surveillance System, Men Who Have Sex With Men, Chicago, August 2008 - December 2008) (n=22)

MSM Aware of HIV Infection / *Most Recent Sex Partner HIV-Negative or Unknown*	Black (n=8)	White (n=10)	Hispanic (n=4)
	(%)	(%)	(%)
Unprotected anal sex	13	30	50
Drug and/or alcohol use before or during sex	38	70	25
Concurrent sexual partners	25	50	50

Drug Use Illicit drug use was reported among approximately half (49%) of all MSM. Polydrug use was less common among Black MSM than White or Hispanic MSM (15% among Black vs. 27% among both White and Hispanic MSM). Black MSM were also less likely to use club drugs (i.e. ketamine, GHB), crystal methamphetamine, painkillers (e.g. Oxycontin), powdered cocaine, or poppers than White or Hispanic MSM. Crystal meth use was reported among 7% of White and Hispanic MSM and only 1% of Black MSM. The rate of powdered cocaine use among White MSM was two times greater than it was among Black or Hispanic MSM (15% vs. 5% and 6% respectively). Popper use was at least four times greater among White and Hispanic MSM than it was among Black MSM (21% and 18% vs. 4%) (Table 12).

However, Black MSM reported similar or higher rates of use among three drugs, as compared to White MSM or Hispanic MSM: crack cocaine, ecstasy, and marijuana. Black MSM were also more likely to report illicit drug use before or during sex than White and Hispanic MSM (13% vs. 8% and 9%, respectively). Marijuana seemed notably associated with sex among Black MSM compared to White and Hispanic MSM, as 12% of Black MSM reported its use with sex, compared to 4% of White MSM and 5% of Hispanic MSM (Table 12).

TABLE 12. Overall Drug Use Behaviors in the Past 12 Months by Race/Ethnicity (National HIV Behavioral Surveillance System, Men Who Have Sex With Men, Chicago, August 2008 - December 2008) (n=445)

	Black (n=131)	White (n=205)	Hispanic (n=109)
	(%)	(%)	(%)
Any illicit drug use	47	49	48
Polydrug Use	15	27	27
Club Drugs (i.e. Gamma Butyrolactone (GHB) and Ketamine Hydrochloride (e.g Special K, Vitamin K))	0	4	1
Crystal Methamphetamine	1	6	5
Downers/Painkillers	2	8	5
Powder Cocaine	5	14	18
Poppers (Amyl Nitrate)	4	21	18
Crack Cocaine	3	2	5
Ecstasy	9	8	4
Marijuana	44	40	43

Alcohol Use The use of alcohol remains nearly ubiquitous among MSM, with 94% of all MSM reporting some use in the past year. More Black MSM reported no drinking in the past 12 months (10%) than either White (3%) or Hispanic MSM (5%). Similarly, excessive drinking (5 or more drinks at least once a week) was less common among Black MSM, than Whites or Hispanics (22% vs. 37% and 43%, respectively). However, drinking alcohol in conjunction with sex was similarly common between all three racial/ethnicity groups. Thirty-six percent (36%) of Black MSM reported drinking alcohol before most recent sex compared to 38% of White MSM and 42% of Hispanic MSM (Table 13).

TABLE 13. Frequency of Alcohol Use by Race/Ethnicity (National HIV Behavioral Surveillance System, Men Who Have Sex With Men, Chicago August 2008 - December 2008) (n=445)

	Black (n=131)	White (n=205)	Hispanic (n=109)
	(%)	(%)	(%)
Drank Alcohol in past year	90	96	94
Mean number of times had 5+ drinks in the past 30 days	3	4	5
Had 5+ drinks (on average) at least once a week in the past 12 months	19	34	40
Used alcohol before or during most recent sex	36	39	40

Discussion

This study provides for the first time, population-based estimates of HIV prevalence among MSM in Chicago and offers us an important piece of information to integrate into current community educational efforts and a baseline from which to monitor future trends.

Consistent with previous and concurrent studies of MSM conducted in other US cities using similar sampling methods these data revealed that[3-9]:

- Prevalence of HIV infection among MSM is high
- Black MSM had markedly higher prevalence rates than either White or Hispanic MSM, especially among those under 35 years of age
- Many HIV-infected MSM, particularly Black and Hispanic MSM, were unaware that they were HIV-infected at the time of the survey
- Among Black MSM with unrecognized infection, at least two-thirds acquired HIV during the preceding year
- Of those who were unaware of their HIV infection and had not been tested recently, many reported a fear of testing positive or conversely, they did not consider themselves to be at risk.

The level of HIV infection among MSM is significantly higher than other groups at risk for HIV in Chicago. In 2007, NHBS-Chicago found the HIV prevalence rate among heterosexual males and females from at-risk Chicago neighborhoods to be 1.8% (14 positives of 759 tested). HIV prevalence rates for injection drug users (IDU) surveyed as part of NHBS-Chicago in 2005 was estimated to be between 8 and 10%. Also, CDPH has estimated that in 2008, the HIV prevalence rate among the general male population in Chicago was 1.2%[1]. The overall prevalence rate of HIV infection among Chicago MSM, 17.4%, as found in this study, complements CDPH HIV case surveillance data that show MSM continuing to make up the majority of new HIV diagnoses and of persons living with HIV in Chicago. In 2006, 951 of 1,557 new HIV diagnoses in Chicago were among MSM and of the 21,367 cases of HIV and/or AIDS living in Chicago, approximately 11, 697 were MSM[2].

In an attempt to explain the significant and sobering racial/ethnic disparities in HIV prevalence, we compared individual-level risk factors among at-risk MSM that are typically associated with HIV acquisition (sexual and drug use behaviors). Overall, traditional sexual and drug use behaviors (including drug use before or during sex) remain high among MSM surveyed. Over half (54%) of all MSM reported having sex without a condom in the past year, while one-third reported not knowing the HIV status of their most recent male sex partner. Concurrent sexual relationships remain prevalent among many MSM with just under half (43%) of all MSM reporting being involved in this type of relationship at the time of the survey. Having sex while high or drunk was also reported frequently (43%), and MSM reported a median (average) of 3 male sex partners in the 12 months prior to the survey. *However, Black MSM did not report any differences in sexual risk behaviors or number of recent sex partners that might help to readily explain the significant disparity in levels of HIV infection.*

In general, illicit drug use was reported less frequently among Black MSM than White or Hispanic MSM. Also, unlike White and Hispanic MSM, the vast majority of Black MSM who reported using an illicit drug have used only a single type of drug in the past year, rather than polydrug use. The use of drugs such as crystal methamphetamine, powdered cocaine, and amyl nitrates (poppers) remains high among White and Hispanic MSM, especially compared to Black MSM. These drugs, in particular, have been associated with high-risk sexual behaviors and HIV acquisition in previous studies[10]. However, the relationship of drugs such as ecstasy (MDMA) and marijuana, (the latter being more frequently used by Black MSM before or during sex than White or Hispanic MSM), to high-risk sexual behaviors needs further exploration. The role of alcohol use in conjunction with sexual decision-making among MSM also needs elucidation.

The sexual behaviors of HIV-positive men who are aware of their infection are particularly important in understanding the spread of HIV and perhaps in explaining the observed disparities in prevalence rates. It has been shown that a person who has been diagnosed with HIV will significantly modify their behaviors to protect their sex partners and themselves[11]. In our sample, Black MSM with known infection reported significantly lower rates of sexual risk behaviors compared to the rates among HIV-

negative Black MSM. In contrast, among White and Hispanic MSM with known infection, rate of unprotected anal sex were only slightly lower than their HIV-negative counterparts. Reported drug use before or during sex and concurrent sexual relationships among White and Hispanic MSM with known infection were more commonly reported when compared to HIV-negative MSM within each of their respective racial/ethnic groups.

Overall differences in sexual and drug risk behaviors by race/ethnicity, as described above, however, do little to account for the 2 to 3-fold differences found in HIV prevalence rates of Black MSM as compared to White or Hispanic MSM. Despite comparable rates of unprotected anal intercourse (UAI), having sex with partners of unknown status, numbers of annual sex partners, and illicit drug use, the prevalence of HIV is found to be far greater among Black MSM than White or Hispanic MSM.

So What Might Explain Racial/Ethnic Disparities?

While traditional, individual-level risk factors fail to account for the stark disparities in levels of HIV infection between racial/ethnic groups, broader explanations for this difference must be sought. While specific elements of the following discussion remain largely outside the scope of NHBS data, there are three factors that have been increasingly gaining attention as explanations for these disparities. The following three factors will be explored below: 1) the role of new infections; 2) background community prevalence; and 3) the role of sexual networks.

1) <u>The Role of New Infections</u>

HIV incidence[b] can have a profound influence on overall rates of prevalence in a population. Data, from other studies, have shown that even a small rise in the rate of new infections in a population can have an exponential effect on the total number of overall infections in that population[12]. Chicago NHBS data suggest that many HIV-positive MSM have acquired their infections within the last year (Table 14). At least 32% of all the HIV-positive MSM participants were indicative of a newly-acquired infection. Among HIV+ Black MSM, 46% of the infections were new, compared to 8% of infections among Whites and 29% among Hispanics. In addition, Black MSM also reported being recently diagnosed with HIV more frequently than White or Hispanic MSM. Rates of recent HIV diagnoses are often used as a supporting indicator for assessing newer infections. Among Black MSM who had been diagnosed with HIV prior to the survey, over a quarter of these diagnoses (27%) took place within the past 12 months. By comparison, only 10% of White MSM and 14% of Hispanic MSM had been diagnosed in the past year. In

[b] Incidence is defined as the number of new HIV cases within a specific population during a specific period of time.

fact, the vast majority (75%) of White MSM were diagnosed quite a long time prior to the survey. Of the 20 White MSM who knew of their HIV infection at the time of survey, 15 had been diagnosed in 2001 or earlier. This evidence of comparatively higher rates of newly acquired infections among Black MSM suggests that HIV incidence may be playing a significant role in high HIV prevalence rates among Black MSM.

TABLE 14. HIV-Positive Men Who Were Infected or Diagnosed in the Past 12 Months (National HIV Behavioral Surveillance System, Men Who Have Sex With Men, Chicago August 2008 - December 2008) (n=84)

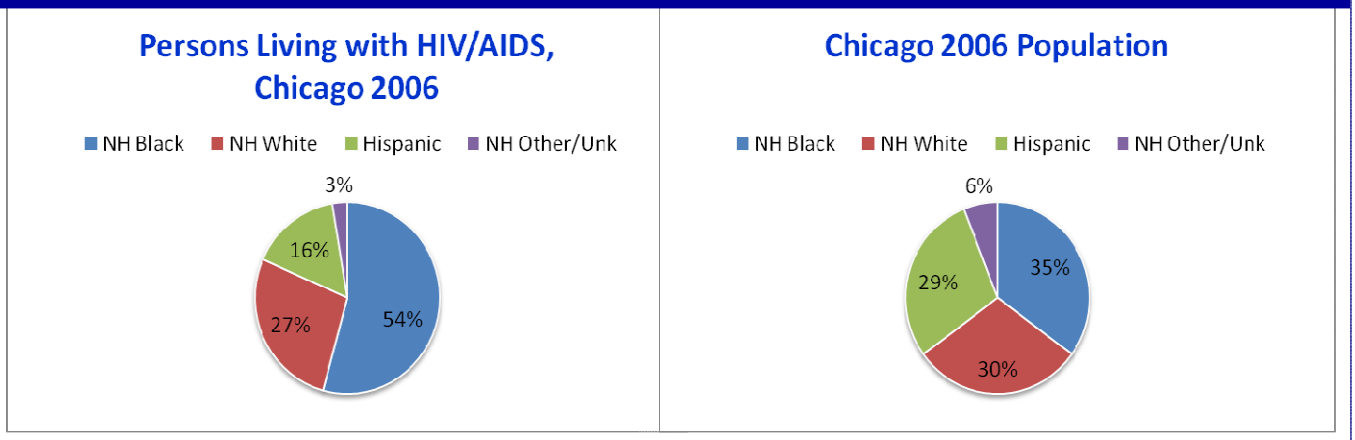
	Total HIV+	Infected in Past 12 Months	% of Total HIV+	Diagnosed in Past 12 Months	% of Total HIV+	Total Recently Diagnosed or Infected	% of Total HIV+
Black	44	20	46	4	9	24	55
White	26	2	8	2	8	4	15
Hispanic	14	4	29	3	21	7	50
TOTAL	84	26	31	9	11	35	42

2) Background Community Prevalence

Examining the background community prevalence of HIV among racial/ethnic groups in all risk categories (MSM, IDU and Heterosexuals) in Chicago may also contribute to our understanding of the disparity in HIV prevalence among MSM found in this study. Background community prevalence represents the total number of persons infected within an *entire* community. The more people that are infected with HIV within a community, the more opportunities there are for uninfected persons in that community to be exposed to the HIV virus, either through unprotected sex (with same-sex or opposite-sex partners) or sharing non-sterile injection equipment. Through 2006, there were 11,596 Blacks living with HIV/AIDS (all risk categories) in Chicago, representing 54% of all HIV/AIDS cases, while Blacks made up only 35% of the overall Chicago population[13, 2]. Expressed as a prevalence rate, 1.37% of Blacks in Chicago are infected with HIV. Whites comprised 27% of people living with HIV/AIDS in Chicago, while making up 30% of the population. Thus, HIV prevalence among Whites in Chicago is 0.69%. In 2006, 16% of people living with HIV/AIDS in Chicago were Hispanic, while Hispanics made up 29% of the

Chicago population, for a prevalence rate of 0.41%[13, 2]. The disparities in levels of HIV infection between MSM race/ethnicity groups as found by the NHBS survey in Chicago (2 to 3 times higher among Black MSM) closely mirror the levels of disparity as seen between racial/ethnic groups in the overall population (also 2 to 3 times higher among Blacks). The high background HIV prevalence among Black Chicagoans (across all risk groups) calls for broad-based, community-wide prevention campaigns in support of ongoing targeted prevention interventions.

FIGURE 2. Persons Living with HIV/AIDS, Chicago 2006 compared to Chicago 2006 Population, by Race/Ethnicity



3) Role of Sexual Networks

It is not only an individual's behavior that defines his risk. The behavior of one's sexual partner, and ultimately, the make-up of his or her social and sexual networks can greatly affect the likelihood of being infected with HIV. Studies published elsewhere have demonstrated the role that sexual networks can play in exacerbating HIV disparities.

There are two basic patterns of sexual mixing (partnering) between MSM[14] (Figure 3):

- Assortative Mixing
- Disassortative Mixing

The first, known as "assortative mixing", occurs when members of one group (e.g. race/ethnicity) are largely limited, or personally prefer sexual partners from within the same group as themselves.

If this group has a high prevalence of HIV, and people in the group are only having sex with each other, infections will be transmitted more quickly within the group, causing a significant rise in the total number of infections (prevalence). Assortative mixing, when combined with overlapping sexual relationships, has been previously described as an extremely efficient way to spread infection and raise prevalence[15].

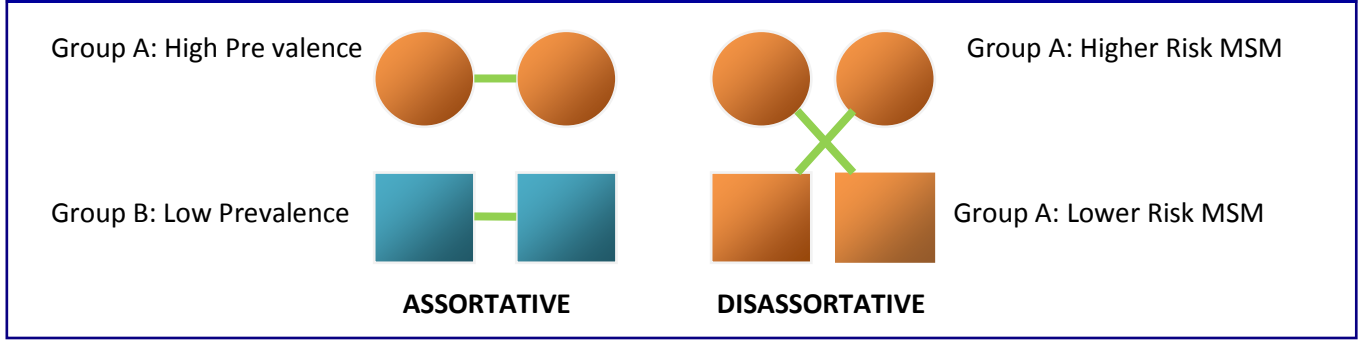
The converse is also true. That is, if the members of a group with very low HIV prevalence are limited to, or prefer sex partners within that group, the prevalence will increase much more slowly or stay at the same level over long periods of time.

The second pattern of mixing (partnering), known as "disassortative mixing", occurs for example, when MSM that infrequently engage in HIV risk behaviors are limited to sexual partners in their same group that frequently engage in HIV risk behaviors.

The higher the probability that one's sexual partner engages in HIV risk behaviors, the higher one's risk is of acquiring HIV. Disassortative mixing can occur when social networks of MSM are constrained by external factors, such as having limited opportunities to meet sexual partners, or, the lack of social spaces that support a diverse array of activities for MSM.

There are numerous social conditions that can promote assortative and/or disassortative mixing between MSM. These can range from individual level factors such as lack of transportation or level of income, to societal issues such as racism or homophobia[16]. Further research is needed to explore how these conditions could impact formation of MSM communities, partner selection practices and/or use of HIV prevention services.

FIGURE 3. Diagrams of Assortative and Disassortative Sexual Mixing Patterns



Recommendations

Understanding the factors related to changing trends in the HIV epidemic among MSM in Chicago is more complex and multifactorial than the mere description of individual risk behaviors and rates of HIV testing. These current data show that Black MSM in Chicago have higher rates of HIV prevalence than White or Hispanic MSM despite comparable levels of sexual and drug use risk behaviors and similar frequency of HIV testing. There could be many reasons, other than the ones described, that could account for the significant racial/ethnic disparities among MSM in Chicago. However, it seems clear that continued emphasis on prevention of individual-level risk behaviors will only have a limited impact on the disproportionate rates of HIV infection among Black MSM in Chicago. Future research and prevention should examine the degree to which social networks, in conjunction with high HIV background prevalence, impact HIV infection rates among Black MSM. As a start, expanding social opportunities for young and Black MSM across Chicago and its suburbs could have a positive impact on decreasing HIV transmission.

Unrecognized HIV infection remains a major issue among population sub-groups at high risk for acquiring HIV infection and a public health concern. CDC estimates that 21% of all HIV-positive persons in the US are unaware of their HIV infection[17]. Our data showed over double that rate among Chicago MSM. It has been shown that persons with unrecognized infection may be primary drivers of new HIV infection rate[18]. This evidence may lead one to think of such a person as potentially disengaged in routine HIV testing and or general health care. However, our survey results show that the majority of MSM who were unaware of their HIV infection at the time of the survey were actually quite engaged with such services.

While rates of HIV testing were slightly lower among those unaware of their infection when compared to HIV-negative MSM, the majority of the former reported that they were, at a minimum, meeting the CDC's guidelines for HIV testing among high risk groups. The CDC recommends at least one HIV test per year for groups at high risk for HIV[19]. In fact, our data strongly suggest that the majority of those unaware of their infections had actually been infected within the 12 months prior to the survey and, likely, in between their regular annual HIV tests.

Modifying the HIV testing guidelines (by increasing the recommended number of HIV tests per year) could greatly reduce the amount of time that MSM spend unaware of their HIV infection, especially in populations where the rate of new infections is seen to be increasing. Corresponding efforts should also be developed to address barriers to testing, particularly those related to fear of knowing one's status, and the perception of being at low risk for acquiring HIV. The fact that a majority of MSM exhibit high levels of engagement with HIV testing and general medical care, underscores the need to improve primary prevention practices, especially among younger MSM and MSM of color.

Limitations

The findings in this report are subject to at least four limitations. First, these findings are limited to men who frequented MSM-identified venues in Chicago during the survey period. Second, given the sensitive nature of some questions, HIV status, certain sex and drug use behaviors might have been underreported during the interview. It is important to note that all survey data were self-reported. Third, data are preliminary and have not been weighted by venue-selection probability. Finally, some sample sizes are quite small, and data should be interpreted cautiously.

Public Health Response

The Chicago Department of Public Health is dedicated to effectively and efficiently responding to the HIV/AIDS epidemic. CDPH recognizes the importance of community partnerships, education, and empowerment in the effort to prevent the spread of HIV. It is critical that we further our collective understanding of the CHAT MSM data and widely disseminate results to various community stakeholders. Toward that end, in partnership with agencies, individuals, and community groups, CDPH will conduct educational and solution-focused forums on this topic. Analyses and reports will be used to continue to inform future community planning processes and city-wide prevention strategies. A partial listing of current CDPH activities designed to stem the HIV epidemic among MSM follows:

HIV Prevention Plan, 2007-2009 - Under the current HIV Prevention Plan, MSM are the highest-prioritized population for services. Additionally, CDPH funds over 20 community based organizations and coalitions to provide services to MSM across the City. CDPH also works closely with non-traditional partners to better understand and serve MSM living with and at risk for HIV. Direct services, social marketing campaigns and key partnerships with community leaders have further enhanced our ability to access and serve the population.

Chicago Black Gay Men's Caucus - Since the group's inception, CDPH has provided vital support and co-leadership for the Chicago Black Gay Men's Caucus. This group was created in 2005 by individuals and organizations committed to eliminating gaps in STD/HIV/AIDS prevention and treatment services for African-American MSM. CDPH will continue to work with the Caucus to expand testing efforts at their quarterly community meetings and via the Caucus Outreach subcommittee, coordinate outreach efforts to reach African-American MSM.

Prevention Pilot Projects - CDPH is engaged in several MSM prevention pilot projects, including MSM couples counseling, MSM cultural competency trainings for clinic staff and partner agencies, and an intervention targeting the "House and Ball" community.

Expanded Testing- As a part of its efforts to increase HIV testing within African-American communities in Chicago, CDPH targets five of the largest LGBT summer events to provide free, on-site HIV tests, syphilis screening and hepatitis vaccination services. Elaborate and efficient "testing villages" attract many MSM who then obtain easy and accessible testing and prevention counseling.

Expanded Condom Distribution – CDPH has increased its free condom distribution from three million to 10-12 million condoms annually. 100 additional community sites for condom distribution have been identified. CDPH is in the planning stages to conduct targeted condom distribution in less well-known venues where MSM might congregate (private parties, roving events etc.), thus reaching those at higher risk for infection.

Increased Community Presence – Finally, CDPH is considering a number of other initiatives to refine and increase prevention efforts for MSM, including the development and launching of a community educational campaign, and creating a CDPH "Outreach Dispatch" to triage and direct outreach requests to appropriate entities.

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