Table 3 Difference change in Global Deficit Score and Z-score of each test at month 6 (M6) compared to baseline (M0)

	Difference between M0 and M6					
	Switching arm (RPV)		Control arm (EFV)		Difference of change between groups	
Parameters	Mean diff (95% CI)	*p-value*	Mean diff (95% CI)	*p-value*	Mean diff (95% CI)	*p-value*
Global Deficit score (GDS)	-0.5 (-0.8 to -0.3)	< 0.01	-0.4 (-0.6 to 0.2)	< 0.01	-0.1 (-0.4 to 0.2)	0.39
1. Verbal and language	0.6 (-0.02 to 1.9)	0.05	0.4 (-0.3 to 1.2)	0.24	0.4 (-0.6 to 1.4)	0.43
2. Attention and working memory	0.2 (-0.1 to 0.6)	0.19	0.01 (-0.9 to 0.9)	0.98	0.2 (-0.7 to 1.2)	0.62
3. Abstraction and executive function	-0.3 (-0.8 to 0.1)	0.13	-0.6 (-1.2 to 0.1)	0.09	0.3 (-0.5 to 1.0)	0.49
4. Verbal Memory	0.6 (0.1 to 1.0)	0.02	0.4 (-0.3 to 1.1)	0.26	0.2 (-0.6 to 0.9)	0.70
5. Figural learning	1.4 (0.6 to 2.1)	< 0.01	1.3 (0.2 to 2.4)	0.02	0.04 (-1.2 to 1.3)	0.94
6. Figural memory	1.2 (0.4 to 1.9)	0.01	1.2 (0.2 to 2.2)	0.03	-0.1 (-1.3 to 1.1)	0.92
7. Speed of information processing	0.7 (0.1 to 1.2)	0.03	0.1 (-0.3 to 0.5)	0.49	0.5 (-0.1 to 1.2)	0.09
8. Motor Skills/Complex Perceptual	0.3 (-0.1 to 0.7)	0.08	0.3 (0.2 to 0.9)	0.23	-0.001 (-0.6 to 0.6)	1.00
9. Gross Motor	0.6 (0.003 to 1.3)	0.05	-0.04 (-0.8 to 0.7)	0.91	0.7 (-0.3 to 1.6)	0.14

Table 4 Factors associated with improved neurological function

	Neurocognitive recovery N=11 (%)	Unchanged N= 9 (%)	Odd ratio	(95% CI)	*P-value*
Switching arm (RPV)	6 (54.5)	4 (44.4)	1.5	(0.2 - 12.4)	0.65
Male gender	7(63.6)	0(0)	-	-	0.003
Age < 50 years	6(54.6)	1(11.1)	9.6	(0.7- 495.4)	0.04
Education > 10 years	6(54.6)	5(55.6)	1.0	(0.1-7.8)	0.96
Diagnosed with HIV < 10 yrs	2(18.2)	1(11.1)	1.8	(0.1 - 117.8)	0.66
Time from HIV Diagnosis to ART initiation < 5 years	11(100.0)	5(55.6)	-	-	0.01
Taking ART < 5 years	2(18.2)	1(11.1)	1.8	(0.1- 117.8)	0.66
On EFV < 5 years	8(72.7)	5(55.6)	2.1	(0.2 - 20.8)	0.42
CD4 nadir < 200	6(54.6)	4(44.4)	1.5	(0.2 - 12.4)	0.65
CDC Cat B or C upon diagnosis	3(27.3)	3(33.3)	0.8	(0.1 -7.9)	0.77

*Exact confidence levels not possible with zero count cells.

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366. Severe Neurologic Impairment Persists Despite Potent ART in HIV Encephalopathy

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Background. Approximately 4–8% of the 1.1 million HIV patients in the United States have or will be diagnosed with HIV encephalopathy or HIV associated dementia (HAD). There are no published studies of the long-term outcomes of HAD treated with potent antiretroviral therapy (ART). We hypothesize that more than 60% of individuals diagnosed with HAD will have persistent neurocognitive impairment despite the successful use of potent ART and fewer than 20% will be employed.

Methods. This is a cross-sectional prospective and retrospective study of outcomes in individuals previously diagnosed with HAD. We identified all individuals with the diagnosis of dementia and HIV at the UC Infectious Diseases Center (IDC). For those who matched the 1993 CDC HAD definition, we collected medical, neurocognitive, and functional information. We attempted to contact all individuals alive and still in the IDC practice ($N = 26$) to perform a validated battery of neuropsychological tests. We excluded individuals with HIV-associated neurocognitive disease that developed after treatment with ART.

Results. We confirmed 39 diagnoses of HAD out of 137 records reviewed. The median CD4 count at the time of diagnosis of HAD was 47 cells/mm3 with a median viral load of 211,475 copies/mL. The median length of follow-up after diagnosis of HAD was 72 months (range 1–166 months). Potent ART was prescribed to all individuals, with 67.5% reaching consistent undetectable viral loads (< 200 copies/mL, occasional blips allowed). Persistent neurologic deficits were noted in 32.5%, while 60% had persistent cognitive deficits. Psychiatric disturbances were present in 72.5%. Only 2.5% reported any employment. To date, 28% have died. Ten participants have undergone formal neurocognitive testing to date ($N = 26$ available). The median overall summary score (total Z score) was -1.17 (range 0.08, -1.95) and median global deficit (GDS) score was 1.48 (range 0, 2.92).

Conclusion. HIV-associated dementia results in substantial morbidity and mortality despite potent antiretroviral therapy. Prospective neurocognitive assessment documents significant impairments in most individuals. HIV-associated dementia will require additional strategies to mitigate the profound impact on the quality of life and longevity.

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367. Use of a Brief Task-Based Measure to Assess the Functional Consequences of Cognitive Impairment in HIV

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Background. In spite of viral suppression with antiretroviral therapy (ART), neurocognitive impairment (NCI) affects ~20% of those infected with HIV; most are asymptomatic or only mildly impaired based on instrumental activity of daily living (IADL) self-reported questionnaires. Previous studies have shown a strong association between depression, common among HIV+, and self-reported IADL impairment, potentially confounding evaluation of the functional impact of NCI. We studied a brief (15–20 minutes) task-based measure of function, the Texas Functional Living Scale (TFLS), in the context of HIV, NCI, and depression.

Methods. Baseline data were analyzed from parallel, longitudinal cohort studies of neurocognitive function among HIV+ and demographically matched HIV-subjects enrolled at NIH and DoD sites. Subjects recruited at NIH were on ART with viral suppression (VS) ≥1 year and nearly all in the DoD also had long-term VS. All participants underwent a standardized, comprehensive neurocognitive battery (7 domains), as well as the TFLS. Global deficit score (GDS) ≥0.5 defined neurocognitive impairment (NCI) and TFLS impairment was defined as T-score >1 standard deviation below mean (i.e., < 40).

Results. 420 subjects were evaluated with demographics in Table 1. Eighty-five subjects (20%) had NCI by GDS and 57 (13%) subjects had TFLS impairment. 17% had a Beck Depression Inventory II (BDI) score ≥13 indicating significant depressive symptoms. In univariate analysis of Table 1 variables, only HIV status was not significantly different between those with or without TFLS impairment, however after adjustment using multivariable logistic regression, only education level, race, and NCI were associated with TFLS impairment; depressive symptoms (BDI ≥13) were not associated with functional impairment measured by TFLS.

Conclusion. In parallel DoD and NIH cohorts of well-treated HIV+ and matched HIV- subjects, task-based functional impairment measured by TFLS was strongly associated with NCI, but not with depressive symptoms, suggesting the potential utility of this measure to better understand the functional consequences of HIV associated neurocognitive disorders. While the association of TFLS with education was expected, that with race was not and requires further study.

Table 1: Logistic Regression Model for TFLS Impairment (T-score <40)

Risk Factor	N (%)	Odds Ratio	95% Wald Confidence Limits		P-value
DoD (ref: NIH)	223 (53.1)	1.29	0.51	3.27	0.59
HIV+ (ref: HIV-)	320 (76.2)	1.06	0.41	2.73	0.90
Age, mean (std dev)	47.2 (10.6)	1.04	0.99	1.08	0.11
Female (ref: Male)	90 (21.4)	1.06	0.46	2.42	0.90
Race (ref: White)					
Black	188 (44.8)	**8.51**	**3.03**	**23.92**	**<.0001**
Other	20 (4.8)	4.27	0.95	19.26	0.06
Education (ref: < 12th gr)					
12th grade/GED	111 (26.4)	0.39	0.13	1.17	0.09
Some college	105 (25.0)	**0.13**	**0.04**	**0.43**	**0.001**
Bachelor's degree	88 (21.0)	**0.21**	**0.06**	**0.73**	**0.01**
Higher degree	79 (18.8)	**0.05**	**0.01**	**0.33**	**0.002**
Employed (ref: Not empl.)	290 (69.1)	0.70	0.32	1.55	0.38
NCI (GDS ≥0.5)	85 (20.2)	**7.40**	**3.45**	**15.86**	**<.0001**
BDI ≥13	71 (16.9)	1.91	0.83	4.38	0.13

Abbreviations: TFLS=Texas Functional Living Scale; DoD=US Department of Defense; ref=reference; GDS=global deficit score; BDI=Beck Depression Inventory II; NCI=neurocognitive impairment

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