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## Risk behavior and access to HIV/AIDS prevention services in a community sample of homeless persons entering permanent supportive housing

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### ABSTRACT

Homeless persons suffer disproportionately high rates of HIV infection, and moving into permanent supportive housing (PSH) can provide a stable base from which to access needed prevention services. However, little is known about HIV risk or prevention behavior during this critical time of transition. The current study investigated STI and HIV risk and prevention behavior and recent use of prevention and treatment services (i.e., education, testing, medication) among homeless persons preparing to move into PSH. Data come from interviews with 421 homeless adults before they moved into PSH. Thirty-seven percent of the respondents were sexually active; of those, 75.7% reported unprotected sex. Nearly two-thirds (64%) reported past year HIV testing and 40% reported testing for another STI. Fewer than one-third (31%) of respondents reported receiving posttest counseling at their last HIV test. HIV seropositivity was self-reported by 10%. Among those persons who were HIV-positive, 57.1% reported less than 100% antiretroviral (ARV) adherence. Among HIV-negative respondents, less than 1% had been prescribed preexposure prophylaxis (PrEP). Less than half (46.4%) of the sample reported any HIV prevention education in the past year. This population of homeless adults about to move into PSH report high rates of HIV risk behavior, but low rates of HIV prevention education and very little PrEP utilization. Further, low rates of ARV adherence among HIV-positive respondents indicate significant risk for HIV transmission and acquisition. Entering PSH is a period of transition for homeless persons when integrated care is critically important to ensure positive health outcomes, but these data suggest that PrEP and other HIV prevention services are poorly accessed among this population. As such, multipronged services that integrate PrEP and other HIV prevention services are needed to prevent transmission and acquisition of HIV in this high-risk, vulnerable population and ensure the health and wellbeing of PSH residents.

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### KEYWORDS

HIV prevention; homelessness; permanent supportive housing; sexual risk behavior; medication adherence

### Introduction

Homeless persons suffer disproportionately high rates of HIV, ranging from 2% to 10.5% across several studies in US cities (Caton et al., 2013; Robertson et al., 2004). Permanent supportive housing (PSH) can provide a stable base from which formerly homeless residents can access needed resources and services (Substance and Mental Health Services Administration [SAMHSA], 2010) and offers protection from potentially harmful street-based influences, such as drug-using networks (Elifson, Sterk, & Theall, 2007), sexual assault (Kushel, Evans, Perry, Robertson, & Moss, 2003), and exchange sex (Jenness et al., 2011). Services focused on prevention and treatment of HIV/AIDS, however, may not be routinely provided through PSH facilities that are not specifically designed for persons living with HIV/AIDS (Henwood, Harris, Wenzel, & Rhoades, n.d.; Post, n.d.). This is of particular concern, for example, in light of the effectiveness of preexposure prophylaxis (PrEP) medication in

preventing HIV transmission and its inaccessibility to impoverished populations that could most benefit from it (Eaton, Driffin, Bauermeister, Smith, & Conway-Washington, 2015).

Further, despite an opportunity for enhanced stability and safety for residents, HIV risk behavior does not necessarily decrease after entry into housing among either seronegative (Henwood et al., 2015) or HIV seropositive residents (Aidala, Cross, Stall, Harre, & Sumar-tojo, 2005; Wolitski et al., 2010). Being homeless is a barrier to sexual intimacy due to limited privacy and shelter policies separating men and women (Brown, Kennedy, Tucker, Golinelli, & Wenzel, 2013). Having one's own place may facilitate sexual intimacy, but condom use to prevent sexually transmitted infections (STIs) may decrease once one receives housing (Brown et al., 2012; Brown et al., 2013; Henwood et al., 2013; Henwood et al., 2015). These findings point to the importance of understanding need for HIV prevention among homeless persons entering PSH so that providers

can ensure that such services are available to residents during this critical time of transition. The current study investigated STI and HIV risk and prevention behavior and recent use of prevention and treatment services (i.e., education, testing, medication) among homeless persons preparing to move into PSH.

## Methods

Interviews were conducted with 421 homeless participants either prior to or within 5 days of moving into PSH in Los Angeles, CA. Respondents were moving into PSH administered or coordinated by 26 collaborating housing and social services agencies from August 2014 to January 2016. Clients were referred to the study by agency staff or approached by study staff during leasing events. People were eligible for participation if they were at least 39 years old, currently homeless, spoke English or Spanish, moving into PSH without minor children, and moving within 20 miles of downtown Los Angeles or in the Long Beach, CA area. Structured interviews were conducted by trained study interviewers and assessed HIV testing, HIV prevention education experiences, HIV risk behavior, HIV status, and PrEP/ARV (antiretroviral) prescription and adherence. Respondents received \$20 for completing the interview. Study protocols were approved by the authors' University Institutional Review Board.

## Measures

Demographic questions assessed age, gender, race, ethnicity, and income. Participants listed all/most frequently stayed places during the previous 3 months and reported lifetime total time stayed in literal homelessness locations (temporary or emergency shelters, outside, abandoned building, garage or shed not meant for living in, indoor public place, vehicle, public transportation; NAEH, 2012).

Questions on last HIV test date, HIV seropositivity, and sexual activity were adapted from previous research with homeless adults (Brown et al., 2013; Wenzel, 2005). Participants reported number of vaginal and anal sex partners during the previous 3 months. Unprotected sex was measured by asking total number of sex acts and total number where condoms were used. Exchange sex was defined as "sex for money, food, drugs, a place to stay, or anything else".

Posttest counseling at last HIV test was assessed with a question informed by the Society for Adolescent Medicine's HIV Counseling and Testing Questionnaire (1993). Participants were asked if they had ever been tested for syphilis, gonorrhea, hepatitis B, hepatitis C,

human papilloma virus (HPV), or chlamydia, the date and result of the last test, and if they had received prescribed treatment medication after any positive diagnosis.

HIV seropositive respondents indicated if they were receiving HIV care (Module two, 1993) and/or taking HIV medication. Among those taking ARVs, we assessed level of adherence (Giordano, Guzman, Clark, Charlebois & Bangsberg, 2004; Simoni et al., 2006). Those with less than 100% adherence indicated reasons for non-adherence (Mitchell & Selmes, 2007; NSHAPC, 1999). HIV-negative respondents were asked whether they had ever been prescribed PrEP, and if they had, about their adherence. Other measures included injection drug use (NIDA, n.d.), and whether a health care provider had ever discussed HIV prevention with the respondent or if the respondent had ever taken a training or class or attended a presentation about HIV prevention.

## Analysis

All analyses are descriptive and were conducted in Stata Version 12 (StataCorp (2011), College Station, TX).

## Results

As shown in Table 1, mean participant age was 54 (SD = 7.5), 71.5% were male, 56.0% identified as Black/African American, and past-month income averaged \$596. Three quarters reported past 3-month literal homelessness, with an average lifetime duration of 6 years (SD = 6.9). Most common place of stay prior to moving into PSH was temporary/emergency shelters (41.8%).

Thirty-seven percent of participants were sexually active during the previous 3 months. Of those, 75.7% reported any unprotected sex, 30.1% multiple partners, and 12.5% exchange sex. On average, 68% of sex acts were unprotected. For the remaining findings, if relevant, we separately describe sexually active vs. other participants. Fewer than 3% of respondents reported injection drug use (4.6% among those sexually active).

Sixty-four percent reported HIV testing and 40.1% other STI testing (syphilis, gonorrhea, hepatitis B and C, HPV, chlamydia) during the previous year. These rates were slightly higher in the sexually active subsample, with 73% reporting HIV testing and 48% testing for another STI. Only 30.6% of those ever tested for HIV reported receiving posttest counseling at their last test.

At last STI test, 9.6% had a positive syphilis result (12.5% among sexually active), 11.8% gonorrhea, 3.1% hepatitis B, 15.6% hepatitis C (12.4% among sexually active), 3.9% HPV (2.9% among sexually active), and

**Table 1.** Demographic and Homelessness Characteristics, HIV Risk Behavior, HIV Testing, STI Testing, HIV Seropositivity, and HIV Prevention, Transitions to Housing Study (N = 421).

Demographics	Full sample %(n)/mean(SD)	Sexually active only (n = 153) %(n)/mean(SD)
Age	54.4 (7.5)	53.5 (7.1)
<i>Gender</i>		
Male	71.5 (301)	68.0 (104)
Female	27.8 (117)	31.4 (48)
Transwoman/transfemale	3 (0.7)	0.7 (1)
<i>Race/ethnicity</i>		
Black	56.0 (235)	58.6 (89)
White	23.8 (100)	17.8 (27)
Latino/hispanic	8.8 (37)	9.9 (15)
Another race/ethnicity	11.6 (49)	14.4 (22)
Average income (past 30 days)	596.1 (473.7)	574.6 (430.9)
<i>Homelessness</i>		
Lifetime duration of literal homelessness (years)	6.0 (6.9)	5.6 (6.1)
Any literal homelessness in past 3 months	76.7 (323)	79.7 (122)
<i>Most Common Place of Stay (past 3 months)</i>		
Shelter	41.8 (176)	38.6 (59)
Transitional living	20.9 (88)	20.3 (31)
Outside	17.1 (72)	20.9 (32)
Vehicle	7.1 (30)	6.5 (10)
Another location	13.1 (55)	13.7 (21)
<b>HIV Risk Behavior</b>		
Sexually active in past 3 months	36.5 (153)	–
<i>Of Sexually Active</i>		
Unprotected vaginal or anal sex	–	75.7 (112)
Multiple partners	–	30.1 (46)
Exchange sex	–	12.5 (19)
Average % of vaginal/anal sex acts unprotected	–	0.68 (0.43)
IDU (past 3 months)	2.6 (11)	4.6 (7)
<b>HIV Testing</b>		
Past year	64.2 (267)	73.0 (111)
Past 3 months	36.1 (150)	45.4 (69)
Posttest counseling at last test (among ever tested)	30.6 (114)	31.9 (45)
<b>STI Testing</b>		
Past year	40.1 (169)	47.7 (73)
Past 3 months	18.3 (77)	19.6 (30)
<i>Positive Last STI Test (among those ever tested)</i>		
Syphilis	9.6 (24)	12.5 (13)
Gonorrhea	11.8 (32)	11.9 (13)
Hepatitis B	3.1 (8)	3.0 (3)
Hepatitis C	15.6 (41)	12.4 (13)
HPV	3.9 (7)	2.9 (2)
Chlamydia	7.5 (17)	10.5 (10)
Received medication for STI at last diagnosis	69.8 (67)	80.0 (32)
<b>HIV Seropositivity</b>		
<i>Self-Reported HIV Seropositivity</i>		
Among full sample	9.3 (39)	9.2 (14)
Among those ever tested	10.4 (39)	9.9 (14)
<i>Among HIV+ Sample</i>		
Currently seeing a doctor for HIV care	94.9 (37)	100.0 (14)
Currently on ARV medications	92.3 (36)	92.9 (13)
<i>Among those on ARVs</i>		
% adherence	84.6 (22.1)	81.5 (24.5)
<100% adherence	57.1 (20)	69.2 (9)
<i>Among those with &lt;100% adherence</i>		
<i>Most common reasons for missing doses</i>		
Forgetting	60.0 (12)	66.7 (6)
Medicine stolen	15.0 (3)	22.2 (2)
Prescription not refilled on time	10.0 (2)	22.2 (2)
Medicine lost	10.0 (2)	22.2 (2)
<b>HIV Prevention</b>		
<i>PrEP Prescriptions and Use (among those HIV seronegative)</i>		
Ever prescribed PrEP	0.5 (2)	1.5 (2)
Currently taking PrEP (of those prescribed)	50.0 (1)	50.0 (1)
PrEP adherence	71.0 (n/a)	71.0 (n/a)
<i>Discussed HIV Prevention with Healthcare Provider or had HIV Prevention Training/Class</i>		
Ever	77.0 (324)	85.0 (130)
Past year	46.4 (195)	55.9 (85)
Past 3 months	27.9 (117)	36.2 (55)
Average length of time since last occurred (years)	3.1 (6.5)	2.7 (6.0)

7.5% chlamydia (10.5% among sexually active). Among these respondents, 69.8% received treatment medication (80.0% among sexually active).

Of those ever tested for HIV, 10.4% ( $n = 39$ ) reported being HIV positive. Among HIV-positive respondents, 94.9% were seeing a provider for HIV care and 92.3% were prescribed ARVs. However, 57.1% reported less than 100% ARV adherence. Among those sexually active, adherence was 69.2%. The most common reason for ARV non-adherence was forgetting (60.0%).

Fewer than 1% ( $n = 2$ ) had been prescribed PrEP medication. Of those two respondents, only one reported currently taking PrEP and reported 71% adherence. Only 46.4% reported a health care provider spoke to them about HIV prevention or that they attended an HIV prevention training/class during the previous year (55.9% among sexually active). Participants reported a gap of 3.1 years ( $SD = 6.5$ ) since their last HIV prevention discussion or training/class.

## Discussion

Despite HIV risk behavior in this cohort of homeless adults on the cusp of moving into PSH, overall exposure to HIV prevention education and utilization of PrEP was limited. Although HIV testing rates were slightly higher among currently sexually active respondents, overall rates were low, and lower than the universal yearly screening recommended by the Centers for Disease Control and Prevention for high-risk persons (Branson et al., 2008). Posttest counseling during last HIV test was also uncommon. These findings point to missed opportunities for prevention of primary and secondary HIV transmission (Skarbinski et al., 2015).

The self-reported rate of HIV seropositivity in this sample, 10%, is higher than that found in other recent studies of homeless persons in urban areas (Caton et al., 2013; Parker & Dykema, 2014; Wenzel et al., 2012) and much higher than the 2014 general population rate of 0.48% in Los Angeles County (LAC DPH, 2016). That most HIV-positive respondents, particularly those who were sexually active, reported less than 100% adherence to ARV medication indicates significant risk of HIV transmission and acquisition.

Some limitations must be acknowledged. These data represent baseline findings from a larger longitudinal study examining HIV risk behavior among PSH residents. Longitudinal changes must be examined to fully understand the context of HIV risk behavior and prevention efforts in PSH. Bias is an inherent risk with self-report data, although homeless adults are accurate in reporting health care utilization (Hwang, Chambers, & Katic, 2016). Additionally, although the study sample

demographically resembles an aging cohort of chronically homeless adults who are disproportionately African American (Culhane, Metraux, Byrne, Stino, & Bainbridge, 2013), it is not necessarily representative of the full population entering PSH during this time.

Entering permanent housing is a critical period of transition for homeless adults; appropriate integrated services may be vitally important to ensure health and wellbeing. The extent to which PrEP and other HIV prevention services are poorly accessed among homeless persons preparing to enter housing, and the limited evidence thus far suggesting that HIV prevention services are not provided as part of integrated health care in PSH (Post, n.d.; Henwood et al., n.d.), indicates need for a multipronged effort to better prevent transmission and acquisition of HIV and other STIs in this vulnerable population. Ensuring that PrEP and other HIV prevention services are integrated and accessible within PSH should improve the health and wellbeing of formerly homeless adults and the public health of the communities in which they live. Our study findings establish a foundation for future research, intervention, and policy development regarding prevention of primary and secondary HIV transmission among homeless persons and within the communities where they reside.

## Disclosure statement

No potential conflict of interest was reported by the authors.

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## References

- Aidala, A., Cross, J. E., Stall, R., Harre, D., & Sumartojo, E. (2005). Housing status and HIV risk behaviors: Implications for prevention and policy. *AIDS and Behavior*, 9(3), 251–265.
- Branson, B. M., Handsfield, H. H., Lampe, M. A., Janssen, R. S., Taylor, A. W., Lyss, S. B., & Clark, J. E. (2008). Revised recommendations for HIV testing of adults, adolescents, and pregnant women in health-care settings. *Journal of the National Medical Association*, 100(1), 131–147.
- Brown, R. A., Kennedy, D. P., Tucker, J. S., Golinelli, D., & Wenzel, S. L. (2013). Monogamy on the street a mixed methods study of homeless men. *Journal of mixed methods research*, 7(4), 328–346.
- Brown, R. A., Kennedy, D. P., Tucker, J. S., Wenzel, S. L., Golinelli, D., Wertheimer, S. R., & Ryan, G. W. (2012). Sex and relationships on the street: How homeless men judge partner risk on skid Row. *AIDS and Behavior*, 16(3), 774–784.

- Caton, C. L., El-Bassel, N., Gelman, A., Barrow, S., Herman, D., Hsu, E., ... Felix, A. (2013). Rates and correlates of HIV and STI infection among homeless women. *AIDS and Behavior*, 17(3), 856–864.
- Culhane, D. P., Metraux, S., Byrne, T., Stino, M., & Bainbridge, J. (2013). The age structure of contemporary homelessness: Evidence and implications for public policy. *Analyses of social issues and public policy*, 13(1), 228–244.
- Eaton, L. A., Driffin, D. D., Bauermeister, J., Smith, H., & Conway-Washington, C. (2015). Minimal awareness and stalled uptake of pre-exposure prophylaxis (PrEP) among at risk, HIV-negative, black men who have sex with men. *AIDS patient care and STDs*, 29(8), 423–429.
- Elifson, K. W., Sterk, C. E., & Theall, K. P. (2007). Safe living: The impact of unstable housing conditions on HIV risk reduction among female drug users. *AIDS and Behavior*, 11(2), 45–55.
- Giordano, T. P., Guzman, D., Clark, R., Charlebois, E. D., & Bangsberg, D. R. (2004). Measuring adherence to antiretroviral therapy in a diverse population using a visual analogue scale. *HIV clinical trials*, 5(2), 74–79.
- Henwood, B., Harris, T., Wenzel, S. L., & Rhoades, H. (n.d.). *Availability of services in a community sample of supportive housing programs: A mixed-methods study*. Unpublished manuscript.
- Henwood, B. F., Hsu, H. T., Dent, D., Winetrobe, H., Carranza, A., & Wenzel, S. (2013). Transitioning from homelessness: A “fresh-start” event. *Journal of the Society for Social Work and Research*, 4(1), 47–57.
- Henwood, B. F., Rhoades, H., Hsu, H. T., Couture, J., Rice, E., & Wenzel, S. L. (2015). Changes in social networks and HIV risk behaviors among homeless adults transitioning into permanent supportive housing a mixed methods pilot study. *Journal of Mixed Methods Research*, 1558689815607686.
- Hwang, S. W., Chambers, C., & Katic, M. (2016). Accuracy of self-reported health care use in a population-based sample of homeless adults. *Health services research*, 51(1), 282–301.
- Jenness, S. M., Kobrak, P., Wendel, T., Neaigus, A., Murrill, C. S., & Hagan, H. (2011). Patterns of exchange sex and HIV infection in high-risk heterosexual men and women. *Journal of Urban Health*, 88(2), 329–341.
- Kushel, M. B., Evans, J. L., Perry, S., Robertson, M. J., & Moss, A. R. (2003). No door to lock: Victimization among homeless and marginally housed persons. *Archives of Internal Medicine*, 163(20), 2492–2499.
- Los Angeles County Department of Public Health. (2016). *2014 annual HIV/STD surveillance report*. Retrieved May 10, 2016, from <http://publichealth.lacounty.gov/dhsp/Reports/HIV-STDsurveillanceReport2014.pdf>
- Mitchell, A. J., & Selmes, T. (2007). Why Don't patients take their medicine? Reasons and solutions in psychiatry. *Advances in Psychiatric Treatment*, 13(5), 336–346.
- Module two. (1993). Module two: HIV counseling and testing. *Journal of Adolescent Health*, 14(5 suppl), S16–S35.
- National Alliance to End Homelessness (NAEH). (2012). *Changes in the HUD definition of “Homeless.”* Retrieved May 10, 2016, from [http://www.endhomelessness.org/page/-/files/3006\\_file\\_Summary\\_and\\_Analysis\\_of\\_Final\\_Definition\\_Rule.pdf](http://www.endhomelessness.org/page/-/files/3006_file_Summary_and_Analysis_of_Final_Definition_Rule.pdf)
- National Institute on Drug Abuse. (n.d.). *NIDA quick screen V1.0*. Retrieved June 15, 2015, from <http://www.drugabuse.gov/sites/default/files/pdf/nmassist.pdf>
- National Survey of Homeless Assistance Providers and Clients (NSHAPC): Code Book for Client Data. (1999). Published Retrieved June 15, 2015, from [https://www.census.gov/prod/www/nshapc/datadocu/cb\\_cli.pdf](https://www.census.gov/prod/www/nshapc/datadocu/cb_cli.pdf)
- Parker, R. D., & Dykema, S. (2014). Differences in risk behaviors, care utilization, and comorbidities in homeless persons based on HIV status. *Journal of the Association of Nurses in AIDS Care*, 25(3), 214–223.
- Post, P. A. (n.d.). *Defining and funding the support in permanent supportive housing: Recommendations of health centers for serving homeless people*. Washington, DC: Corporation for Supportive Housing.
- Robertson, M. J., Clark, R. A., Charlebois, E. D., Tulskey, J., Long, H. L., Bangsberg, D. R., & Moss, A. R. (2004). HIV seroprevalence among homeless and marginally housed adults in San Francisco. *American journal of public health*, 94(7), 1207–1217.
- Simoni, J. M., Kurth, A. E., Pearson, C. R., Pantalone, D. W., Merrill, J. O., & Frick, P. A. (2006). Self-report measures of antiretroviral therapy adherence: A review with recommendations for HIV research and clinical management. *AIDS and Behavior*, 10(3), 227–245.
- Skarbinski, J., Rosenberg, E., Paz-Bailey, G., Hall, I., Rose, C. E., Viall, A. H., ... Mermin, J. H. (2015). Human immunodeficiency virus transmission at each step of the care continuum in the United States. *JAMA Internal Medicine*, 175(4), 588–596.
- StataCorp. (2011). *Stata statistical software: Release 12*. College Station, TX: StataCorp LP.
- Substance and Mental Health Services Administration. (2010). *Permanent supportive housing: Getting started with evidence-based practices*. SMA10-4510. Washington, DC: Author.
- Wenzel, S. L. (2005). *Alcohol use and HIV risk among impoverished women*. Grant No. R01 AA015301. Rockville, MD: National Institute on Alcohol Abuse and Alcoholism.
- Wenzel, S. L., Rhoades, H., Hsu, H. T., Golinelli, D., Tucker, J. S., Kennedy, D. P., ... Ewing, B. (2012). Behavioral health and social normative influence: Correlates of concurrent sexual partnering among heterosexually-active homeless men. *AIDS and Behavior*, 16(7), 2042–2050.
- Wolitski, R. J., Kidder, D. P., Pals, S. L., Royal, S., Aidala, A., Stall, R., ... Housing and Health Study Team. (2010). Randomized trial of the effects of housing assistance on the health and risk behaviors of homeless and unstably housed people living with HIV. *AIDS and Behavior*, 14(3), 493–503.