Improving Time to Viral Suppression: 5 Years Post-Implementation of Rapid ART Start

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Background

- Rapid initiation of antiretroviral therapy (ART) is recommended by all major HIV guidelines and is a core pillar of the *Ending the HIV Epidemic* (EHE) Strategy in the U.S.
- Improvement in time to viral suppression with rapid ART is clear but debate remains around longer term virologic outcomes, particularly in real world settings.
- Primary Objective:
  - Describe trends in time to and achievement of VS since implementation of rapid ART in a large, urban, Ryan White funded clinic in Atlanta, Georgia
- Secondary Objective:
  - Evaluate whether time to VS and likelihood of VS within first 12 months of follow up are improved among those given Rapid ART.

Methods

- Single, retrospective cohort study between 2016–2020.
- Population: ART-naive, adult PWH new to HIV care with detectable viral load at clinic entry
- Demographic variables and lab values were abstracted from the electronic medical records with follow up virologic data.
- Cohort consists of 2 groups:
  - Rapid– received ART within 5 days of enrolling in clinic
  - Non-Rapid– received ART >5 days of enrolling in clinic
- Key Analysis methods:
  - Frequency Statistics
  - Time to first undetectable HIV viral load (<2.3 log-copies/mm3)
  - Kaplan-Meier survival and Cox proportional hazards analysis to assess the effect of rapid initiation of ART on achieving VS

Results

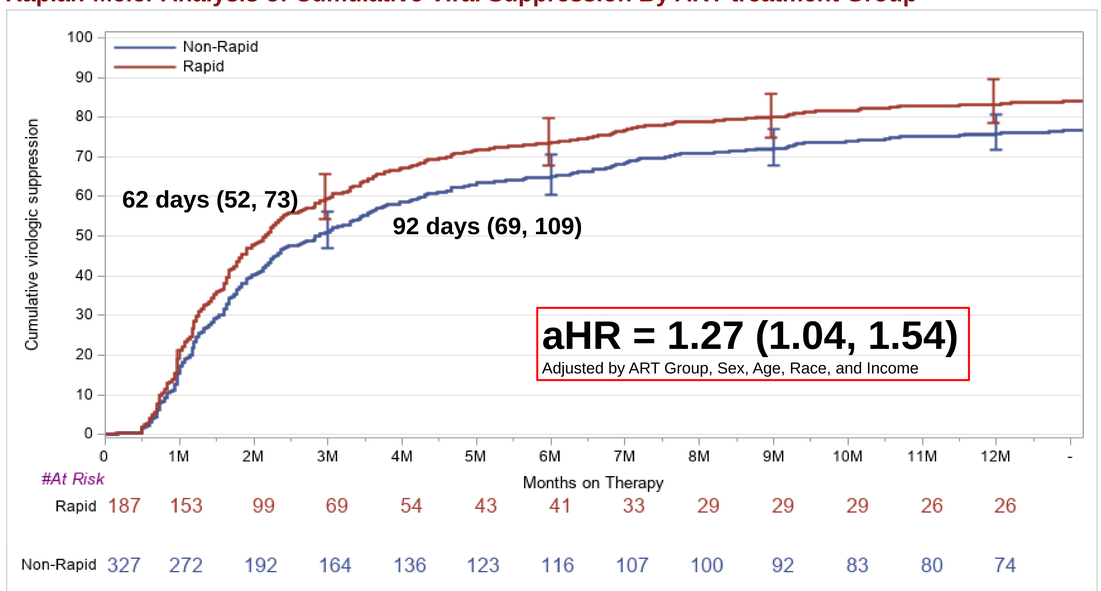
- Among 546 ART-naive PWH enrolled in care with baseline labs available, 80% were males, 86% were Black, 6% were Hispanic, 73% were aged 18-39, and the median annual income was $15,600.
- The median CD4 at enrollment was 205 cells/mL (IQR 316 cell/mL), with 44% <200, and the median HIV viral load (VL) was 4.8 log-copies/mL (IQR 1.33 log-copies/mL).
- 82% of the cohort obtained an undetectable VL during follow up. The overall median time from enrollment to first undetectable viral load was 62 days (IQR 108.8).

-Over a 5-year period of real-world, rapid ART implementation in the American South, time to VS was 28 days earlier and likelihood of achieving VS during the first year of care was 27% higher. Over the course of these 5 years, there was a clinic-wide trend towards better viral suppression with each passing year.

Frequency Statistics for Overall Population and by Rapid Entry Group

		OVERALL(N=546) Freq / Total (%)	RAPID(N=353) Freq / Total (%)	NON-RAPID(N=193) Freq / Total (%)
Age	<45	398/545 (73.0%)	251/352 (71.3%)	147/193 (76.2%)
	>45	147/545 (27.0%)	101/352 (28.7%)	46/193 (23.8%)
	Mean (SD)	36 (13.1)	36 (12.2)	36 (13.5)
Gender	Male	434/546 (79.5%)	288/353 (81.6%)	146/193 (75.6%)
	Female	112/546 (20.5%)	65/353 (18.4%)	47/193 (24.4%)
Race	Black	469/546 (85.9%)	305/353 (86.4%)	164/193 (85.0%)
	Other	77/546 (14.1%)	48/353 (13.6%)	29/193 (15.0%)
Ethnicity	Hispanic	33/546 (6.0%)	18/353 (5.1%)	15/193 (7.8%)
	Non-Hispanic	512/546 (93.8%)	334/353 (94.6%)	178/193 (92.2%)
	Unknown	1/546 (0.2%)	1/353 (0.3%)	
HIV transmission Risk	MSM	300/546 (54.9%)	203/353 (57.5%)	97/193 (50.3%)
	Other (IVDU, etc.)	246/546 (45.1%)	150/353 (42.5%)	96/193 (49.7%)
Viral Suppression	None	101/546 (18.5%)	72/353 (20.4%)	29/193 (15.0%)
	Suppression	445/546 (81.5%)	281/353 (79.6%)	164/193 (85.0%)

Kaplan-Meier Analysis of Cumulative Viral Suppression By ART treatment Group



Cumulative Viral Suppression by Year of Enrollment

Year of enrollment	Month3	Month 6	Month 9	Month 12	Log-rank p-value
	Cumulative suppression (%) ± SE				
2016	58.3 ± 4.0	71.5 ± 3.7	74.8 ± 3.5	81.0 ± 3.2	<0.001
2017*	31.6 ± 4.2	49.5 ± 4.5	59.6 ± 4.4	63.1 ± 4.4	
2018	63.8 ± 4.4	74.2 ± 4.0	81.3 ± 3.6	83.1 ± 3.5	
2019	64.5 ± 5.1	78.4 ± 4.5	82.3 ± 4.2	83.7 ± 4.1	
2020	61.1 ± 9.6	77.8 ± 8.4	95.6 ± 4.3	95.6 ± 4.3	
Overall	54.6 ± 2.2	68.3 ± 2.1	75.1 ± 1.9	78.7 ± 1.8	

*Note – 2016 was a pilot year for rapid initiation of ART in the clinic. In 2017, the program underwent restructuring and had less support, then became fully funded in 2018.

Results (cont.)

- Using stratified Kaplan-Meier survival analysis, median time to viral suppression among the rapid group was 64 days (52, 73), while in the nonrapid group it was 92 days (69, 109), which is a 28-day (30%) difference (log-rank p<0.002).
- Multivariate Cox Proportional Hazards analysis revealed that achievement of viral suppression was 1.27 (1.04, 1.54) times more likely among the rapid group compared to the non-rapid group, after adjusting for age, sex, race, and income.

Conclusion

- Overall time to viral suppression and cumulative viral suppression improved between 2016 and 2020 after clinic-wide implementation of rapid ART.
- Among a mostly Black and MSM population in the urban American South, rapid initiation of ART was associated with achievement of viral suppression about 1 month sooner than among those with non-rapid initiation of ART.

ADDITIONAL KEY INFORMATION

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Acknowledgements: This work was supported by the Center for AIDS Research at Emory University (P30AI050409). We would also like to thank the Emory-Grady HIV registry for providing some of the data used in this analysis.