



# A vicious cycle: food insecurity and substance use are bi-directionally related in marginally-housed HIV-infected adults in San Francisco, CA

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## Introduction

- Food insecurity: limited or uncertain availability of nutritionally adequate, safe foods or the inability to acquire acceptable food in socially acceptable ways<sup>1</sup>
- Affects half of HIV-infected patients in the U.S<sup>2</sup>
- Food security and substance use are associated in cross-sectional studies, but the direction of the association is unclear<sup>3</sup>
- Hypothesis: Food insecurity will be bidirectionally associated with substance use in a sample of marginally-housed HIV-infected adults<sup>3</sup>
- Sample: 331 HIV-infected, marginally-housed individuals followed quarterly over a median of 4 visits and 28 months in the Research on Access to Care in the Homeless (REACH) cohort.

## Project Aims

**Examine relationship between food insecurity and substance use in a longitudinal cohort of marginally-housed HIV-infected adults**

## Methods

- **Primary outcomes:** 1. Household Food Insecurity Access Scale
- 2. Substance use based on self-reported use in the previous 90 days at each visit
- **Covariates:** Demographics, socioeconomic controls, clinical controls
- **Analysis:** Lagged dynamic transition models for the two outcomes of interest controlled for confounders identified in the literature
- As a secondary analysis, created models for individual illicit substances, alcohol.

## Results and Outcomes

- Mean age was 42.9 (SD 7.8)
- 70.4 % were male
- 62.5% % of participants were non-white
- 33.6% reported any illicit substance use in the preceding 90 days
- 7.5 % reported problem drinking in this same time period.
- 56.7 % reported recent food insecurity at baseline.

**Table 1.**  
Association of changes in individual drug use with food insecurity, N=310 for each model

Ref: persistent abstinence from illicit substance	Food insecure AOR (p-value)
Persistent heroin use	2.90 (0.06)
Started heroin use	3.10 (0.04)
Stopped heroin use	0.72 (0.51)

Ref: persistent abstinence from illicit substance	Food insecure AOR (p-value)
Persistent meth/speed use	2.10 (0.02)
Started meth/speed use	4.01 (<0.001)
Stopped meth/speed use	2.10 (0.05)

Ref: persistent abstinence from illicit substance	Food insecure AOR (p-value)
Persistent crack/cocaine use <sup>2</sup>	1.75 (0.04)
Started crack/cocaine use	1.90 (0.04)
Stopped crack/cocaine use	1.70 (0.09)

Ref: persistent abstinence from illicit substance	Food insecure AOR (p-value)
Persistent problem drinking <sup>3</sup>	1.33 (0.48)
Started problem drinking	1.34 (0.48)
Stopped problem drinking	0.95 (0.90)

**Table 2.**  
Associations of transitions into food insecurity with current individual substance use, N=310 for each model

Referent: persistent food security	Crack/cocaine AOR (p-value)	Meth/Speed AOR (p-value)	Heroin AOR (p-value)	Problem drinking AOR (p-value)
Became food insecure <sup>2,3</sup>	2.10 (0.06)	3.66 (<0.001)	2.88 (0.03)	1.96 (0.22)
Persistent food insecure	1.94 (0.07)	3.32 (<0.01)	2.40 (0.03)	1.77 (0.24)
Became food secure	1.60 (0.24)	1.85 (0.14)	0.98 (0.97)	1.18 (0.74)

## Discussion

- Becoming food insecure is associated with increased illicit substance use
- Initiating illicit substance use is associated with development of food insecurity
- Therefore, bidirectional relationship between food insecurity and substance use
- Both illicit substance use and food insecurity are associated with worse HIV outcomes

## Implications

**Public health interventions that address substance use and food insecurity simultaneously may have the best chance of breaking this cycle, and may improve HIV outcomes.**

## Literature Cited

1. Bickel G, M. Nord, et al. Guide to Measuring Household Food Security, Revised 2000. Alexandria, VA, U.S. Department of Agriculture, Food and Nutrition Service. 2000.
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3. Weiser SD, Young SL, Cohen CR, et al. Conceptual framework for understanding the bidirectional links between food insecurity and HIV/AIDS. *Am J Clin Nutr*. 2011;94(6):1729S-1739S.

## Acknowledgements

**We appreciate the assistance of the Global Food Initiative for assisting with research funding and education. Research also funded by NIH R01MH095683.**