Tri-County CHAIN

Report 2007_1

Housing, Transportation, and HIV Medical Care and Outcomes

Angela Aidala
Gunjeong Lee
Sara Berk
Barbara Bennett

Columbia University
Mailman School of Public Health
In collaboration with Medical and Health Research Association of New York, the NYC Department of Health, the Westchester Department of Health, and the NYC Health & Human Services HIV Planning Council

HRSA Contract H89 HA00015-16
© 2007 The Trustees of Columbia University

November 1, 2007

C.H.A.I.N. Report

ACKNOWLEDGMENTS

A Technical Review Team (TRT) provides oversight for the CHAIN Project. In addition to Peter Messeri, PhD and Angela Aidala, PhD of Columbia University's Mailman School of Public Health, TRT members include Mary Ann Chiasson, DrPH, MHRA (chair); Lucia Torian, PhD, NYCDOHMH; Jan Carl Park, MPA, Nina Rothschild, DrPH, Office of AIDS Policy and Community Planning; Clarissa Silva, MSW, and Daniel Weglein, MD, Office of Evaluation and Quality Assurance, JoAnn Hilger, NYCDOHMH; Julie Lehane, PhD, Westchester County DOH; Roberta Scheinmann, MPH, MHRA.

This research was supported by grant number H89 HA 0015-15 from the US Health Resources and Services Administration (HRSA), HIV/AIDS Bureau with the support of the HIV Health and Human Services Planning Council, through the New York City Department of Health and Mental Hygiene and the Medical and Health Research Association of New York City, Inc. Its contents are solely the responsibility of the researchers and do not necessarily represent the official views of the U.S. Health Resources and Services Administration, the City of New York, or the Medical and Health Research Association of New York

Introduction

A recent assessment of the housing needs of persons with HIV/AIDS in New York found that HIV-specific housing resources have been very limited in the Tri-County Region (Hudson Planning Group, 2005). The report inventoried fewer than 150 units of permanent supportive housing, concentrated in Westchester County. Rental assistance is available to those who meed medical eligibility requirements through the use of Ryan White funding and the Housing Opportunities for Persons With AIDS (HOPWA) program. However, the lack of affordable rental units in the region is a barrier to utilization of rental subsidies. Rental units are not available in all locations throughout the Tri-County Region, further exacerbating difficulties with transportation in an area with limited public transit options.

Concern about needs for housing and transportation assistance have increased with the Ryan White HIV/AIDS Treatment Modernization Act enacted in 2006 which requires that 75 percent of funds be used for specifically defined “core medical services.” Housing and transportation are excluded from core service funding which limits funds available to address these needs.

Both providers and consumers are greatly concerned that changes in the availability of funding for housing and transportation services will have a negative impact on people living with HIV/AIDS and create (or fail to remove) significant barriers to HIV treatment and care. The goal of the present report is to investigate the relationship between housing and transportation needs, and access to and maintenance in HIV medical care, and health outcomes for HIV positive persons living in the Tri-County Region.

Methods

Sample

During 2001-2002 the Tri-County CHAIN Project recruited and interviewed a sample of 398 HIV+ individuals living in Westchester, Putnam or Rockland County and engaged in the care system. Individuals were recruited from 32 randomly selected sites of services among 28 medical or social service agencies in the three counties. Extensive semi-structured face to face interviews were completed by 398 individuals between November 2001 and November 2002 and two follow-up interviews were completed at approximately 12 month interviews. In 2004, the sample was ‘refreshed’ with an additional 84 individuals who were recruited from the same randomly selected service sites and interviewed for the first time between 2004 and 2005. The current report is based on data provided in baseline interviews by the combined sample of 492 persons living with HIV/AIDS (PLWH) in the Tri-County area.

The sample is considered broadly representative of estimated 1,600 -1850 HIV+ adults engaged in the Tri-County care system. Table 1 shows that compared to the gender and ethnic composition of surviving AIDS cases in Tri-County as of 2001, women are over-represented in the CHAIN sample but ethnic composition with in gender closely approximates the AIDS surveillance data.

Table 1.Sample Representativeness, Tri-County AIDS Cases and CHAIN Cohort

	Tri-County Surviving AIDS Cases, 12/31/00[1]		Tri-County CHAIN Original and Refresher Cohorts	
	Male	**Female**	**Male**	**Female**
n	(1429)	(748)	(247)	(235)
White	27%	18%	26%	15%
Black	50%	60%	45%	54%
Latino	22%	22%	28%	26%
Other	<1%	<1%	2%	5%

[1] Source: New York State Department of Health, Bureau of HIV/AIDS Epidemiology

Measures

Housing Need. In order to encompass the multiple aspects of housing that may affect connection to HIV medical care, we have chosen an indicator that reflects both 'objective' housing status regarding adequacy and stability of living arrangements, and 'subjective' experience of housing problems. To code housing status, we ask a series of questions about current and recent (past six months) living arrangements. Persons who describe sleeping on the street, in a drop in center or shelter for homeless persons, a limited-stay SRO or welfare hotel with no services, an abandoned building, or in a public or private place not intended for sleeping (e.g. subway station) are coded as "homeless." Residence in a temporary or transitional housing program, in jail, halfway house, drug treatment or medical housing with no other place to live, or temporarily doubled up with others in someone else's home, is coded as "unstably housed." Housing status is classified as "own place/ stably housed" only if they had secure, permanent housing in an apartment, house, or group quarters , living alone or with others, but with no time limit or restrictions on residency other than what would be found in a conventional lease or ownership agreement.

A separate set of questions asks about housing problems or the need for assistance in the area of housing, the nature of the problem, and whether or not any attempt was made to obtain assistance. Self-reported housing problem is a broader category than current housing status since individuals can be currently housed but facing housing loss due to inability to pay rent, facing eviction for any number of tenant or landlord reasons, or being discharged from a residential program with no resources to secure housing; or being in an intolerable or unhealthy situation due to domestic violence or other dangers, or lack of basic services such as heat and hot water. A separate question ask how often the respondent did not have enough money for rent. Persons who answered that they often did not have enough money to pay rent were also coded as having a need for housing assistance.

Transportation Need. Respondents who reported problems with transportation or need for transportation services at any time during the past six months, or persons who answered yes to the following question: At any time in the last 6 months did you ever delay or not get the assistance you

thought you needed because it was difficult to get transportation there?

Medical Care and Outcomes. A number of different measures of access to medical care, quality of care, continuity of care, access to treatment and adherence to treatment regimens have been used in different analyses of relationships between housing and health care in the CHAIN study. Likewise both clinical markers (T-cell count, viral load) and health functioning or quality of life are used to indicate health outcomes. The specific indicators and measures used will be discussed below, in conjunction with the specific analysis undertaken.

Findings

Housing Instability and Need for Housing Assistance

One in four (25%) of Tri-County CHAIN participants were homeless or unstably housed at the time of their baseline interview or at some point during the six months prior to their interview (Table 2). Five percent (5%) were literally homeless, sleeping in the street, a shelter for homeless persons, a limited stay SRO, an abandoned building or other place not meant for sleeping. Another 9% were previously homeless but currently in some type of temporary or transitional housing program. This category also includes persons in residential drug treatment or ex-offender halfway houses, as well as those temporarily in a nursing home or other medical facility with no other place to live. Another 10% were temporarily doubled up with friends or family, in somebody else's home.

Housing problems or need for housing assistance was reported by 46% of all CHAIN Participants. Types of problems described included being homeless, not having a regular place to live, not being able to pay rent, facing eviction for any reason, being asked to leave shared housing, being discharged from a housing program with no resources to secure housing, poor housing quality (e.g. no heat), severe overcrowding, domestic violence or other dangerous situation, needing to change housing due to a medical condition (e.g. needing wheelchair access), problems with rental subsidy, too far from transportation.

Note that many PLWH reported a history of housing problems prior to their diagnosis with HIV. Forty percent (40%) were homeless or unstably housed during the year that they became aware of their HIV status (data not shown).

Need for Transportation Assistance

About one-third (31%) of respondents indicated a need for transportation assistance at their baseline interview (Table 2). Those with transportation needs were fairly even divided between those who indicated need for transportation to medical appointment, transportation to social service appointments, and transportation for other purposes (e.g. shopping, work, church). When we consider both housing and transportation issues, we see that 35% of the sample need housing assistance only, 11% need transportation only, 19% need both housing and transportation assistance, and 34% have neither service need (Table 3).

Table 2. Need for Housing and Transportation Assistance

Total Sample (n=)	*(482)*
Housing Status at Baseline Interview	
Stable, own place	75%
Temporarily doubled up with others	10
Temporary/ transitional housing[1]	9
Homeless[2]	5
Housing Problems[3] Self-reported housing problems or need for housing assistance, or not enough money for rent sometimes or often during the past 6 months: *Types of problems described: Homeless, no regular place to live, can't pay rent, facing eviction for any reason, being asked to leave shared housing, being discharged from program with no resources to secure housing, poor housing quality, no heat/ plumbing, domestic violence or other dangerous situation, need accessible unit, too far from transportation.*	46%
Need for Housing Assistance Homeless, unstably housed, or report housing problem or need for housing assistance at baseline interview	54%
Need for Transportation Assistance[4] Self-reported problems with transportation or need for transportation services, or respondent answered that they delayed or did not get needed services because of transportation difficulties	31%

1. Residence in a temporary or transitional housing program; in jail, halfway house or drug treatment housing; or in a hospice, currently or during the past six months.

2. Sleeping in the street; a shelter for homeless persons; a limited stay SRO with no services; in an abandoned building, a public or private place (e.g. subway station) not intended for sleeping currently or during the six months prior to interview.

3. Percent reporting not enough money for rent sometimes or often or answering "YES" in response to the question: "In the last six months, have you had a problem or needed assistance in the area of housing?" and examples of housing problems described.

4. Percent answering "YES" in response to the question: "In the last six months, have you had a problem or needed assistance in the area of transportation" or reported that they delayed or did not get services they thought they needed "because it was difficult to get transportation there."

Housing and Transportation Need by Client Characteristics

Table 3 also presents need for housing and transportation by client characteristics. Women are more likely than men to need both services. PLWHs of color have higher rates of service need than nonHispanic whites although only marginally significant differences are shown. Household income and mental health functioning are the factors most strongly associated with housing and transportation needs. Eighty-one percent (81%) of respondents with income below $10,000 have one or both need (40% housing only, 32% both housing and transportation, and 9% transportation only). Persons with very low mental health functioning as measured by a standardized instrument (MOS-SF36, Mental Component Summary Score below 37.0, the mean score seen among psychiatric in-patient populations are more likely than those with higher mental health scores to have both needs.

Housing Status and Connection to HIV Medical Care

We will consider a number of indicators of connection to medical care. We investigate whether a respondent has "comprehensive primary care." At each wave of interviews, study participants were asked a series of questions about specific features of their medical care including whether their provider offers primary care characterized by coordination (single doctor or medical person "in charge of overall HIV care"), comprehensiveness (indicated by the provision of "routine check-ups, vaccinations, and medical tests" as well as being a place they could go for "information or advice about a health concern") and access (whether the provider or covering service would be available 24/ 7 in case of a medical emergency). These features of coordination, comprehensive- ness, and access have been established as characteristics of good primary care by the Institute of Medicine (IOM, 1994; 1996) that patients can reliably report upon (Flocke, 1997). Prior Tri-County CHAIN reports have found that comprehensive medical care was strongly associated with continuity of care, access and adherence to antiretroviral medications, and positive health outcomes.

We also consider whether the medical care an individual receives is consistent with standards for appropriate medical care for HIV is based on interview data assessing the number of visits for outpatient care, receipt of diagnostic services such as blood work-ups for CD4 T-cell counts and viral loads, and drug therapies. Standards for HIV medical care were obtained from those promulgated by the New York State Department of Health (NYS DOH) AIDS Institute[1].

There is a clear relationship between housing and transportation need and connection to HIV medical care (Table 4). Almost all CHAIN study participants have a source of medical care and most are receiving care that meets minimum clinical practice guidelines. However, when we examine characteristics of care received, differences by housing and transportation need are apparent. Considering comprehensive primary care, 40% of those with both housing and transportation need had less than optimal care; 60% reported some unmet need fo medical care or experienced a barrier to care in the six months prior to interview. Housing and transportation problems appear to pose barriers to use of HAART among those for whom it would be clinically indicated (t-cells below 350), and adherence to medication regimen among those who are taking ARVs. Recent history of housing and/or transportation need is associated with higher rates of emergency room and inpatient use.

[1] Sources include New York State AIDS Institute "Protocols for the Primary Care of HIV/AIDS in Adults and Adolescents" (Nov 1995), "Criteria for the Medical Care of Adults with HIV Infection" by the AIDS Institute (1998 thru 2003), and personal interviews with key program staff at the AIDS Institute.

Table 3. Housing and Transportation Need by Client Characteristics

	n	Need Housing Assistance Only	Need Transportation Only	Need Both Housing and Transportation	Neither
Total Sample					
Original and Refresher Cohort at Baseline Interview	(482)	35%	11%	19%	34%
Gender**					
Female	(235)	36%	13%	22%	29%
Male	(247)	34%	10%	17%	39%
Race/ Ethnicity #					
White	(97)	29%	14%	12%	44%
Black	(237)	36%	10%	19%	34%
Latino	(131)	40%	9%	24%	28%
Location #					
Urban Westchester	(256)	37%	12%	20%	31%
Suburban West/Putnam	(137)	37%	14%	14%	36%
Rockland	(88)	27%	6%	24%	43%
Risk Category					
MSM	(68)	34%	15%	18%	35%
Problem drug use	(204)	35%	9%	20%	36%
MSM & PDU	(20)	30%	15%	25%	30%
Other	(190)	37%	13%	18%	32%
Mental Health **					
Below 37 MCS	(155)	35%	13%	27%	25%
37 and above MCS	(327)	36%	11%	15%	39%
Household Income***					
Below $10,000	(157)	40%	9%	32%	19%
$10,000 and above	(316)	33%	13%	13%	41%
Household composition					
Alone	(176)	35%	13%	22%	31%
Adults only	(133)	33%	13%	17%	38%
Lives w/ kids	(166)	38%	9%	17%	36%

Note: Row percentages shown # $p < .10$ * $p < .05$ ** $p < .01$ *** $p < .001$

Table 4. Connection to HIV Medical Care by Need for Housing and Transportation Assistance

	Service Need			
	Housing Only	Trans Only	Both	Neither
Total sample (n=)	*(170)*	*(55)*	*(92)*	*(165)*
No Visit with Primary Care Provider Does not have regular medical provider for HIV or no visit to primary medical care provider in past 6 months	2%	4%	7%	2%
Lack Comprehensive Primary Care Does not have primary medical care that is coordinated, comprehensive, and provides 24 hour access	22%	30%	40%	24% *
Lack of Adequate Clinical Care Is not receiving medical care that meets minimum clinical practice guidelines	28%	20%	30%	32%
Unmet Need for Medical Care Self-reported unmet need for medical care or experienced barrier to receiving care past 6 months	22%	58%	60%	18% ***
Interruption of Medical Care[1] Has ever dropped out of care for 6+ months	40%	33%	40%	37%
Lack of Medical Insurance Has no medical insurance of any kind to cover HIV care	1%	2%	1%	1%
Not on HAART [2] No HIV medications or not on HAART regimen	28%	42%	60%	28% *
Not Adherent to HIV Medications[3] Self-report less than 100% adherent or missed pills during the past 2 days	27%	31%	51%	27% **
Hospitalization & ER Visits				
One or more ER visit past 6 months	30%	54%	41%	30% **
One or more hospitalization past 6 months	19%	30%	23%	19%

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

1. Sub-sample of respondents who were asked question: need housing n=116, transportation n=45, both n=62, neither n=115.
2. Among PLWH with CD4 count below 350: need housing n=126, transportation n=42, both n=67, neither n=132.
3. Among PLWH on any type of HIV medications: need housing n=63, transportation n=19, both n=35, neither n=58.

Health Outcomes

Table 5 presents bivariate relationships between need for housing and transportation services at baseline interview and multiple health indicators. There are strong differences especially with regard to functional health status. Half (50%) of respondents who have both housing and transportation needs evaluate their health as only 'fair' or 'poor'. Two-thirds (67%) score below the clinical cut point on a standardized measure indicating physical impairment sufficient to interfere with regular employment. PLWH who need housing as well as those needing both housing and transportation are less likely than others to have t-cell counts above 500. There are mental health differences as well among the service need groups; almost half (46%) of individuals with both housing and transportation needs have mental scores in the 'very low' range, at the level seen among psychiatric inpatient populations. The health burden from both chronic and infectious disease other than HIV is high among the entire sample with few differences by the service need groups.

Predicting Receipt of Comprehensive HIV Primary Medical Care

For the final section of this report we examine the association between housing and transportation needs and connection to HIV medical care, controlling for other factors that may confound the relationship between housing and transportation issues, and medical care outcomes. Economic resources, substance abuse, and mental health needs, for example, increase the risk of housing need as well as affect access to medical care (see discussions in Kim, Kertesz, Horton, Tibbetts, & Samet, 2006; Mkanta & Uphold, 2006). We also examine the role of housing assistance and other supportive services for connection to medical care and medical care outcomes. Receipt of *housing assistance* is indicated by past six month contact with an agency or paid provider for help with solving housing problems. A separate variable will examine the receipt of rental assistance. Prior CHAIN studies (Aidala et al. 2001b; Messeri et al. 2002) lead us to expect that receipt of housing services facilitates connection to care. Receipt of transportation services is also included in the models.

All models control for socio-demographics (age, gender, race/ethnicity, birthplace); SES (education, income); current location (urban Westchester compared to suburban and more rural areas); health status (t-cell count, length of time since HIV diagnosis); mental health and substance abuse co-morbidities (very low mental health functioning score, problem drug use past six months); and experience of HIV-related stigma; receipt of additional supportive services (case management, mental health and substance abuse services); Medical case management (helped respondent get specific medical services or referred to medical services) and social services case management (developed a care plan, helped get or referred to specific social services, coordinated social services, helped fill out forms for entitlements) are considered separately.

We use the *odds ratio* statistic to show the relationship between housing and transportation needs, receiving housing and other supportive services, and access to comprehensive HIV primary care. This statistic describes how much a variable reduces or increased the odds of a specific outcome controlling for the other variables in the analysis. Odds ratios less than one indicate that the variable is associated with lower likelihood of being in comprehensive primary care while odds ratios greater than one indicate that the variable is associated with increase access to care. A value of two or more represents a substantial impact.

Table 6 presents the odds ratios associated with comprehensive medical care. The first column shows the relationship between each variable and the medical care outcome, without considering any other factor. The second column shows the adjusted odds ratios, adjusted for all other variables in the model.

Table 5. Health Indicators by Need for Housing and Transportation Assistance

	Service Need			
	Housing Only	Trans Only	Both	Neither
Total Sample (n=)	(170)	(55)	(92)	(165)
Would you say your health is...				
Excellent or Very Good	29%	38%	21%	42% ***
Good	38	29	29	32
Fair or Poor	33	33	50	26
Compared to six months ago, is your health in general now...				
Better	41%	43%	37%	42%
Same	47	39	37	45
Worse	13	18	26	12
Physical Health Functioning[1]				
Physical Health Summary Score, mean(sd)	43.61 (10.3)	42.36 (11.1)	41.20 (10.0)	54.04 * (9.7)
"Poor" Physical Functioning (< 45.0)	57%	51%	67%	48% *
Mental Health Functioning[2]				
Mental Health Summary Score, mean(sd)	42.63 (11.7)	40.51 (10.7)	38.18 (12.0)	45.34 *** (11.7)
"Very Low" Mental Health (< 37.0)	32%	36%	46%	24% **
T-cell Count				
Below 200	22%	20%	22%	17% *
200 - 499	34	38	41	33
500 or higher	27	35	28	40
Don't know t-cell count	18	7	9	10
Viral load				
10,000 + or "bad"	18%	18%	20%	19%
9999 - 400	22	19	30	19
Undetectable, below 400, "good"	57	62	45	60
Don't know viral load	3	2	5	5
Chronic Disease[3]				
Any chronic disease diagnosed or symptomatic past 6 months	57%	56%	58%	58%
Opportunistic Infections[4]				
Any opportunistic infection, hepatitis, or STD last 6 months	59%	67%	66%	66%

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

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.

3. Any of the following diagnosed or symptomatic during the past six months: Asthma, hypertension, cardio- vascular disease (heart problems), high cholesterol, diabetes, arthritis, chronic sinusitis.

4. Any of the following diagnosed or symptomatic during the past six months: Thrush, PCP, bacterial pneumonia, KS, CMV retinitis or colitis, MAI or MAC, salmonella, PML, Cryptococcosis, TB, toxoplasmosis, histoplasmosis, cervical cancer, cervical dysplasia, hepatitis, herpes, chalamydia, gonorrhea, syphillis, HPV, chancroid, PID or other STD.

Needing both housing and transportation assistance is strongly associated with lack of comprehensive HIV medical care, and receipt of direct housing services greatly improves the odds of access to comprehensive care, controlling for a wide range of client characteristics and other service utilization variables (Table 6). PLWH who need both housing and transportation services are less than half as likely to be receiving comprehensive primary care as those who have neither service need (AOR 0.40). Individuals who received assistance with housing needs from a service provider during the six months prior to their interview are almost three times to be in medical care that meets the criteria for comprehensive care (AOR 2.78). Interestingly, receipt of rental assistance as such does not appear to have the same effect.

The only other factors that affects comprehensive primary care are low mental health functioning which lowers the odds and year of HIV diagnosis which shows a positive association, indicating that persons more recently diagnosed are more likely to be receiving comprehensive care. High stigma score and Black ethnicity are associated with comprehensive primary care in the bivariate or two-way analysis, but these factors are not statistically significant predictors when the other variables are taken into consideration.

Predicting Poor Physical Health Functioning

For the final analysis we use the same approach to examine the association between needing housing and transportation services, receipt of services to address needs, and poor physical health functioning (Table 7). Scores above 1.0 indicate the factor in question increases the odds that a person will experience poor physical health. Not surprisingly, having a low t-cell count is the strongest predictor and history of injecting drug use, and low mental health score also increase the odds of poor health functioning. Nonetheless, having both housing and transportation needs shows a strong association with poor physical health, controlling for these and other variables in the model. The odds of poor physical health are over twice as high for individuals experiencing both housing and transportation as for their counterparts who have neither housing nor transportation needs. Receipt of rental subsidy associated with poor health although the relationship does not reach statistical significance in the full adjusted model. This is likely a manifestation of eligibility and other program considerations in the Tri-County area which result in increased access to rental assistance based on medical need. Periodic health assessment can result in loss of housing support if health improves. Individuals who are foreign born are less likely than their native born counterparts to have poor physical health. Other client characteristics (age, gender, MSM) are not statistically significant in the full adjusted model.

Table 5. Logistic Regression Analysis: Receipt of Comprehensive HIV Primary Medical Care

	HAS COMPREHENSIVE HIV MEDICAL CARE[1]	
	Undjusted OR (95% CI)	**Adjusted AOR (95% CI)**
Socio-demographics		
Age	1.01	1.01
Gender	0.81	0.67
Black	**1.73** **	1.51
Latino	0.72	1.21
Foreign Born	0.99	0.91
Less than high school education	0.90	0.96
Household Income < $10,000 yr	1.14	1.26
Risk Exposure[2]		
MSM	0.69	1.19
IDU	1.09	1.51
Health Status		
Year of HIV diagnosis	**1.04** *	**1.06** *
T-cell below 200	1.14	1.47
Multiple Diagnoses		
Very Low Mental Health [3]	**0.53** **	**0.49** **
Current Problem Drug Use [4]	0.73	0.72
Location		
Other than Urban Westchester	1.22	1.24
HIV Stigma		
High stigma scale score [5]	**0.64** *	0.93
Housing and Transportation Need		
Need Only Housing Services	1.54#	1.03
Need Only Transportation Services	0.92	0.98
Need Both Housing and Transportation	**0.45** ***	**0.40** *
Service Utilization		
Medical Case Management [6]	1.09	1.48
Social Services Case Management [7]	0.85	0.66
Mental Health Services[8]	0.74	0.99
Drug Treatment[9]	0.58#	0.72
Transportation Services	0.65	0.88
Rental Subsidy[10]	0.94	0.84
Direct Housing Services[11]	1.82#	**2.78** *

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

Footnotes for Table 5:

1. Respondent has a medical provider in charge of his/her overall HIV care and who provides ALL of the following: (1) routine check-ups, well visits, vaccinations, (2) source of health information and advice, (3) 24-hour access for medical emergencies.

2. Heterosexual/ Other is the referent category

3. MOS SF-36 Mental Component Summary Score mean (sd). Scores below 37.0 are consistent with psychiatric diagnosis and d the mean scores seen in psychiatric inpatient populations.

4. Any use of heroin, crack/cocaine, methamphetamine, or problem drinking currently or six months prior to interview.

5. Score above the mean on multi-item scale of perceived stigma associated with HIV positive status

6. Case manager referred to, arranged for, or coordinated medical services

7. Case manager developed a care plan, helped get or referred to specific social services,coordinated social services, filled out forms for entitlements

8. One or more visits to a mental health professional - psychiatrist, psychologist, therapist, or clinical social worker.

9. Methadone, residential, in-patient, out-patient, therapeutic community, or detox treatment.

10. Respondent or household member gets rental subsidy.

11. Respondent reported that within the past six months, he or she received help for a housing problem from an agency or paid provider in the form of direct housing assistance (e.g. provision of housing, housing placement assistance), application for assistance, a service referral, or information or advice about solving the problem.

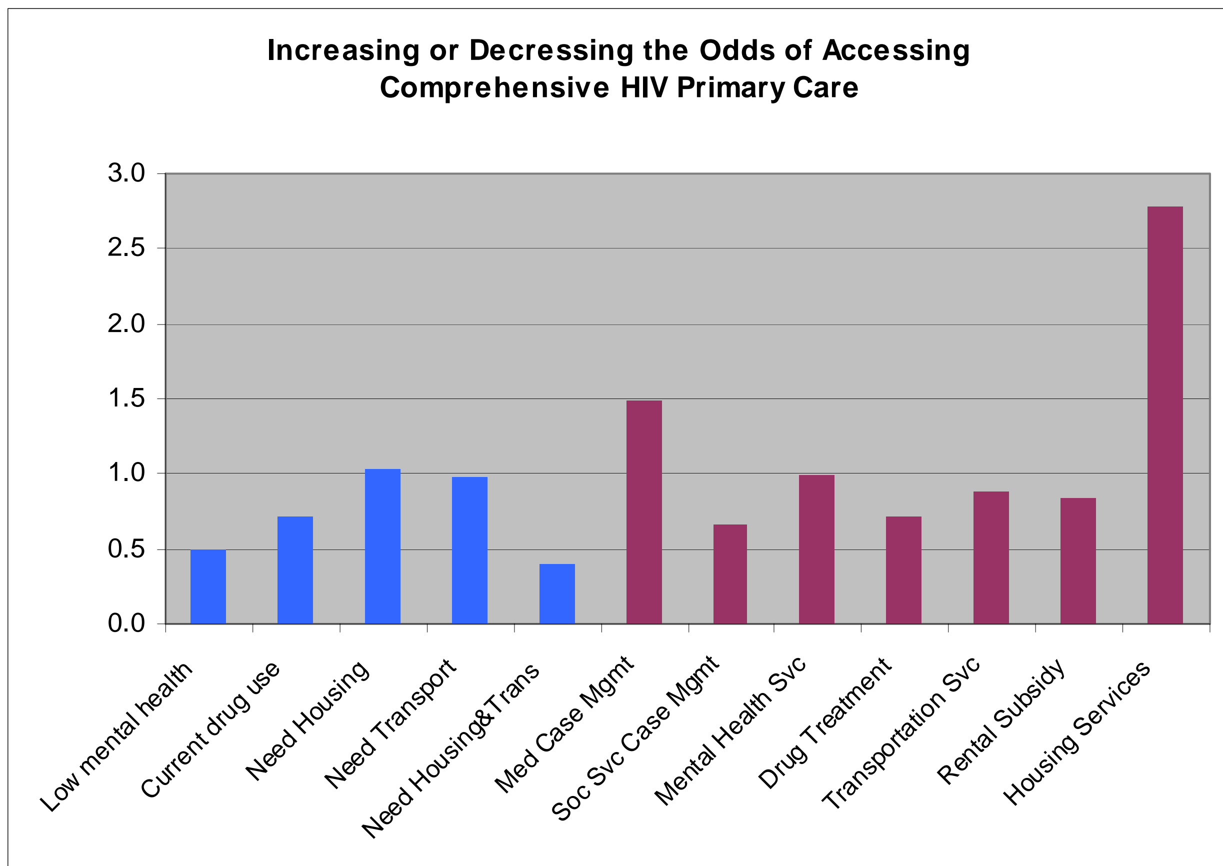


Table 5. Logistic Regression Analysis: Poor Physical Health Functioning

	CURRENT PHYSICAL FUNCTIONING IS "POOR"[1]	
	Undjusted OR (95% CI)	**Adjusted AOR (95% CI)**
Socio-demographics		
Age	**1.03****	1.03#
Gender	**1.05*****	1.43
Black	1.17	1.53
Latino	0.89	0.84
Foreign Born	**0.55****	**0.57***
Less than high school education	1.45#	1.46
Household Income < $10,000 yr	1.32	0.98
Risk Exposure[2]		
MSM	**0.51****	0.52#
IDU	**2.64*****	**1.92***
Health Status		
Year of HIV diagnosis	0.97#	0.99
T-cell below 200	**2.61*****	**2.72*****
Multiple Diagnoses		
Very Low Mental Health [3]	**2.24*****	**2.38*****
Current Problem Drug Use [4]	1.04	0.74
Location		
Other than Urban Westchester	1.33	1.26
HIV Stigma		
High stigma scale score [5]	1.11	0.90
Housing and Transportation Need		
Need Only Housing Services	1.13	1.58#
Need Only Transportation Services	0.87	0.82
Need Both Housing and Transportation	**1.75** *	**2.10** *
Service Utilization		
Medical Case Management [6]	1.43#	1.23
Social Services Case Management [7]	1.38#	1.17
Mental Health Services[8]	1.27	0.83
Drug Treatment[9]	**1.86***	1.07
Transportation Services	1.94#	1.75
Rental Subsidy[10]	**1.61***	1.53#
Direct Housing Services[11]	1.70#	1.11

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

Footnotes for Table 6:

1. MOS SF-36 Physical Component Summary Score below 45.0, clinically established cut-point indicating 'poor' physical functioning, and physical limitations sufficient to impair regular employment.

2. Heterosexual/ Other is the referent category

3. 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.

4. Any use of heroin, crack/cocaine, methamphetamine, or problem drinking currently or six months prior to interview.

5. Score above the mean on multi-item scale of perceived stigma associated with HIV positive status

6. Case manager referred to, arranged for, or coordinated medical services

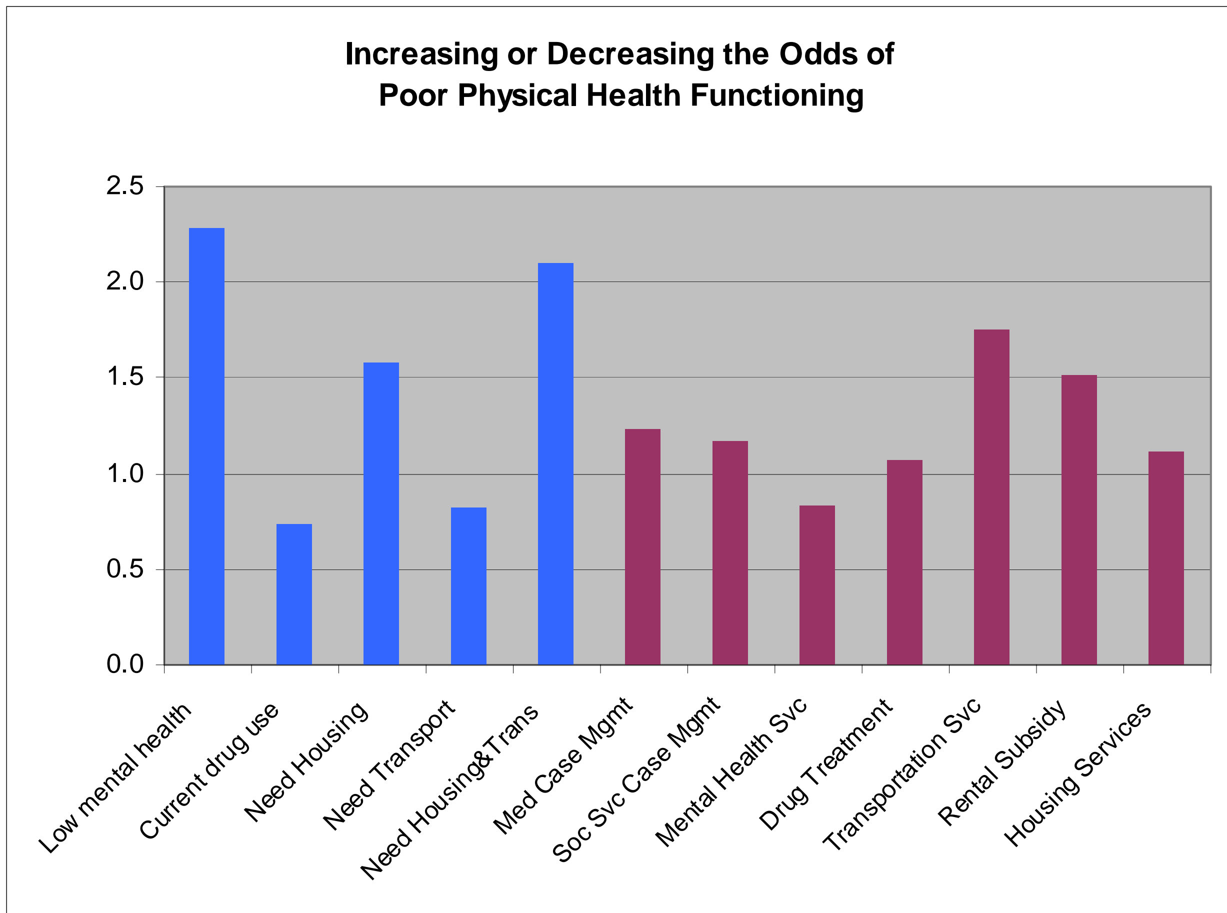
7. Case manager developed a care plan, helped get or referred to specific social services,coordinated social services, filled out forms for entitlements

8. One or more visits to a mental health professional - psychiatrist, psychologist, therapist, or clinical social worker.

9. Methadone, residential, in-patient, out-patient, therapeutic community, or detox treatment.

10. Respondent or household member gets rental subsidy.

11. Respondent reported that within the past six months, he or she received help for a housing problem from an agency or paid provider in the form of direct housing assistance (e.g. provision of housing, housing placement assistance), application for assistance, a service referral, or information or advice about solving the problem.



Discussion

Taken together, the findings in this report make a strong case that unstable housing, rent burden, and other housing challenges have a significant impact on connection to medical care, and to medical outcomes among persons living with HIV/AIDS in the Tri-County Region, especially when combined with transportation challenges. Receipt of housing assistance has a significant impact on access to comprehensive primary medical care which other research has shown is strongly associated with maintenance in care over time, access to HAART, and adherence to treatment regimens. In the present study, contact with an agency or paid provider who provides housing or assists with addressing housing needs is more strongly associated with positive medical care outcomes than receipt of rental assistance as such. It may be that active involvement with such an agency facilitates other service linkages that can address co-occurring conditions and vulnerabilities associated with both housing instability and tenuous connection to medical care. Similar to findings from a companion study in New York City, rental assistance may be necessary but not sufficient for homeless or unstably housed persons with multiple needs. However provision of supportive services - case management, mental health or drug treatment, transportation services - without addressing housing needs would seem to have limited potential to improve medical care, health, and quality of life outcomes.

The decrease in funding to provide housing and transportation assistance and reduced support for case management and other services oriented toward identifying housing resources for PLWH would seem ill advised. The ability of substantial numbers of infected persons to maintain stable housing without housing assistance in areas such as the Tri-County Region is highly questionable. Findings from the current report are consistent with findings from prior analyses (Aidala et al. 2000; 2001; Messeri et al. 2002) regarding barriers to care associated with unmet housing and supportive service need and the impact of housing assistance for securing and maintaining connection to appropriate care. Housing should be understood as a 'core' service needed to achieve outcomes that affect the HIV-related clinical status of persons living with HIV/AIDS. Improving access to housing will improve access to and effectiveness of HIV medical care and treatment.

References

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

Aday, L. (2001). At Risk in America: The Health and Health Care Needs of Vulnerable Populations in the United States. San Francisco: Jossey Bass Publishers.

Aidala A, Davis N, Abramson D, Lee G. (2001a). Housing Status and Health Outcomes among Persons with HIV/AIDS. Community Health Advisory & Information Network Update Report #41. Columbia University: Mailman School of Public Health.

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

Aidala A, Lee G. (2006). Housing Status and Entry into HIV Medical Care. Community Health Advisory & Information Network Report 2006-3. Columbia University: Mailman School of Public Health.

Aidala A, Messeri P, Abramson D, Lee G. (2001b). Housing and Medical Care among Persons Living with HIV/ AIDS. Community Health Advisory & Information Network Update Report #37. Columbia University: Mailman School of Public Health.

Arno PS, Bonuck KA, Green J, Bennett CL, Fahs MC, Maffeo C, Drucker E. (1996). The impact of housing status on health care utilization among persons with HIV disease. J Health Care Poor Underserved. 7(1):36-49.

Flocke SA. (1997). Measuring attributes of primary care: development of a new instrument. J Family Practice, 45(1):64-74.

Institute of Medicine (IOM). (1994). Defining primary care: An interim report. Washington, DC: National Academy Press.

Institute of Medicine (IOM). (1996). Primary Care: America's Health in a New Era. Washington, DC: National Academy Press.

McHorney, C. A., Ware, J. E., & Raczek, A. E. (1993). The MOS 36-item short-form health survey (SF-36):II. Psychometric and clinical tests of validity in measuring physical & mental health constructs. Medical Care, 31, 247-263.

Messeri, P., Abramson, D., Aidala, A., Lee, F. and Lee, G. (2002). The Impact of Ancillary HIV Services on Engagement in Medical Care in New York City. AIDS Care, 14(Supp1): S15-S30.

New York State AIDS Institute (1995). Protocols for the Primary Care of HIV/AIDS in Adults and Adolescents. Albany, NY: New York State Department of Health.

New York State AIDS Institute (2003). Criteria for the Medical Care of Adults with HIV Infection. Albany, NY: New York State Department of Health.

New York State AIDS Institute (2007). The Primary Care Approach To The HIV-Infected Patient. Albany, NY: New York State Department of Health.

Smith M Y, Rapkin BD, Winkl G, Springer C, Chhabra R, Feldman I. (2000). Housing status and health care service utilization among low-income persons with HIV/AIDS. J Gen Intern Med, 15: 731-738.

Uphold CR and Mkanta WN.(2005). Use of health services among persons living with HIV infection: State of the science and future directions. AIDS Patient Care and STDs, 19(8):473-485.

Waddell, E. N., Messeri, P.A. (2006). HIV disclosure, social support and use of combination therapy. AIDS and Behavior, 10, 263-272.