Detrimental Effects of a High Adversity Score on HIV Care Corrado Cancedda, MD, PhD² in the Era of Highly Active Anti-Retroviral Therapy

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Objective

Socially disadvantaged HIV+ patients experience unacceptably high rates of AIDS and death. We developed a scoring system to quantify and examine the impact of adverse socio-economic and psychosocial events on the outcome of HIV+ patients treated with Highly Active Anti-Retroviral Therapy (HAART).

Rationale / Background

Despite widespread access to combined active antiretroviral therapy in the United States, the rates of new AIDS diagnoses and AIDS-related deaths have not declined in recent years.

With a shift to a disease affecting populations of low socioeconomic status, unmet basic needs and social stressors serve as difficult hurdles for patients, who find themselves burdened by conflicting priorities and unable to prioritize their own care.

Methods

This retrospective cohort study included 431 HIV+ subjects who initiated HAART between 2000 and 2006 in a university-based Infectious Diseases clinic in St Louis, MO. Characteristics of the sample are shown in **Table 1**.

Poor outcome was defined as having either clinical failure (progression to AIDS or death) or laboratory failure (VL > 400 copies/ml or CD4 <200 cells/ μ l) at Educe 6 months. Seven psychosocial variables were associated with increased risk of poor outcome and used for the adversity score (female gender, non-white race, income < \$10,000/year, being a single parent, cocaine abuse, depression, other psychiatric disorders), and are shown in **Table 2**.

The score was categorized into quartiles determined by the cumulative number of psychosocial variables (from least to most). The distribution of patient characteristics across quartiles of adversity score is shown in **Table 3**.

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omains and variables lefined as anytime during treatment)	N (%)
iscrimination	
eing a female	139 (32.2)
eing non-white	267 (61.9)
eing <18 years at time of diagnosis	18 (4.2)
eing a young MSM (<24 years)	32 (7.4)
eing a black MSM	69 (16.0)
ocioeconomic position	
aving an income <\$10,000 per year	301 (69.8)
aving a <12 years education level	16 (3.7)
nemployed	286 (66.4)
olation/Marginalization	
eing homeless or living in a shelter	41 (9.5)
eing incarcerated	33 (7.7)
aving an incarcerated partner	16 (3.7)
eing physically abused	4 (0.9)
ading sex for money or drugs	3 (0.7)
amilial stress	
eing a single parent	92 (21.3)
eing diagnosed while pregnant	38 (8.8)
aving new children while under care	63 (14.6)
ctive substance abuse	
busing alcohol	65 (15.1)
busing cocaine	58 (13.5)
busing intravenous drugs	7 (1.6)
busing another substance	67 (15.5)
ther psychosocial factors	
aving depression	178 (41.3)
aving another psychiatric disorder	46 (10.7)

Table 2. Adjusted Odds Ratios for Anv Poor Outcome

able	Odds Ratio	95%
ned as anytime during treatment)		Confidence
		Interval
ale gender	2.13	(1.06-4.17)
white race	2.50	(1.41 - 4.44)
nosed at less than 18 years of age	2.18	(0.69 - 6.86)
factor = young MSM	1.76	(0.75 - 4.10)
factor = Black MSM	0.94	(0.46 - 1.91)
ne less than \$10,000/yr	2.89	(1.67 - 5.02)
ation less than 12 th grade	1.01	(0.22 - 4.55)
eless shelter	1.34	(0.60 - 3.00)
isoned	1.08	(0.45 - 2.58)
er imprisoned	0.83	(0.23 - 2.95)
g physically abused	2.44	(0.75 - 7.98)
ing sex for money or drugs	0.21	(0.02 - 3.10)
le parent	2.60	(1.29-5.23)
nancy during treatment	1.36	(0.53 - 3.49)
child during treatment	1.39	(0.65 - 2.95)
hol abuse	0.63	(0.31 - 1.25)
ine abuse	2.63	(1.22-5.68)
venous drug abuse	2.14	(0.30-15.55)
r substance abuse	1.31	(0.69 - 2.50)
ession	1.75	(1.06-2.89)
r psychiatric disorder	3.05	(1.48-6.28)

Progression to a higher quartile significantly ncreased odds of poor outcome OR = 2.58,95% CI = 1.96, 3.36 (Table 4).

The odds of poor outcome decreased but remained Significant at 2.13 (95% CI = 1.57, 2.88) after adjusting for possible mediators (poor access to and utilization of care, more advanced disease at baseline, poor adherence).

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Results

Rates of poor outcome were 6%, 26%, 42%, and 68% for quartile 1, 2, 3, 4 respectively (Figure 1).

Table 3. Characteristics of Patients by Quartile of Adversity Score

nains and variables	1 st	2 nd	3 rd	4 th
	quartile (n=51) N (%)	quartile (n=114) N (%)	quartile (n=140) N (%)	quartile (n=126) N (%)
crimination				
ng a female*	14 (28)	44 (39)	38 (27)	43 (34)
ng non-white*	5 (10)	61 (54)	95 (68)	106 (84)
ng <18 years at time of mosis	1 (2)	4 (4)	8 (6)	5 (4)
ng a young MSM [<24 ˈs]	0 (0)	7 (6)	14 (10)	11 (9)
ng a black MSM	0 (0)	20 (18)	22 (16)	27 (21)
oeconomic position				
ing and income 0,000 per year*	4 (8)	51 (45)	121 (86)	125 (99)
ing a <12 years cation level	3 (6)	10 (9)	19 (14)	31 (25)
ation/Marginalization				
ng homeless or living in elter	0 (0)	3 (3)	11 (8)	27 (21)
ng incarcerated	0 (0)	3 (3)	8 (6)	22 (18)
ing an incarcerated	0 (0)	4 (4)	2 (1)	10 (8)
ng physically abused	1 (2)	6 (5)	3 (2)	7 (6)
ling sex in exchange for gs or money	0 (0)	0 (0)	0 (0)	3 (3)
nilial stress				
ng a single parent*	0(0)	12(11)	31 (22)	49 (39)
ng diagnosed while gnant	1 (2)	13 (11)	15 (11)	9 (7)
ing new children while er care	6 (12)	14 (12)	22 (16)	21 (17)
ive substance abuse				
sing alcohol	1 (2)	6 (5)	20 (14)	38 (30)
sing cocaine*	0(0)	2 (2)	6 (4)	50 (40)
sing intravenous drugs	1 (2)	0 (0)	1 (1)	5 (4)
sing another substance	3 (6)	9 (8)	21 (15)	34 (27)
er psychosocial factors				
ing depression*	0 (0)	28 (25)	57 (41)	93 (74)
ing another psychiatric rder*	1 (2)	4 (4)	8 (6)	33 (26)
ble included in adversity score	5			

Labor failure

Clinic failure

Conclusion In our study, high adversity scores were associated with a greater likelihood of poor outcome in HIV+ patients initiating HAART. Our data confirm that sociodemographic factors reflected among U.S. HIV-infected persons have a profound influence upon health outcomes.

As health care providers, we need to make the management of HIV more comprehensive to care for the complex lives of individuals living with the disease.



Figure 1. Outcomes by Quartile of Adversity Score for 431 HIV+ Patients Seen in an Urban Infectious Disease Clinic from 2000-2006.



Any Poor Outcome

Laboratory Failure

Clinical Failure

Table 4. Odds of Outcomes for Proximal Quartiles of Adversity Categories

ome	Odds (95% CI)	Mediators	Confounders	Adjusted Odds (95% CI)
me	2.58 (1.96, 3.36)	Utilization	HBV	2.13 (1.57, 2.88)
		Adherence		
		Baseline disease		
atory	2.21 (1.52, 3.19)	Access	Renal insufficiency	1.94 (1.26, 3.00)
•		Adherence	Liver failure	
		Baseline disease		
eal	1.92 (1.46, 2.53)	Utilization	Heart disease	1.72 (1.28, 2.31)
		Adherence		
		Baseline disease		