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HIV Risk Behavior and Access to Services: What Predicts HIV Testing among Heterosexually-Active Homeless Men?

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Abstract

Objectives—HIV is a serious epidemic among homeless persons, where rates of infection are estimated to be three times higher than in the general population. HIV testing is an effective tool for reducing HIV transmission and for combating poor HIV/AIDS health outcomes that disproportionately affect homeless persons, however, little is known about the HIV testing behavior of homeless men. This study examined the association between individual (HIV risk) and structural (service access) factors and past year HIV testing.

Methods—Participants were a representative sample of 305 heterosexually active homeless men interviewed from meal programs in the Skid Row region of Los Angeles. Logistic regression examined the association between past year HIV testing and demographic characteristics, HIV risk behavior, and access to other services in the Skid Row area in the past 30 days.

Results—Despite high rates of past year HIV testing, study participants also reported high rates of HIV risk behavior, suggesting there is still significant unmet need for HIV prevention among homeless men. Having recently used medical/dental services in the Skid Row area (OR: 1.91; CI: 1.09, 3.35), and being a military veteran (OR: 2.10; CI: 1.01 – 4.37) were significantly associated with HIV testing service utilization.

Conclusions—HIV testing was not associated with HIV risk behavior, but rather with access to services and veteran status, the latter of which prior research has linked to increased service access. Therefore, we suggest that programs encouraging general medical service access may be important for disseminating HIV testing services to this high-risk, vulnerable population.

Keywords

HIV Testing; Homeless Men; Service Access; Military Service; HIV Risk Behavior

Introduction

HIV/AIDS is a significant health problem among homeless persons, for whom rates of HIV are estimated to be three times higher than in the general population (National Alliance to End Homelessness, 2006). HIV testing is an important tool for combating HIV transmission, because those who have been diagnosed with HIV are less likely to transmit the virus than those who are unaware of their HIV positive status (Marks, Crepaz, Senterfitt, & Janssen, 2005). Despite widespread availability of HIV testing, more than one-fifth of HIV positive persons in the U.S. are unaware that they are infected (Centers for Disease Control and

Prevention, 2010), and homelessness is a risk factor for living with undiagnosed HIV infection (Zetola et al., 2008). Regular HIV testing is also an effective way to combat disparities in HIV/AIDS health outcomes (Centers for Disease Control and Prevention, 2003) among African American men and homeless men; these men are likely to have their HIV diagnosed later in the course of the disease progression (Centers for Disease Control and Prevention, 2011; Nelson et al., 2010), which can lead to a shortened time to AIDS diagnosis and poorer treatment efficacy (Kitahata et al., 2009; Palella et al., 2003). Men accounted for the majority of new HIV infections in 2009 in the U.S. (75.9%), and heterosexual transmission is the second-leading cause of HIV transmission among men, accounting for 13.8% of new infections (Centers for Disease Control and Prevention, 2011).

HIV testing is an important risk reduction technique for high risk populations, such as heterosexually-active homeless men, but the mechanisms which encourage these men to be tested for HIV and the factors that may interfere with HIV testing are not well understood. An examination of HIV testing in a population of homeless men is therefore necessary. By virtue of their being homeless and transient, this population is among the most marginalized in society, and it cannot be assumed that the predictors of testing among non-homeless persons would apply equally well to this population.

Correlates of HIV testing may include individual sexual and drug use behavior that puts men at risk for HIV acquisition and perceived susceptibility to HIV. Previous studies have found that multiple sex partners and ever injecting drugs have been associated with HIV testing (Williams-Roberts, Chang, Losina, Freedberg, & Walensky, 2010), and substance abuse has been associated with increased HIV testing among mentally ill homeless populations (Desai & Rosenheck, 2004). Homeless persons' perceived susceptibility to HIV has also been associated with HIV testing in prior research (Desai & Rosenheck, 2004; Stein & Nyamathi, 2000). Although the perception of vulnerability to HIV infection has been shown to be correlated with risk behavior and may motivate one to seek testing for HIV, this perception is not perfectly correlated with risk behavior. Feelings of susceptibility to HIV may be related to long-held, but medically inaccurate, beliefs about risk, and these feelings of susceptibility, rather than actual risk, may motivate testing (Brown et al., 2011).

Structural factors, particularly access to services, may also play a role in whether an individual is tested for HIV (Bond, Lauby, & Batson, 2005). Prior research has found that having a regular source of medical care or more encounters with medical service providers is associated with increased HIV testing (Desai & Rosenheck, 2004; Herndon et al., 2003; Jenness et al., 2009; Tucker, Wenzel, Elliott, Hambarsoomian, & Golinelli, 2003). However, the multiple vulnerabilities faced by those living on the street may mean that homeless men are more likely to access health services via non-traditional avenues. Regular health care may be provided through contact with shelters or other service providers in the immediate area in which shelters are located. Incarceration and veteran status may also be considered structural factors, because they represent unique opportunities for coming into contact with HIV testing services through different institutional settings. Approximately three-quarters of inmates report having been tested for HIV since their admission to prison (Centers for Disease Control and Prevention, 2009), and incarceration has been associated with increased HIV testing among homeless and other high-risk populations (Desai & Rosenheck, 2004; Desai, Rosenheck, & Desai, 2007; Jenness et al., 2009); contact with the criminal justice system may therefore be an important route through which vulnerable populations, such as homeless persons, are tested for HIV. Being a veteran may also be associated with increased access to medical services among homeless men, and consequently HIV testing utilization, as prior research indicates that chronically homeless adults who are veterans have more encounters with medical services than non-veterans (Mares, Greenberg, & Rosenheck, 2008). This study investigates these key HIV risk behavior and service access variables that

may be associated with HIV testing utilization among heterosexually-active homeless men living in the Skid Row area of Los Angeles.

The Current Study

This study focuses on past year HIV testing, as the CDC recommends annual, opt-out HIV testing for all high risk individuals (Branson et al., 2006), and prior studies have focused on past year HIV testing as a better measure of effective HIV prevention than lifetime testing (Herndon et al., 2003; Jenness et al., 2009; Petroll et al., 2008). Recent testing may also have protective effects against HIV acquisition, as research has shown that the frequency of condom use peaks during the 3 to 5 months following an HIV test (DiFranceisco, Pinkerton, Dyatlov, & Swain, 2005). We know of only two published studies that have examined the correlates of HIV testing among homeless men, one of which focused only on severely mentally ill homeless persons (Desai & Rosenheck, 2004), and one which included only the male partners of female study participants (Stein & Nyamathi, 2000). Because research thus far has been limited in amount, and may not be generalizable to larger populations of homeless men, the present study expands prior research by utilizing a large, probability-based sample of heterosexually active homeless men using meal lines in the Skid Row area. We hypothesize that HIV testing will be related to individual HIV risk behaviors, as well to structural features, specifically recent access to services (which may be represented indirectly through recent incarceration or being a military veteran) that may facilitate increased HIV testing in this population.

Methods

Participants were 305 homeless men randomly sampled and interviewed in 13 meal programs in the Skid Row area of Los Angeles for a study of HIV risk among heterosexually active homeless men (Wenzel, 2009). Around 9% of Los Angeles' homeless population can be found within approximately 50 blocks (LAHSA, 2009). Men were eligible if they were at least age 18, could complete an interview in English, and had experienced homelessness in the past 12 months (i.e., stayed at least one night in a place like a shelter, abandoned building, voucher hotel, vehicle, or outdoors because they didn't have a home to stay in). As this sample was collected as part of a study of heterosexual risk behavior, all participants reported having had vaginal or anal sex with a female partner in the past 6 months. Of the 338 men who screened eligible for the study, 320 men were interviewed (18 refusals). Of these 320, 4 cases had large amounts of missing data, 7 were partial completes/break-offs, and 4 were later found to be repeaters. The final sample size was 305, for a completion rate of 91% (305/334). For the analysis in this paper, this analysis, 6 additional men were excluded because they reported being diagnosed with HIV more than 1 year ago, and their past year HIV testing would not be representative of HIV testing as a risk-reduction behavior. For the data collection, computer-assisted personal interviews were conducted with the software EgoWeb (<http://egoweb.github.com>), an open source software designed specifically for the collection, analysis, and visualization of personal network data. Men were paid \$30 for participation in the interview, which lasted on average 83 minutes. The research protocol was approved by the institutional review boards of the University of Southern California and the RAND Corporation.

To obtain a representative sample of heterosexually active homeless men from the Skid Row area of LA, we implemented a probability sample of men recruited from meal lines in the area. The list of meal lines was developed using existing directories of services for homeless individuals and performing interviews with services providers. Our final list contained 13 meal lines: 5 breakfasts, 4 lunches and 4 dinners offered by 5 different organizations. Each meal line was extensively investigated to obtain an estimate of the average number of men served daily. This information was used to assign an overall quota of completes to each site,

approximately proportional to the size of the meal line. We then drew a probability sample of homeless men from the 13 distinct meal lines. The interview team randomly selected potential recruits for screening by their position in line using statistician-generated random number tables. Tables were generated such that the site-daily quota could be achieved before the meal line was exhausted. Once the field director selected a potential recruit, an interviewer would wait for him to finish his meal before screening him.

Some men are more likely to be included in the sample because of variability in how frequently men use meal lines. Because of this deviation from a proportionate-to-size stratified random sample, we accounted for the differential frequency of using meal lines by asking respondents how often they had breakfast, lunch and dinner at a meal line in the Skid Row area in the past 30 days, and how much of the past 6 months they had been homeless. This information was used to develop and implement sampling weights to correct for departures from a proportionate-to-size stratified random sample and potential bias due to differential inclusion probabilities (Elliott, Golinelli, Hambarsoomian, Perlman, & Wenzel, 2006).

Measures

HIV testing—Men were asked if they had ever been tested for HIV, and if they had, the date of their last HIV test. A dichotomous measure was created indicating testing in the prior 12 months.

Background characteristics included in all models are age in years, race/ethnicity, education (having at least a high school education or GED) and being currently married. These background characteristics have been utilized in previous studies of homeless populations (Rhoades et al., 2011; Wenzel et al., 2009).

HIV risk behavior was measured for the prior six months, and included the total number of sex partners, having had any male sex partners, and having traded sex for money or goods (Kennedy et al., 2010; Wenzel, 2009). Respondents reported the total number of sex events in the prior six months, and the total number of events where a condom was used; a single measure of unprotected sex was created to indicate any reported sex event where a condom was not used. Men were also asked whether they had ever injected illegal drugs (Kennedy et al., 2010).

HIV susceptibility—HIV susceptibility was assessed using a three-item, 4 point likert scale having an internal consistency of 0.66 (Kennedy et al., 2010). Respondents were asked how much they agreed/disagreed with the following statements: 1. It would be easy for you to get infected (or reinfected) with HIV or AIDS, 2. Your behavior puts you at risk of (being reinfected with) HIV or AIDS, and 3. You worry about getting (re)infected with HIV or AIDS. Higher scores indicate feeling more susceptible to HIV.

Access to services—Men were asked whether they had slept in an emergency or transitional shelter, visited a drop-in center, utilized alcohol or drug counseling, or accessed medical or dental services on Skid Row in the prior 30 days. Men were also asked whether they had ever served in the military (Y/N), and if they had been in prison or jail, or had been on parole in the past 6 months.

Analysis

Weighted logistic regression models were used to predict the odds of being tested for HIV in the past year (analyses conducted in STATA 9.2). We first examined the bivariate association between each predictor and past year HIV testing. Each predictor associated at

$p < .10$ with the outcome in bivariate analyses was retained in the multivariate model (Hosmer & Lemeshow, 1989). Correlations between all independent variables were examined prior to inclusion in the multivariate model, in order to avoid problems associated with multi-collinearity. Individual demographic characteristics (age, race/ethnicity, education, and marital status) were retained in the multivariate model as control variables.

Results

Sample characteristics

As shown in Table 1, 57% of the sample had been tested for HIV in the past year. Most men self-identified as African American (71.6%), followed by white (non-Hispanic, 11.7%), Hispanic (10.4%) and other or multiracial (6.3%). Most respondents (73.8%) had a high school diploma/GED and few were currently married (6.2%). On average, men perceived their HIV susceptibility to be 2.5 on a scale of 4 (higher score = more perceived susceptibility to HIV infection). Most men (62.8%) had unprotected sex in the prior six months, 42.3% participated in any sex trade activity, less than 7% had any male partners, and nearly 20% of men reported ever having used injection drugs. More than 71% of men had slept in an emergency or transitional shelter in the Skid Row area in the prior 30 days, 67% had used a drop-in center, 22.3% had used alcohol and drug counseling, 26.4% had mental health counseling, and 33.9% accessed medical or dental services. Nearly half of the sample (46.1%) had been in jail, prison or on parole in the prior six months, and 18.6% had ever served in the military.

Logistic Regression Results

Bivariate associations indicated that having used medical/dental services in the Skid Row area in the past 30 days and being a military veteran were statistically significant correlates of HIV testing; these two characteristics remained statistically significantly associated with prior year HIV testing in the multivariate model. As shown in Table 2, using medical/dental services was associated with an 91% increase in the odds of past year HIV testing (OR: 1.91; CI: 1.09, 3.35), while being a military veteran was associated with more than twice the odds of testing (OR: 2.10; CI: 1.01 – 4.37).

Discussion

Only structural factors related to service access remained statistically significantly associated with past year HIV testing among the men in this study, with recent access to medical or dental services on Skid Row and past military service associated with a greater likelihood of testing. These results support prior findings that access to medical service is an important predictor of utilizing HIV testing (Desai & Rosenheck, 2004; Herndon et al., 2003; Jenness et al., 2009; Tucker et al., 2003). Being a veteran may be a measure of increased access to medical services, as research has indicated that homeless veterans have more encounters with medical settings than homeless persons who are not veterans (Mares et al., 2008). If homeless veterans in this study received HIV testing through greater access to medical services, however, such access was not duplicative of access reflected in their self-reports of medical/dental care received on Skid Row in the past 30 days, given a modest correlation (0.126) between veteran status and Skid Row medical service use. This suggests that veterans might have received care at VA sites outside of Skid Row that were linked to HIV testing.

That previous service access and status as a U.S. military veteran were notable correlates of past year HIV testing suggests that access to medical care, on Skid Row and perhaps elsewhere, confers utilization of routine testing regardless of external, and sometimes

stigmatizing, status indicators such as same-sex behavior or intravenous drug use. Such a scenario would be reflective of current CDC standards which aim to increase HIV screening by recommending that HIV testing be offered routinely to all patients in health-care settings (Branson et al., 2006).

Nearly 60% of the men in this study were tested for HIV in the past 12 months, compared to the national past year HIV testing rate of just 19% among adults 18-65 (Kaiser Family Foundation, 2009). HIV testing rates in this study are also much higher when compared to a representative sample of men in Los Angeles County who reported past-2-year testing (Los Angeles County Department of Public Health, 2007). County-wide, 30.3% of these men were tested in the past two years, while 75.2% of the men in the current study reported an HIV test in the same time two-year time period. County-wide HIV testing rates were the highest among African-American men, at 56.2% in the past two years (Los Angeles County Health Survey, 2007), but rates were still higher among African-American men in this study, at 77.3% (Wenzel, 2009).

While high rates of HIV testing in this population is a positive finding of this study, the fact that sexual risk behavior was not associated with past year HIV testing among homeless men suggests the potential for gaps in HIV testing services. Men reported high levels of HIV risk behavior in this study: 62% had engaged in unprotected sex and 42% in sex trade in the past six months. However, 43% of those reporting HIV risk behavior had not been tested in the past 12 months. This indicates a sizable number of men at high risk for HIV who are not utilizing HIV testing, potentially because they are not accessing other services that may put them into contact with testing. That individual risk behaviors and susceptibility for HIV were not associated with past year HIV testing among homeless men in this study suggests the potential for high rates of undetected HIV infection in this population and missed opportunities for HIV prevention. The CDC's recommendation for routine testing in medical settings (Branson et al., 2006) reflects the potential disconnect between individual HIV risk behavior and utilization of HIV testing; offering testing to all at risk persons who come into contact with services can reduce the impact of this disconnect between risk and testing access. Because there is still notable risk among heterosexually-active homeless men, universal testing should be a high priority in this vulnerable population. Further, prior research reveals the need for enhanced access to highly-active antiretroviral therapy (HAART) and expanded housing options for HIV-positive homeless men to maintain their health once they are diagnosed (Aidala, Lee, Abramson, Messeri, & Siegler, 2007; Kidder, Wolitski, Campsmith, & Nakamura, 2007; Leaver, Bargh, Dunn, & Hwang, 2007; Palepu, Milloy, Kerr, Zhang, & Wood, 2011).

Limitations

This population was part of a study of heterosexually active homeless men, and while there was representation of men who have sex with men and women (7.26% of the sample), these results may not generalize to exclusively non-heterosexual populations of men. These data are also cross-sectional, so we cannot make inferences about the causal direction of the findings.

Conclusions

This study has identified two key factors associated with the utilization of past year HIV testing services by heterosexual homeless men: past 30 day access to medical/dental services on Skid Row and being a military veteran. Both of these factors may be associated with HIV testing because they represent an overall increase in access to medical services. As such, programs that encourage general medical service access, and increased accessibility of HIV testing in these settings, may be important for effectively disseminating HIV testing services

in this high-risk, vulnerable population. High rates of past year HIV testing are a positive finding of this study, however, men also reported significant HIV risk behavior, suggesting there is still need for HIV prevention, and that HIV prevention programs are not universally accessed by this population. Another example of this unmet need for HIV prevention services is a recent survey which found that 60% of shelters serving homeless women in Los Angeles do not provide HIV prevention services, and that the remainder of the shelters do not offer evidence-based HIV prevention programming (Tucker & Wenzel, 2010). Future research is needed on effective means of disseminating HIV prevention programs to these particularly vulnerable populations.

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References

- Aidala AA, Lee G, Abramson DM, Messeri P, Siegler A. Housing need, housing assistance, and connection to HIV medical care. *AIDS Behav.* 2007; 11(6 Suppl):101–115. Research Support, Non-U.S. Gov't Research Support, U.S. Gov't, P.H.S. 10.1007/s10461-007-9276-x [PubMed: 17768674]
- Bond L, Lauby J, Batson H. HIV testing and the role of individual- and structural-level barriers and facilitators. *AIDS Care.* 2005; 17(2):125–140. [PubMed: 15763709]
- Branson BM, Handsfield HH, Lampe MA, Janssen RS, Taylor AW, Lyss SB, Clark JE. Revised recommendations for HIV testing of adults, adolescents, and pregnant women in health-care settings. *MMWR Recomm Rep.* 2006; 55(RR-14):1–17. quiz CE11-14. rr5514a1 [PubMed: 16988643]
- Brown RA, Kennedy DP, Tucker JS, Wenzel SL, Golinelli D, Wertheimer SR, Ryan GW. Sex and Relationships on the Street: How Homeless Men Judge Partner Risk on Skid Row. *AIDS Behav.* 2011; 10.1007/s10461-011-9965-3
- Centers for Disease Control and Prevention. Late Versus Early Testing of HIV -- 16 Sites, United States, 2000--2003. *MMWR.* 2003; 52(25):581–586. [PubMed: 12836626]
- Centers for Disease Control and Prevention. HIV Testing Implementation Guidance for Correctional Settings. Atlanta, GA: Centers for Disease Control and Prevention; 2009. p. 1-38.
- Centers for Disease Control and Prevention. HIV Surveillance Report, 2008. Vol. 20. CDC; 2010.
- Centers for Disease Control and Prevention. HIV Surveillance Report, 2009. Vol. 21. CDC; 2011.
- Desai MM, Rosenheck RA. HIV testing and receipt of test results among homeless persons with serious mental illness. *Am J Psychiatry.* 2004; 161(12):2287–2294. [PubMed: 15569902]
- Desai MM, Rosenheck RA, Desai RA. Prevalence and correlates of Human Immunodeficiency Virus testing and posttest counseling among outpatients with serious mental illness. *The Journal of Nervous and Mental Disease.* 2007; 195(9):776–780. [PubMed: 17984780]
- DiFranceisco W, Pinkerton S, Dyatlov R, Swain G. Evidence of a brief surge in safer sex practices after HIV testing among a sample of high-risk men and women. *J Acquir Immune Defic Syndr.* 2005; 39(5):606–612. [PubMed: 16044015]
- Elliott MN, Golinelli D, Hambarsoomian K, Perlman J, Wenzel S. Sampling with field burden constraints: An application to sheltered homeless and low income housed women. *Field Methods.* 2006; 18:43–58.
- Herndon B, Asch SM, Kilbourne AM, Wang M, Lee M, Wenzel SL, Gelberg L, et al. Prevalence and predictors of HIV testing among a probability sample of homeless women in Los Angeles County. *Public Health Rep.* 2003; 118(3):261–269. [PubMed: 12766220]
- Hosmer, D.; Lemeshow, S. *Applied Logistic Regression.* New York: Wiley-Interscience; 1989.

- Jenness SM, Murrill CS, Liu KL, Wendel T, Begier E, Hagan H. Missed opportunities for HIV testing among high-risk heterosexuals. *Sex Transm Dis*. 2009; 36(11):704–710. [PubMed: 19652632]
- Kaiser Family Foundation. 2009 Survey of Americans on HIV/AIDS: Summary of Findings on the Domestic Epidemic. Menlo Park, CA: Kaiser Family Foundation; 2009.
- Kennedy DP, Wenzel SL, Tucker JS, Green HD Jr, Golinelli D, Ryan GW, Zhou A, et al. Unprotected sex of homeless women living in Los Angeles county: an investigation of the multiple levels of risk. *AIDS Behav*. 2010; 14(4):960–973.10.1007/s10461-009-9621-3 [PubMed: 19876728]
- Kidder DP, Wolitski RJ, Campsmith ML, Nakamura GV. Health status, health care use, medication use, and medication adherence among homeless and housed people living with HIV/AIDS. *Am J Public Health*. 2007; 97(12):2238–2245. Comparative Study Multicenter Study. 10.2105/AJPH.2006.090209 [PubMed: 17971562]
- Kitahata M, Gange S, Abraham A, Merriman B, Saag M, Justice A, Moore R, et al. Effect of early versus deferred antiretroviral therapy for HIV on survival. *N Engl J Med*. 2009; 360(18):1815–1826. [PubMed: 19339714]
- LAHSA. 2009 Greater Los Angeles Homeless Count Report, City of Los Angeles Skid Row. Los Angeles: Los Angeles Homeless Services Authority; 2009.
- Leaver CA, Bargh G, Dunn JR, Hwang SW. The effects of housing status on health-related outcomes in people living with HIV: a systematic review of the literature. *AIDS Behav*. 2007; 11(6 Suppl): 85–100. Research Support, Non-U.S. Gov't Review. 10.1007/s10461-007-9246-3 [PubMed: 17682940]
- Los Angeles County Department of Public Health, O. o. H. A. a. E. LA Health Trends: HIV Testing Among Los Angeles County Adults. LACDPH; 2007.
- Los Angeles County Health Survey. Los Angeles County Department of Health, Office of Health Assessment and Epidemiology; 2007.
- Mares AS, Greenberg GA, Rosenheck RA. Client-level measures of services integration among chronically homeless adults. *Community Ment Health J*. 2008; 44(5):367–376.10.1007/s10597-008-9138-7 [PubMed: 18449640]
- Marks G, Crepaz N, Senterfitt JW, Janssen RS. Meta-analysis of high-risk sexual behavior in persons aware and unaware they are infected with HIV in the United States: implications for HIV prevention programs. *J Acquir Immune Defic Syndr*. 2005; 39(4):446–453.00126334-200508010-00013 [PubMed: 16010168]
- National Alliance to End Homelessness. Fact Sheet: Homelessness and HIV/AIDS. Washington, DC: National Alliance to End Homelessness; 2006.
- Nelson KM, Thiede H, Hawes SE, Golden MR, Hutcheson R, Carey JW, Jenkins RA, et al. Why the wait? Delayed HIV diagnosis among men who have sex with men. *J Urban Health*. 2010; 87(4): 642–655.10.1007/s11524-010-9434-8 [PubMed: 20186493]
- Palella F, Deloria-Knoll M, Chimel J, Moorman A, Wood K, Greenberg A, Holmberg S. Survival benefits of initiating antiretroviral therapy in HIV-infected persons in different CD4+ cell strata. *Ann Intern Med*. 2003; 138:620–626. [PubMed: 12693883]
- Palepu A, Milloy MJ, Kerr T, Zhang R, Wood E. Homelessness and adherence to antiretroviral therapy among a cohort of HIV-infected injection drug users. *J Urban Health*. 2011; 88(3):545–555. Research Support, N.I.H., Extramural Research Support, Non-U.S. Gov't. 10.1007/s11524-011-9562-9 [PubMed: 21409604]
- Petroll A, diFranceisco W, McAuliffe T, Seal D, Kelly J, Pinkerton S. HIV testing rates, testing locations, and healthcare utilization among urban African-American men. *Journal of Urban Health*. 2008; 86(1):119–131. [PubMed: 19067176]
- Rhoades H, Wenzel SL, Golinelli D, Tucker JS, Kennedy DP, Green HD, Zhou A. The social context of homeless men's substance use. *Drug Alcohol Depend*. 2011
- Stein JA, Nyamathi A. Gender differences in behavioural and psychosocial predictors of HIV testing and return for test results in a high-risk population. *AIDS Care*. 2000; 12(3):343–356. [PubMed: 10928212]
- Tucker JS, Wenzel SL. Telephone survey of agencies providing services to homeless adults in Los Angeles County. 2010

- Tucker JS, Wenzel SL, Elliott MN, Hambarsoomian K, Golinelli D. Patterns and correlates of HIV testing among sheltered and low-income housed women in Los Angeles County. *J Acquir Immune Defic Syndr*. 2003; 34(4):415–422. [PubMed: 14615660]
- Wenzel SL. Heterosexual HIV risk behavior in homeless men National Institute for Child Health and Human Development. 2009
- Wenzel SL, Green HD Jr, Tucker JS, Golinelli D, Kennedy DP, Ryan G, Zhou A. The social context of homeless women's alcohol and drug use. *Drug Alcohol Depend*. 2009; 105(1-2):16–23. [PubMed: 19616904]
- Williams-Roberts H, Chang Y, Losina E, Freedberg KA, Walensky RP. Frequent HIV testing among participants of a routine HIV testing program. *Virulence*. 2010; 1(2):68–71. [PubMed: 21178419]
- Zetola NM, Kaplan B, Dowling T, Jensen T, Louie B, Shahkarami M, Klausner JD, et al. Prevalence and correlates of unknown HIV infection among patients seeking care in a public hospital emergency department. *Public Health Rep*. 2008; 123(Suppl 3):41–50. [PubMed: 19166088]

Table 1

Descriptive statistics (weighted): Past year HIV testing, and individual and structural factors, N= 299.

Variables	%	Mean	S.E.
Tested for HIV in past year	57.0	---	---
Demographic characteristics			
Age	---	45.6	0.7
Race/ethnicity			
African American	71.6	---	---
White	11.7	---	---
Hispanic	10.4	---	---
Other or multiracial	6.3	---	---
Education		---	---
Less than high school	26.2	---	---
High school or equivalent	73.8	---	---
Married	6.2	---	---
HIV Risk			
Sexual Risk Behavior (past 6 months)			
Any unprotected sex	62.8	---	---
Any male partners	6.8	---	---
Any sex trade	42.3	---	---
Total number of sex partners	---	3.7	0.3
Injection drugs (ever)	19.6	---	---
Perceived HIV susceptibility	---	2.5	0.1
Service Access		---	---
Jail/prison/parole past 6 months	46.1	---	---
Military service	18.6	---	---
Service use (past 30 days Skid Row)			
Emergency/transitional shelter	71.6	---	---
Drop-in center	67.0	---	---
Alcohol and drug counseling	22.3	---	---
Mental health counseling	26.4	---	---
Medical/dental services	33.9	---	---

Table 2

Binary logistic regression models predicting HIV testing utilization in past 12 months (weighted), N=299.

Variables	Bivariate Results	Multivariate Model
	Odds Ratio (95% CI)	Odds Ratio (95% CI)
Demographic characteristics		
Age	1.01 (0.99 - 1.04)	1.01 (0.98 - 1.04)
Race/ethnicity (white is omitted)		
African American	1.09 (0.45 - 2.65)	0.84 (0.35 - 2.03)
Hispanic	1.16 (0.36 - 3.72)	0.93 (0.28 - 3.08)
Other or multiracial	2.91 (0.68 - 12.55)	2.57 (0.58 - 11.44)
High school or more (vs. <HS)	0.72 (0.40 - 1.32)	0.63 (0.33 - 1.22)
Married	1.11 (0.30 - 4.08)	1.51 (0.44 - 5.25)
HIV Risk		
Sexual Risk Behavior (past 6 months)		
Any unprotected sex	0.98 (0.57 - 1.67)	---
Any male partners	2.65 (0.88 - 8.05) ^z	1.99 (0.62 - 6.37)
Any sex trade	1.18 (0.69 - 1.99)	---
Total number of sex partners	1.05 (0.99 - 1.11)	---
Injection drugs (ever)	1.78 (0.86 - 3.67)	---
Perceived HIV susceptibility	0.98 (0.76 - 1.28)	---
Service Access		
Jail/prison/parole past 6 months	1.49 (0.88 - 2.53)	---
Military service	2.59 (1.30 - 5.14) ^{**}	2.10 (1.01 - 4.37) [*]
Service use (past 30 days Skid Row)		
Emergency/transitional shelter	0.83 (0.46 - 1.48)	---
Drop-in center	1.28 (0.72 - 2.27)	---
Alcohol and drug counseling	1.28 (0.67 - 2.44)	---
Mental health counseling	1.06 (0.59 - 1.90)	---
Medical/dental services	1.96 (1.13 - 3.39) [*]	1.91 (1.09 - 3.35) [*]

^zp>.10,^{*}p>.05,^{**}p>.01