

HAART and mortality in the homeless: a prospective study

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Background

Highly active antiretroviral therapy has greatly reduced AIDS mortality. However, access to therapy is still limited in the urban indigent.

We studied HIV therapy and mortality in the REACH cohort of HIV-positive homeless and marginally housed persons in San Francisco.

Methods

We followed a representative sample of 330 HIV-positive adults, recruited 1996-2000 in lunch lines, homeless shelters and a random sample of SRO hotels.

We carried out quarterly interviews and blood draws. All subjects on HAART were studied monthly for adherence (measured by self-report, pill count and electronic cap) and viral load.

Table 1. The REACH cohort: demographic, risk factor and clinical variables at baseline (n=330)

Median Age 40	MSM 21%
Male 75%	IDU 32%
Female 16%	MSM/IDU 35%
Transgender 9%	Other 12%
White 45%	IDU ever 64%
African-American 45%	Alcohol 20%
Hispanic 6%	Other drug use 54%
Other 5%	Median income \$700/mo
Uninsured 31%	Mental health hospitalization 24%
High School grad 67%	Sex work, ever 56%
Ever in prison 26%	Median viral load 3.9
Median CD4 384	

Table 2. HIV and all-cause mortality and mortality rates in the REACH cohort

	person-years	Deaths:			Death rate (% ppy):		
		HIV	other	all	HIV	other	all
Subjects with:							
≥12 mos. HAART	482	10	8	18	4.4	3.2	7.7
<12 mos. HAART	613	21	12	33	9.0	3.3	12.3
All subjects	1095	31	20	51	6.5	3.3	9.7

Table 3. Univariate predictors of mortality in the REACH cohort.

Variable	Relative risk	p
Age (10 yr)	1.2	.29
Female	1.2	.56
White vs other	1.5	.14
Did not complete HS	1.7	.08
Living on street at baseline	0.6	.20
IDU history	1.6	.11
Current substance use	1.5	.18
Public health ins	1.3	.049
Baseline CD4 (per 50 cells)		
<200 cells vs >500	11.2	<.01
200-500 vs >500	5.3	<.01
Baseline viral load (per 1 log)	1.7	<.01
Fair or poor health	3.1	<.01
HAART:		
At baseline:	0.9	.69
At time (t)	0.4	<.01
Ever ≥ 6 months	0.7	.12
Ever ≥ 12 months	0.4	<.01
Cumulative 12 mos at (t)	0.7	.31

Table 4. Multivariate predictors of mortality in the REACH cohort

Variable	Adj RR (95% CI)	p
Age (per 10 yrs)	1.6 (1.11-2.3)	0.02
White	1.7 (.95-2.95)	0.07
Not high school	1.7 (.97-2.97)	0.07
Baseline CD4 count		
>500 cells/uL	1.0	
200-500 cells/uL	6.4 (1.9-21)	<.01
≤200 cells/uL	15.0 (4.4-52)	<.01
≥12 mos. HAART @ time t	0.5 (.23-.93)	0.03

Results

Treatment. The proportion on HAART rose to 56% in late 2001 (Fig.1). As of May 2002, 219/330 subjects (66%) had received at least one month of HAART and 175 (53%) received at least 12 months. Mean pill count adherence in those with more than 12 mos. of HAART was 69%.

Viral suppression. By early 2002, the proportion virally suppressed in the cohort was 30% (Fig 2).

Deaths. 51 subjects have died with a median 33 mos of follow-up (9.7% per person-year of follow-up). 31 have died from AIDS-related illness (6.5% ppy) (Table 2).

Treatment and mortality. Subjects with more than 12 mos HAART at death times had a crude death rate of 4.4 % ppy from HIV-related causes vs 9% ppy among those with less than 12 mos. HAART (Table 2) . They had an adjusted relative risk of 0.5 for death (p=.03) (Table 4). Death was independently predicted by age, baseline CD4 count, and accrued HAART experience. White ethnicity and lack of high school diploma were of borderline significance.

Figure 1. Proportion of the cohort on HAART regimens by six monthly intervals

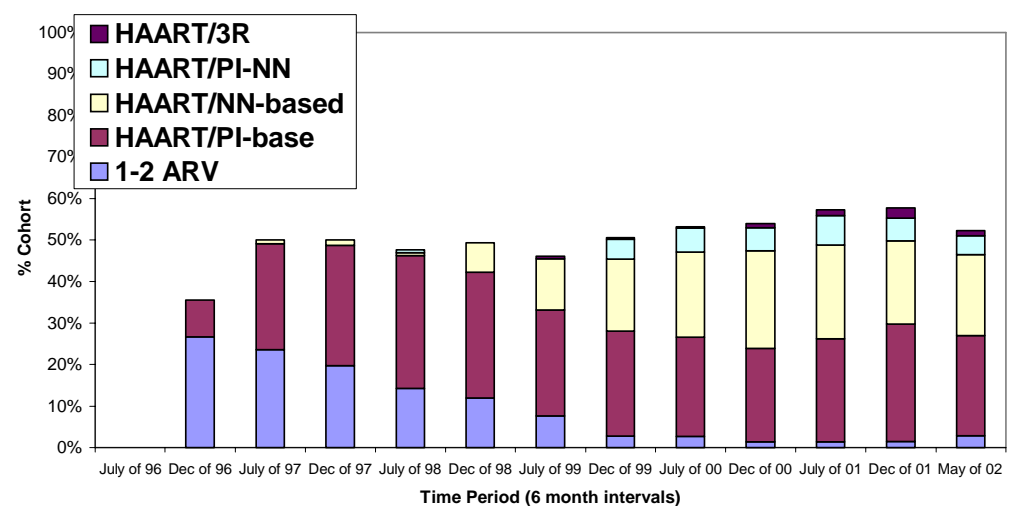
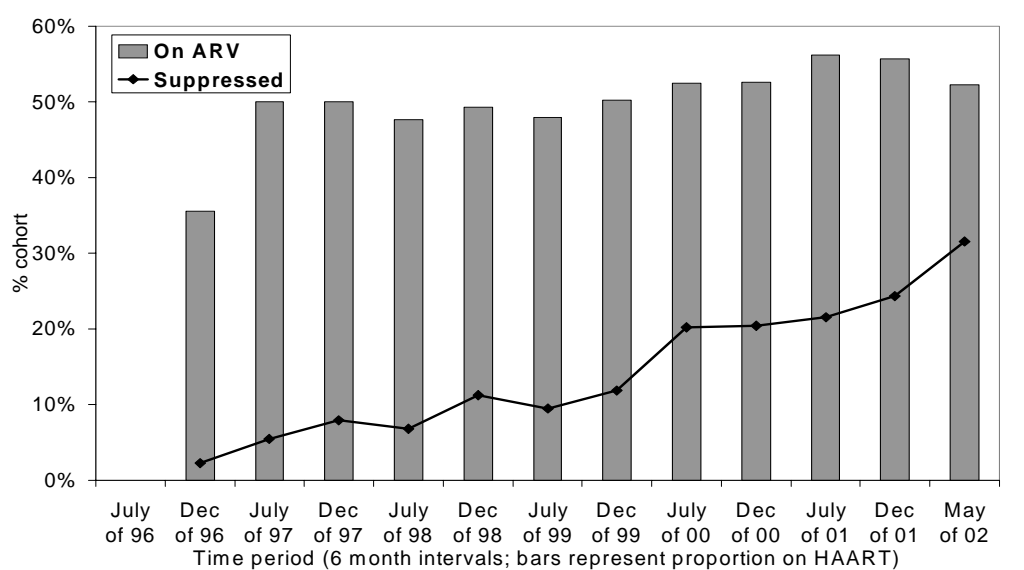


Figure 2. Proportion of the cohort with suppressed HIV viral load (<400 copies/ml) by six monthly intervals



Conclusions

Half of the HIV-positive homeless have received at a least a year of HAART. Those receiving a year of HAART had sharply reduced mortality.

Although penetration of therapy is incomplete and adherence remains an issue, HAART has had a major effect on mortality in the urban indigent.