

## **Housing as an HIV/AIDS Structural Intervention: Overview of the Evidence Base**

**Satellite Conference and Live Webcast  
Tuesday, July 20, 2010  
10:00 am-12:00 pm Central Time**

**Produced by the Alabama Department of Public Health  
Video Communications and Distance Learning Division**

## **Faculty**

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## **Levels of HIV Prevention Interventions**

- Individual      • Structural
- Dyad            –Laws and policies
- Family          –Environment
- Group            –Social determinants
- Community

## **Baseline Findings from the Housing and Health Study of Homeless and Unstably Housed People Living with HIV: Housing, Adherence, Health, and Stigma**

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**For the Housing and Health Study Team**



## **Study Collaborators**

- Department of Housing and Urban  
Development (HUD), Office of  
HIV/AIDS Housing, HOPWA Program
- Centers for Disease Control and  
Prevention (CDC)
- RTI

## **Study Collaborators**

- Columbia University  
Johns Hopkins University  
University of Pittsburgh  
housing consultants
- Baltimore  
–Department of Housing and  
Community Development

### **Study Collaborators**

- **Chicago**
  - Department of Health
  - AIDS Foundation of Chicago
- **Los Angeles**
  - Los Angeles Housing Department (LAHD)
  - Housing Authority of the City of Los Angeles (HACLA)

### **Primary Research Questions**

- **Does Housing Opportunities for Persons with AIDS (HOPWA) housing affect**
  - HIV-related health status of people living with HIV

### **Primary Research Questions**

- Measured by biological markers of HIV disease progression (CD4, viral load)
- HIV and STD risk behavior among people living with HIV
- Access to medical care
- Adherence to medical care

### **Study Overview**

- **630 people across three sites**
  - Baltimore
  - Chicago
  - Los Angeles

### **Study Overview**

- **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

### **Study Overview**

- Received usual and customary care available in the community
- **Two types of data collected**
  - Computer-based individual interviews
    - Interviewer administered and self-administered

## Study Overview

- Biological markers (blood sample)
  - Viral load
  - CD4
- Four data collection points
  - Baseline, 6 month, 12 month, 18 month
  - Monetary incentives for each session

## Participants

- Meet HOPWA eligibility
  - Low income ( $\leq 80\%$  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

## Housing Status

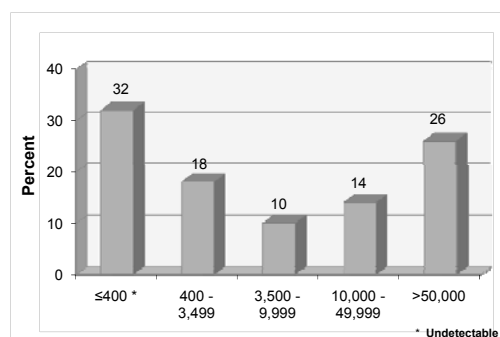
- Percent in each place, last 90 days
- Selected all that applied

Spent at least one night in...	%
Homeless shelter	14
On the street or anywhere outside	10
Public place not intended for sleeping	6
Temporarily with someone else	54
Temporary housing program	18
Welfare or voucher hotel/motel	6
Jail, prison, or halfway house	3
Drug treatment, detox unit, or drug program housing	8
Hospital, nursing home, or hospice	9
Not spent night in any of above places	5

## Housing Status

	%
Homeless	27
Unstably/transitionally housed	69
In own place, severe risk of homelessness	4

## HIV Viral Load



### **Alcohol and Drug Use**

- **Alcohol and drug use past 90 days**
  - **Alcohol: 52%**
  - **Marijuana: 26%**
  - **Cocaine: 22%**
  - **Crack cocaine: 19%**
  - **Methamphetamine / Speed: 6%**
  - **Injection drug use: 4%**
  - **Using 2+ drugs: 24%**

### **Alcohol and Drug Use**

- **Using 2+ drugs was associated with**
  - **Unsafe sexual behaviors**
  - **Lower adherence to HIV medication regimens**

### **Summary**

- **Some baseline findings so far**
  - **Medication adherence**
    - **One-third not on any HIV medications**
    - **Can achieve high levels of adherence**

### **Summary**

- **Some baseline findings so far**
  - **Viral load**
    - **Only one-third have undetectable viral load**
    - **Disclosure to family members is associated with undetectable viral load**

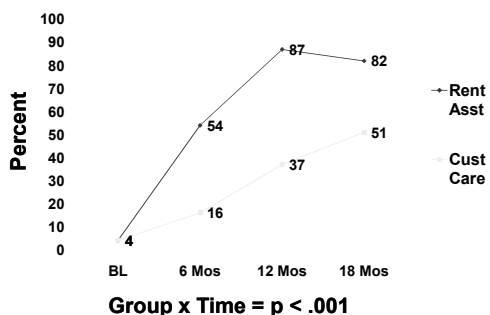
### **Summary**

- **Some baseline findings so far**
  - **HIV-related stigma**
    - **Stigma common and associated with depression and poorer self-assessed physical and mental health**

### **Summary**

- **Some baseline findings so far**
  - **Drug and alcohol use**
    - **Multi-drug users more likely to be non-adherent and have unsafe sex**
  - **Violence and abuse**
    - **High levels of violence and abuse**

### Housing Status: Own Place



### As Treated Analyses

- For each follow-up, computed variable representing homelessness 1+ nights during past 6 months
- Overall effect of homelessness was assessed by pooling data from all follow-ups

### As Treated Analyses

- Analysis controlled for multiple observations from same participant
- Covariates were included to address potential confounds
  - Socio demographic, physical and mental health, and substance use variables

### H&H Findings

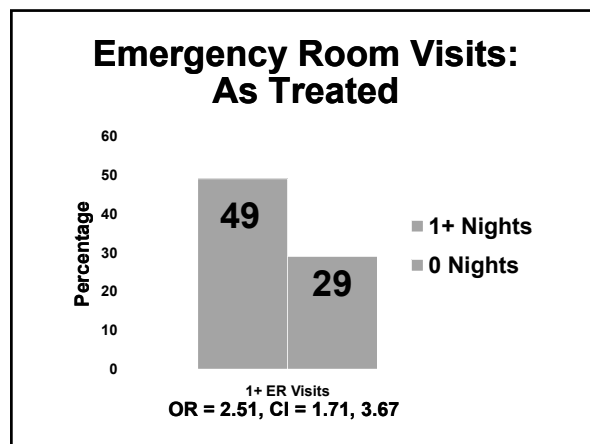
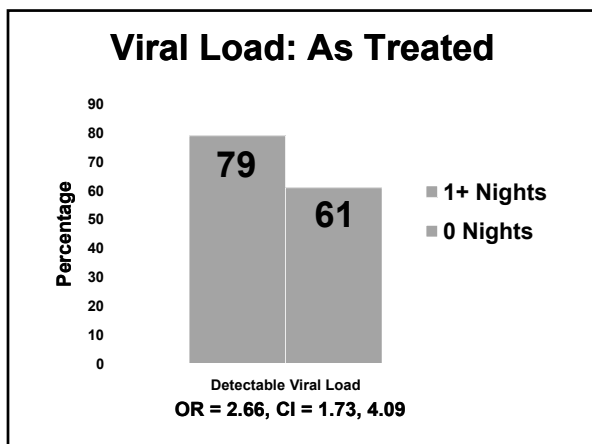
- At 18 months, 82.5% of voucher recipients had their own place, compared to 50.6% of control group members
  - At 6 months, these figures were 54.2 vs. 16.0%
  - At 12 months, these figures were 87.0 vs. 37.2%

### H&H Findings

- Compared to housed participants, and controlling for demographics and health status, those who experienced homelessness during follow-up
  - Were significantly more likely to use an ER

### H&H Findings

- Were significantly more likely to have a detectable viral load
  - An outcome with HIV prevention relevance
- Reported significantly higher levels of perceived stress
  - An outcome which relates to quality-adjusted life expectancy



### H&H Study: Typical Annual Service Delivery Costs Per Client (AIDS and Behavior, 2007)

City	Payor Perspective Costs	Societal Perspective Costs
Baltimore	\$9,256	\$10,048
Chicago	\$11,651	\$14,032
Los Angeles	\$10,639	\$12,785

### How Many Transmissions Must be Averted to be Cost-saving or Cost-effective? (AIDS and Behavior, 2007)

	Cost-saving Threshold	Cost-effective Threshold
Baltimore	.0454 (23)	.0128 (78)
Chicago	.0634 (16)	.0179 (56)
LA	.0578 (18)	.0163 (62)
Average	.0555 (1 per 19 clients)	.0157 (1 per 64 clients)

### Did H&H Achieve the Thresholds?

- To transmit HIV, let's make a simplifying assumption that there needs to be some detectable viral load (and of course some risk behavior)

### Did H&H Achieve the Thresholds?

- Applying this to H&H as-treated analysis indicates that 8.2% of persons with housing might possibly transmit, but 10.5% of persons without housing could potentially transmit (a difference of about 2.4%)  
 $-(.1332 \cdot .614) - (.1332 \cdot .791)$

### Did H&H Achieve the Thresholds?

- Let's also assume a mean of 3.81 sexual partnerships per year in H&H for HIV+ persons who had any seronegative or unknown serostatus partners, and a one-year, per-partnership transmission probability of 17.4%

### Did H&H Achieve the Thresholds?

- So,  $.024 * 3.81 * .174$  equals roughly .0157 HIV transmission averted for each housed client in a given year
- Cost-per-quality-adjust-life-year-saved is approximately \$62,493

### Sensitivity Analysis in H&H

Number of QALYs Saved Per HIV Transmission Averted (Input Parameter)	Cost-Utility Ratio
5.33 {base case}	\$62,493 {base case}
7.50	\$48,337
11.23	\$34,780

### How Does Housing Compare to Other Public Health Interventions in Terms of Cost-effectiveness?

Intervention	Approx. cost per QALY saved (varies by study)
Kidney dialysis	\$52,000 to \$129,000
Mammography, 50-69 y.o.	\$57,500
Colon cancer screening, 50-85 y.o.	\$53,600
Type 2 diabetes screening, >25 y.o.	\$63,000
HIV screening every 5 years	\$42,200
Syringe exchange	Cost-saving
HIV behavioral interventions	Generally cost-saving
PrEP	\$298,000
HIV vaccine	\$22,617 to \$111,277
Early vs deferred HAART	\$15,159 to \$36,301
Deferred vs no HAART	\$46,423
Mycobacterium avium complex (MAC) prophylaxis	\$44,500

### Recent Studies of Cost Offset

- Larimer et al. (JAMA, 2009)
  - Housing first model for persons with severe alcohol challenges created stability, reduced alcohol consumption, and decreased health costs 53% relative to wait-list condition

### Recent Studies of Cost Offset

- Gilmer et al. (Psych Services, 2009)
  - Participants in a San Diego housing first program had increased case management and outpatient care costs but these were nearly entirely offset by decreases in inpatient, ER and criminal justice system

## Recent Studies of Cost Offset

- **Economic Roundtable**
  - Report: “Where We Sleep,” 2009
  - Study of 10,193 persons in LA County
    - 9,186 were homeless while receiving General Relief Public Assistance

## Recent Studies of Cost Offset

- 1,007 exited homelessness via supportive housing
- Typical public monthly cost in group experiencing homelessness: \$2,897
- Typical public monthly cost in supportive housing group: \$605

## The Wall Street Journal Housing is HIV Prevention and Health Care Housing Interventions Work

### Healthy Homes

A study of ill homeless people in Chicago found that those who received housing required fewer public services than those who received usual care

Estimated costs over 18 months, in millions



Mary Pelts, in her kitchen. She was in the usual care group, but got an apartment through CHHP after the study ended.

Estimated total costs  
Group given housing\* \$5.5 million  
Usual care \$6.9 million

\*Includes housing and case management costs

Source: Chicago Housing for Health Partnership

## Evaluating HIV Housing Conclusions

- Results of economic evaluation studies of housing indicate it is either cost-saving or within the range of interventions generally considered to be “cost-effective” and “well accepted” by society

## Evaluating HIV Housing Conclusions

- Each prevented HIV infection saves hundreds of thousands of dollars in life-time medical costs, and even more importantly, years of (quality-adjusted) life
- Evidence indicates housing is an effective and efficient HIV care and prevention strategy

## Levels of HIV Prevention Interventions

- Individual
- Dyad
- Family
- Group
- Community
- Structural
  - Laws and policies
  - Environment
  - Social determinants