# EVOLUTION OF THE RESERVOIR IN EARLY TREATED CHILDREN WITH HIV-1 IN SUB-SAHARAN AFRICA

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**Background:** The analysis of reservoir evolution is key to understand pathways to achieve HIV cure or remission. There are data in adults, but in children information is scarce. We analyzed the total HIV reservoir serially in African children.

**Methods:** Participants were 208 infants from the EARTH-EPIICAL Cohort established in South Africa, Mozambique, and Mali. HIV was diagnosed shortly after birth followed by early ART initiation. Total HIV-1 DNA was analyzed yearly in all participants, from ART initiation to 4 years (or death or loss to follow-up), from PBMCs by ddPCR.

**Results:** 155/208 (74%) enrolled participants had a follow-up >12 months (median follow-up time, 44 months [IQR 37.6-45.5]). ART started at a median of 34 days [IQR, 26-73]. Overall, total HIV-1 DNA levels decreased over time and every year the distribution of the HIV-1 DNA was significantly smaller than the previous year (p<0.0001) (Figure 1). In 96 (46%) children with available DNA data, factors associated with a smaller reservoir after 3 years of ART were lower **pre-ART viral load** (VL) (p<0.01), **faster rate of total HIV-1 DNA decay in the first year** (p<0.05), and **female sex** (p<0.05).

**Results (continuation):** After adjusting for baseline VL, CD4 percentage, and age at ART initiation, the baseline HIV-1 total DNA did not independently predicted survival (HR, 1.23 (95% CI: 0.44–3.49)). However, baseline VL was a significant predictor, with a hazard ratio of 1.77 (95% CI: 1.16–2.68) (p = 0.0075).

**Three years after birth, the reservoir size in early treated children living with HIV in Africa depends largely on baseline viral load, initial decay and sex.**

**Conclusions/Learning Points:** Pre-ART viral load and initial HIV-1 DNA decay rate are important predictors of total viral reservoir size in early treated children living with HIV, suggesting that improved early antiviral treatment is required to reduce the reservoir. Sex differences should be explored to understand mechanisms of HIV reservoir control.

**Figure 1**. Distribution of total HIV-1 DNA levels in children at different follow-up time points.

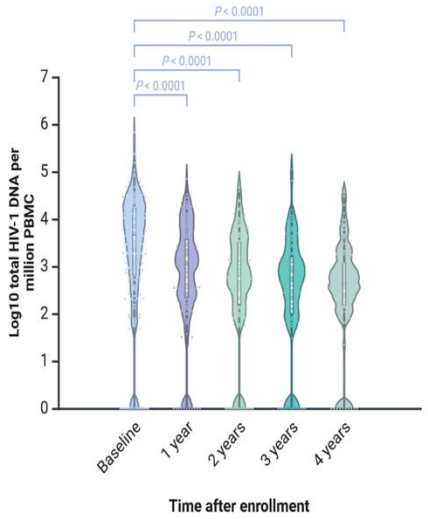
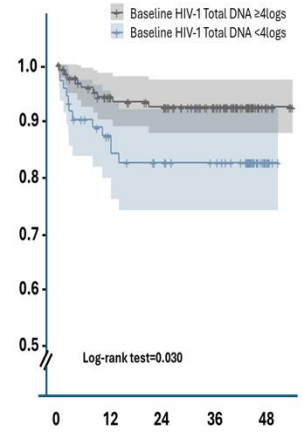



**Figure 2**. Association between baseline HIV-1 Total DNA and survival probability




ADDITIONAL INFORMATION

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