Housing, HIV, and Medication Adherence

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Overview

- Estimated 40,000+ HIV infections each year in the U.S.
- Results of improved HIV treatments:
  - More people living with HIV
  - Improved quality of life
- About 25% of people with HIV in the U.S. do not know they are infected

Housing and HIV/AIDS

- Homelessness, HIV risk behavior, and HIV infection co-occur
  - HIV/AIDS is 3-9 times higher in homeless/unstably housed
- Housing is a structural factor
  - Contextual / environmental influence that interacts with other risk factors
- Increasing interest in the relationship between housing and HIV
  - Special issue of *AIDS and Behavior* on Housing and HIV/AIDS (Nov. 2007)

Housing and ARV adherence

- Antiretroviral (ARV) medication use / adherence results in reductions in
  - viral load
  - risk of transmitting HIV
- Homeless PLWHA face many obstacles to receiving appropriate HIV care
  - Financial resources, transportation, health insurance
  - Health care provider reluctance to prescribe ARVs due to concerns about ability to adhere to regimens

Housing, HIV/AIDS, and adherence

- Relatively few studies have investigated effects of housing status on treatment adherence, risk behaviors, and medical care among PLWHA

- Studies have often been small scale, single site/city

- Equivocal results regarding adherence among homeless PLWHA
  - Factors other than homelessness may be related to non-adherence

Housing and ARV adherence

- 2 studies of PLWHA

- Research questions:

  1) Is housing status associated with health and HIV medication adherence variables?

  2) Among homeless or unstably housed PLWHA

    - What sociodemographic, mental health, and substance use factors are associated with HIV medication adherence?

    - What factors are associated with viral load?

SHAS Project

- Secondary analysis:

  CDC's Supplement to HIV/AIDS Surveillance (SHAS) project
  - Cross-sectional, multi-site behavioral surveillance data collection

- Study goals:
  - Examine associations between housing status and health and medication adherence variables.

Kidder DP, Wolitski RJ, Campsmith ML, Nakamura GV (2007). Health status, health care use, medication use, and medication adherence in homeless and housed people living with HIV/AIDS. American Journal of Public Health, 97, 2238–2245.

SHAS Participants

- N = 7925

- Adults recruited from 19 HIV/AIDS surveillance sites around U.S.

- All recently (past 2 years) diagnosed with HIV/AIDS

- Homeless: Living in shelter or on streets at time of interview
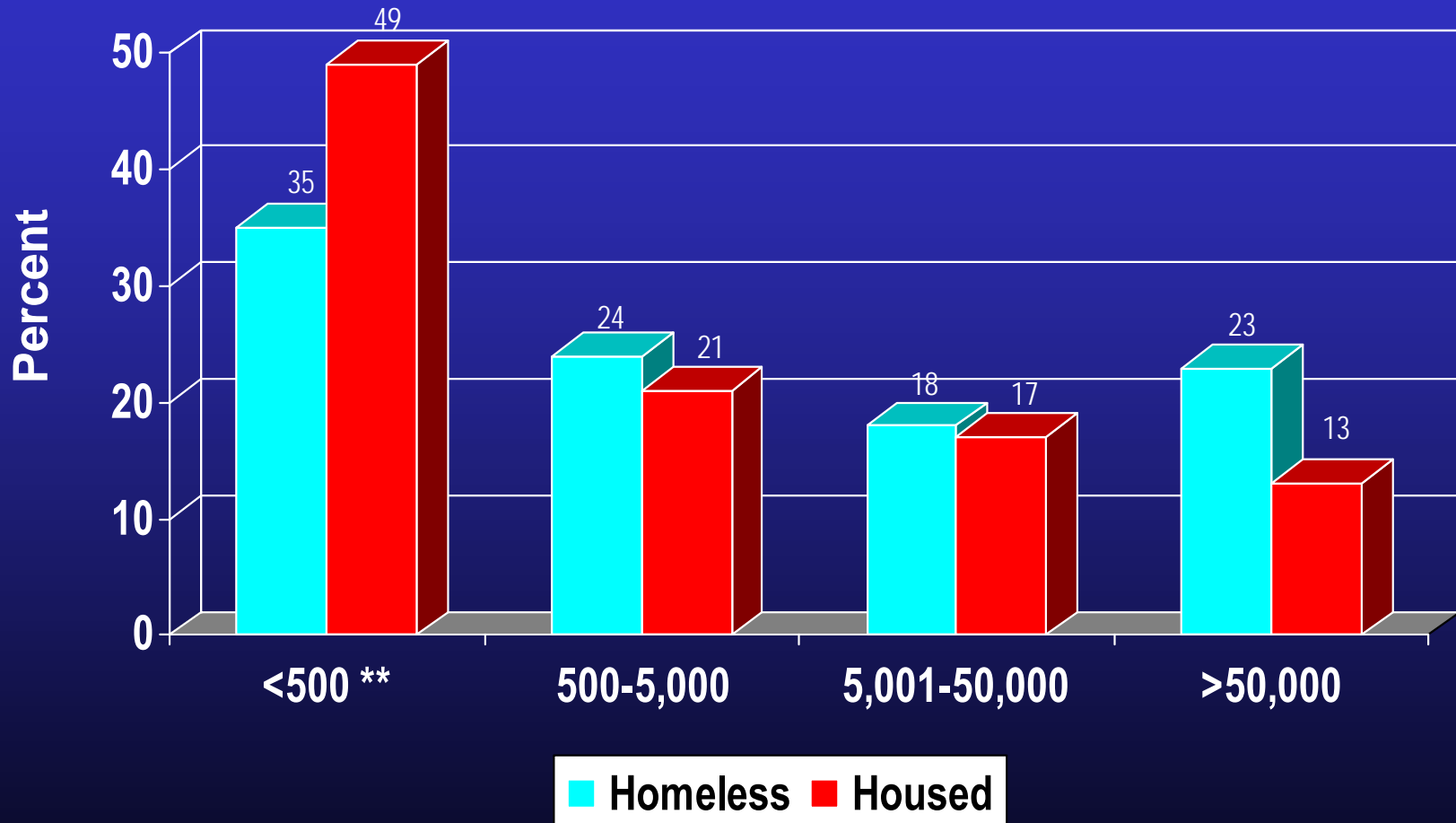 - n = 304 (3.8%)

Participant Characteristics

- Age (mean): 40
- Male: 72%
- Race/ethnicity
    Black: 55%
    White: 22%
    Hispanic: 19%
- Single: 66%
- Unemployed: 36%
- Education:
    < High school: 31%
    High school: 33%
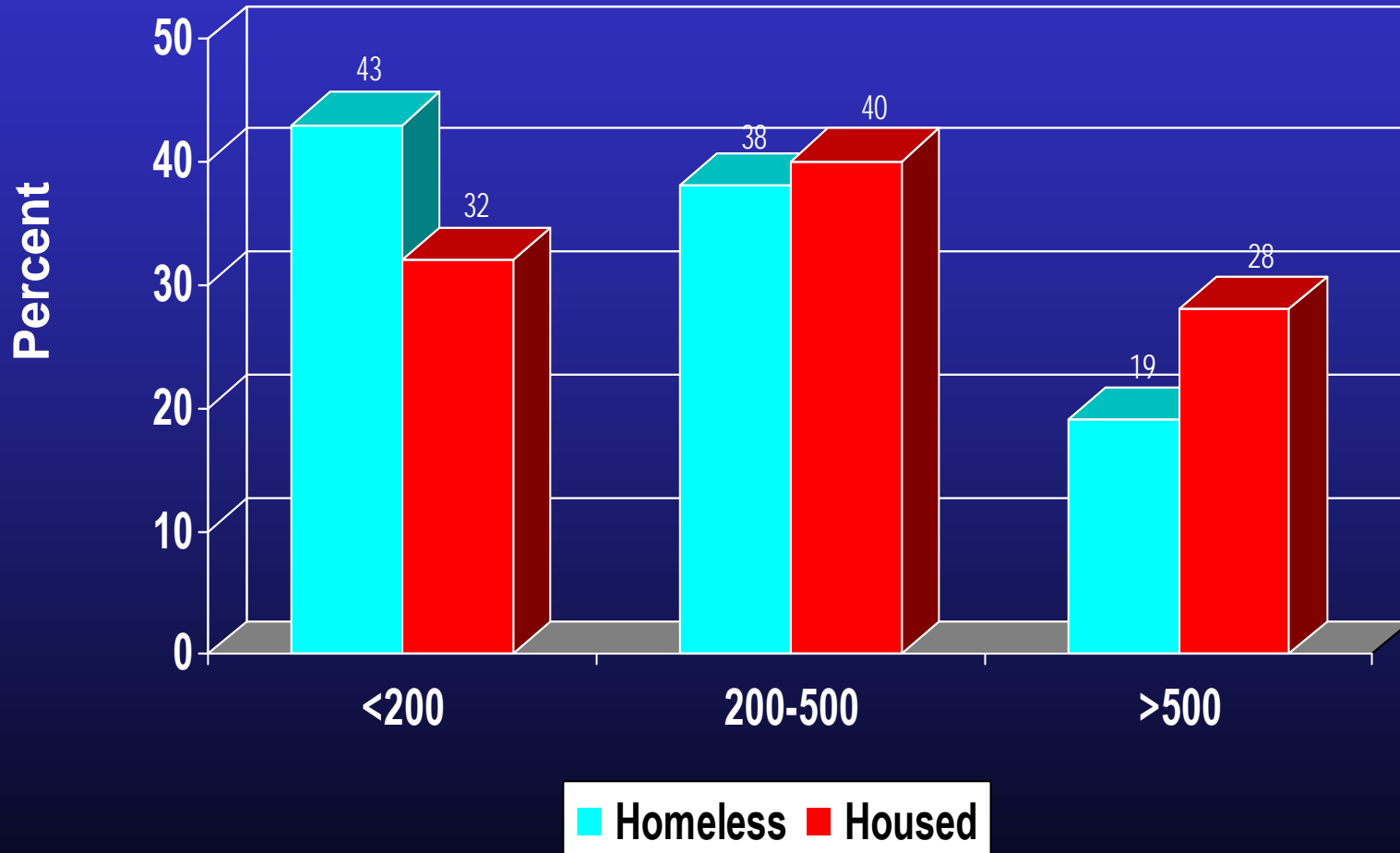   > High school: 36%

HIV Viral Load *

- Self-reported

* P<.001

** Undetectable

CD4+ T Cell Count *

- Self-reported

* P<.001

HIV Medication Use / Adherence

- Ever used HIV antiretroviral meds *
  - Homeless: 72%
  - Housed: 81%

- Currently taking HIV meds *
  - Homeless: 70%
  - Housed: 86%

- Adherence: Missed any doses of HIV ARV meds past 48 hours *
  - Homeless: 31%
  - Housed: 17%

* P<.001

Analyses

- Multivariate logistic regression analyses
  - Controlling for sociodemographic, drug, and alcohol variables
- DVs:
  - Medication taking and adherence variables
  - Health variables
    - Self-rated health, emergency department use, CD4, viral load

Results

- Homeless significantly less likely to
  - Be currently taking HIV meds: AOR=0.43 (0.33, 0.55)
  - Be adherent to HIV meds: AOR=0.49 (0.33, 0.71)
  - Have undetectable viral load: AOR=0.69 (0.48, 0.99)
  - Have self-reported health status good to excellent: AOR=0.72 (0.56, 0.93)
- Homeless significantly more likely to
  - Have used emergency department (past 12 months): AOR=1.60 (1.24, 2.07)

Summary

Compared to housed respondents, homeless

- Less likely to ever or currently be taking HIV ARVs

- Less likely to be adherent to HIV ARVs

- Less likely to have an undetectable viral load

Housing & Health Study Goal

Assess the ability of housing to reduce the risk of HIV transmission and improve the health of persons living with HIV

Current Research Questions

Among homeless or unstably housed PLWHA:

- What factors are associated with HIV medication adherence?

- What factors are associated with viral load?

Study Overview

- Multi-site, randomized controlled trial (RCT) with 630 people across 3 sites (Baltimore, Chicago, Los Angeles)

- Randomized into two groups:

  - **Housing Group**: Received study- and site-funded rental assistance.

  - **Customary Care Group**: Did not receive study- and site-funded rental assistance. Received usual and customary care available in the community.

Study Overview (cont'd)

- Two types of data collected
  - Computer-based individual interviews (interviewer administered and self-administered)
  - Biological markers (blood sample)
    - Viral load
    - CD4

- Four data collection points
  - Baseline, 6 month, 12 month, 18 month
  - Monetary incentives for each session
- Baseline N = 644

Participants

- Low income (≤ 50% median income for area)
- HIV+
- Homeless / Severe risk of homelessness
- At least 18 years old
- Speak English or Spanish
- Able to provide informed consent

Participant Characteristics

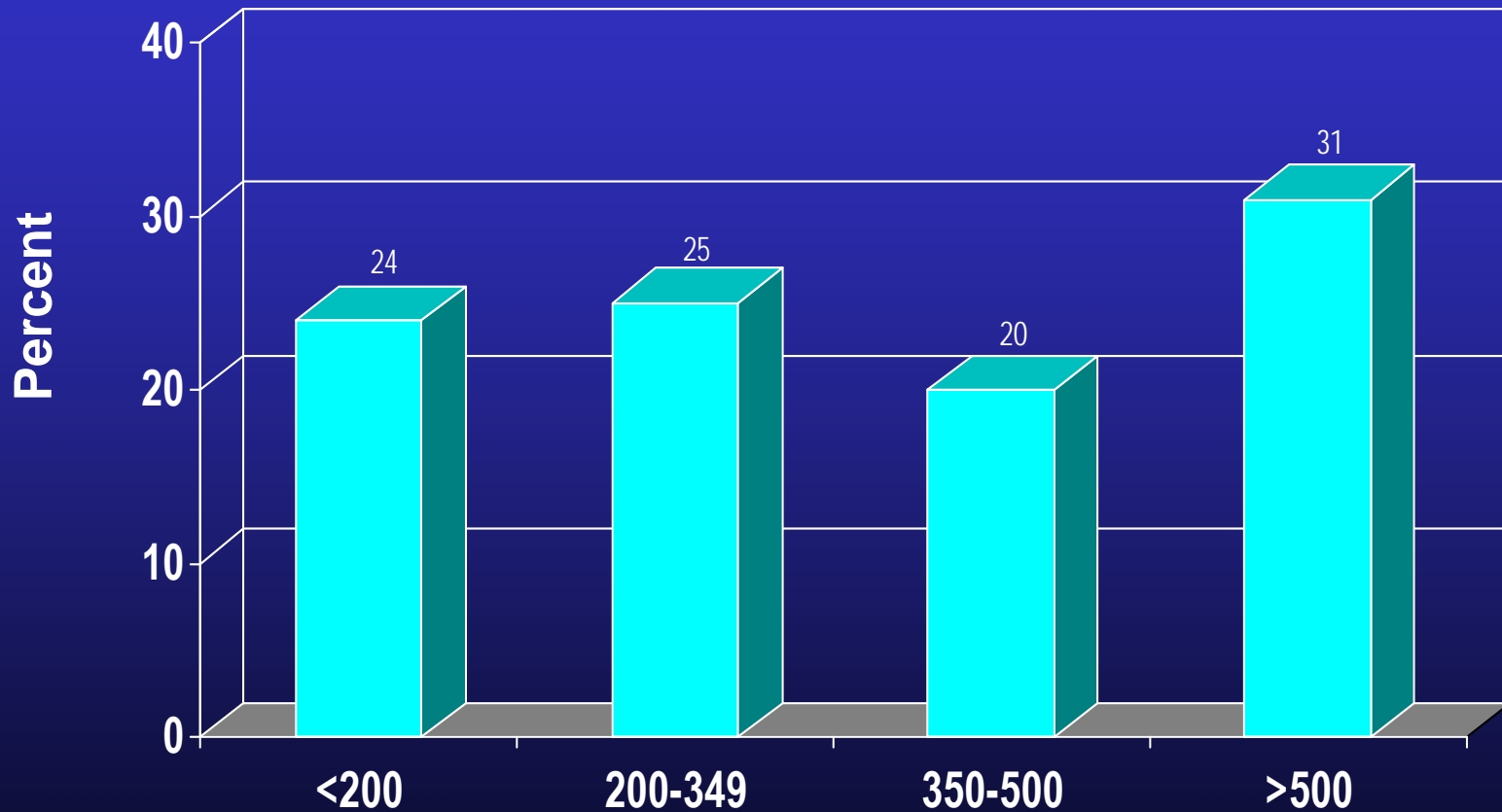|	
Age (mean)	41
Gender (% male)	68
Race / Ethnicity (%)	
Black	79
Hispanic	9
White	8
Other	4
Education (%)	
< High school	35
High school / GED	29
> High school	36
Marital status (%)	
Never married	69
Married	11
Divorced / Separated	16
Widowed	5
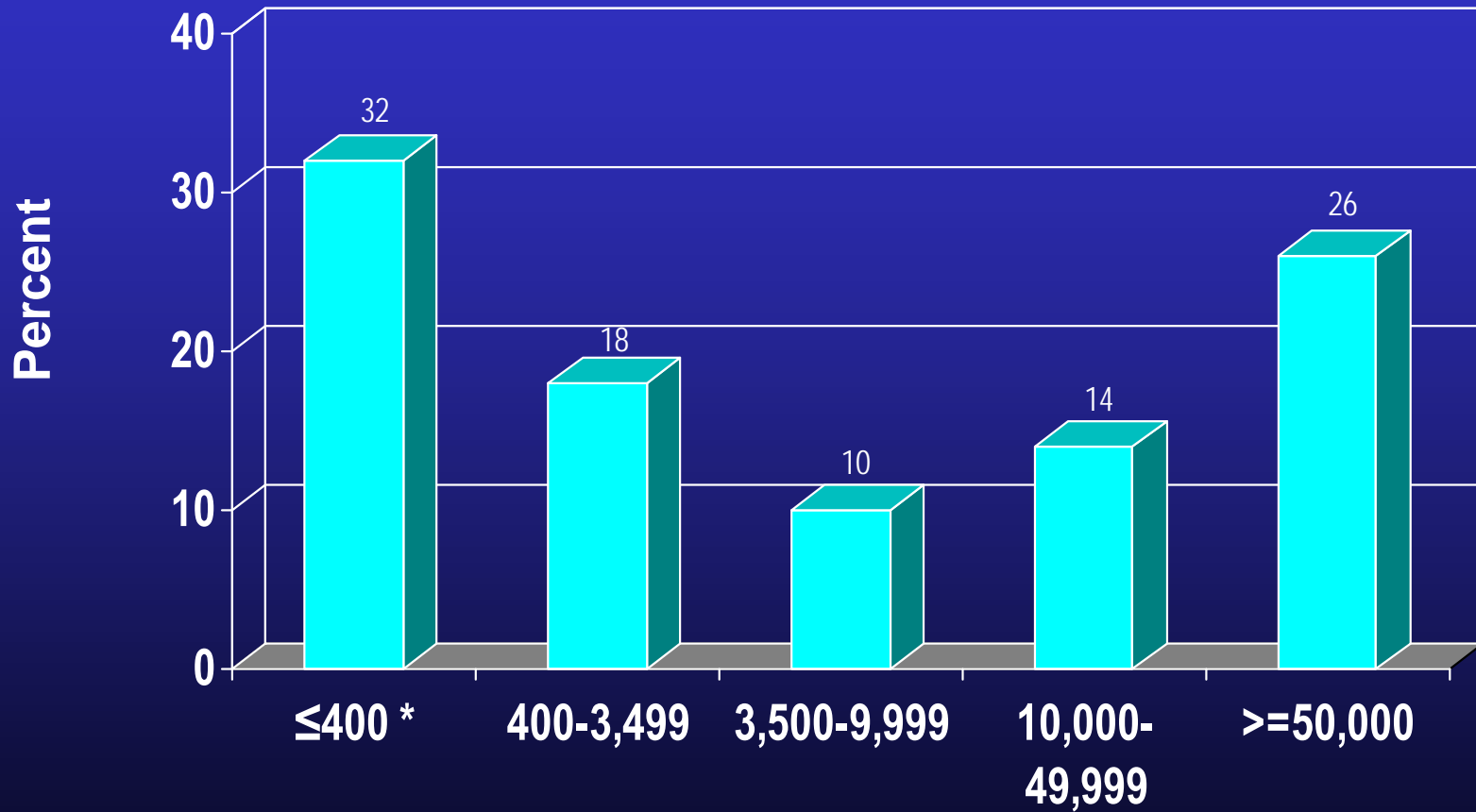
HIV Medication Use / Adherence

	(%)
On HAART,* 100% adherent (past 2 days)	40
On HAART, <100% adherent	15
On HIV medications, not HAART	11
Not on HIV medications	33

▪ Those on HAART (55%) included in this analysis

2-day adherence: 78% of those on HAART reported 100% adherence

* Taking at least 3 ARVs of which at least 2 were of different drug classes (NRTI, NNRTI, PI, fusion/entry inhibitor/FI).

Analyses

DV: 2-day non-adherence (<100% adherent)

- Multivariate logistic regression analysis
  - Sociodemographic, access to health care, drug, and alcohol variables
- Mental health regression analyses
  - SF-36 mental component summary, CES-D (depression), Perceived Stress Scale, medication attitudes
  - Each scale analyzed separately due to high correlations among scales

Results

- Poorer adherence among those on HAART was associated with:
  - Younger age (18-39): OR=2.33 (1.32, 4.11)
  - Not having medical insurance: OR=2.43 (1.04, 5.69)
  - Drug use past 90 days: OR=1.85 (1.01, 3.41)
  - Higher levels of depressive symptoms: OR=1.08 (1.04, 1.13)
  - Higher perceived stress levels: OR=1.06 (1.01, 1.10)
  - Lower self-assessed mental health: OR=0.97 (0.95, 0.99)
  - More negative attitudes toward HIV medications: OR=0.87 (0.81, 0.94)

HIV Viral Load

- Would expect that HIV medication adherence affects viral load

- What factors are associated with HIV viral load?

- Multivariate logistic regression analyses controlling for sociodemographic variables
  - DV: Detectable viral load (>400)

Regression Analyses

- Controlling for sociodemographic variables

	Adj. OR	95% CI	p-value
Used illegal drugs: more likely to have detectable VL	1.48	1.00, 2.19	0.05
HIV status disclosure to family members			0.02
Disclosed to 100%	0.55	0.33, 0.89	
Disclosed to >=50% to <100%	0.41	0.20, 0.83	
Disclosed to <50%	1.00		
No insurance: more likely to have detectable VL	2.51	1.42, 4.45	<0.001
HIV medication use / adherence			<0.0001
On HAART, 100% adherent	0.08	0.05, 0.14	
On HAART, <100% adherent	0.13	0.07, 0.25	
On HIV medications, not HAART	0.19	0.09, 0.40	
Not on HIV medications	1.00		

Not significant: Housing status, time to get to medical care, received any medical care, source of medical care, problems getting medical care, case management visits, mental health scales, HIV status disclosure to friends and total network, frequent alcohol use, ever injected drugs.

Conclusions

- Many homeless and unstably housed PLWHA had detectable viral load levels.

- Many homeless are not on any HIV ARVs

- For those taking HIV ARVs housing status / homelessness affects HIV medication adherence

- Some differences between studies in rates of self-reported adherence
  - Yet, adherence rates for homeless similar to other non-homeless populations

Conclusions (cont.)

- Mental health, substance use, and medical care access affect HIV medication adherence in homeless

- Viral load associated with medication adherence, disclosure to family members, having insurance

- These studies provide (more) evidence that housing status, mental health, substance use, and medical care access affect medication adherence and viral load

Limitations

- Data primarily self-report
  - Subject to socially desirable responding, recall biases, etc.
- Studies not intended to primarily examine adherence
- Not representative of all homeless or all homeless PLWHA
- Cross-sectional
  - Not able to determine causality

Study Collaborators

SHAS

- CDC: Richard Wolitski, Michael Campsmith, Glenn Nakamura

Housing & Health Study

- Department of Housing and Urban Development (HUD), Office of HIV/AIDS Housing, HOPWA Program
- Centers for Disease Control and Prevention (CDC)
- RTI
- Columbia U., Johns Hopkins U., U. Pittsburgh
- Baltimore: Dept. of Housing and Community Development
- Chicago: Dept. of Health, AIDS Foundation of Chicago
- Los Angeles: Los Angeles Housing Dept. (LAHD),Housing Authority of the City of Los Angeles (HACLA)

References

Kidder DP, Wolitski RJ, Campsmith ML, Nakamura GV (2007). Health status, health care use, medication use, and medication adherence in homeless and housed people living with HIV/AIDS. <u>American Journal of Public Health</u>, <u>97</u>, 2238–2245.

Kidder DP, Wolitski RJ, Royal S, Harre D, Courtenay-Quirk C, Holtgrave D, Aidala A, Sumartojo E, Stall R for the Housing and Health Study Team (2007). Access to housing as a structural intervention for homeless and unstably housed people living with HIV: Rationale, methods, and implementation of the Housing and Health Study. <u>AIDS and Behavior</u>, <u>11</u>, S149–S161.

Royal S, Kidder DP, Patrabansh S, Wolitski RJ, Holtgrave D, Aidala A, Stall R for the Housing and Health Study Team (under review). Factors associated with adherence to highly active antiretroviral therapy in homeless or unstably housed adults living with HIV.

Kidder DP, Pals SL, Wolitski RJ, Royal S, Holtgrave D, Aidala A, Stall R for the Housing and Health Study Team (under review). Factors associated with detectable viral load in homeless or unstably housed adults.