

Predictors of Cumulative Time on HAART Among the Homeless and Marginally Housed

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BACKGROUND

- The use of highly active antiretroviral therapy (HAART) has been shown to significantly delay mortality among HIV-infected individuals (Palella 1998; Detels 1998; Pezzotti 1999; Ledergerber 1999; Bing 1999).
- However, the effectiveness of HAART to achieve and sustain viral suppression may be hindered by delays in and discontinuation of treatment (Fairfield 1999).
- Few studies have been conducted to examine time on therapy, particularly among homeless and marginally housed (HMH) individuals. Determining characteristics associated with time on therapy could be used to structure interventions or target services for the homeless.
- We identified associations between the cumulative number of months on HAART and personal characteristics of homeless and marginally housed (HMH) individuals participating in the “Research in Access to Care in the Homeless” (REACH) project.

METHODS

Project Operations

- Between July 1996 and October 2001, a community-based study site and mobile outreach were used to interface and follow-up with participants.
- Systematic sampling was conducted from the largest homeless shelters, low-income single room occupancy hotels, and free meal programs in San Francisco.
- All English-speaking individuals who tested positive for HIV were invited to participate in the REACH study.
- Study participants completed a consent procedure and standardized questionnaire; thereafter making quarterly visits.
- Questionnaires were interviewer-administered quarterly and asked about sociodemographics, residential history, health services utilization, health status, HIV medications, mental health treatment history, drug use, and sexual behavior.
- Blood samples were obtained quarterly to assess CD4 count and viral load.

Analysis

- The dependent variable for the current study was cumulative number of months on HAART, defined as the number of months on therapy before study entry, in addition to those observed during the study period.
- Analyses were restricted to individuals who had ever received HAART.
- Independent variables regarding sociodemographics, drug use, health, and health care characteristics included baseline and prospective information collected during the study period. All independent variables represented baseline data. Continuous independent variables were categorized at the median to create dichotomous variables.
- Simple linear regression, using a 95% confidence interval, was used to assess associations between dependent and independent variables.
- Inferences for cumulative number of months on HAART were based on simultaneous adjustment for independent variables using multiple linear regression. All significant bivariate associations were considered. Using a backward stepwise approach, independent variables were deleted from the linear regression model if they did not improve the fit of the model. Goodness of fit was determined by F-tests of nested models. Residuals were plotted and examined for patterns. Interaction terms were tested for all models.

RESULTS

- 217/269 (80.7%) of eligible participants had ever received HAART
- 83.9% were male
- 56.2% were of non-Caucasian ethnicity
- The median age was 40 years (Inter-Quartile Range = 34-47)
- 27.7% had ever been incarcerated
- 34.6% were current injection drug users
- Individuals spent most nights sleeping on the streets or in a shelter (25.5%), in low-income hotels (33.3%), in jail or prison (29.9%)
- The median baseline CD4 cell count in this population was 322 cell/mm³ (Inter Quartile Range [IQR] = 176-448)
- The median number of cumulative months on therapy was 26 (IQR=13-41)

Table 1. Associations between months on HAART and participant characteristics among HIV+ marginally housed individuals who ever received HAART (n=217)

Characteristic	Unadjusted Coefficient (SE)	Unadjusted p-value	Adjusted Coefficient (SE)	Adjusted p-value
Female sex	-5.28 (3.30)	0.11		
Age >40	9.20 (2.36)	<0.01	6.18 (1.92)	<0.01 ξ
Non-Caucasian ethnicity	6.08 (2.42)	0.01	4.48 (1.93)	0.02 ξ
High school graduate	5.70 (2.58)	0.28		
Homeless>1 year	-0.77 (2.45)	0.75		
Uninsured	-5.36 (2.75)	0.052		
Receive SSI	4.06 (2.54)	0.11		
Mental health inpatient ever	0.71 (2.86)	0.81		
“Drinking problem” ever	-3.45 (2.56)	0.18		
Injection drug use ever	-3.33 (2.48)	0.18		
Crack use ever	-3.06 (2.83)	0.27		
Able to identify a regular health care provider	6.83 (3.03)	0.03	5.35 (2.37)	0.03 ξ
Baseline CD4 cell count	0.01 (0.01)	0.24	0.001 (0.001)	0.31 ξ
Year of HAART initiation	7.48 (0.73)	<0.01	7.00 (0.69)	<0.01 ξ
Entered REACH after 1998	-0.10 (2.37)	0.97		

ξ Variables included in final model

Table 2. Effects of interaction terms in the final model assessing associations between months on HAART and participant characteristics (n=217)

Characteristic	Adjusted Coefficient (SE)	Adjusted p-value
Age >40	5.65 (1.95)	<0.01
Able to identify a regular health care provider	5.12 (2.40)	0.03
Year of HAART initiation	7.33 (0.71)	<0.01
Non-Caucasian ethnicity	13.42 (4.20)	<0.01
Baseline CD4 Cell Count		
>500 (reference)		
350-500	-0.63 (4.13)	0.88
200-349	5.37 (4.60)	0.24
<200	6.78 (6.78)	0.09
INTERACTION		
Non-Caucasian ethnicity		
Baseline CD4 cell count		
>500 (reference)		
350-500	-4.72 (5.86)	0.42
200-349	-10.71 (5.80)	0.07
<200	-18.62 (5.40)	<0.01

CONCLUSIONS

- Among the homeless and marginally housed (HMH), older and non-Caucasian individuals had significantly more cumulative time on therapy, even after adjusting for date of therapy initiation.
- The significant interaction term indicates that the relationship between baseline CD4 cell count and time on HAART operates differently for Caucasian and non-Caucasian individuals.
- Drug use and mental inpatient history did not significantly predict number of months on HAART.
- These data suggest that age and race-based considerations may be important in maintaining HMH on HAART.

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