

Housing as a Determinant of HIV Health Outcomes

Results from a Systematic Review of Research 1996-2014
& Implications for Policy and Program
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Housing is unique as a social determinant of health shaping our daily lives – but also manifestation of broader, antecedent, structural processes of inequality and marginalization that are fundamental drivers of HIV vulnerability and poor outcomes among the infected



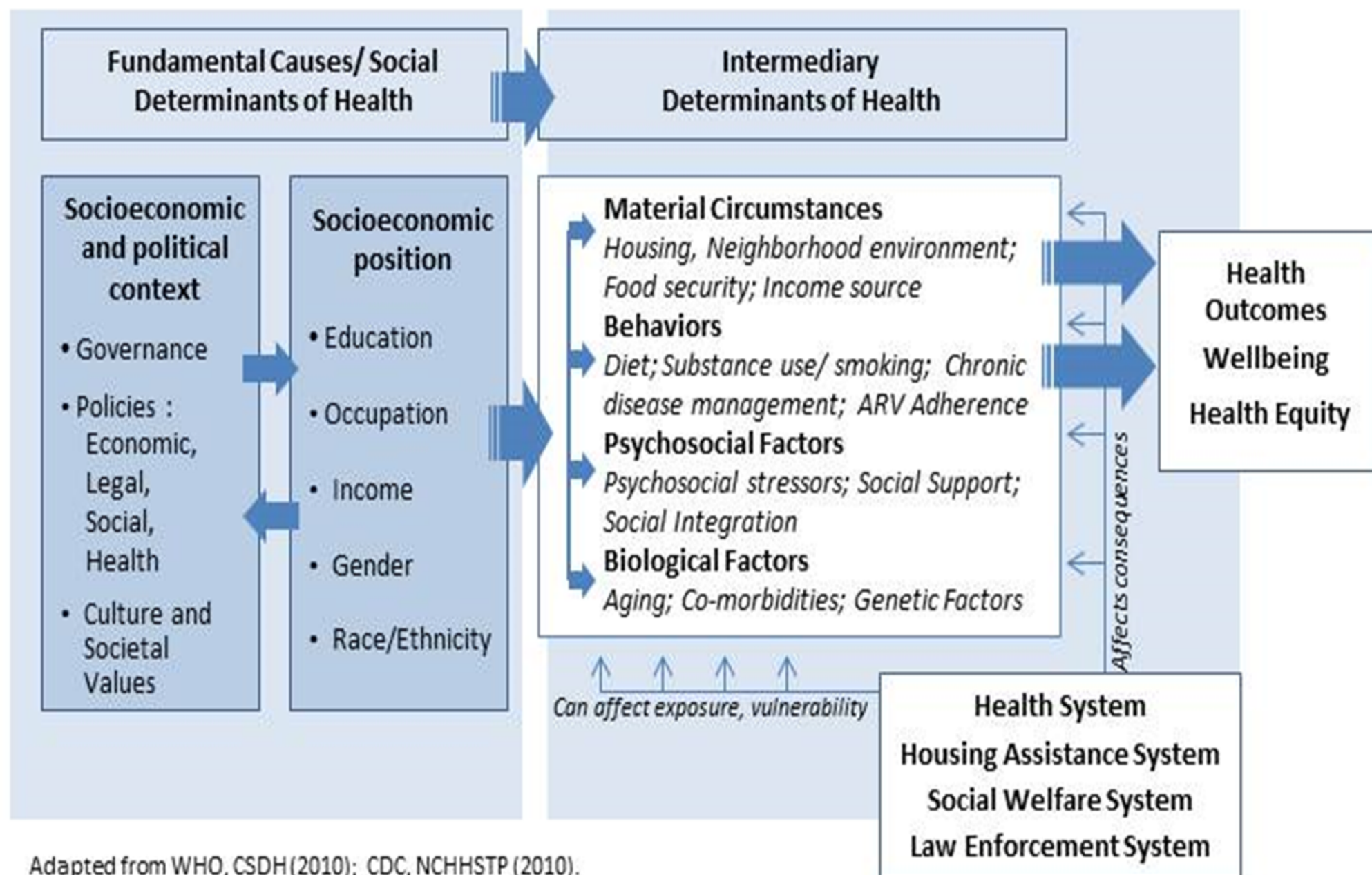
INTRODUCTION

- Housing is an (intermediary) social determinant of health and health equity
- Fundamental determinants of health are macro level social, cultural, economic, political policies and dynamics that affect
- Socioeconomic positions of individuals, groups, communities within society
 - determines access to education, work, income
 - Influenced by gender, race/ethnicity, other bases of social inclusion/ exclusion
- Socioeconomic status determines exposure to health compromising or health promoting conditions - to "intermediary" social determinants

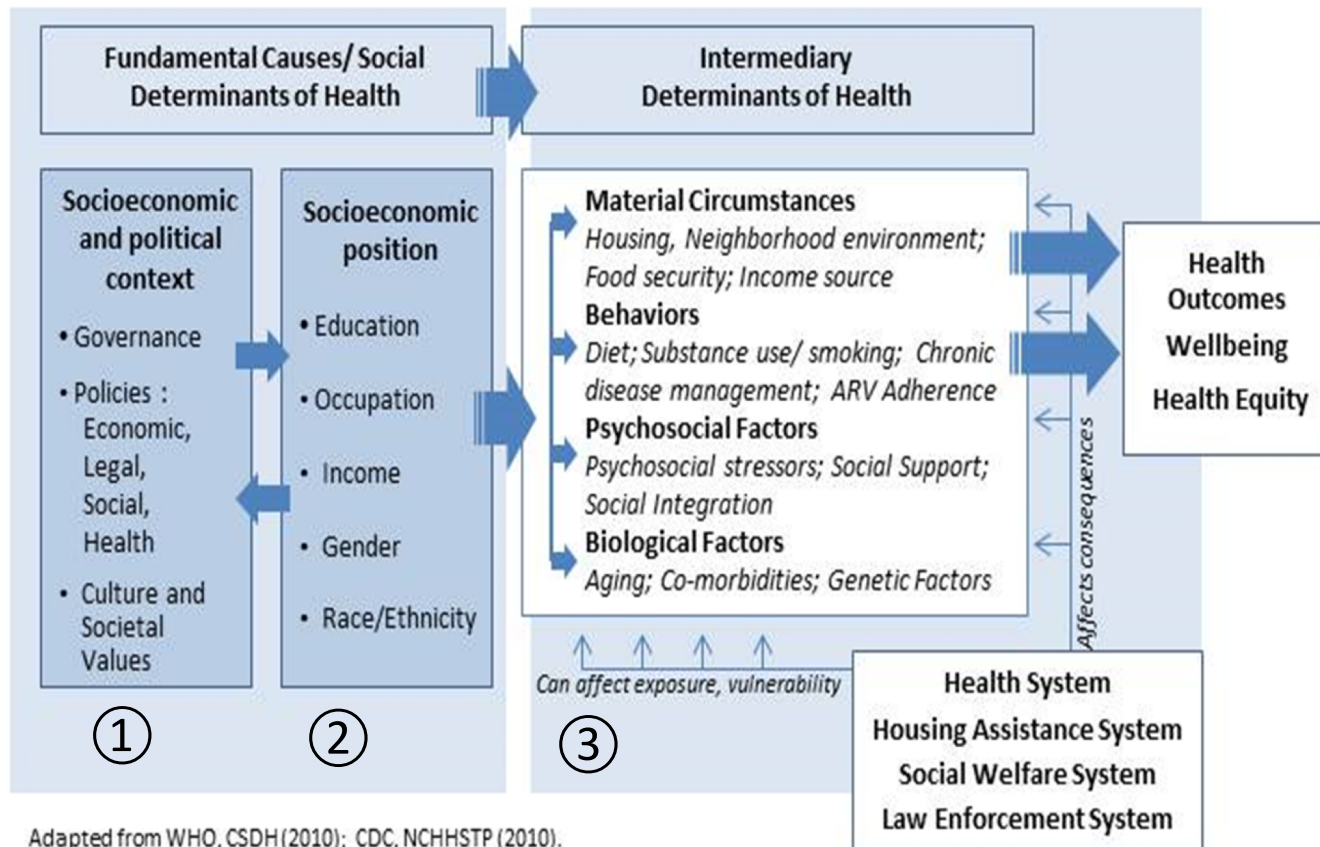
INTRODUCTION

- Housing links “upstream” economic, social, and cultural determinants to the more immediate physical and social environments in which we carry out our day-to-day lives
- Housing is where our economic, social, and personal, lives come together
 - "Our health is determined by resources and supports available in our homes, neighborhoods, and communities"
--Healthy People 2020
- The "housing system” as well as the health system affects exposure and vulnerability to broader social determinants of disease or injury as well as their consequences

Fundamental and Intermediary Social Determinants of Health Conceptual Framework



Adapted from WHO, CSDH(2010); CDC, NCHSTP (2010).



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- ① Macro level structural determinants of health that affect socioeconomic positions of individuals and communities →
- ② SES determines our access to resources, life conditions, and life chances (the 'social determinants of health' as usually understood) →
- ③ Intermediary determinants of health link the 'upstream' economic, social, cultural determinants to the more immediate physical and social environments in which we carry out our day-to-day lives

Direct and Indirect Effects of Housing

Lack of stable, secure, adequate housing:

- Lack of protected space to maintain physical and psychological well-being
- Constant stress producing environments and experiences
- Neighborhoods of disadvantage and disorder
- Compromised identity and agency
- Press of daily needs - barrier to service use when available
- Lack resources for nutritious food, medical costs
- Transiency - barrier to stable sources of social support
- Structuring the private sphere— lack of housing is barrier to forming stable intimate relationships

Systematic Review of the Research

- Pulling together the evidence
- Increasing number of studies have shown housing is linked with the risk for HIV exposure and transmission, and the care and health of persons living with HIV/AIDS
- Canadian and US researchers conducted a systematic review to examine and summarize available evidence
- Why systematic review?
 - Synthesizing all of the available research evidence reduces the likelihood of being misled by a single or a few studies and increases confidence in the findings
 - Helpful knowledge translation tool - allows knowledge users to go to one source to access research evidence about a particular question

Methods

- SEARCH STRATEGY

(housing OR dwelling OR homeless OR homelessness
OR living accommodation OR residence OR residential)
AND

(HIV OR PHA OR PWHA OR PLWA OR PLWHA)

- DATABASES

Medline, PsychInfo, Healthstar, Embase, Sociological Abstracts and Social Science Abstracts, CINAHL and the Cochrane Library

- DATES 1996 - April 2014

Also contacted experts to identify any additional relevant studies

Aidala AA et al. Am J Public Health, 2016 Jan; 106(1):e1-23.

<http://ajph.aphapublications.org/doi/pdf/10.2105/AJPH.2015.302905>

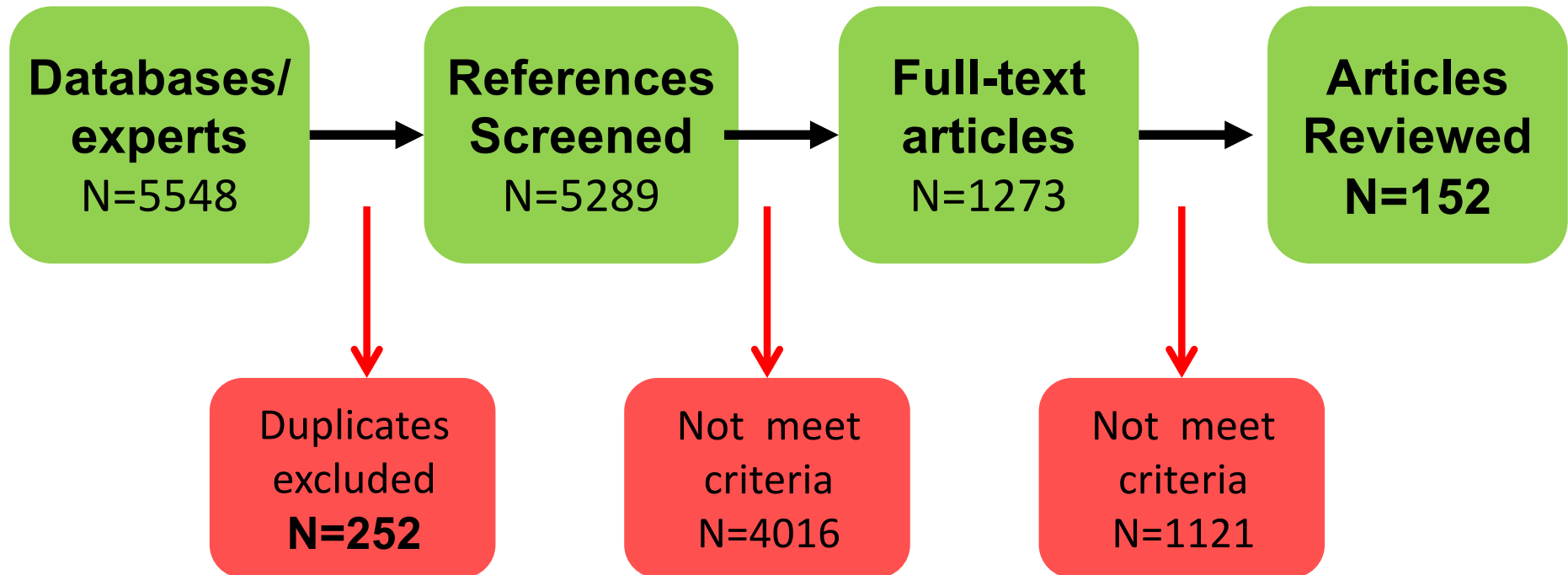
Selection Criteria

- Sample must include people living with HIV/AIDS
 - will do separate review with people at-risk for HIV/AIDS
- Studies with analysis of empirical data with at least:
 - one measure of housing status as an independent variable
 - at least one quantitative health outcome as a dependent variable
- Conducted in high resource country
 - U.S. Canada, Europe, etc.

Definitions

- **Housing status:** any measure of homelessness, marginal housing, housing instability, or quality of housing
- **Health-related outcomes:**
 - HIV medical care (e.g. access to treatment and care, service utilization, adherence to treatment)
 - Clinical health outcomes (e.g. CD4 count, viral load, mortality)
 - Other health outcomes (e.g. co-morbidities, mental health, physical health functioning, quality of life)
 - HIV drug and sex risk-behaviors

Flow chart for included articles



- From 5289 studies screened, 152 meet review criteria
- 112 in USA, 27 in Canada, 12 in Europe, 1 S Korea
- Represents 139,757 HIV positive study participants

Reviewing and Quality Appraisal

- Two independent reviewers determined eligibility, two assessed methodological quality of each article
- Considered appropriate methods for measuring exposure, outcomes, and methods to control confounding
 - exposure (i.e. housing) good = clear and replicable definition of housing status including time specifier
 - outcome measures (i.e. HIV care, viral load, etc.) good = objective measure based on clinical assessment or validated self-report measure
 - controls for confounding good = appropriate analytic methods to control for other variables known to be associated with outcome including at least one SES indicator (e.g. poverty, type insurance) and one behavioral health indicator (substance use, mental health symptoms)

HOUSING & HIV MEDICAL CARE



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Health Care Outcomes

- 35 papers examined access to HIV medical care and medications, service utilization
- 33 (94%) found worse HIV medical care outcomes among those who were homeless/ unstable/ inadequately housed compared to PLWH 'better' housing
- 29 (83%) reported statistically significant differences comparing homeless/ unstable/ inadequate housed PLW and those with stable, appropriate housing

HIV Health Care Outcomes

Study Design	Health Care Access / Utilization		
	Negative outcome ¹	Stat Signif	% Stat Signif
RCT Housing Interventions	1/1	0/1	0.0%
Longitudinal Studies	9/11	9/11	81.8%
Cross-sectional Studies	23/23	20/23	87.0%
Total number of papers	35	29	82.9%

Adherence

- 30 papers examined housing status and adherence to ARV treatment regimens
- 28 (93%) found worse adherence among those who were homeless or unstably housed
- 24 (80%) reported statistically significant differences in adherence comparing homeless/ unstable PLW and those with stable housing

Adherence

Study Design	ART Adherence		
	Negative outcome ¹	Stat Signif	% Stat Signif
RCT Housing Interventions	0/1	0/1	0.0%
Longitudinal Studies	10/11	9/11	81.8%
Cross-sectional Studies	18/18	15/18	83.3%
Total number of papers	30	24	80.0%

ER Visits/Hospital Stays

- 13 papers examined housing status emergency room visits and/or hospital inpatient stays among PLWH
- 13/13 (100%) found higher rates of ER visit or inpatient stays among those who were homeless or unstably housed
- 12/13 (92%) reported statistically significant differences comparing homeless/ unstable PLW and those with stable housing
- ER/ Inpatient service utilization indicator of poor engagement with HIV primary care with implications for health of PLWH and health care cost savings

HIV Clinical Outcomes



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HIV Clinical Health Outcomes

- 27 papers looked at HIV-related health outcomes CD4 counts, viral load, opportunistic infections, mortality
- 24 (89%) found worse HIV-related health outcomes among those who were homeless or unstably housed
- 20 (74%) reported statistically significant differences comparing homeless/ unstable PLW and those with stable housing
- 5 of 8 mortality studies found housing status associated with HIV mortality risk - studies that assessed lifetime homelessness or poor housing at diagnosis less likely show association with mortality

HIV Clinical Outcomes

Study Design	Viral load / CD4 count		
	Negative outcome ¹	Stat Signif	% Stat Signif
RCT Housing Interventions	2/2	2/2	100.0%
Longitudinal Studies	13/15	10/15	66.7%
Cross-sectional Studies	9/10	8/10	80.0%
Total number of papers	27	20	74.1%

Other Health Outcomes

- 27 papers looked at other health outcomes – mental health, health comorbidities, health functioning or quality of life etc.
- 26 (96%) found higher rates of other health outcomes among those who were homeless or unstably housed
- 25 (93%) reported statistically significant differences comparing homeless/ unstably housed PLW and those with stable housing

Housing and HIV Risk Behaviors



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HIV Risk Behaviors

- 22 papers examined HIV sex and drug risk behaviors – needle using and sharing, sex exchange, unprotected sex, etc.
- 22 (100%) found higher rates of risk behavior among those who were homeless or unstably housed
- 18 (82%) reported statistically significant differences comparing homeless/ unstably housed PLW and those with stable housing

HIV Risk Behaviors

Study Design	Sex or Drug Risk Behavior		
	Negative outcome ¹	Stat Signif	% Stat Signif
RCT Housing Interventions	1/1	0/1	0.0%
Longitudinal Studies	8/9	8/9	85.7%
Cross-sectional Studies	12/12	10/12	83.3%
Total number of papers	22	18	81.8%

Housing and the Treatment Cascade

- PLWH who are homeless or unstably housed:
 - More likely to delay entry into care
 - Experience discontinuous care – lack of retention
 - Not be receiving medical care that meets minimal clinical practice guidelines
 - Less likely to be on ARVs or adherent to regimen
 - Less likely achieve sustained viral suppression

Housing Assistance = Better Outcomes

- Homeless/unstably housed PLWHA whose housing status improves over time are:
 - more likely to report HIV primary care visits, continuous care, care that meets clinical practice standards
 - more likely to return to care after drop out
 - more likely to be receiving ARVs
 - more likely to be virally suppressed
- Housing status significant predictor of health care access & outcomes regardless of other barriers to prevention and care

Cost Considerations

Review did not consider cost studies BUT other research:

- Two large-scale intervention studies examine the impact of housing on health care utilization & outcomes among homeless/unstably housed persons with HIV & other chronic medical conditions
- The Chicago Housing for Health Partnership followed 407 chronically ill homeless persons over 18 months following discharge from hospitals
- The Housing and Health (H&H) Study examined the impact of housing on HIV risk behaviors and medical care among 630 homeless/unstably housed HIV+ persons
- Findings: Investment in housing is cost effective

H & H Comparative Cost-Effectiveness

- Evaluated the “cost-utility” or “cost per quality adjusted life year (QALY) saved” of housing as an HIV health care intervention
- “Cost per QALY” is the measure used by health economists to compare the “value for money” of health care interventions
- Cost-utility of the H&H housing intervention a function of cost of services provided, transmissions averted, avoidable medical costs saved, and life years saved
- Cost per QALY of H&H housing as health care = \$62,493
- Well within the \$100,000 accepted standard for “cost-effective” health care interventions

Holtgrave et al. *AIDS Behav* 2013;17(5):1626-31

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Summary

- Findings show homelessness/ unstable/ inadequate housing is consistently associated with worse engagement with HIV health care - poor retention in care, lack of ART uptake, lack of adherence to treatment
- Homelessness/unstable/inadequate housing associated with poor HIV clinical outcomes - failure to achieve viral suppression
- Homelessness/ unstable housing also associated with increased sex and drug risk behaviors
- Better/ Improved housing associated with retention in care, ART uptake, treatment success

Policy Implications

- Housing status is strongly association with HIV medical care and outcomes - and medical expenditures
- Homelessness/ unstable/ adequate housing contribute to continued HIV transmission
- Housing is a promising structural intervention to stop the spread of HIV and improve the health of individuals and communities most affected by the epidemic
- Housing can be a cost savings/ cost effective prevention and treatment intervention

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