

Update Report # 41



Housing Status and Health Outcomes among Persons Living with HIV/AIDS

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C.H.A.I.N. REPORT

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Much of the present report is a summary and extension of analyses found in prior CHAIN studies:

Abramson D, Lee G. Trends in Health Status. Community Health Advisory & Information Network Update Report #21. Columbia School of Public Health. 1999.

Abramson D, Aidala A, Lee F. Comorbid Conditions: Intersecting Needs among the CHAIN Cohort. Community Health Advisory & Information Network Update Report #24. Columbia School of Public Health. 2000.

Aidala A, Lee G. Housing Assistance and Housing Stability Among Persons Living with HIV/AIDS. Community Health Advisory & Information Network Update Report #32. Columbia School of Public Health. 2000.

Messeri P, Abramson D, Lee F, Lee G, Aidala A. The Impact of Ancillary Services on Entry and Retention to HIV Medical Care in New York City. Community Health Advisory & Information Network Update Report #30. Columbia School of Public Health. 2000.

In addition, some material presented here has also been presented in a collaborative work between the Mailman School of Public Health and Bailey House, Inc. The Baily House study was funded by The New York Community Trust and The Jacob and Valeria Langeloth Foundation.

Aidala A, Jackson T, Fuentes-Mayorga N, Burman R. Housing, Health and Wellness Study: A Collaborative Project by Columbia University School of Public Health and Bailey House, Inc. October, 2000.

INTRODUCTION

A growing body of literature, including prior CHAIN studies, has shown that homelessness or unstable housing is associated with barriers to medical care, lower rates of service utilization, and poor adherence to complex treatment regimens (See review in HRSA 1999. See also Messeri et al. 2000, Abramson, Lekas et al. 2000; Messeri 1999; Aidala 1999; Cunningham et al. 1999; Gallagher et al. 1997; McMurray-Avila 1997; Arno et al. 1996; Aidala et al. 1995; Wood & Valdez 1991). We also know that access to health care and needed supportive services is a major determinant of health outcomes. People living with HIV who do not access health care on a regular basis, and who do not follow prescribed medication regimens, have health outcomes that are dramatically different from those who do.

The goal of the present report is to investigate the relationship between housing and health outcomes among persons living with HIV/AIDS in New York City. We have characterized health along two dimensions: *clinical health indicators* (expressions of one's physical state), as illustrated by self-reported t-cell counts, viral load levels, and recent opportunistic infections; *perceived health status*, based upon questions related to one's health in general, how it compares to one's health six months earlier, and a composite scale that encompasses measures of limitations in activities of daily living, social activity impairment, experience of pain, and other markers of physical and mental health functioning. The experience of good health or limitations associated with poor health are related more directly to quality of life and are important indicators of serious morbidity and risk for mortality in addition to biomedical clinical markers (Ferraro & Farmer 1999).

KEY FINDINGS

- Housing needs are pervasive among persons living with HIV/AIDS in New York City. Focusing on the most recent data (1998 - 2000), one third of CHAIN participants (33%) were unstably housed, inadequately housed, or without housing altogether at the time of interview. Almost twice as many (64%) had experienced homelessness or housing instability at some point in their lives. Many individuals who are currently housed are experiencing housing problems including inability to pay rent that put them at risk for homelessness.
- Individuals with housing difficulties, especially the homeless, are more likely to experience poor health. Over 40% of the homeless describe their current health as only "fair" or "poor" compared to 29% of the stably housed. Homeless individuals are also more likely than others to say that their health is worse now compared to six months ago.
- Using a standardized measure, individuals who are homeless or unstably housed have lower mental health functioning than those in stable housing.
- Housing status is a significant predictor of viral load, controlling for a range of client characteristics and medical care and treatment factors. all the other variables in the analysis. Being stably housed predicts low viral load or a recent decrease in viral load; homelessness or unstable housing predicts higher viral loads.

- The data from seven waves of CHAIN study interviews from 1995 to 2000 show that there is a significant relationship between homelessness/unstable housing and remaining outside of or marginal to HIV medical care.
- Providing housing services has consequences for increasing access and engagement with medical care among homeless or unstably housed persons living with HIV. People with housing needs who get any kind of practical housing assistance are almost four times more likely to enter into medical care than those who do not get housing assistance, and they are twice as likely to enter into and continue in care that meets current clinical standards for treatment of HIV/AIDS.
- Living in or being at risk for unstable housing is one of the most important factors limited use of combination therapy, controlling for a wide range of individual client characteristics as well as service system variables. Individuals with a history of homelessness/ unstable housing who receive housing services initiate combination therapy at rates comparable to persons with no history of housing instability
- The homeless have the highest rates of non-adherence compared to individuals in other housing situations. In the most recent interviews, 48% of individuals who were homeless reported missing pills or being off schedule for medication dosing. Only 38% could answer that they take their medication “exactly as prescribed, almost never missing a dose.” The remainder report various degrees of nonadherence.
- These findings suggest that providing housing and supportive services (case management, mental health and drug treatment, etc.) needed by the many individuals with a history of homelessness among the HIV infected would significantly improve the health status of a sizeable proportion of persons living with HIV in New York City.

BACKGROUND AND METHODOLOGY

A. The CHAIN survey and data

The relationship between housing status and health outcomes will be examined through an analysis of aggregate data from a representative sample of HIV-infected individuals in New York City. The data were collected as part of the CHAIN Project, an ongoing longitudinal study funded since 1994 by the City’s Title I Health and Human Services Planning Council (the Planning Council). The CHAIN Project tracks individuals’ encounters with both medical care and ancillary services and links patterns of service delivery to a wealth of information on individual characteristics and health outcomes. The CHAIN Project has interviewed HIV-infected individuals in the cohort every 6-12 months since 1994, and data for this study are current as of 1999-2000. Close to 1000 individuals have been interviewed as part of the CHAIN project and more than half of these have been homeless or precariously housed at some time during the study period.

The CHAIN Project followed a recruitment procedure designed to yield a broadly representative sample of people living with HIV in New York City. Study recruitment was conducted in 43 agencies which were selected so that there would be roughly an equal number of medical care and social service sites represented, as well as representation both from sites that were Title I grant recipients, and sites which

were not. At 30 sites, staff contacted a random sample of clients. A sequential enrollment procedure was implemented at the remaining 13 agencies. All eligible clients present on a small number of recruitment days were invited by agency providers and CHAIN staff to participate in the CHAIN study. A total of 648 individuals recruited from participating agencies completed baseline interviews. The agency-based sample was supplemented with 50 interviews conducted with HIV+ individuals with little or no connection to medical and social services. These individuals were contacted at outreach sites and through nominations from CHAIN participants. More detailed information on sampling strategy and recruitment may be obtained upon request from MHRA (CHAIN Technical Report #1, 1995).

Subsequent interviews were conducted at approximately six to twelve month intervals. Round two interviews were completed with 568 participants, 92% of the cohort still alive and not known to have moved outside of New York City. Round three interviews were conducted with 480 of CHAIN participants, 88% of the cohort who were alive and still residing in New York City. Round four interviews were conducted with 420 CHAIN participants or 82% of the surviving cohort. In an effort to replenish the CHAIN sample which had lost a number of participants to death and other factors, in 1998 an additional 267 individuals were added to the study, using the same agency and community sources. These individuals constituted the 'refresher' sample and joined the 385 CHAIN continuing participants who have been involved in the project since its inception in 1994, bringing the total number of people interviewed in round five to 652. In round six 508 participants, and in round seven 444 participants were interviewed representing 80% of those eligible at each interview period (not known to be deceased or moved out of the NYC area).

All CHAIN interviews are conducted in person by interviewers recruited from communities throughout New York City and trained specifically for the study. Interviewers are matched to respondents as much as possible with regard to gender and race/ethnicity. Approximately one-third of the field staff are themselves HIV positive. Interview topics include sociodemographic characteristics, the full range of experiences with access and use of medical and social services, and quality of life. At each round of interviews participants are asked about their current living situation, their recent history of housing instability, and whether or not they have had any housing problems or need for assistance with housing issues. Information was also obtained about rental assistance, housing placement or other housing services received.

The CHAIN data can be considered a fairly representative sample of the total population of persons living with HIV in New York City. Thus, generalizations can be made from the patterns seen in the data at hand to the broader population. However, the analyses of the role of housing services for treatment access and adherence is limited by the fact that detail about different housing service models is not available in the CHAIN data set. Often we can designate formerly homeless persons only as either 'had services' or 'no services'.

In the analyses that follow, we examine the relationship between the *situation* of being homeless or unstably housed and health status indicators. For most analyses, we limit ourselves to the most recent data, provided by 652 individuals who completed interviews at Time 5, Time 6 and/or Time 7, during the time period 1998 through the end of 2000. Each interview with each CHAIN study participant constituted an opportunity to observe the relationship between that person's current or recent housing instability and his or her current health status and functioning, providing over 1600 observation points. For other analyses, we will utilize the entire over time CHAIN data base which includes 996 individuals and over 3000 observation points.

Measuring Homelessness/ Housing Instability. We ask respondents about their current living arrangements and recent history (any time during the six months prior to interview) of unstable or inadequate housing. We classify persons as “stably housed,” “unstably housed” or literally “homeless.” Persons who describe themselves as homeless, or sleeping on the street, in a shelter, an SRO or welfare hotel, temporarily in jail with no other place to live, or in an abandoned building, a public or private place not intended for sleeping (e.g. subway station) will be considered ‘homeless’. Individuals who are currently in some type of transitional housing (e.g. a halfway house, drug treatment housing) or who are temporarily doubled up with friends or family, in someone else’s home will be considered “unstably housed”. This approach follows closely the classification of homelessness adopted by the Housing Workgroup of the NYC HIV Planning Council and includes not only clients who are literally homeless but also those who are precariously housed, who lack a stable, permanent living situation they can comfortably maintain. As the HRSA Bureau of Primary Care has emphasized, recognition of instability of living arrangement is crucial to the definition of homelessness (HRSA, 1999)¹.

Table 1. CHAIN Study Participants Compared to NYC AIDS Cases

	AIDS Cases, NYC¹	CHAIN: Wave 5	CHAIN: Wave 7
	1998	1998	2000
n	(40,014)	(652)	(444)
MALE	(29,900)	(376)	(238)
<i>Non-Hispanic White</i>	28%	19%	19%
<i>Non-Hispanic Black</i>	38%	54%	54%
<i>Hispanic</i>	33%	26%	27%
<i>Other</i>	1%	2%	1%
FEMALE	(10,114)	(276)	(206)
<i>Non-Hispanic White</i>	12%	5%	5%
<i>Non-Hispanic Black</i>	53%	64%	66%
<i>Hispanic</i>	34%	30%	29%
<i>Other</i>	1%	1%	1%

1 Source: NYC DOH Office of AIDS Surveillance

¹ In 1997 the NYC HIV Council Housing Work Group put forth a definition of homelessness, based on the McKinney Act: A homeless person is defined as an individual who lacks a fixed, regular and adequate night-time residence; and whose primary nighttime residence is a shelter, an institution that provides temporary residence for individuals intended to be institutionalized, or public or private place not designated for or ordinarily used as a regular sleeping accommodation. Individuals who are at imminent risk of losing their housing because they are being evicted from their residence or are being discharged from institutions and have nowhere else to go are also considered to be homeless.

PREVALENCE OF HOMELESSNESS AND HOUSING PROBLEMS

Homelessness and housing problems are pervasive among persons living with HIV/AIDS in New York City. Focusing on the most recent data, provided by individuals who were interviewed at Time 5, Time 6 and/or Time 7, (1998 - 2000), one third (33%) were unstably housed, inadequately housed, or without housing altogether at the time of interview. Almost twice as many (64%) had experienced homelessness or housing instability at some point in their lives; many individuals who were currently housed were experiencing housing problems; 48% report difficulties paying rent, housing that was inadequate for their needs, or inability to stay current residence due to other reasons. Among CHAIN respondents interviewed in recent years, 15% were homeless or unstably housed at three or more interview periods (Table 2). Housing has been the greatest client self-reported unmet need for services among individuals living with HIV in New York City (see e.g. CHAIN Update Report #16).

Table 2.
Experience of Homelessness and Housing Problems among CHAIN Study Participants

	(n)	%
Recent Experience of Homelessness		
<i>Continuous Stable Housing</i>	(438)	67%
<i>Unstable Housing</i>	(118)	18%
<i>Homelessness</i>	(96)	15%
Recent Experience of Housing Problems		
<i>Self-Report Housing Problems</i> <i>(can't pay rent; can't stay in housing; no heat/ poor condition; access problems etc)</i>	(311)	48%
Lifetime Experience of Homelessness or Unstable Housing		
<i>Ever Homeless or Unstably Housed</i>	(419)	64%
Chronic or Recurrent Housing Instability		
<i>Homeless or Unstably Housed at 3+ Interviews</i>	(98)	15%

Note: Pooled information from T5, T6, and T7 interviews (1998 - 2000) representing 652 individuals. "Recent" experience refers to housing status or housing problems at the time of interview or any time within 6 month prior to interview.

HOUSING STATUS AND HEALTH OUTCOMES

1. Self-Perceived Health Functioning

Table 3 presents a number of measures of self-perceived health functioning by respondents' recent experience of homelessness or unstable housing. We can see that individuals with housing difficulties, especially the homeless, are more likely to experience poor health. Over 40% (43%) of the homeless describe their current health as only "fair" or "poor" compared to 29% of the stably housed. Individuals in unstable housing situations but not literally homeless show rates of "poor" health in between these two extremes. Homeless individuals are also more likely than others to say that their health is worse now compared to six months ago.

The CHAIN interview includes a widely used, standardized instrument to measure health functioning, the MOS-SF 36 (McHorney, Ware & Raczek 1993). The scale has been standardized such that a score of 50.0 indicates good health functioning. Scores below 45.0 indicate poor physical health, and are associated with health limitations sufficient to impair regular employment. (Ware et al. 1994).

Almost 60% (58%) score below the score indicating poor physical functioning. Interestingly, individuals who are unstably housed but not literally homeless score highest on the health functioning measure, perhaps because this includes individuals who are currently, if only temporarily, in a residential treatment setting or temporary or transitional housing which often provides onsite services.

The MOS instrument also provides a summary mental health functioning score. Cut points have been established such that a score of 42.0 or below indicates clinically relevant symptoms (e.g. depression, anxiety etc). As score of 37.0 or below is consistent with clinical diagnosis of disorder and represents the mean score among psychiatric inpatient populations. CHAIN study participants who are homeless or unstably housed have lower mental health functioning scores than their stably housed counterparts.

While the association between homelessness and low mental health functioning is clear, it is not possible with the data at hand to untangle causal direction. As a further exploration of this issue, we divided the sample into those with very low mental health scores for three interview periods or more, as an indicator of the more seriously and persistently mentally ill among the CHAIN cohort. The relationship between "SPMI" so defined and housing status was not statistically significant (data not shown). Other CHAIN studies have shown that low mental health scores at prior interview do not predict housing loss among individuals with a history of housing instability, controlling for other services received, especially financial or rental assistance (Aidala et al., CHAIN Update Report #32). An individual's mental illness may precede and contribute to housing instability. On the other hand, the stress and chronic challenges associated with homelessness can compromise mental health functioning and/or exacerbate an underlying mental health condition.

Table 3
Health Status by Recent Experience of Homelessness / Unstable Housing

	Stable Housing	Unstable Housing	Homeless
n	(1225)	(165)	(128)
In general, would you say your health is...			
<i>Excellent or Very Good</i>	38%	38%	23% **
<i>Good</i>	32%	28%	34%
<i>Fair or Poor</i>	29%	34%	43%
Compared to six months ago, is your health generally...			
<i>Better</i>	39%	47%	41% *
<i>Same</i>	47%	40%	37%
<i>Worse</i>	14%	14%	22%
Physical Health Functioning¹			
<i>Physical Health Summary Score (PCS)</i>	43.85 (11.7)	47.21 (11.7)	42.00(11.8)***
<i>“Poor” Physical Functioning (PCS < 45.0)</i>	50%	38%	58% **
Mental Health Functioning²			
<i>Mental Health Summary Score (MCS)</i>	44.85 (12.1)	42.91 (12.)	42.56 (11.8)*
<i>“Very Low” Mental Health (MCS < 37.0)</i>	27%	36%	32% *

Pooled information from T5, T6, and T7 interviews (1998 - 2000) representing 652 individuals and 1604 observations. Table shows the relationship between health status measures and experience of homelessness or unstable housing at time of interview or any time within 6 month prior to interview.

1. MOS SF-36 Physical Component Summary Score mean (sd). Scores below 45.0 are associated with physical limitations sufficient to impair regular employment.
2. MOS SF-36 Mental Component Summary Score mean (sd). Scores below 37.0 are consistent with psychiatric diagnosis and the mean scores seen in psychiatric inpatient populations.

* p < .05 ** p < .01 *** p < .001

2. Clinical Indicators of HIV disease

In every interview, clients are asked to report their most recent T-cell count and viral load. Where possible, this information is verified by written information that the respondent has been given by his or her medical provider. If exact numerical counts cannot be recalled with accuracy, study participants are asked to report test results in broad categories. Table 4 presents classification of test results in broad categories to indicate relatively good or poor clinical indicators. Clients are also asked about any opportunistic infections during the six months prior to interview, by reviewing a list presented to them that includes: Thrush, PCP, bacterial pneumonia, KS, CMV retinitis or colitis, MAI or MAC, Herpes, STD, Salmonella, PML, Cryptococcosis, TB, toxoplasmosis, and histoplasmosis.

The relationship between housing status and clinical indicators of disease is less consistent than findings regarding perceived health functioning. Fewer of the homeless report T-cell counts above 500 than individuals in other housing situations, but these differences are not statistically significant. The unstably housed and the homeless are both about 10% less likely to report “good” or undetectable viral loads. We also reviewed recent history of hospitalization and ER visits for medical reasons. These may be taken as indirect indicators of compromised health status. Almost two of every five (38%) of the homeless made one or more visits to a hospital emergency room in the six months prior to interview and 28% were hospitalized during this period. This compares to 27% of the stably housed who visited an emergency room and 20% who were hospitalized. As with other indicators, the unstably housed but not literally homeless are in between (Table 4).

MULTIPLE INFLUENCES ON HEALTH OUTCOMES

A number of prior CHAIN reports have examined health outcomes among CHAIN study participants (Abramson et al. 1999; Messeri et al. 2000; Messeri et al. 2001). Findings suggest that overall health is improving among the HIV-positive population, yet some subgroups have better health outcomes than others. When examining rates or simple correlations between homelessness and health outcomes, the homeless and/or unstably housed fare worse than the stably housed. However, many factors influence individual health, both client characteristics and care and treatment factors. The next stage in our exploration is to consider the interplay of these factors. We need to examine the extent to which housing status as such, or other factors that might be associated with homelessness/unstable housing, strongly affect health outcomes. To accomplish this, a statistical analysis is conducted which can essentially examine housing as a potential factor influencing health *while holding all other factors constant*. This way, one can evaluate whether homeless individuals -- regardless as to whether they are men or women, current or former drug users, with low or high incomes, etc. -- report better health status.

Table 4.
Clinical Indicators by Recent Experience of Homelessness / Unstable Housing

	Stable Housing	Unstable Housing	Homeless
n	(1225)	(165)	(128)
T-cell Count			
<i>Below 200</i>	25%	25%	24%
<i>200 - 499</i>	44%	40%	50%
<i>500 or higher</i>	31%	35%	26%
Viral load			
<i>10,000 + or "bad"</i>	24%	21%	29% *
<i>9999 - 400</i>	18%	29%	22%
<i>Below 400 or "good"</i>	59%	50%	49%
Opportunistic Infections¹			
<i>Any opportunistic infection past 6 months</i>	36%	39%	43%
Hospitalization & ER Visits			
<i>One or more ER visit past 6 months</i>	28%	34%	38% **
<i>One or more hospitalization past 6 months</i>	20%	23%	27% #

Pooled information from T5, T6, and T7 interviews (1998 - 2000) representing 652 individuals and 1604 observations. Table shows the relationship between health status measures and experience of homelessness or unstable housing at time of interview or any time within 6 month prior to interview.

1. Opportunistic infections include: Thrush, PCP, bacterial pneumonia, KS, CMV retinitis or colitis, MAI or MAC, Herpes, STD, Salmonella, PML, Cryptococcosis, TB, toxoplasmosis, histoplasmosis

p=.10 * p < .05 ** p < .01 *** p < .001

A series of analyses were undertaken to examine if health outcomes were affected by the following factors:

Sociodemographic characteristics	Resources & Risks	Medical care, health services, and health behaviors
Gender	HIV risk categories	Medical care setting
Race/ethnicity	Homelessness/ unstable housing	Continuity of medical provider
Age	Annual household income	Number of visits to HIV medical provider in prior 6 months
Household composition	Insurance status	Any in-patient hospital stay
	Substance use	Any emergency room use
		Adherence to antiretroviral therapy
		Provider-patient relationship
		Comprehensive primary care

For the full analysis see Abramson et al. (1999), CHAIN Technical Report #21. The results of this statistical analysis suggests the following key points:

- C The greatest predictors of self-perceived good health functioning are being male, under 40 years old, having access to and being completely adherent to HAART antiretroviral therapy, making 1-4 visits to a primary medical provider in prior 6 months, having a T-cell count above 500, and not having an opportunistic infection in the prior 6 months.
- C A separate analysis done on a subset of the full cohort illustrated that having a positive sense of one’s ability to influence one’s own health, and being in control of one’s own health behaviors, are also strong predictors of better health functioning.
- C Income and insurance resources are not independently related to better clinical health outcomes, such as T-cell counts, viral loads, or opportunistic infections.
- Housing status is a significant predictor of viral load, controlling for all the other variables in the analysis. Being stably housed predicts low viral load or a recent decrease in viral load; homelessness or unstable housing predicts higher viral loads.

DIRECT AND INDIRECT EFFECTS OF HOUSING STATUS

These above analyses of health outcomes, as well as separate analyses of trends in HIV mortality (see Messeri et al. 2001) demonstrate that good medical care, access to effective treatments and adherence to treatment regimens are the strongest predictors of good health outcomes for persons living with HIV/AIDS, regardless of other risks and resources, including housing resources. However, housing status is one of the biggest predictors of access and engagement with medical care and treatments. That is, homeless individuals who have good medical care, maintain continuity of care over time, have access to effective treatments and are perfectly adherent to their antiretroviral

combination therapy will have as good health outcomes as those in stable housing. Unfortunately, homelessness and conditions of daily life associated with homelessness pose serious challenges to this level of service utilization, even when insurance or cost of treatment is not a factor.

1. Housing and Access and Engagement with Medical Care

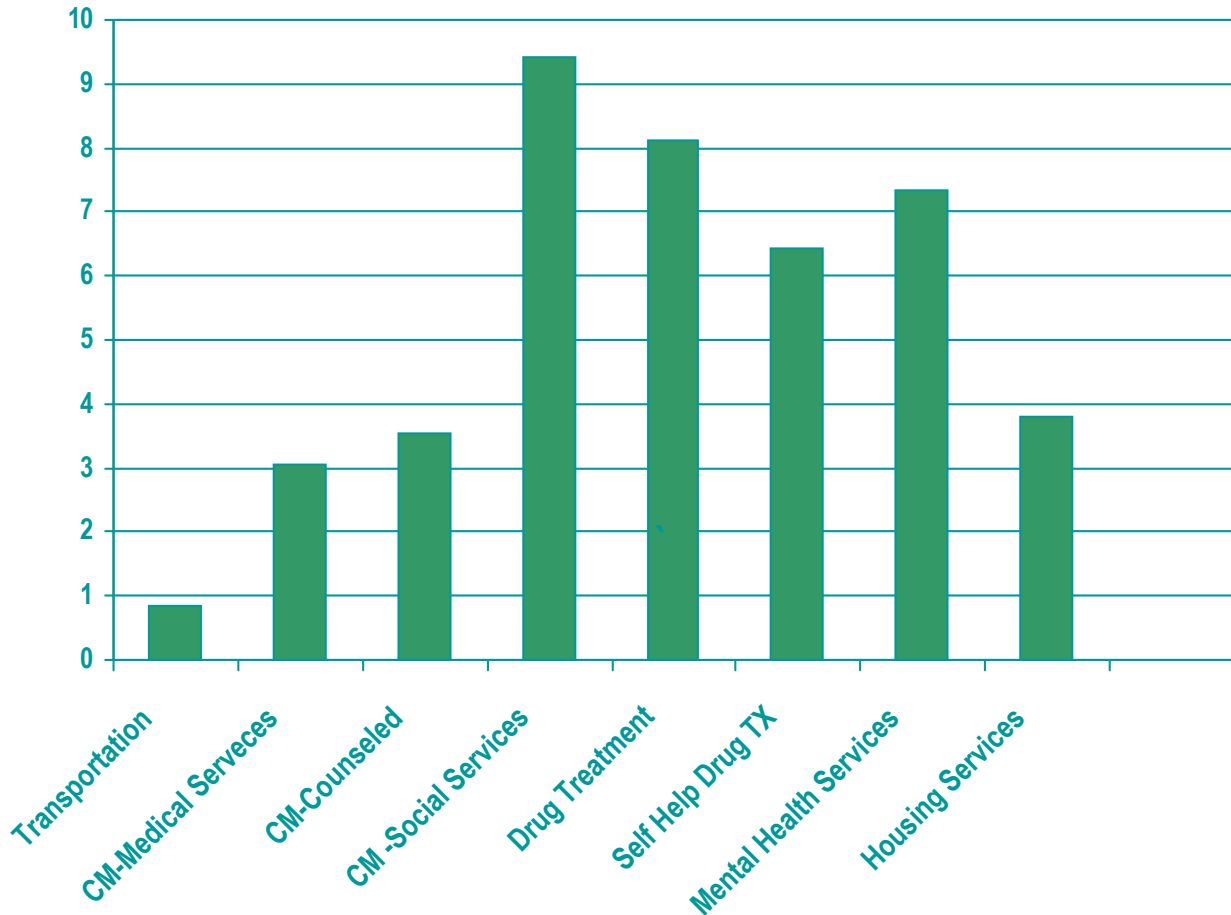
Several key findings regarding the relationship between housing and health care are described below. For a complete analysis of these and related data see Aidala et al. 2001, CHAIN Update Report #39.

- The data from seven waves of CHAIN study interviews from 1995 to 2000 show that there is a significant relationship between homelessness/unstable housing and remaining outside of, or marginal to HIV medical care. Figure 1 shows the relationship between needing and receiving services and entry into medical care among those outside of care using the *odds ratio* statistic. This statistic describes how much receiving a service increased the odds of a specific outcome controlling for the other variables in the analysis. Odds ratios greater than one indicate that the service is associated with increased entry and retention; a value of two or more represents a substantial impact.
- Providing housing services has consequences for increasing access and engagement with medical care among homeless or unstably housed persons living with HIV. People with housing needs who get any kind of practical housing assistance are almost four times more likely to enter into medical care than those who do not get housing assistance, and they are twice as likely to enter into and continue in care that meets current clinical standards for treatment of HIV/AIDS.
- Case management and referrals to needed services also affect entry into medical care. Among those who need service coordination, persons who receive case management oriented toward housing and other needed social services are almost ten times more likely to enter appropriate medical care than those who do not get case management services.
- A number of analyses point to the importance of additional supportive services, especially mental health services and ongoing support for drug abuse issues provided by self-help drug treatment (e.g. NA, AA), in addition to case management and housing services as exerting the greatest impact on entry and retention into medical care among the formerly unconnected.

2. Housing and Access to Antiretroviral Treatments

- Living in or being at risk for unstable housing is one of the most important factors limiting access to regular medical care severely restricts HIV/AIDS treatment for homeless persons. Housing status continues to affect access to the newer protease based combination therapies.

Figure 1. Increasing the Odds of Entering Any Medical Care



- Living in or being at risk for unstable housing is one of the most important factors limiting use of combination therapy, controlling for a wide range of individual client characteristics as well as service system variables
- Earlier disparities in use of antiretroviral therapies were associated with race/ethnicity. Recent research has shown that, at the present time in New York City, the use of combination therapies has achieved a sustained plateau of high use and there are fewer systematic relationships between patient characteristics and current use of combination therapy. Access to these treatments is now fairly uniform across different medical care settings. However, housing status remains one of the most important factors influencing an individual's use of combination therapy.
- Individuals with a history of homelessness/ unstable housing who receive housing services initiate combination therapy at rates comparable to persons with no history of housing instability.

3. Housing and Adherence to Antiretroviral Treatments

Adherence to complex HIV medication regimens presents special challenges for homeless or unstably housed individuals and their care givers.

- Only a small fraction of the CHAIN cohort report consistent and adherent use of combination therapies.
- The homeless have the highest rates of non-adherence compared to individuals in other housing situations. In the most recent interviews, 48% of individuals who were homeless reported missing pills or being off schedule for medication dosing. Only 38% could answer that they take their medication “exactly as prescribed, almost never missing a dose.” The remainder report various degrees of nonadherence.
- Individuals in unstable housing situations but not literally homeless are often highly adherent. This appears to be associated with onsite services that may be provided by the transitional housing facility or social support provided by family members or others co-resident in “doubled up” situations. Individuals who remain in supportive housing continue to be adherent. There is no evidence that individuals who leave supportive settings continue good adherence practices.
- Individuals with a history of homelessness can be completely adherent to treatment regimens, including individuals who also struggle with mental illness and/or substance abuse provided that supportive services (case management, mental health services, relapse prevention support groups etc) are provided in addition to housing as such. Independent living situations such as scatter site programs that maintain contact with residents and facilitate service linkages appear to be as successful as congregate settings with onsite services in supporting good adherence.

CONCLUSION

Homelessness, housing instability, and housing problems are pervasive and persistent among individuals living with HIV/AIDS in New York City. Housing status is related to health outcomes. Whether we examine self-reported health status, or clinical indicators of HIV disease, persons who are not in stable, secure homes adequate for their needs fare more poorly than individuals for whom home is a taken for granted, safe and secure reality. Housing status affects access and engagement to medical care and lifesaving HIV antiretroviral therapies. Individuals who struggle with housing issues are less adherent to medication regimens. Taken together, these findings strongly suggest that providing housing and supportive services (case management, mental health and drug treatment, etc.) needed by the many HIV infected individuals with a history of homelessness would significantly improve the health status of a sizeable proportion of persons living with HIV in New York City

Table 5.
Adherence to Antiretroviral Combination Therapy among
CHAIN Participants with a History of Homelessness/ Housing Instability

		Ever Homeless by Housing Services Currently Received		
		Supportive Housing	Rental Assistance	No Housing Services/ referral only/ SRO
	Ever Homeless/ Unstably Housed			
Number on antiretroviral therapy (n=)	(152)	(37)	(68)	(47)
General experience with adhering to treatment regimen				
Takes meds exactly as prescribed almost never missing a dose	54%	62%	59%	38%
Sometimes skips a dose or forgets to take pills	34%	24%	29%	49%
Often skips a dose or forgets to take pills	6%	11%	4%	6%
Rarely takes pills as prescribed	3%	0	6%	4%
Other	2%	3%	%	2%
Missed taking pills or was off schedule in prior 2 days	40%	40%	40%	48%

Note: CHAIN participants interviewed in Wave 6 who have reported a history of homelessness, who were currently on combination therapy and for whom medication adherence data was available (n=152).

- APPENDIX -

CRITERIA FOR DETERMINING APPROPRIATE HIV MEDICAL CARE

Step	Criterion	Coded as Appropriate/Preferred Practice
1	Number of visits to primary care provider in past 6 months, Rounds 1 & 2 (pre-1996)	<i>If asymptomatic = 1 visit/6 months</i>
		<i>If symptomatic or AIDS diagnosis = 2 visits/6 months</i>
2	Number of visits to primary care provider in past 6 months, Rounds 3, 4, 5 (post-1996)	<i>If asymptomatic, not on antiretroviral therapy (ARV) = 1 visit/6 months</i>
		<i>If on ARV or symptomatic or AIDS diagnosis = 2 visits/6 months</i>
		<i>If CD4 count < 500 and viral load > 10,000 = 2 visits/6 months</i>
3	Specific services received from primary care provider in past 6 months	<i>Minimum of one CD4 check</i>
		<i>Respondent reported both a physical exam and a blood test/work up</i>

Note: Depending on time period, either steps 1 + 3 (pre-1996) or steps 2 + 3 (post-1996) have to be present to qualify for meeting preferred practice guidelines. Sources include New York State AIDS Institute “Protocols for the Primary Care of HIV/AIDS in Adults and Adolescents” (Nov 1995), the latest edition of “Criteria for the Medical Care of Adults with HIV Infection” by the AIDS Institute (Mar 1998), and personal interviews with key program staff at the AIDS Institute.