

Supplemental Digital Content

Table S1: Predictors of long term cognitive decline considered using the original data: source of information, mean (SD) or proportion and OR (95% CI)

Predictors at initial assessment	Source of information	Mean (SD) or Proportion		OR (95 % CI) for decline, unadjusted	OR (95 % CI) for decline, adjusted for age and sex
		Stable n = 147	Decliners n = 128		
Demographics					
Age, years	Chart review	50.80 (6.86)	56.88 (8.19)	1.11 (1.06 to 1.17)	1.11 (1.06 to 1.16)
Men (vs women)	Self-reported	82.31 %	91.41 %	2.23 (1.37 to 3.65)	1.55 (0.87 to 2.74)
Education, University vs less	Self-reported	43.54 %	33.86 %	0.67 (0.54 to 0.82)	0.61 (0.51 to 0.72)
Ethnicity, European descent	Self-reported	74.64 %	82.35 %	1.68 (0.85 to 3.31)	1.14 (0.59 to 2.21)
HIV characteristics					
Duration of HIV, years	Chart review	16.02 (8.01)	18.83 (7.73)	1.05 (1.02 to 1.07)	1.02 (1.00 to 1.04)
Nadir CD4 count, cells/ μ l OR per 100 units	Chart review and self-reported	224 (163)	185 (146)	0.85 (0.76 to 0.96)	0.89 (0.81 to 0.97)
Nadir CD4 count, ≤ 200 cells/ μ l		51.06 %	60.16 %	1.42 (1.06 to 1.90)	1.18 (0.95 to 1.46)
CD4 count, cells/ μ l (mean, SD) Median (p25, p75) OR per 100 units	Chart review	656 (247) 620 (482, 796)	607 (272) 590 (432, 738)	0.93 (0.84 to 1.04)	0.98 (0.88 to 1.08)
CD4 count ≤ 200 cells/ μ l	Chart review	1.39 %	4.76 %	3.39 (0.80 to 14.31)	2.82 (0.47 to 16.95)
CD8 count, cells/ μ l OR per 100 units	Chart review	843 (394)	852 (428)	1.00 (0.93 to 1.08)	1.00 (0.92 to 1.08)
CD4/CD8 ratio (mean, SD) Median (p25,p75)	Chart review	0.91 (0.47) 0.82 (0.58, 1.13)	0.82 (0.41) 0.76 (0.56, 1.02)	0.63 (0.23 to 1.78)	0.75 (0.25 to 2.19)
Plasma HIV RNA >50 copies/ml	Chart review	2.80 %	8.73 %	3.32 (1.30 to 8.49)	3.38 (1.19 to 9.60)
Vascular Comorbidities					
Heart disease or angina	Self-reported	5.44 %	14.84 %	3.05 (1.93 to 4.83)	1.76 (0.89 to 3.51)

Hypertension	Self-reported	22.76 %	32.54 %	1.62 (1.08 to 2.45)	1.03 (0.65 to 1.63)
Systolic blood pressure	Measured	122.10 (14.59)	123.48 (16.34)	1.01 (0.98 to 1.03)	1.00 (0.98 to 1.02)
Peripheral vascular disease	Self-reported	3.40 %	9.38 %	3.07 (2.14 to 4.40)	2.78 (2.36 to 3.28)
Framingham Risk Score	Calculated from Measured and Self- reported items	5.33 (4.77)	9.01 (5.48)	1.16 (1.11 to 1.21)	1.08 (1.03 to 1.14)
Low <10		83.61%	51.89 %	Ref	Ref
Intermediate 10-<20		13.93 %	40.57 %	4.67 (2.27 to 9.58)	2.42 (1.46 to 3.98)
High 20+		2.46 %	7.55 %	4.90 (1.71 to 14.04)	3.08 (1.50 to 6.31)
Diabetes	Self-reported	8.84 %	14.84 %	1.78 (0.80 to 3.98)	1.17 (0.60 to 2.30)
HbA1c	Chart review	5.50 (0.80)	5.75 (1.28)	1.30 (0.88 to 1.92)	1.07 (0.83 to 1.38)
LDL cholesterol, mmol/L	Chart review	2.78 (0.83)	2.57 (0.82)	0.74 (0.54 to 1.01)	0.85 (0.63 to 1.16)
ApoB	Chart review	0.92 (0.23)	0.88 (0.26)	0.48 (0.12 to 1.96)	0.58 (0.12 to 2.84)
Other comorbidities					
Thyroid disease	Self-reported	4.76 %	5.47 %	1.10 (0.45 to 2.70)	1.09 (0.41 to 2.94)
Kidney disease	Self-reported	9.52 %	7.03 %	0.68 (0.39 to 1.16)	0.55 (0.34 to 0.89)
Hepatitis C	Chart review	12.17 %	15.56 %	1.41 (0.82 to 2.40)	1.56 (0.98 to 2.46)
Liver problem	Self-reported	19.05 %	21.88 %	1.17 (0.61 to 2.25)	1.06 (0.57 to 1.97)
Numbness	Self-reported	54.86 %	55.47 %	1.02 (0.70 to 1.50)	0.98 (0.58 to 1.67)
Comorbidity score, mean (SD)	Calculated from self-reported items	1.07 (1.21)	1.29 (1.49)	1.12 (0.96 to 1.29)	1.02 (0.91 to 1.15)
0		42.18 %	36.72 %	Ref	Ref
1		26.53 %	32.81 %	1.41 (1.15 to 1.72)	1.22 (0.99 to 1.52)
2		19.73 %	13.28 %	0.75 (0.27 to 2.05)	0.67 (0.28 to 1.58)
3		6.80 %	7.03 %	1.13 (0.75 to 1.70)	0.82 (0.60 to 1.12)
≥ 4		4.76 %	10.16 %	2.34 (1.23 to 4.48)	1.46 (0.88 to 2.42)
Lifestyle factors					
Tobacco use	Self-reported			Ref	Ref
Never		44.37 %	31.20 %		
Past only		38.03 %	45.60 %	1.73 (1.41 to 2.13)	1.12 (0.81 to 1.54)
Current		17.61 %	23.20 %	1.90 (1.14 to 3.18)	2.60 (1.49 to 4.53)
Cannabis use	Self-reported			Ref	Ref
Never		35.66 %	30.71 %		
Past only		39.16 %	25.98 %	0.76 (0.44 to 1.32)	0.68 (0.36 to 1.30)
Current		25.17 %	43.31 %	1.96 (1.05 to 3.66)	1.98 (1.15 to 3.39)

Alcohol use	Self-reported	16.90 %	14.17 %	Ref	Ref
None		79.58 %	78.74 %	1.19 (0.67 to 2.12)	0.91 (0.43 to 1.92)
Some		3.52 %	7.09 %	2.52 (0.80 to 7.93)	1.25 (0.39 to 4.00)
Risky					
BMI	Direct measurement	3.40 %	2.34 %	0.54 (0.21 to 1.44)	0.46 (0.15 to 1.43)
Underweight <18.5		38.10 %	50.78 %	Ref	Ref
Normal 18.5 to ≤ 25		38.10 %	32.81 %	0.65 (0.28 to 1.53)	0.62 (0.23 to 1.65)
Overweight 25 to ≤ 30		14.97 %	9.38 %	0.49 (0.19 to 1.24)	0.50 (0.21 to 1.21)
30 to ≤ 35		5.44 %	4.69 %	0.66 (0.20 to 2.20)	0.81 (0.28 to 2.36)
≥ 35					
Waist to hip ratio (sex-specific) ¹	Direct measurement	22.73 %	18.49 %	Ref	Ref
0: Best		25.76 %	32.77 %	1.60 (0.58 to 4.39)	1.33 (0.65 to 2.71)
1: Mid risk		51.52 %	48.74 %	1.21 (0.63 to 2.34)	0.88 (0.51 to 1.49)
2: Higher risk					
Level of physical activity in the past 6 months	Self-report				
Vigourous		23.08 %	33.86 %	2.19 (1.52 to 3.15)	2.07 (1.49 to 2.89)
Moderate		46.85 %	46.46 %	1.47 (0.98 to 2.21)	1.30 (0.94 to 1.81)
Sedentary		30.07 %	19.69 %	Ref	Ref
Satisfaction with sleep	Self-report – WHOQOL-HIV Bref ^[80]				
Very dissatisfied		8.28 %	10.94 %	1.07 (0.50 to 2.29)	1.27 (0.47 to 3.47)
Dissatisfied		25.52 %	21.88 %	0.73 (0.36 to 1.49)	0.57 (0.27 to 1.19)
Neither satisfied nor dissatisfied		17.24 %	21.09 %	Ref	Ref
Satisfied		37.24 %	36.72 %	0.80 (0.44 to 1.45)	0.65 (0.34 to 1.25)
Very satisfied		11.72 %	9.38 %	0.64 (0.33 to 1.24)	0.58 (0.30 to 1.15)
Medication-related factors					
Taking prescribed benzodiazepines	Self-reported	10.88 %	11.72 %	1.12 (0.40 to 3.09)	1.25 (0.55 to 2.82)
Taking prescribed opioids	Self-reported	7.48 %	8.59 %	1.18 (0.57 to 2.42)	1.28 (0.55 to 2.99)
Taking any medication for depression	Self-reported	26.90 %	23.39 %	0.82 (0.53 to 1.26)	0.89 (0.57 to 1.38)

Anticholinergic burden	Calculated from self-reported medication	0.96 (1.65)	0.96 (1.46)	1.00 (0.86 to 1.15)	0.98 (0.85 to 1.14)
Sedative Burden	Calculated from self-reported medication	0.82 (1.33)	0.73 (1.22)	0.94 (0.77 to 1.16)	0.97 (0.79 to 1.19)
Health status indicators					
Hemoglobin	Measured	14.69 (1.22)	14.63 (1.35)	0.97 (0.86 to 1.11)	0.95 (0.83 to 1.09)
eGFR < 60 mL/min/1.73 m ²	Measured	6.99 %	8.13 %	1.13 (0.56 to 2.24)	1.58 (0.99 to 2.51)
CRP	Measured	3.97 (5.59)	3.46 (4.53)	0.99 (0.93 to 1.04)	1.01 (0.95 to 1.07)
Calcium, mg/dL OR per 0.5 unit	Measured	2.33 (0.10)	2.32 (0.09)	0.35 (0.02 to 7.62)	0.28 (0.01 to 6.57)
FIB-4	Calculated from chart review	1.25 (0.56)	1.52 (0.65)	2.13 (1.01 to 4.48)	1.25 (0.71 to 2.21)
FIB-4 <1.45 vs ≥ 1.45		26.24 %	48.67 %	2.66 (1.31 to 5.41)	1.51 (0.98 to 2.33)
VACS Index 1.0, range 0-100	Calculated from chart review	8.83 (6.03)	14.32 (8.72)	1.10 (1.06 to 1.16)	1.05 (1.02 to 1.09)
Physical function index	Self-reported - RAND-36 ^[81]	84.66 (18.96)	80.90 (19.88)	0.99 (0.98 to 1.01)	1.00 (0.98 to 1.01)
Vitality	Self-reported - RAND-36 ^[81]	53.08 (23.09)	53.42 (22.13)	1.00 (0.99 to 1.01)	0.99 (0.98 to 1.00)
TSH	Chart review	1.96 (1.07)	2.10 (1.01)	1.17 (0.94 to 1.46)	1.16 (0.95 to 1.42)
Psychosocial and environmental factors					
HADS depression	Self-reported, Hospital Anxiety and Depression Scale ^[82]	4.62 (3.81)	4.68 (3.69)	1.01 (0.95 to 1.06)	1.03 (0.98 to 1.09)
HADS anxiety		6.81 (4.24)	7.17 (3.89)	1.02 (0.99 to 1.05)	1.07 (1.03 to 1.12)

Motivation: interested in learning new things Not at all Some A lot	Self-reported, items from Starkstein Apathy Scale ^[83]	2.11 % 40.14 % 57.75 %	1.56 % 38.28 % 60.16 %	0.68 (0.19 to 2.50) 0.92 (0.61 to 1.37) Ref	1.47 (0.23 to 9.27) 0.92 (0.64 to 1.31) Ref	
Motivation: have plans and goals for the future Not at all Some A lot		10.79 % 53.96 % 35.25 %	15.25 % 59.32 % 25.42 %	1.97 (1.19 to 3.27) 1.50 (0.85 to 2.62) Ref	1.70 (0.95 to 3.06) 1.40 (0.77 to 2.52) Ref	
Loneliness: find yourself feeling lonely Quite often Sometimes Almost never		Self-reported, Item 5 from the OARS ^[84]	15.97 % 46.53 % 37.50 %	15.63 % 45.31 % 39.06 %	0.96 (0.46 to 1.98) 0.92 (0.66 to 1.30) Ref	1.55 (1.13 to 2.13) 1.25 (0.97 to 1.61) Ref
Stigma: bothered by people blaming you for your HIV status Not at all A little A moderate amount Very much An extreme amount		Self-reported, Item 8 from the WHOQOL-HIV Bref ^[80]	66.21 % 17.93 % 5.52 % 6.90 % 3.45 %	70.31 % 10.94 % 10.16 % 4.69 % 3.91 %	Ref 0.58 (0.32 to 1.05) 1.71 (0.82 to 3.59) 0.67 (0.33 to 1.37) 1.09 (0.27 to 4.40)	Ref 0.69 (0.29 to 1.60) 2.29 (0.99 to 5.31) 0.61 (0.33 to 1.13) 2.16 (0.43 to 10.91)
Personal/family history						
Cognitive reserve	Cognitive Reserve Index ^[85]	17.15 (7.77)	16.59 (7.59)	0.99 (0.96 to 1.02)	0.98 (0.96 to 1.00)	
Family history of cardiac disease	Self-reported	38.36 %	39.68 %	1.11 (0.50 to 2.47)	1.07 (0.50 to 2.26)	
Family history of dementia	Self-reported	8.90 %	9.52 %	1.24 (0.52 to 2.94)	1.47 (0.66 to 3.31)	
History of head trauma	Self-reported	9.79 %	9.38 %	0.91 (0.50 to 1.67)	0.78 (0.37 to 1.67)	
Educational history: failing a grade	Self-reported	41.96 %	46.88 %	1.18 (0.88 to 1.58)	1.20 (0.81 to 1.78)	
Educational history: needing special help with class	Self-reported	19.58 %	23.44 %	1.23 (1.02 to 1.50)	1.67 (1.31 to 2.14)	

Educational history: prior diagnosis of learning disability or attention deficit disorder	Self-reported	6.99 %	11.02 %	1.70 (0.83 to 3.46)	1.91 (0.75 to 4.84)
Cognition					
Self reported cognition ²	Self-reported	33.95 (17.76)	32.58 (16.08)	1.00 (0.98 to 1.01)	1.00 (0.98 to 1.01)
B-CAM, mean (SD) (range: -0.95 to 3.56, higher is better)	Direct measurement	1.10 (0.75)	1.15 (0.69)	1.11 (0.87 to 1.42)	1.52 (1.33 to 1.75)
Q1				Ref	Ref
Q2				1.72 (1.08 to 2.74)	2.31 (1.25 to 4.25)
Q3				1.54 (0.89 to 2.67)	2.12 (1.47 to 3.07)
Q4				1.21 (0.62 to 2.47)	2.07 (1.01 to 4.26)
¹ Waist to hip ratio: Low Risk: ≤ 0.85 for men and ≤ 0.80 for women; Moderate Risk: 0.85 and 0.90 for men and 0.80 and 0.85 for women; High Risk: above 0.90 for men and above 0.85 for women. ² Patient Deficit Questionnaire (PDQ), range: 0-100, higher is worse					