Reducing homelessness among people with HIV who use drugs key to increasing population-level viral suppression

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Homelessness:

- Reduces likelihood of ART initiation  
  (Kidder et al., 2007; Altice et al., 2011)

- Adversely affects adherence to therapy  
  (Kushel et al., 2006; Palepu et al., 2011)

- Lowers rates of viral suppression  
  (Milloy et al., 2012; Santos et al., 2014)

- Increases risk of virological failure & ART discontinuation  
  (Westergaard et al., 2013)
The Health Impact of Supportive Housing for HIV-Positive Homeless Patients: A Randomized Controlled Trial

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Objectives. We assessed the health impact of a housing and case management program, the Chicago Housing for Health Partnership, for homeless people with HIV.

Methods. HIV-positive homeless adults at a public hospital (n = 105) were randomized to usual care or permanent housing with intensive case management. The primary outcome was survival with intact immunity, defined as CD4 count ≥ 200 and viral load < 100,000. Secondary outcomes were viral loads, undetectable viral loads, and CD4 counts.

Results. Outcomes were available for 94 of 105 enrollees (90%). Of 54 intervention participants, 38 (68%) retained permanent housing in program housing agencies. After 1 year, 58% of the intervention and 34% of the usual care groups were alive and had intact immunity (P = .36). Seventeen intervention (36%) and 9 usual care (17%) participants had undetectable viral loads (P = .01). Median viral loads were 0.88 log lower in the intervention group (P = .03). There were no statistical differences in CD4 counts.


Randomized Trial of the Effects of Housing Assistance on the Health and Risk Behaviors of Homeless and Unstably Housed People Living with HIV

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Abstract Homelessness affects HIV risk and health, but little is known about the longitudinal effects of rental assistance on the housing status and health of homeless and unstably housed people living with HIV/AIDS. Homeless unstably housed people living with HIV/AIDS (N = 630) were randomly assigned to immediate Housing Opportunities for People with AIDS (HOPWA) rental assistance or customary care. Self-reported data, CD4, and HIV viral load were collected at baseline, 6, 12, and 18 months. Results showed that housing status improved in both groups, with greater improvement occurring in the treatment group. At 18 months, 51% of the comparison group had their own housing, limiting statistical power. Intent-to-treat analyses demonstrated significant reductions in medical care utilization and improvements in self-reported physical and mental health; significant differential change benefiting the treatment group was observed for depression and perceived stress. Significant differences between homeless and unstably housed participants were found in integrated analyses for health care utilization, mental health, and physical health. HOPWA rental assistance improves housing status and, in some cases, health outcomes of homeless and unstably housed people living with HIV/AIDS.
Only two trials to date...

Proportion with viral suppression at 12 months: 36% vs. 19%, $p = 0.051$

Proportion with viral suppression at 18 months: 43% vs. 37%, $p = 0.956$
Objective

• We sought to determine the impact of eliminating homelessness on viral suppression among HIV-infected people who use drugs.

• We employed a “population intervention” approach to estimate population viral suppression if all participants were housed.
Study Design

- AIDS Care Cohort to Evaluate Exposure to Survival Services (ACCESS)
- Ongoing community-recruited prospective cohort of HIV+ people who use drugs (PWUD) at all stages of the care cascade past diagnosis
- Interviewer-administered behavioral questionnaire
- Confidential linkage to comprehensive HIV/AIDS records, including viral load tests
708 persons completed an interview between Jan 1, 2005 and Dec 31, 2014 and were eligible for this analysis.

- Homelessness: living on the street with no fixed address

- Viral load during subsequent clinical care (avg. 23 days after interview): suppression defined as <50 copies/mL

- Other covariates: known risk factors for viral suppression or homelessness among HIV+ PWUD
1. Estimate relationship between homelessness and viral suppression using modified Poisson regression

2. Obtaining the population intervention effect:
   - Predict outcome for each person, then average to obtain estimated population viral suppression prevalence
   - Create a new dataset in which homelessness = 0 for all
   - Apply model estimates to imputed dataset to obtain viral suppression prevalence had all persons been housed
   - Bootstrapping to estimate 95% confidence intervals
Sample Characteristics

Proportion (n=708)

- Virally suppressed: 38%
- Homeless: 31%
- Aged 35-51: 69%
- Male: 66%
- White: 55%
- Injection Drug Use: 94%
- Employed: 18%
- On Methadone: 40%
Population effect of eliminating homelessness on viral suppression among HIV-infected people who use drugs in Vancouver, Canada.

Panel A: Full Sample \((n = 708)\)

![Bar chart showing proportion virally suppressed by homelessness status and model adjustments.](image)

- **Empirical Data**: 38%
- **Crude Model**: 45%
- **Adjusted Model**\(^*\): 43%

* Model adjusted for year of interview, age, gender, ethnicity, education, ever hospitalized for a mental illness, injection drug use, incarceration, sex trade involvement, methadone program participation and other addiction treatment (past 6 months), and recent employment.
Population effect of eliminating homelessness on viral suppression among HIV-infected people who use drugs in Vancouver, Canada.

Panel A: Full Sample ($n = 708$)

Panel B: Homeless at First Study Visit ($n = 223$)

* Model adjusted for year of interview, age, gender, ethnicity, education, ever hospitalized for a mental illness, injection drug use, incarceration, sex trade involvement, methadone program participation and other addiction treatment (past 6 months), and recent employment.
Study Implications

- Housing programs should continue to be implemented as part of comprehensive HIV prevention and treatment efforts.
- Expansion of low-threshold, “Housing First” models (and comprehensive supportive housing services) are needed.
- Analyses of other measures of housing instability are ongoing.
Strengths & Limitations

- Unmeasured confounding
- Homelessness status was self-reported
- Generalizability of study findings
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