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Homelessness and HIV-Associated Risk Behavior Among African American Men Who Inject Drugs and Reside in the Urban South of the United States

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Abstract This study determined whether homeless injection drug users (IDUs) were more likely than stably housed IDUs to engage in HIV-associated risk behaviors. Respondent driven sampling was used to recruit 343 African American male IDUs. About 69% of men had been homeless in the past year and 13% were HIV positive. Controlling for age and income, homeless men as compared to stably housed men were 2.6 times more likely to report sharing needles, 2.4 times more likely to have 4 or more sex partners and 2.4 times more likely to have had sex with other men. Homeless men were also twice as likely to report having unprotected sex with a casual partner and about two-thirds less likely to report *never* using sterile needles. Self-reported HIV status was an effect modifier of these associations such that the observed relationships applied mostly only to men who were *not* knowingly HIV positive.

Keywords Injection drug use · Men · HIV · AIDS · African American · Sexual risk

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Introduction

In the United States, injection drug use continues to account for a large percentage of HIV/AIDS cases. At the end of 2004, 26% of cumulative AIDS cases were attributed solely to injection drug use (CDC, 2005) while this estimate climbs to over one-third (36%) of cases since the beginning of the epidemic when considering indirect transmission (e.g., sexual contact with an injection drug user). Indeed, recent studies have shown the potential of injection drug users (IDUs) to not only acquire HIV through injection drug use, but also to transmit HIV to the larger population through their engagement in sexual risk behavior (Houlding & Davidson, 2003; Kuyper et al., 2004; Rosengard, Anderson, & Stein, 2004; van Empelen, Schaalma, Kok, & Jansen, 2001).

Many previous prevention efforts directed toward IDUs have typically focused on drug use behaviors (van Empelen et al., 2003) and have met some degree of success (e.g., Davis, Burris, Kraut-Becher, Lynch, & Metzger, 2005; Margolin, Avants, Warburton, Hawkins, & Shi, 2003; McCusker et al., 1992; Paone, Caloir, Shi, & Des Jarlais, 1995; Stephens, Feucht, & Roman, 1991). To a lesser degree, there have been efforts directed at changing sexual risk behaviors; however, effectiveness has been very limited (van Empelen et al., 2003). To inform future

intervention programs and enhance their effectiveness, additional behavioral research relative to HIV acquisition and transmission risk among IDUs is warranted. A line of inquiry that may be beneficial would be to focus on contextual factors that could both directly and indirectly affect risk behaviors (Aidala, Cross, Stall, Harre, & Sumartojo, 2005). For example, homelessness is an important contextual factor to consider as previous evidence suggests that HIV seroprevalence is elevated among homeless youth, homeless mentally ill and homeless IDUs (Aidala et al., 2005; Robertson et al. 2004).

In general, homeless people experience poorer levels of physical and mental health than the general population (Wright & Tompkins, 2006). Data indicate significant portions of the homeless population suffer mental health problems (Burt et al., 1999; Goldfinger, Susser, Roche, & Berkman, 2003), depression (Somlai, Kelly, Wagstaff, & Whitson, 1998), violence and victimization (Bassuk et al., 1996; Surratt & Inciardi, 2004), lack of social support (Meadows-Oliver, 2005; Schutt, Meschede, & Rierdan, 1994) and other influences, all of which may contribute to the homeless engaging in more high risk behaviors; thus placing them at heightened risk for HIV infection.

Furthermore, HIV-associated risk behaviors have been found in various subgroups of homeless people in the US and internationally. Wechsberg et al. (2003) found that homeless African American women reported increased drug use and sex trade, more risky sexual practices and higher levels of violence than their housed counterparts. Homeless sex-workers reported more unprotected sex acts and more sex acts under the influence of drugs than non-homeless sex-workers (Surratt & Inciardi, 2004). Homeless mothers reported more multiple partners within the last 6 months (Weinreb, Goldberg, Lessard, Perloff, & Bassuk, 1999), and increased levels of physical and sexual assault as compared to their housed counterparts (Weinreb, Goldberg, & Perloff, 1998).

Among IDUs especially, research from several longitudinal studies have found associations between unstable housing (i.e., homelessness) and HIV-associated risk behaviors (Andia et al., 2001; Corneil et al., 2006; Metraux, Metzger, & Culhane, 2004). Among HIV positive persons, homelessness has been related to recent drug use, needle use and sex exchange (Aidala et al., 2005).

Another potential contextual factor to consider is race. For example, AIDS has become a leading cause of death for African Americans. In 2002, HIV/AIDS was the second leading cause of death for all African Americans aged 35–44 (Anderson & Smith, 2005). In 2004, the national AIDS rate was approximately 17.1 while for Black men it was estimated at 99.4 (CDC, 2006). In addition, men and African Americans tend to be overrepresented among IDUs (SAMHSA, 2006) and the homeless (NCH, 2006).

Together, these combined contextual influences (i.e., homeless, injection drug use, and African American ethnicity) may represent a ''triple threat'' to the health of African Americans and clearly warrants further and intensive investigation that can inform effective prevention efforts. Accordingly, we examined HIV-related behaviors among African American male IDUs residing in an urban center of the deep South to test the hypothesis that homeless IDUs would be more likely than stably housed IDUs to engage in HIV-associated risk behaviors. We also determined whether self-reported HIV status was an effect modifier of any observed associations between homelessness and risk behavior.

Methods

Sampling

Respondent driven sampling (RDS) was employed to maximize the potential of recruiting large numbers of active IDUs. RDS has been used in multiple studies of IDUs and other ''hidden'' populations (Falck, Siegal, Wang, Carlson, & Draus, 2005; Heckathorn, 1997; Heckathorn, Semaan, Broadhead, & Hughes, 2002;) and theoretically produces a more representative sample of the hidden population under study than either snowball or targeted sampling (Heckathorn et al., 2002). Like chain-referral sampling, RDS relies on the identification and recruitment of ''seeds'' who are members of the target population. The seeds are usually identified in formative research activities. They are not selected at random, but rather are identified and ultimately selected based on their ''popularity'' among the targeted population or some other attribute that would benefit the recruitment process.

First, the research team interviewed several IDUs identified by street outreach. Subsequently, key community stakeholders who work in the HIV or substance abuse field were also interviewed. During this formative research the research team identified nine active IDUs as potential seeds. These seeds were the first people recruited in the study and they were asked to distribute five coupons to other IDUs. Of these nine initial seeds, seven engaged in active recruitment.

As RDS is a chain-referral process, eligible participants who presented with coupons were in turn given referral coupons and so on. Essentially, RDS is deemed a Markov process, which signifies that the sample compositions theoretically will reach equilibrium, or stabilize, as the recruitment process unfolds, regardless of the characteristics of the initial sample (Heckathorn, 1997). One source of bias to consider, however, when using RDS is the unequal network sizes (e.g., IDUs may personally know as little as five in their personal network or as many as 200). Thus, we

limited the number of referrals from any participant to five for the initial seeds and to three for all other participants. Seeds and subsequent participants were told that they should give their coupons only to an IDU. For each eligible referral, participants were compensated $10.

Participants and Setting

The setting for this study was the metropolitan statistical area of Atlanta, Georgia, which was one city of the 25 US cities that participated in the National HIV Behavioral Surveillance sponsored by the Centers for Disease Control and Prevention. Participants were male and female IDUs; however, in the present study we are examining associations between homelessness and HIV-associated risk behaviors for a subsample of male IDUs.

Data collection was from July 2005 through December 2005. To be eligible, participants had to be a resident of the metro Atlanta area, be at least 18 years of age, and self-report injecting drugs at least once in the past 12 months. In addition to the 9 seeds, 451 men presented a coupon at one of two storefront locations. About 48 men were deemed ineligible and unfortunately, due to the malfunction of two handheld computers used by the research staff, 36 cases of valid data were compromised leaving a final sample size of 376 male IDUs. Moreover, this analysis was limited to African American men. There were 33 men who identified as members of a race other than African American; thus, these men were excluded from the analyses. The final analytic sample comprised 343 African American men.

One storefront location was within one mile of downtown in Northwest Atlanta and was characterized by high crime, poverty, dilapidated housing, and prevalent drug use. The other location was in Northeast Atlanta and was also located in a neighborhood characterized by crime, poverty, poor housing, and drug use. Both storefront locations were a part of AIDS service organizations.

Procedures

Men who came into the storefront were first screened for study eligibility using a two-tiered process. First, men had to show a valid coupon to a research staff member who was responsible for validating the coupon. If the coupon was valid, then the staff asked potential participants their age and if they had injected drugs in the past 12 months. If they met these conditions, then the potential participant was escorted to an interviewer in a private room. The interviewer then conducted a final determination of eligibility by asking the potential participant a series of questions and inputting the responses into a handheld computer. A computer-generated algorithm provided the interviewer with either a ''yes'' or a ''no'' regarding the participants'

eligibility. One especially important aspect of eligibility was determining whether or not self-report of injection drug use was valid. To verify that injection had occurred, research staff used either a visual or verbal criterion. For example, interviewers asked participants to show them track marks (or an abscess). The track marks were compared to clinical photos to make a determination. Some participants indicated that they injected in their groin area or they indicated that they did not have any visible track marks. In these instances, the verbal protocol was followed and entailed asking a series of questions that assessed whether participants could describe in detail the entire process of injecting drugs. The verbal protocol was such that if you had never injected drugs, then it was extremely difficult to meet this criterion.

Participation was anonymous. Eligible men provided informed consent verbally. The interview was administered in a private room, using a face-to-face format. Men's oral responses were recorded by trained interviewers on a handheld computer using handheld assisted personal interview (HAPI) software (Nova Research, Bethesda, MD). All data were encrypted and inaccessible until they were uploaded into the warehouse manager program. The interview process lasted, on average, about 45–60 min. The process was streamlined by the use of large visual aid containing preprinted response alternatives for questions having more than five response options. Even when the visual aid was used, the interviewer still read each of the preprinted responses aloud.

Upon terminating the interview, men were given the option of serving as a recruiter of other IDUs to enroll in the study. Men agreeing to this option were provided verbal instructions in how to recruit. Men were told to give coupons only to people who they knew and who met the eligibility criteria. Men were given three coupons that contained coded identifiers, which linked them to the recipients of these coupons. Coupon numbers given out, coupon numbers redeemed and participant I.D. were recorded in specialized software (Coupon Manager) so that recruitment analyses could be performed.

Measures

Network Size

To determine IDUs network size, we asked them to report about how many IDUs they know and of the IDUs who they know, about how many have they seen in the past 6 months.

HIV-associated Risk Behaviors

Eight HIV risk behaviors were assessed using a recall period of the past 12 months: using needles to inject that had pre-

viously been used by someone else, never using sterile needles, sharing cookers or cotton, having sex with other men, having unprotected sex with casual sex partners, and accumulating four or more sex partners in 12 months. Although not a risk factor per se, we also assessed whether men had traded money or drugs for sex in the past 12 months.

Homelessness

To determine housing status, we asked participants whether they had been homeless anytime in the previous 12 months (yes or no). Responses were coded as ''stably housed'' if they responded ''no'' and ''homeless'' if they responded ''yes'' to being homeless anytime in the past 12 months.

HIV Status

HIV status was self-reported. We asked participants what the results were of their last HIV test. Responses were coded as ''positive'' for positive results or ''not knowingly positive'' for negative and other responses.

Data Analysis

Using the custom software program developed by Heckathorn and Volz (2006), RDS Analysis Tool (RDSAT), Version 5.6.0., network analyses were performed on the sample to determine population proportion estimates (PPEs). A network analysis entails using the raw sample proportion of each group (e.g., gender, race), a recruitment matrix that shows cross-tabulations of recruiters and recruitees by group and network sizes to generate weights that adjust the sample.

To examine the study's research questions, first bivariate associations between homelessness and the outcome measures were assessed by the use of prevalence ratios, their 95% confidence intervals, and their respective P-values. Significance was defined by an alpha level of .05 or less. To control for the influence of age and income, adjusted odds ratios, their 95% confidence intervals, and P-values were calculated using logistic regression. Finally, to determine whether HIV status was an effect modifier of the relation between housing status and HIV-associated behaviors, we conducted several stratified logistic regressions.

Results

Characteristics of the Sample

As this study used a stratified subsample, we attempted to perform network analyses on the stratified subsample (race × gender × housing status) and the stratified subsample (race × gender × HIV status), but RDAST was unable to generate stable estimates due to the fact that some of the stratified groups (e.g., Black men who were HIV positive) recruited *only* within their group; because we were unable to assess the bias in the sample or generate weighted estimates of the population proportions, we present the sample proportion estimates for housing status and for HIV status.

The mean age of the sample was 46.3 years (standard deviation = 8.6). Just over two-thirds of the sample (68.5%) indicated they had been homeless sometime in the past 12 months. About 45 men indicated they were knowingly HIV positive. Thus, self-reported HIV seroprevalence was 13.1%. The median income category was $5,000–10,000 per year. The first and second columns of Table 1 display the proportion of stably housed men versus homeless men engaging in each of 8 risk factors for HIV acquisition/transmission. These columns also show the proportion of stably housed versus homeless men who reported they were HIV positive.

Bivariate Findings

Table 1 also displays the prevalence ratios corresponding to each of the nine outcome measures. As shown, five of these measures achieved significance, each in the hypothesized direction. Two strong associations (i.e., prevalence ratios > 2.0) were observed. Homeless men were more than twice as likely as their stably housed counterparts to report using needles previously used by someone else ($P < .001$). Homeless men were also more than twice as likely to report having sex with men ($P < .05$). Of the four measures that failed to achieve significance, it is worth noting that one approached significance. Among homeless men, 45.1% had recently exchanged sex for money or drugs as compared to 35.1% among stably housed men ($P < .06$).

Adjusted Analyses

Table 2 displays the age and income adjusted odds ratios (AOR) for each of the nine measures. Each of the four measures that failed to achieve bivariate significance remained non-significant in the adjusted analysis. Likewise, each of the five measures that achieved bivariate significance retained this significance after adjusting for these two covariates. The strongest association observed pertained to using needles that had first been used by someone else. Homeless men were about 2.6 times more likely to report this risk behavior than their stably housed counterparts ($P < .01$). Similarly strong associations were found for having accumulated four or more sex partners in the past 12 months (AOR = 2.5, $P < .001$) and having sex with other men (AOR = 2.4, $P < .05$). Homeless men were about twice as likely to report having unprotected sex with

Table 1 Comparison of dichotomously assessed correlates between homeless (n = 235) and stably housed (n = 108) African American male injection drug users.

Risk behavior	(n)	%	PR[a]	95% CI[b]
Used needles previously used by someone else[c]				
Stably housed	(17)	15.7		
Homeless	(79)	33.6	2.14***	1.33–3.42
Never used sterile needles[c]				
Stably housed	(55)	50.9		
Homeless	(147)	62.8	1.23*	1.00–1.52
Shared cooker with someone else[c]				
Stably housed	(62)	57.1		
Homeless	(129)	55.1	.96	.79–1.17
Shared cotton with someone else[c]				
Stably housed	(17)	39.3		
Homeless	(92)	32.7	1.20	.88–1.65
Exchanged money, drugs, etc. for sex[c]				
Stably housed	(37)	34.3		
Homeless	(106)	45.1	1.32	.98–1.77
Had sex with a male partner[c]				
Stably housed	(7)	6.5		
Homeless	(38)	16.5	2.54*	1.17–.5.50
Had unprotected sex with a casual partner[c]				
Stably housed	(27)	25.0		
Homeless	(99)	42.1	1.65**	1.18–2.41
Had oral, anal, or vaginal sex with ≥4 partners[c]				
Stably housed	(35)	32.4		
Homeless	(127)	54.3	1.67***	1.24.–2.25
HIV status	*(n)% Positive*			
Self-reported HIV status				
Stably housed	(16)	14.8		
Homeless	(29)	12.3	.83	.47–.1.47

[a] Prevalence ratio; [b] Confidence interval; [c] During the last 12 months

*P < .05, **P < .01, ***P < .001

a casual partner (P < .01) and about two-thirds more likely to report *never* using sterile needles to inject drugs in the past 12 months (P < .05).

Analysis Stratified by HIV Status

To further investigate the HIV-associated risk behaviors in IDUs who had been homeless, we stratified participants by HIV status (knowingly HIV positive and not knowingly HIV positive) and performed adjusted logistic regressions. The results are presented in Table 3. For the group who were not knowingly HIV positive, with the exceptions of sharing cookers, sharing cotton and exchanging money, drugs for sex, homelessness was a significant risk factor for engaging in multiple HIV-associated risk behaviors. For

Table 2 Age and income-adjusted odds ratios for HIV-associated risk behaviors for men who were homeless relative to men who were stably housed.

Risk	AOR[a]	95% CI[b]
Used needles previously used by someone else[c]	2.61**	1.43–4.75
Never used sterile needles[c]	1.66*	1.03–2.66
Shared cooker with someone else[c]	.96	.60–1.54
Shared cotton with someone else[c]	1.31	.80–2.16
Exchanged money, drugs, etc. for sex[c]	1.47	.90–2.38
Had sex with a male partner[c]	2.38*	1.01–5.60
Had unprotected sex with a casual partner[c]	1.96**	1.17–3.30
Had oral, anal, or vaginal sex with ≥4 partners[c]	2.49***	1.49–4.00
Self-reported HIV-positive status	.69	.35–1.36

[a] Adjusted odds ratio; [b] Confidence interval; [c] During the last 12 months

*P < .05, **P < .01, ***P < .001

the group who knew they were HIV positive, homelessness was not a significant risk factor for engaging in any of the HIV-associated risk behaviors.

Discussion

This study is unique because it focused upon a hidden and marginalized population of African American men at great risk of HIV infection. These men experience the discrimination of being African American plus the stigma of being injection drug users. And, for more than two-thirds of the men, which is a rate much higher than that found in previous research (e.g., Andia et al., 2001; Metraux et al., 2004; Song, Safaeian, Strathdee, Vlahov, & Celentano, 2000), homelessness is a reality that appears to exacerbate their risk of HIV acquisition. In essence, this population may experience an unrivaled level of marginalization from society that may culminate in HIV infection.

As hypothesized, homelessness was associated with both risky injection drug behaviors as well as certain risky sexual behaviors. Our findings are not inconsistent with previous research (Andia et al., 2001; Metraux et al., 2004; Song et al., 2000) and may be explained by the context in which homeless IDUs must live. Limited access to resources, health care, and social isolation contribute to a likelihood of engaging in risky behaviors (Metraux et al., 2004); however, an unanswered question is why does this context lead to more risky behavior? One possibility is that to garner some level of social support and decrease their isolation, many homeless IDUs congregate together. In fact, one of the storefronts used in this study was a house that was located in a residential neighborhood. We frequently observed many IDUs congregating with one an-

Table 3 Adjusted odds ratios for HIV-associated risk behaviors for men who were homeless relative to men who were stably housed, categorized by housing status

Risk	AOR[a]	95% CI[b]
Used needles previously used by someone else[c]		
HIV-positive	3.14	.72–13.74
HIV-negative	2.56*	1.33–4.94
Never used sterile needles[c]		
HIV-positive	1.02	.28–3.70
HIV-negative	1.82*	1.90–3.04
Shared cooker with someone else[c]		
HIV-positive	1.57	.43–5.79
HIV-negative	.91	.54–1.51
Shared cotton with someone else[c]		
HIV-positive	2.06	.56–7.63
HIV-negative	.92	.81–1.04
Exchanged money, drugs, etc. for sex[c]		
HIV-positive	.35	.07–1.66
HIV-negative	1.67	.99–2.81
Had sex with a male partner[c]		
HIV-positive	1.84	.43–7.31
HIV-negative	4.86	1.11–21.34
Had unprotected sex with a casual partner[c]		
HIV-positive	.33	.07–1.62
HIV-negative	2.40*	1.36–4.20
Had oral, anal, or vaginal sex with ≥4 partners[c]		
HIV-positive	.75	.14–3.92
HIV-negative	2.66**	1.58–4.50

[a] Adjusted odds ratio; [b] Confidence interval; [c] During the last 12 months

*$P < .05$; **$P < .01$

other in what may have been standing social support networks. Indeed, the sampling method employed in this study (i.e., RDS) in essence defines the closed and relatively small network of IDUs, which can be viewed as a ''brotherhood'' where being men, African American and an IDU are the ties that bind. Homelessness may further accentuate these already close-knit ties. Furthermore, as is typical of most groups or social networks, acceptance depends upon adhering to the group's norms of behavior. For African American male and homeless IDUs, norms may support and even encourage risk behaviors such as sharing of needles, having sex with each other or within the network and having unprotected sex. Adherence to risky group norms has been documented in previous research with IDUs. For example, Seal, Margolis, Sosman, Kacanek, and Binson (2003) found in their interviews with service providers to IDUs support for the assertion that engaging in risky drug use behaviors underlie group acceptance:

The desire for acceptance by peer groups and the desire for community identification were also seen as a motivation for sharing needles: 'What they're [IDUs] searching for is a sense of family. When people pass paraphernalia around in a circle, this becomes your family.' Said another provider, 'They hang with a group and use the same syringe because they're all buddies... They think about their friends: you would never screw me over; I would never screw you over. What do you mean you want to use your own rig? You don't trust me? We're buds' (Seal et al., 2003, p. 136).

We also found that nearly one of every six men in our study reported they were knowingly HIV positive suggesting unprecedented rates of seroprevalence among this sample. Given that this method of assessment (i.e., self-report) may significantly underestimate true seroprevalence, it is quite clear that the population of African American, male, IDUs residing in the deep South experiences seroprevalence rates much higher than the rest of the United States (CDC, 2006). Interestingly, contrary to our expectations, homelessness did not differentiate between men who knowingly were HIV positive and men who did not know their HIV status or were HIV negative. Indeed, the number of men who were knowingly infected was equally high for both stably housed men (14.8%) and homeless men (12.8%). This finding is not consistent with previous research that has shown elevated prevalence of HIV/AIDS among homeless populations (Allen et al., 1994; Culhane, Gollub, Kuhn, & Shpaner, 2001; Empfield et al., 1993; Magura, Nwakeze, Rosenblum, & Joseph, 2000; Shlay et al., 1996; Zolopa et al., 1994) and other research that has shown among samples of IDUs, homelessness was a risk factor for HIV infection (Patrick et al., 1997; Smereck & Hockman, 1998). Our finding may be due to the cross-sectional design which precludes examining whether homelessness is a risk factor for HIV infection or vice versa.

Another important finding was that men's self-reported HIV status was an effect modifier of the observed *behavioral* associations such that significant associations remained for men whose status was either unknown or negative whereas men who reported they knowingly were HIV positive, there were no associations between homelessness and HIV-related risk behaviors. This effect is important because it suggests that among this population, knowing you are HIV positive may act as a buffer between homelessness and engaging in HIV-risk behaviors. There are several plausible explanations for this finding. For example, among this population, given a status of HIV positive, others in the group may ostracize HIV positive IDUs from the tight-knit social network. Without ties to the group, there may be a lack of opportunity to engage in

certain high-risk behaviors, which are normative. Unfortunately, we did not ask our sample whether or not they had disclosed their HIV status to other members of their network. Thus, it is unclear if those who were knowingly HIV positive were ostracized from the group, or whether they volitionally no longer partook in normative behaviors that would put other group members at risk for HIV infection. If the latter explanation is likely, then it could be that once they knew their HIV positive status, some of the men began to exercise special precautions regarding engaging in HIV risk behaviors with other group members thereby placing their level of risk on the same plane as their stably housed counterparts. It may be that receiving a positive HIV diagnosis may be a turning point that serves as the impetus for stopping the sharing of needles, not using sterile needles and engaging in high-risk sex. Future research needs to explore this moderating effect to uncover the mechanism through which HIV status moderates HIV-risk related behaviors.

The observed effect modification of HIV status also strongly suggests that associations between homelessness and HIV-risk pertain to risk of *acquisition* rather than HIV transmission. The implication here is that homelessness may therefore be a critical risk factor for the acquisition (as opposed to transmission) of HIV among African American male IDUs residing in the urban south.

Findings are limited by the validity of men's self reported HIV status and sexual behavior; however, given the retrospective nature of the study, using self-reported HIV status as contrasted to a biological assay constituted a methodological strength. Indeed, to the extent that men did not conceal being HIV positive, this self-reported measure indicated that men stating a positive status were well aware of this reality and the remarkably consistent pattern of moderating effects supports the validity of their self-reported status. Of course, the larger problem may be that many men believing themselves to be negative were actually positive but had not been tested after acquiring the virus. Again, however, from a psychological standpoint these men perceived themselves to be HIV negative. Another limitation is the cross-sectional design. Although we used the same time referent (previous 12 months) for all behavioral questions, and we assessed homelessness as being homeless anytime in the previous 12 months, we failed to determine for how long they had been homeless. Because of the cross-sectional design, we cannot determine the temporal order of becoming homeless and the engagement in high-risk behaviors. The findings from this study cannot be generalized to the population of African American male IDUs as we were unable to weight our sample accordingly given the inability to perform stable estimates of the biases present in the sample.

Observed associations between homelessness and HIV-risk pertained to men who were HIV negative or did not know for certain their HIV status. Thus, homelessness may therefore be a critical risk factor for the acquisition of HIV among African American male IDUs residing in the urban south.

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