

Impact of Rapid Antiretroviral Therapy Initiation on Retention in Care and Viral Suppression in an Urban HIV Clinic in Louisville, Kentucky

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INTRODUCTION

In 2022, the CDC reported 31,800 new HIV cases (~50% in the Southern US) with 1.2 million people living with HIV [1].

~80% of new HIV infections originate from individuals who are either unaware of their HIV status or are aware but not engaged in care.

Efforts must focus heavily on testing, linkage to care, and retention in HIV care.

Rapid antiretroviral therapy (ART) refers to the initiation of ART within a week of an HIV diagnosis. Limited evidence suggest that rapid ART could have both viral suppression and retention benefits [2-5], but more studies are needed to assess whether the results are generalizable to the Southern US population.

Aim: To assess whether rapid initiation of ART improves retention and accelerates viral suppression in newly diagnosed HIV patients.

METHODS

Study design and population

Patients newly diagnosed HIV, 18 years and older establishing care at the 550 Clinic within the University of Louisville Hospital. After consenting and initiating ART, patients were followed up at 4-8 weeks, 12-16 weeks, and subsequently every 4-6 months thereafter.

Data collection and Outcome definitions

Patients were categorized into two arms: The rapid ART arm included patients who started ART within 7 days of HIV diagnosis, whereas the non-rapid arm included patients who started ART more than a week after HIV diagnosed.

Primary outcome: Retention in HIV care from the time of diagnosis until one year, defined as 1) keeping at least 3 visits within the first 12 months of care, 2) attending a 1-year visit (Visit 5), and 3) experiencing no gaps in care greater than 6 months.

Secondary outcomes: The proportion of each arm with an undetectable viral load (HIV-1 RNA <20 copies/mL) and time to undetectable viral load from the time of diagnosis until 1 year.

Statistical Analysis

Descriptive statistics were used to compare the epidemiological and clinical characteristics, as well as time to visit data for the rapid and non-rapid arm. Baseline categorical explanatory variables were analyzed using a chi-square test or Fisher's exact test and continuous variables by Wilcoxon-Mann-Whitney test. Logistic regression was used the effect of the rapid ART on outcomes. Cox proportional hazards regression was used to examine rapid ART on time to undetectable HIV viral load. Time to undetectable viral load was compared using Log-rank tests, with Kaplan-Meier curves produced. A P-value <0.05 was considered statistically significant.

Table 1. Characteristics of the population enrolled as of September 2022.

	Overall	Non-Rapid ART	Rapid ART	P
n	168	60	108	
Age (median [IQR])	32 [26, 41.25]	36 [29, 45]	30 [24, 37]	0.004
Male sex	137 (82)	45 (75)	92 (85)	0.16
Race				0.03
White	88 (52)	39 (65)	49 (45)	
African American	56 (33)	16 (27)	40 (37)	
American Indian or Alaskan Native	1 (0.6)	1 (1.7)	0 (0.0)	
Other/mixed	23 (14)	4 (6.7)	19 (18)	
Hispanic	22 (13)	3 (5.0)	19 (18)	0.04
Insured	136 (57)	38 (63)	55 (51)	0.19
Stable housing	145 (86)	48 (80)	97 (90)	0.12
Alcohol use	70 (43)	23 (41)	47 (44)	0.89
Tobacco Use				0.03
Never	69 (42)	16 (29)	53 (50)	
Former	80 (49)	35 (63)	45 (42)	
Current	14 (8.6)	5 (8.9)	9 (8.4)	
IV drug use	44 (27)	20 (35.)	24 (22)	0.10
Heterosexual	62 (38)	26 (47)	36 (34)	0.13
Bisexual	11 (6.8)	6 (11)	5 (4.7)	0.25
Male sex with male	83 (52)	20 (36)	63 (59)	0.01
HIV defining illness	7 (4.4)	3 (5.8)	4 (3.8)	0.87
Alcohol overuse	8 (4.9)	6 (10.9)	2 (1.9)	0.03
Hepatitis C	28 (17)	17 (30)	11 (11)	0.003

Table 2. Visit and laboratory data at the baseline and first office visits.

	Non-Rapid ART n = 60	Rapid ART n = 108
HIV Diagnosis to ART initiation, days	38 [19, 100]	3 [1, 7]
Baseline CD4 count	483 [323, 724]	362 [183, 543]
Baseline Viral Load	47900 [10580, 247250]	53800 [16700, 256000]
Antiretroviral therapy - BIC/FTC/TAF n (%)	57 (95)	108 (100)
OI Prophylaxis n (%)	9 (15)	22 (21)

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RESULTS

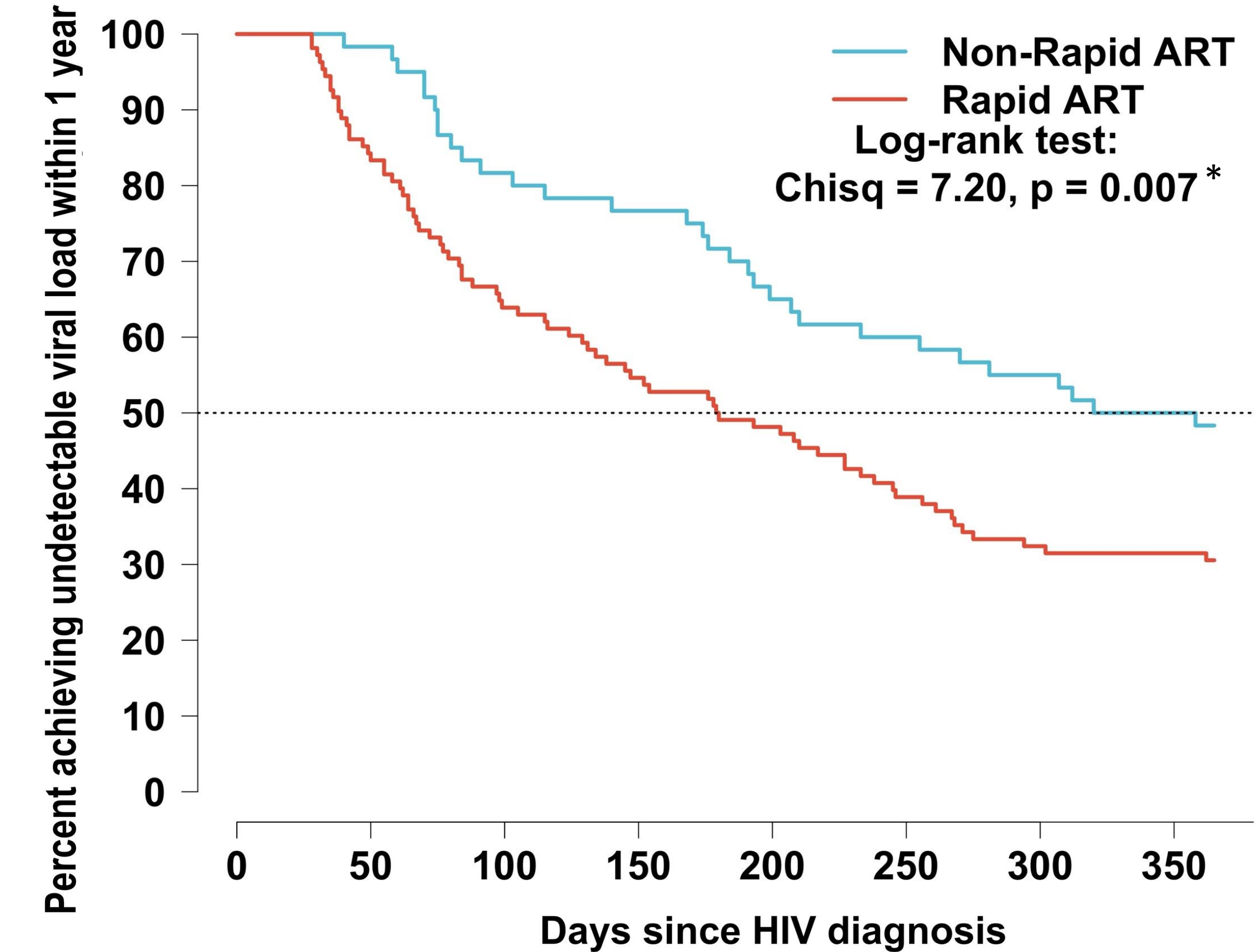


Figure 1. Kaplan Meier estimates of time to undetectable viral load within one year of HIV diagnosis across rapid and non-rapid ART.

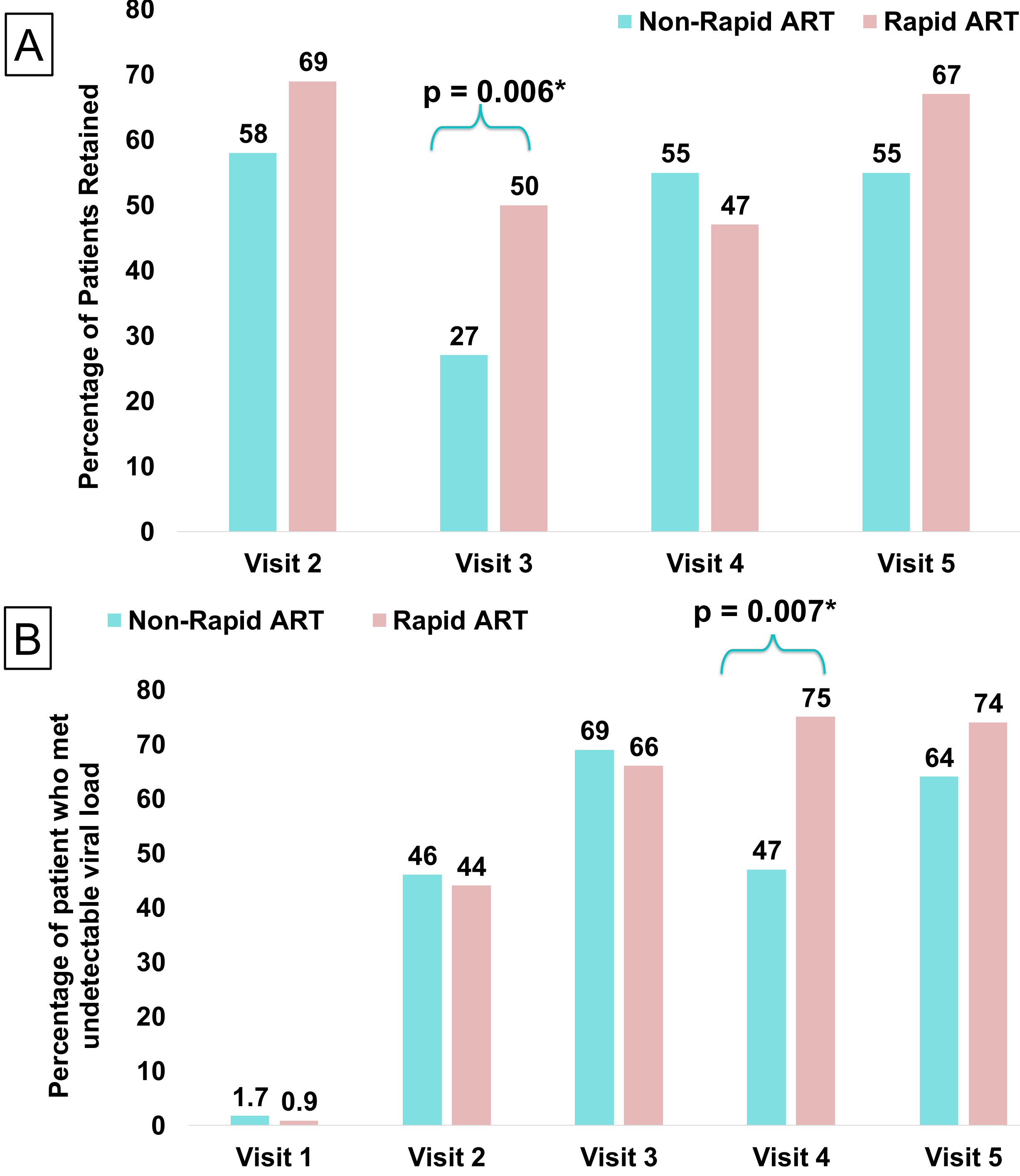


Figure 2. Retention rates (A) and rates of undetectable viral load (B) at each visit stratified by rapid ART and non-rapid ART.

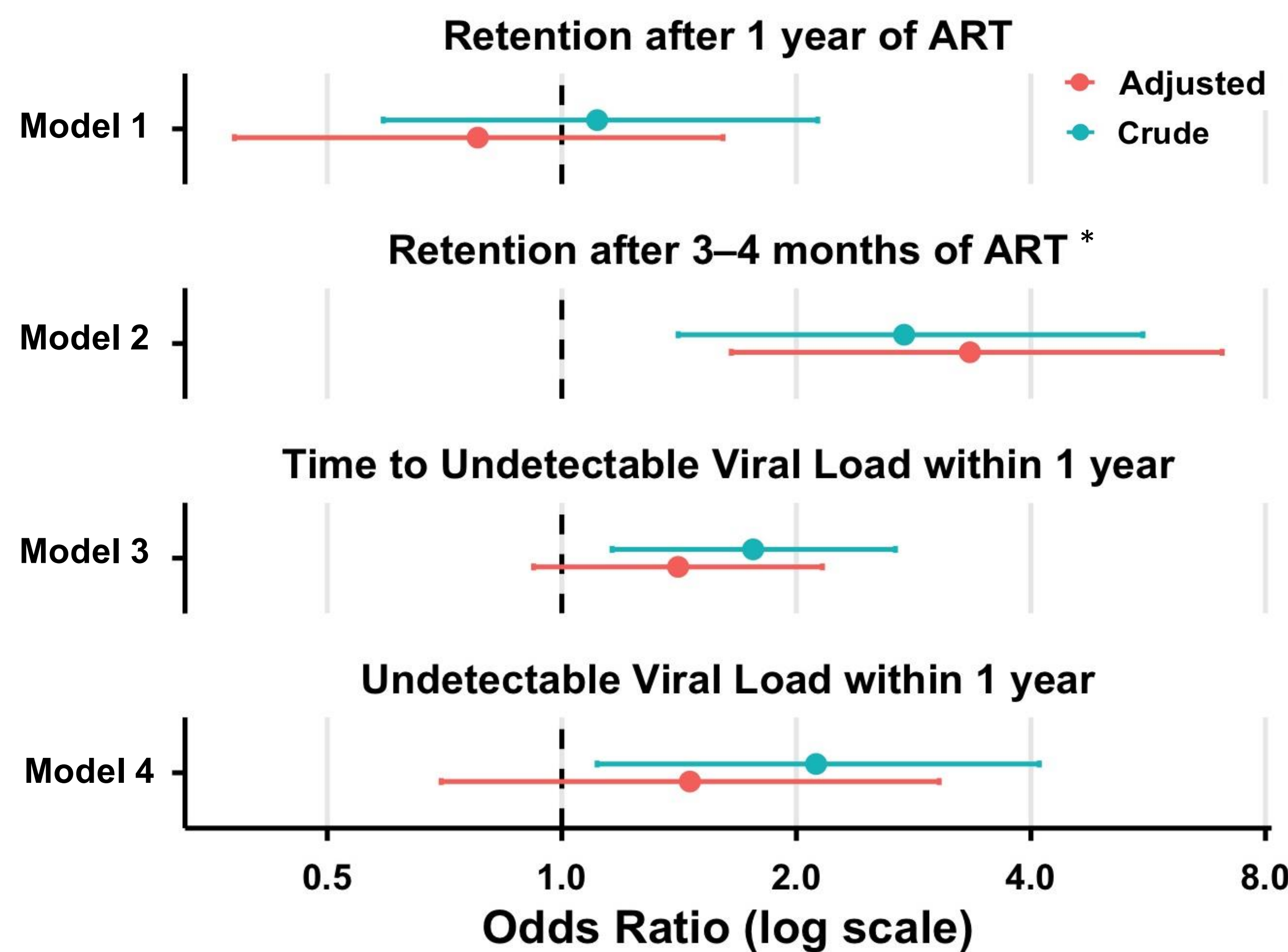


Figure 3. Crude and Adjusted Associations of HIV Treatment Outcomes comparing rapid ART to non-rapid ART initiation.

Model 1 - adjusted for smoking and IV drug use
Model 2 - adjusted for smoking and IV drug use
Model 3 - adjusted for IV drug use
Model 4 - adjusted for age, IV drug use and retention

CONCLUSIONS

Participants newly diagnosed with HIV who received **rapid ART had the benefit of short-term retention (3 months) and long-term viral load suppression (one year) with a shorter time to reach undetectable.**

A benefit of retaining patients early is being able to achieve an undetectable viral load since a patient's viral load should decrease a log by the first month after treatment and be undetectable after two months of treatment. This was noted with a higher proportion of rapid ART participants with an undetectable viral load at 12 months.

The epidemiological data in our study, including demographics, socioeconomic and health behaviors, are highly representative of the general United States population⁷, increasing the external validity.

The results of the present study support that rapid ART is an essential component of getting patients to the most important aspects of their care – retention and suppressed HIV viral load.

Future studies may address other barriers in retention of care, such as scheduling, transportation, education of treatment options to ensure continuity of HIV care, a suppressed viral load and longevity.

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