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# THE ASSOCIATION BETWEEN HIV STATUS AND HOMELESSNESS AMONG VETERANS IN CARE

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*Veterans seeking care in the Department of Veterans Affairs Health Care System (VA) are more vulnerable to HIV infection and homelessness. However, there is little scholarship on the association between serostatus and homelessness among VA veterans. We examined this association in the Veterans Aging Cohort Study, a sample of 6,819 HIV-positive and*

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*HIV-negative veterans attending 8 VAs across the country. We utilized logistic models regressing shelter use in the last month on correlates. HIV and homelessness prevalence was higher than in general veteran populations. Being HIV-positive was protective against homelessness. Substance use, hazardous alcohol use, depression, schizophrenia, and being African American and male increased risk of homelessness. HIV-positive status reduced the homelessness risk posed by substance use, especially among African American substance users. However, women veterans with HIV were at higher risk of homelessness than noninfected women veterans. Implications for policies on veteran homelessness and housing for people with HIV are discussed. © 2015 Wiley Periodicals, Inc.*

Veterans seeking care in the Department of Veterans Affairs Health Care System (VA) tend to be older, poorer, and less educated and present with more acute physical illnesses, mental illness, and substance use compared to both nonveterans as well as veterans not in treatment (Kazis et al., 1998; Randall, Kilpatrick, Pendergast, Jones, & Vogel, 1987). Given that these are risk factors for homelessness, and that homelessness has been found to be associated with HIV infection in the general population (Aidala & Sumartojo, 2007), it follows that homelessness and HIV infection are salient issues for veterans in VA care. Compared to other healthcare institutions, the VA provides services that are more comprehensive, are of superior quality, rely on a better information management system, and are more likely to address the needs of vulnerable clients (Kazis et al., 1998).

It is possible, therefore, that while homelessness and HIV status are correlated in most populations, the positive association is weaker among VA patients because of the services they receive in the VA care environment. There is a dearth of scholarship, however, examining this association among veterans: A literature review failed to identify any study examining HIV and homelessness in this population in the last decade. Consequently, little is known about homelessness and HIV status among VA patients who comprise a particularly vulnerable section of the veteran population. Addressing this need, this research examines the association between HIV status and homelessness in the Veterans Aging Cohort Study (VACS), a sample of 6,819 HIV-positive and HIV-negative veterans attending the general medical clinic of eight VAs across the country.

## **BACKGROUND**

### ***Homelessness and HIV Risk***

Aidala and Sumartojo (2007) found that the prevalence of HIV risk behaviors such as drug use, needle sharing, engaging in unprotected sex, and exchanging sex for money was three to six times higher among the homeless than among the stably housed. Change in housing status was also significantly correlated with HIV risk behaviors. Improved housing stability significantly reduced the risk of hard drug use and needle sharing and engaging in sex for exchange and unprotected sex.

Similarly, in a sample of African American male intravenous drug users, homeless subjects were more than twice as likely to share needles, have multiple sex partners, and engage in unprotected sex (Salazar et al., 2007). In a national study of syringe exchange

programs in the United States, Des Jarlais, Braine, and Friedmann (2007) found that, on average, unstably housed exchange participants were more than twice as likely as stably housed participants to report continued high-risk syringe sharing. Examining HIV risk practices in a sample of injection drug users, Sethi and colleagues (2004) found that unstable housing significantly increased the risk of sharing dirty needles and engaging in sex work.

Becoming infected with HIV can pose a significant risk to retaining housing. Forced to “spend down” or become poor to meet Medicaid eligibility criteria (Whetten & Zhu, 2004) and unable to access housing and other services in neighborhoods that are hostile to their presence (Takahashi, 1997), people with HIV are at a heightened risk of becoming homeless.

Consequently, scholars have documented a high correlation between homelessness and seroprevalence. Reviewing scholarship on the subject, Aidala and Sumartojo (2007) report that HIV prevalence among those unstably housed was three to nine times higher than among those who are stably housed.

### ***Homelessness Risk Factors Among Veterans***

Studying homeless veterans, Rosenheck and Fontana (1994) identified postmilitary social isolation, substance abuse, and psychiatric illness as significant risk factors for homelessness. Alcohol and illicit substance use, in particular, has been referred to as a pandemic among homeless veterans (Goldstein, Luther, Jacoby, Haas, & Gordon, 2008), significantly raising the risk of future homelessness (O’Connell, Kaspro, & Rosenheck, 2008), poor health outcomes (Gonzalez & Rosenheck, 2002), social maladjustment (Gonzalez & Rosenheck, 2002), mental illness (Lim, Kaspro, & Rosenheck, 2006), and suicidality (Prigerson, Desai, Liu-Mares, & Rosenheck, 2003).

Mental illness has been directly linked to homelessness among veterans. O’Connell and colleagues (2008) found that posttraumatic stress syndrome (PTSD) significantly increased the risk of formerly homeless veterans for becoming homeless again. In a study of 7,224 veterans, Desai and colleagues (2003) found that homelessness was significantly associated with suicidality, with more than 66% of veterans reporting a history of suicidal ideation and 27% reporting suicidal attempts.

Studies have shown that age and race are significant correlates of homelessness among veterans. In examining the association between age and homelessness, Rosenheck, Frisman, and Chung (1994) identified a cohort effect among veterans: Those who fought in the Vietnam War were less likely to be homeless than those who enlisted immediately after the war ended. The Veteran’s Supplement to the Department of Housing and Urban Development’s Annual Homeless Assessment Report (AHAR; Department of Housing and Urban Development, 2008) found African Americans to be at increased risk of becoming homeless. Compared to the 0.7% prevalence of homelessness among veterans in general, 4% of African American veterans reported being currently homeless.

### ***HIV and Veterans in Care***

Veterans receiving care in the VA report a high prevalence of factors that put them at risk of HIV infection. Compared to both nonveterans and veterans not in VA care, they present with higher levels of mental illness as well as substance use (Kazis et al., 1998; Randall et al., 1987). Scholars have documented an HIV prevalence ranging from 1% to 9% across VA outpatient healthcare sites (Owens et al., 2007). In a study on HIV risk

behaviors among veterans in substance abuse treatment in the VA, Dolan and colleagues (Dolan, Black, DeFord, Skinner, & Robinowitz, 1987) found that almost all of them (87%) were injecting drugs intravenously and most (68%) were sharing needles. Mental illness, substance abuse, being younger and a person of color increased risk of infection among veterans (Dolan et al., 1987; Owens et al., 2007). However, less than half of vulnerable veterans in care have been tested for HIV (Owens et al., 2007; Perlin, 2005), leading to high rates (ranging from 12 to 40%) of advanced immunosuppression and opportunistic infections in this population (Gandhi, Skanderson, Gordon, Concato, & Justice, 2007; Chou, Huffman, Fu, Smits, & Korthuis, 2005).

### *The Social Ecological Perspective and Homelessness*

The social ecological perspective emphasizes the relationship between a person and his or her environment, noting the manner in which individual-level behavior shapes and is shaped by the environment (Brofenbrenner, 1979; Lewin, 1951). Discussing the nested nature of the environments in which people are embedded, scholars have called attention to the way personal characteristics and interpersonal interactions interact with meso-level environments like organizational and neighborhood contexts, which, in turn, interact with larger societal and cultural milieus. Applying the ecological perspective to homelessness, Toro and colleagues (1991) call attention to the manner in which personal attributes, characteristics, and resources shape the risk environment for homelessness and are, in turn, affected by this environment. Describing the manner in which people create fits with and niches within their environment, they note that homelessness needs to be understood as an interaction between individual-level variables and contextual factors.

Similarly, describing chronic residential mobility among people with serious mental illness, scholars have noted the manner in which individual-level risk factors associated with mental illness interact with contextual factors, such as the ability to forge social ties and integrate into a neighborhood, to undermine housing stability (Newman, 1994; Kloos & Shah, 2009).

Informed by the social ecological perspective, this research examines the link between individual-level factors and the risk environment for homelessness among veterans in VA care. While both HIV and homelessness appear to share risk factors such as substance use and mental illness, scholars have not examined the association between HIV status and homelessness among veterans. We examine this association in a national study of veterans in care in the VA. Moreover, we examine the way HIV interacts with the homelessness risk factors identified in the scholarship reviewed above.

## **METHODS**

### *Sample*

The VACS is a longitudinal study of HIV-infected and uninfected patients seen in VA infectious disease and general medical clinics. Initiated in 2002, the eight-site study includes veterans being treated in VAs in Atlanta, Baltimore, New York, Houston, Los Angeles, Pittsburgh, and Washington, DC. Veterans presenting for care with HIV ( $n = 3,410$ ) were offered enrollment. Age, race, and site-matched HIV-negative control subjects from the general medicine clinic ( $n = 3,409$ ) were simultaneously recruited into the study. We used the baseline data and information from VA medical records for this study (Justice et al., 2006).

## Measures

We used a conservative measure of homelessness: those who spent at least one night in a shelter in the last month. While homelessness can be interpreted differently across respondents and can describe various stages of housing instability (Department of Housing and Urban Development, 2008), recent shelter use is a concrete event that identifies those at the most vulnerable pole in the homelessness continuum.

Alcohol use was measured using the Alcohol Use Disorders Identification Test-Consumption scale (Reinert & Allen, 2002), which screens for hazardous drinking, a lower level of use than alcohol dependency. High substance use was operationalized as use of an illicit substance at least once a week. Demographic measures and mental health diagnoses for depression, anxiety, schizophrenia, and PTSD were obtained from hospital administrative data.

## Analyses

We conducted bivariate analyses and entered significant correlates into a logistic regression model. Interactions between serostatus and the other factors were examined and interactions with significant associations included in the model.

## RESULTS

Almost 11% of the sample reported shelter use in the last month. HIV status, mental illness, substance use, race, gender, and age were correlated with current shelter use in the bivariate analyses (Table 1). In particular, shelters were used in significantly higher proportions by weekly substance users (21% vs. 8%) and hazardous drinkers (14% vs. 9%); those with PTSD (15% vs. 10%) and schizophrenia (24% vs. 10%); and those who are African Americans (13% vs. 7%), men (11% vs. 5%), and older veterans (mean age of 50 years of age among shelter users vs. 48 years of age among nonusers).

Table 2 presents results of a logistic regression examining the effects of HIV and comorbidities on shelter use. Weekly substance use (adjusted odds ratio [AOR] = 3.00), hazardous drinking (AOR = 1.41), depression (AOR = 2.40), and schizophrenia (AOR = 2.29) increased the risk of current shelter use. HIV-positive status proved to be a protective factor, with seropositive status reducing the risk of current shelter use by almost 40% (AOR = 0.61). The results of the interaction between HIV status and other variables indicate that the protective effect of being HIV positive was significantly increased for weekly substance users: HIV-positive frequent users were 22% less likely to use shelters compared to HIV-negative frequent users ( $\beta = -0.25$ , AOR = 0.78).

African Americans were almost twice as likely to be current shelter users than others (AOR = 1.98), while women were almost 80% less likely to use shelters than men (AOR = 0.23). However, the significant interaction between seropositive status and gender indicates that HIV-positive women were three times more likely to use shelters than uninfected women ( $\beta = 1.13$ , AOR = 3.11).

## DISCUSSION

Contrary to previous findings (Aidala & Sumartojo, 2007), HIV-positive status was protective against homelessness in our sample. Moreover, while substance users and, in particular, substance-using African Americans, were the most vulnerable to becoming homeless

**Table 1. Proportions and Bivariate Associations**

	<i>Means and proportions (n)</i>	<i>Percentage in shelters (n)</i>	<i>Chi-square value</i>
Shelter use	10.5 (717)		
<b>Serostatus</b>			
HIV+		8.5 (289)	
HIV-		12.6 (428)	305.6**
<b>Mental health</b>			
Depression	8.8 (603)	21.7 (169)	
No depression		9.1 (548)	1162.8**
Posttraumatic stress disorder (PTSD)	11.4 (780)	14.6 (88)	
No PTSD		10.1 (629)	117.3**
Anxiety	5.5 (378)	10.5 (44)	
No anxiety		11.7 (670)	7.07
Schizophrenia	4.0 (271)	23.7 (63)	
No schizophrenia		10.0 (653)	521.2**
<b>Drug use</b>			
At least once a week	17.9 (122)	21.2 (259)	
Less than once a week		8.2 (458)**	1812.6**
<b>Alcohol Use</b>			
Hazardous	37.6 (256)	13.5 (346)	
Nonhazardous		8.7 (371)	389.4**
<b>Gender</b>			
Female	5.1 (350)	4.9 (17)	
Male		10.8 (699)	121.6**
<b>Race</b>			
African American	64.8 (4420)	12.56 (555)	
Non-African American		6.73 (161)	563.0**
Hispanic	9.7 (661)	8.6 (57)	
Non-Hispanic		10.7 (660)	27.7
<b>Age (full sample)</b>	49.8		
Mean age of shelter users	48		
Mean age of housed	50**		

\*\* $p < .0001$ .

in this sample, this risk reduced significantly when they were HIV positive. Taken together, these results indicate that HIV status is a measure of the care environment of the VA for seropositive veterans and may reduce their risk for homelessness. HIV-positive veterans may be connected to services in the VA that reduce risk environment for homelessness.

Federal housing initiatives for veterans such as the Homeless Providers Gant and Per Diem Program, the Housing and Urban Development and VA Supporting Housing Program, and the Supportive Services for Veteran Families provide housing support for homeless veterans (National Center on Homelessness Among Veterans, 2012). However, for a variety of reasons, not all veterans who were eligible for these programs access them (Department of Housing and Urban Development, 2008). Our results suggest that, for the most part, HIV-positive veterans in VA care were being successfully linked to these programs.

These conclusions support earlier findings that document the success with which the VA's psychosocial services address the complex needs of clients, attributing it to an organizational culture that prioritizes evidence-based practice and draws on a model of wraparound comprehensive care (Gonzales & Rosenheck, 2002; Kazis et al., 1998). In

**Table 2. Shelter Use Regressed on Correlates**

	AOR [95% CI]
<b>Serostatus</b>	
HIV+	0.61 [0.51, 0.75]
<b>Mental health</b>	
Depression	2.40 [1.95, 2.95]
Schizophrenia	2.29 [1.67, 3.13]
Posttraumatic stress disorder	1.20 [0.92, 1.55]
<b>Drug use</b>	
At least once a week	3.00 [2.37, 3.81]
<b>Alcohol Use</b>	
Hazardous	1.41 [1.20, 1.66]
<b>Demographics</b>	
African American	1.98 [1.64, 2.39]
Female	0.23 [0.12, 0.45]
Age	0.97 [0.96, 0.98]
<b>Interactions with serostatus<sup>a</sup></b>	
HIV*drug use	-0.30*
HIV*female	1.05*

Note. AOR = adjusted odds ratio; CI = confidence interval.

<sup>a</sup>Coefficients are reported for interactions with HIV status.

\* $p < .05$ .

particular, previous scholarship has documented that HIV-positive veterans with severe depression had a significantly decreased time in treatment in the VA than their noninfected counterparts (Hooshyar et al., 2010), indicating the effectiveness with which VA services address the needs of the most vulnerable seropositive clients.

However, the outlook was not uniformly positive for HIV-positive veterans receiving care in the VA. Substance use, hazardous alcohol use, depression, schizophrenia, and being African American continued to be significant risk factors for homelessness among veterans with HIV. Moreover, women with HIV were significantly more likely to use shelters than their noninfected female counterparts, almost bridging the gender gap in homelessness risk among noninfected veterans, where women were considerably less likely to use shelters than men. HIV-positive women veterans may be accessing and benefiting from services to a lesser extent than HIV-infected men.

Future research needs to examine the manner in which VA care services mediate the association between gender and homelessness among veterans with HIV. Moreover, these results emphasize the necessity for housing interventions to address the special needs of veterans who are HIV positive, African American, women, substance users, and suffering from depression and schizophrenia.

Despite the fact that seropositive status was protective against homelessness in this sample, the prevalence of recent shelter use among HIV-positive veterans (11%) was still significantly higher than the 0.3% point-in-time prevalence and the 0.6% annual prevalence of all forms of homelessness among veterans documented in the AHAR (Department of Housing and Urban Development, 2008). The high rates in this sample may be attributable to the high prevalence of risk factors such as poverty, mental illness, substance use, and poverty among veterans with HIV, all correlates of homelessness in this study.

These results have significant implications for policy. The National HIV/AIDS Strategy discusses housing as a form of HIV intervention and treatment (HIV and Housing

Subgroup, 2009), with the White House's Office of National AIDS Policy organizing several community conferences across the country to discuss strategies to house people living with HIV (Albino, 2011). Our results indicate that the wraparound services available to HIV-positive veterans in the VA might serve as a model for federal initiatives seeking to reduce homelessness among people living with HIV. However, because these services appear to be less effective for women with HIV, the VA needs to tailor them to serve the housing needs of HIV infected women better.

Given the federal government's pledge to eradicate veteran homelessness (Department of Housing and Urban Development, 2008), housing initiatives should start with veterans in VA care, who are more vulnerable to homelessness than veterans not in care and more accessible to interventions since they are already being seen in the VA.

Finally, these results provide support for the social ecological perspective by highlighting the manner in which individual-level factors interact with the care environment of the VA to shape the greater homelessness risk environment for veterans. Future research needs to examine the manner in which particular attributes of the VA care environment, such as housing services, mental health, and substance abuse treatment and access to care, mediate homelessness risk for HIV-positive veterans.

### ***Limitations***

Because these analyses were conducted on cross-sectional data, the associations are correlational and not causal. Moreover, while the dataset was large and draws on VA clients from centers across the country, the sample was not representative of all veterans receiving care in the VA and results cannot be generalized to that population. Despite these shortcomings, these data allow us to conduct one of the first studies on homelessness and HIV status among veterans in VA care.

### **CONCLUSION**

Our results indicate that there is a negative association between HIV infection and homelessness among VA patients. Moreover, HIV status reduces the risk of homelessness associated with substance use and, in particular, among African American substance users. However, women veterans with HIV are at significantly higher risk of homelessness than their noninfected counterparts. The results suggest that services in the VA may be reducing the risk of homelessness among veterans and have differential levels of success for different populations in VA care. Future research needs to examine the role of services in mediating these relationships.

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