Rapid Start: A Changing Algorithm for the Management of HIV Infection

Smitha Gudipati[1], Miriam Jaziri[1], Stephanie Tanner[1], Amit Vahia[1], Nicholas Yared[1], Indira Brar[1]
[1]Henry Ford Health System, Detroit, MI

Introduction

- There is conflicting evidence regarding when to start cART for new HIV diagnoses.
- Some pilot studies in the US have shown that starting cART immediately after HIV diagnosis has led to improved establishment of care, earlier cART initiation and faster HIV RNA suppression.
- Other observational studies were cautious about early start due to starting treatment with the risk of poor compliance/follow up and higher resistance.

Methods

- This is a retrospective study from a tertiary healthcare system in southeast Michigan from 2016 to 2018.
- Study purpose was to identify clinical characteristics and risk factors in patients that were diagnosed with HIV via 4th generation assay using electronic medical records.
- Rapid start was defined as starting the patient on ART prior to knowing the genotype results.
- Categorical variables were analyzed using chi-sq test and continuous variables were analyzed using t-test. Data analysis was done using SAS 9.4.

Results

- In the study period 186 patients were identified as HIV-1 positive and ART naïve: 152 males and 34 females (Table 1).
- Of the 186 patients, 40 patients were rapidly started on ART with a median of 6 days vs 42 days in the standard of care patients (P<0.0001, Table 2), with a shorter duration to clinic follow up over time (P=0.3103).
- There was a tendency to prescribe rapid start in patients with higher viral loads or lower CD4 counts at the time of diagnosis.

Table 1: Demographics

	Standard ART (N= 146)		Rapid Start (N=40)		P value
	N	Percent	N	Percent	
Gender Male	118	80.8	34	85	0.5447
African Americans	116	79.5	28	70	0.2457
Asians	2	1.4	2	5	
Caucasians	28	19.2	10	25	
MSM	66	45.2	20	50	0.5900
HRH	65	44.5	23	57.5	0.1452
Sexually active	18	12.3	6	15	0.6552
Multi-partner	11	7.5	4	10	0.6119
Drug abuse	13	8.9	5	12.5	0.4955
Incarceration	6	4.11	1	2.5	0.6356

The percentage of patients with undetectable HIV VL, recovered CD4 counts, and retention in care was comparable to that of standard of care indicating that starting ART immediately after diagnosis is well accepted by patients.

Our study supports the shift in established treatment paradigm, demonstrating that earlier initiation is not only possible but feasible.

Table 2: Univariate analysis of the number of days between initial clinic visit and the start of ART therapy

	Mean	Median	Std deviation	P value
Standard N=146	98.87	42	216.07	<0.0001
Rapid Start N=40	14.53	6	18.27	

Table 3: Change in ART regimen

Drugs Changed Due to Genotype			
N=174	Standard	Rapid Start	Total Percent
No	135	35	97.6%
Yes	0	4	2.30%
Drugs Changed due to Toxicity			
No	133	38	98.3%
Yes	2	1	1.72%
Unknown	14		7.45%

Graph 1 CD4 Counts Over Time After Initiating ART:
Demonstrates mean CD 4 counts over time comparing the standard group with the rapid start group via t-test. The rapid start group started with a lower mean CD 4 count but ended with a slightly higher count than the standard group. However, differences were not statistically significant.

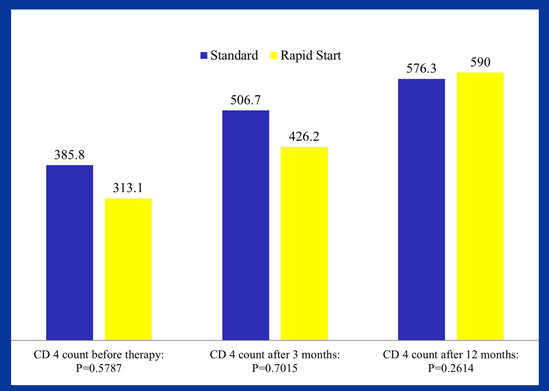
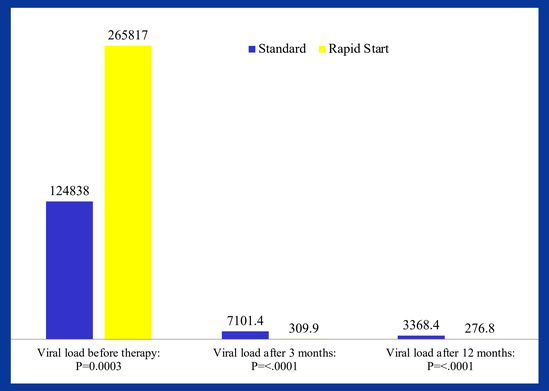


Table 4: Chi square analysis results for quality measures including clinic follow up, viral load and AIDS status

	Standard ART (N=146)		Rapid Start (N=40)		
	Total	Percent	Total	Percent	P value
Single Drug regimen	104	71.72	22	55.00	0.0445
Continued Follow up	121	85.82	36	90.00	0.4910
Undetectable viral load at 3 months	56	51.85	15	51.72	0.9902
Undetectable viral load at 12 months	91	77.12	24	85.71	0.3174
Undetectable Status	105	71.92	27	67.50	0.5855
AIDS before therapy	36	28.57	14	35.90	0.3843
AIDS after therapy	27	18.49	8	20.00	0.8294

Graph 2 Viral Load Over Time After Initiating ART:
Demonstrates mean viral load over time comparing the two groups via t-test. The rapid start group started with viral load that was more than twice a high as the standard group but had a statistically significant lower viral load after only 3 months which still remained lower than the standard group after 12 months.



Results

- Mean CD4 counts were not significantly different between groups (graph 1), however, 35.9 % of the rapid start patients had AIDS at the beginning of therapy compared to only 28.57% (table 4). At the end of therapy the groups were almost equal with 20% rapid start patients still meeting criteria for AIDS compared with 18.49% in the standard group.
- 85.71% patients that were rapid started on ART maintained an undetectable viral load at 12 months vs 77.12% of the standard of care group (table 4).
- Rapid start patients had much higher mean viral loads at the beginning of therapy which decreased significantly faster than in the standard patient group (graph 2).
- 90% of the rapid start patients were retained at 12 months vs 85.82% in the standard group (table 4).
- Most new HIV patients had few to no mutations and only 4 patients in the rapid start group changed their regimen due to genotype. Medications were generally well tolerated in both groups (table 3).
- 126 patients were started on single tablet regimens with a trend favoring Biktarvy over time (P = 0.04) (table 5).

Table 5: Single Drug Regimen Prescribed By Year

	2016		2017		2018	
N = 126	N	Percent	N	Percent	N	Percent
Complera	1	1.7	0	0	0	0
Odefsey	7	12.1	9	29	0	0
Triumeq	20	34.5	11	35.5	2	5.4
Biktarvy	5	8.6	0	0	25	67.6
Genvoya	25	43.1	11	35.5	5	13.5
Symtuza	0	0	0	0	5	13.5

Conclusion

- Rapid start is comparable with standard care with regards to clinic follow up and overall disease control.
- Starting ART at the time of diagnosis might even be more effective in decreasing HIV viral load faster than standard care
- Though not statistically significant, there might be a trend towards faster recovery of CD4 counts.
- There is no reason to delay rapid initiation of ART in all newly diagnosed HIV patients.

References:

G, Ramgopa M, et al. Darunavir/Cobicistat/Emtricitabine/Tenofovir Alafenamide in a Rapid Initiation Model of Care for HIV-1 Infection: Primary Analysis of the DIAMOND Study. Clinical Infectious Diseases 12/2019
(1) Pilcher CD, Ospina-Norvell C, Dasgupta A et al. The Effect of Same-Day Observed Initiation of Antiretroviral Therapy on HIV Viral Load and Treatment Outcomes in a U.S. Public Health Setting. Acquir Immune Defic Syndr. 1/2017; 74(1): 44–51.

(2) Huhn GD, Crofoot
(3) Coffey S, Bacchetti P, Sachdev D. et al. RAPID Antiretroviral Therapy: High Virologic Suppression Rates with Immediate Antiretroviral Therapy Initiation in a Vulnerable Urban Clinic Population. AIDS. 33(5):825–832, 4/2019.

(4) Ford N, Migone C, Calmy A, et al. Benefits and Risks of Rapid Initiation of Antiretroviral Therapy. AIDS 2018, 32:17–23