Abstract # 37

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Outcomes of Integrase Inhibitor-Based ART in Treatment-Experienced Children, Adolescents and Young Adults with HIV Infection

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BACKGROUND

- Currently data on integrase inhibitor (INSTI)-based antiretroviral treatment (ART) in pediatric and adolescent populations are primarily based on approved clinical trials and a few observational studies.
- Specifically, data on INSTI-based second and third line treatment-experienced children, adolescents and young adults (AYA) are very limited.

OBJECTIVE

- Evaluate the outcomes of INSTI-based ART prescribed as a standard of care for treatment-experienced children and AYA <25 years of age in Washington, DC, USA.

METHODS

- Sub-study of HIV-infected patients within the DC Cohort study - a multi-center ongoing prospective observational cohort study of individuals receiving HIV care in Washington, DC.
- Treatment-experienced children, AYA 0-24 years old who had ever initiated INSTI-based ART during 2011-2017 were included in this analysis.

ANALYSIS

- We calculated frequencies and proportions or medians and interquartile ranges (IQRs) for categorical and continuous variables, respectively, including demographics, CD4 count, and ART and viral load (VL) outcomes of first INSTI-based regimen.
- Kaplan-Meier plots and Cox proportional hazards regression were used to assess differences by age in achieving and sustaining viral suppression (VS), defined as HIV RNA < 20 copies/mL.

RESULTS

STUDY COHORT DESCRIPTION

141 treatment-experienced pediatric and AYA patients newly prescribed INSTI-based ART were enrolled.

- Median Age – 19.9 years (IQR 16.3-22.4); 21 (14.9%) ≤12 yrs, 30 (21.3%) 13-17 yrs, 90 (63.8%) 18-24 yrs.
- 57 (40.4%) Female; 123 (89.1%) non-Hispanic Black.
- 83 (62.4%) perinatally infected.
- Median time since HIV diagnosis was 7.6 yrs (IQR 3.4-16.3)

- **At the start of INSTIs** - 37 (28.0%) were on NNRTI-based ART and 86 (65.2%) were on a PI-based regimen.
- 49 (34.8%) had VS, of which 76.1% had CD4 >500 cells/μL.
- 92 (65.2%) had detectable (>20 copies/mL HIV RNA) VL, of which 40.0% had CD4 >500 cells/μL at the start of INSTIs.
- Dolutegravir was the most commonly prescribed INSTI (55.3%), followed by elvitegravir (36.9%) and raltegravir (7.8%).

Figure 1. Kaplan-Meier curves for (a) achievement of VS among patients without VS at baseline (n=70) and (b) viral failure among patients with VS at baseline (n=35), by age.

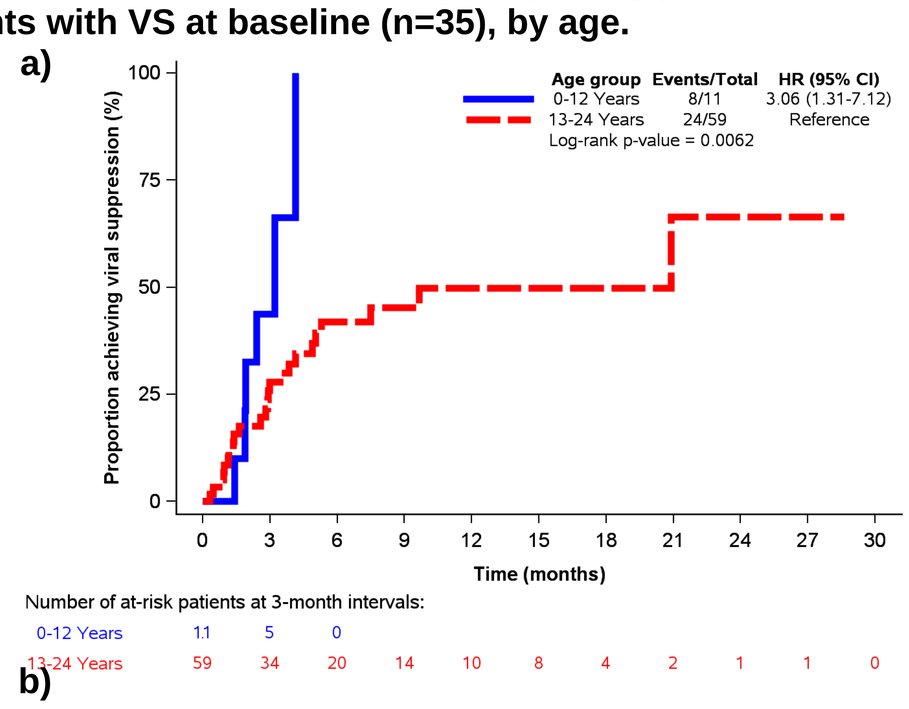

Table 2: Virologic outcomes on INSTI-based regimen (n=105*).

Patients not virally suppressed at baseline (n=70)	n (%)
Time to last available VL result (months), median (IQR)	7.6 (3.2-16.9)
Number of available follow-up VL results, median (IQR)	2 (1-5)
Achieved VS at least once	
No	38 (54.3)
Yes	32 (45.7)
Time to first undetectable VL (months), median (IQR)	2.8 (1.4-4.1)
Had recurrent detectable viremia at least once at a later date[a]	
No	7 (26.9)
Yes	19 (73.1)
Had undetectable VL at first available follow-up test	25 (35.7)
Had undetectable VL at first available test after 6 months[b]	15 (38.5)
Had undetectable VL at first available test after 12 months[c]	11 (42.3)
Patients virally suppressed at baseline (n=35)	**n (%)**
Time to last available VL result (months), median (IQR)	11.0 (3.9-15.8)
Number of available follow-up VL results, median (IQR)	3 (1-5)
Remained VS based on all available follow-up test results	
Yes	18 (51.4)
No	17 (48.6)
Time to first detectable VL (months), median (IQR)	6.2 (3.0-9.0)
Achieved VS again at least once at subsequent testing occurring after initial detectable VL result[d]	
Yes	13 (76.5)
No	4 (23.5)
Had undetectable VL at first available follow-up test	27 (77.1)
VL remained undetectable for all tests through the first available test after 6 months[e]	17 (68.0)
VL remained undetectable for all tests through the first available test after 12 months[f]	14 (93.3)

*The 105 patients who had at least one follow-up VL test result available on a date later than the date of initiation of first INSTI-based regimen were included.
[A]n=26 patients with at least one additional VL test result available on a date after achievement of VS;
[b]n=39 patients with at least one available VL test result on a date after 6 months post-INSTI initiation;
[C]n=26 patients with at least one available VL test result on a date after 12 months post-INSTI initiation;
[d]n=17 patients with at least one additional VL test result available on a date occurring after viral failure;
[e]n=25 patients with at least one available VL test result on a date after 6 months post-INSTI initiation;
[f]n=15 patients with had at least one available VL test result on a date after 12 months post-INSTI initiation.

- Among patients without VS at baseline, patients <13 (vs. 13-24) years old were more likely to achieve VS (p=0.0062).
- Among patients with VS at baseline, there was a trend toward patients <13 (vs. 13-24) years old being more likely to sustain VS (p=0.11).

Table 1:Outcomes of first INSTI-based regimen (n=141).

	n (%)
Ongoing at the end of follow-up	94 (66.7)
Switched backbone, same INSTI	20 (14.2)
Switched to other INSTI drug	12 (8.5)
Switched to non-INSTI regimen	10 (7.1)
Discontinued, Re-started after period of time	4 (2.8)
Discontinued, No new regimen started	1 (0.7)

CONCLUSIONS

- In our cohort of treatment-experienced children and AYA on INSTI-based ART, more than half of patients with detectable viremia at baseline did not achieve VS.
- Transient viremia among patients with VS on previous ART regimen was observed after start of INSTIs.
- Children <13 years of age had better virologic outcomes on INSTI-based ART compared to AYA.
- Further evaluation of long-term outcomes of INSTI-based second and third line ART in treatment-experienced children and adolescents is warranted and is ongoing within our cohort.

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