

Table S1: Association between Retention in Care Measures and Viral Suppression by Age Group (Sensitivity Analysis)

Retention Measure	Age Group				
	18-29 years APR (95% CI)	30-39 years APR (95% CI)	40-49 years APR (95% CI)	50-59 years APR (95% CI)	≥ 60 years APR (95% CI)
NHAS Measure					
Not Retained	1.00 [Ref]	1.00 [Ref]	1.00 [Ref]	1.00 [Ref]	1.00 [Ref]
Retained	1.38 (1.07-1.77)	1.30 (1.08-1.58)	1.12 (0.96-1.31)	1.01 (0.82-1.25)	1.16 (0.73-1.83)
DHHS Indicator					
Not Retained	1.00 [Ref]	1.00 [Ref]	1.00 [Ref]	1.00 [Ref]	1.00 [Ref]
Retained	1.23 (1.05-1.44)	1.27 (1.12-1.43)	1.12 (1.02-1.24)	1.03 (0.90-1.18)	1.05 (0.81-1.36)
6-Month Gap in Care					
Yes (Not Retained)	1.00 [Ref]	1.00 [Ref]	1.00 [Ref]	1.00 [Ref]	1.00 [Ref]
No (Retained)	1.32 (1.08-1.62)	1.20 (1.04-1.40)	1.16 (1.03-1.32)	1.02 (0.86-1.21)	1.20 (0.82-1.77)
3-Month Visit Constancy					
1	1.00 [Ref]	1.00 [Ref]	1.00 [Ref]	1.00 [Ref]	1.00 [Ref]
2	1.26 (1.00-1.60)	1.22 (1.02-1.47)	1.03 (0.89-1.21)	1.08 (0.88-1.32)	1.14 (0.76-1.71)
3	1.41 (1.13-1.76)	1.32 (1.12-1.57)	1.19 (1.03-1.36)	1.06 (0.88-1.28)	1.07 (0.74-1.56)
4	1.54 (1.24-1.91)	1.47 (1.25-1.73)	1.20 (1.05-1.37)	1.10 (0.92-1.32)	1.14 (0.80-1.64)

Abbreviations: APR, adjusted prevalence ratio; CI, confidence interval; DHHS, Department of Health and Human Services; NHAS, National HIV/AIDS Strategy.

In sensitivity analyses, patients with missing viral load data were categorized as “not suppressed”. Models included an interaction between retention measure and age group, and adjusted for sex, race/ethnicity, HIV risk factor, first CD4 cell count in the year, use of ART for >6 months during the year, calendar year, and cohort as time-fixed covariates.

Bold signifies adjusted prevalence ratios with p-value <0.05.

Table S2: Multivariable Associations with HIV Viral Suppression – NHAS Measure, DHHS Indicator, and 6-Month Gap in Care Measure

Characteristic	Adjusted Prevalence Ratio (95% CI)		
	NHAS Measure	DHHS Indicator	6-Month Gap
Retention Measure by Age Group			
Retained vs. Not Retained for 18-29	1.33 (1.03-1.70)	1.19 (1.02-1.39)	1.28 (1.04-1.57)
Retained vs. Not Retained for 30-39	1.23 (1.01-1.49)	1.23 (1.09-1.39)	1.16 (1.01-1.35)
Retained vs. Not Retained for 40-49	1.06 (0.90-1.23)	1.08 (0.97-1.19)	1.12 (0.99-1.27)
Retained vs. Not Retained for 50-59	0.92 (0.75-1.13)	0.99 (0.87-1.14)	0.96 (0.81-1.14)
Retained vs. Not Retained for > 60	0.99 (0.63-1.56)	0.97 (0.75-1.25)	1.09 (0.74-1.60)
Sex			
Male	1 [Reference]	1 [Reference]	1 [Reference]
Female	1.04 (0.97-1.11)	1.04 (0.97-1.11)	1.04 (0.97-1.11)
Race/Ethnicity			
White	1 [Reference]	1 [Reference]	1 [Reference]
Black	0.93 (0.88-0.98)	0.93 (0.88-0.98)	0.93 (0.88-0.98)
Hispanic	1.02 (0.95-1.09)	1.02 (0.95-1.09)	1.02 (0.95-1.09)
Other/Unknown	1.10 (1.02-1.19)	1.10 (1.02-1.20)	1.10 (1.02-1.19)
HIV Risk Factor			
MSM	1 [Reference]	1 [Reference]	1 [Reference]
Heterosexual	0.87 (0.80-0.95)	0.87 (0.80-0.95)	0.88 (0.80-0.95)
IDU	0.93 (0.87-0.98)	0.93 (0.87-0.99)	0.93 (0.87-0.99)
Other/Unknown	0.91 (0.85-0.98)	0.91 (0.85-0.98)	0.91 (0.85-0.98)
First CD4 Count in Year			
< 350 cell/mm ³	1 [Reference]	1 [Reference]	1 [Reference]
350-499 cell/mm ³	1.05 (1.00-1.11)	1.05 (0.99-1.11)	1.05 (1.00-1.11)
≥500 cell/mm ³	1.02 (0.97-1.08)	1.02 (0.96-1.08)	1.02 (0.97-1.08)
Missing	0.91 (0.77-1.08)	0.91 (0.77-1.08)	0.92 (0.78-1.08)
Use of ART in Year			
No	1 [Reference]	1 [Reference]	1 [Reference]
Yes	3.24 (3.05-3.43)	3.19 (3.00-3.38)	3.24 (3.05-3.43)
Calendar Year			
2006	1 [Reference]	1 [Reference]	1 [Reference]
2007	0.95 (0.89-1.03)	0.96 (0.89-1.03)	0.95 (0.89-1.03)
2008	1.16 (1.08-1.24)	1.16 (1.08-1.24)	1.16 (1.08-1.24)
2009	1.20 (1.12-1.29)	1.20 (1.12-1.28)	1.20 (1.12-1.29)
2010	1.24 (1.15-1.33)	1.24 (1.15-1.33)	1.24 (1.15-1.33)

Abbreviations: ART, antiretroviral therapy; CI, confidence interval; DHHS, Department of Health and Human Services; HET, heterosexual transmission; HIV, human immunodeficiency virus; IDU, injection drug use; MSM, men who have sex with men; NHAS, National HIV/AIDS Strategy.

Estimates and 95% CIs are from a modified poisson regression model for binary outcomes incorporating the joint effect of clinical retention and age group on viral suppression through a categorical interaction and adjusted for sex, race/ethnicity, HIV risk factor, first CD4 cell count in the year, use of ART for >6 months during the year, calendar year, and cohort as time-fixed covariates.

Bold signifies adjusted prevalence ratios with p-value <0.05.

Table S3: Multivariable Associations with HIV Viral Suppression – 3-Month Visit Constancy Measure

Characteristic	Adjusted Prevalence Ratio (95% CI)
3-Month Visit Constancy by Age Group	
2 quarters vs. 1 quarter for 18-29	1.23 (0.97-1.55)
2 quarters vs. 1 quarter for 30-39	1.16 (0.97-1.40)
2 quarters vs. 1 quarter for 40-49	0.98 (0.85-1.14)
2 quarters vs. 1 quarter for 50-59	1.02 (0.83-1.20)
2 quarters vs. 1 quarter for ≥ 60	1.01 (0.65-1.37)
3 quarters vs. 1 quarter for 18-29	1.36 (1.18-1.82)
3 quarters vs. 1 quarter for 30-39	1.27 (1.07-1.50)
3 quarters vs. 1 quarter for 40-49	1.12 (0.98-1.29)
3 quarters vs. 1 quarter for 50-59	1.00 (0.82-1.29)
3 quarters vs. 1 quarter for ≥ 60	0.95 (0.65-1.20)
4 quarters vs. 1 quarter for 18-29	1.47 (1.18-1.82)
4 quarters vs. 1 quarter for 30-39	1.41 (1.19-1.66)
4 quarters vs. 1 quarter for 40-49	1.13 (0.99-1.29)
4 quarters vs. 1 quarter for 50-59	1.03 (0.86-1.23)
4 quarters vs. 1 quarter for ≥ 60	1.01 (0.71-1.45)
Sex	
Male	1 [Reference]
Female	1.04 (0.97-1.11)
Race/Ethnicity	
White	1 [Reference]
Black	0.93 (0.88-0.98)
Hispanic	1.01 (0.95-1.09)
Other/Unknown	1.10 (1.02-1.20)
HIV Risk Factor	
MSM	1 [Reference]
Heterosexual	0.88 (0.81-0.96)
IDU	0.93 (0.87-1.00)
Other/Unknown	0.93 (0.87-0.99)
First CD4 Count in Year	
< 350 cell/mm ³	1 [Reference]
350-499 cell/mm ³	1.05 (0.99-1.11)
≥500 cell/mm ³	1.02 (0.97-1.08)
Missing	0.91 (0.78-1.09)
Use of ART in Year	
No	1 [Reference]
Yes	3.14 (2.96-3.34)
Calendar Year	
2006	1 [Reference]
2007	0.95 (0.89 -1.03)
2008	1.16 (1.08-1.24)
2009	1.20 (1.12-1.28)
2010	1.24 (1.15-1.33)

Abbreviations:

ART, antiretroviral therapy; CI, confidence interval; HET, heterosexual transmission; HIV, human immunodeficiency virus; IDU, injection drug use; MSM, men who have sex with men.

The 3-month visit constancy measure assesses the number of 3-month intervals in a calendar year in which a patient completes at least 1 HIV visit (range, 1-4). Estimates and 95% CIs are from a modified poisson regression model for binary outcomes incorporating the joint effect of clinical retention and age group on viral suppression through a categorical interaction and adjusted for sex, race/ethnicity, HIV risk factor, first CD4 cell count in the year, use of ART for >6 months during the year, calendar year, and cohort as time-fixed covariates.

Bold signifies adjusted prevalence ratios with p-value <0.05.