

Supplementary Figure 1. Method for calculating pre-ART cumulative exposure to plasma viremia.

For each patient, we calculated the approximate cumulative exposure to plasma HIV-1 viremia (approximate area under the viral load-time curve) from the estimated date of HIV infection to the date at which antiretroviral therapy (ART) was initiated.

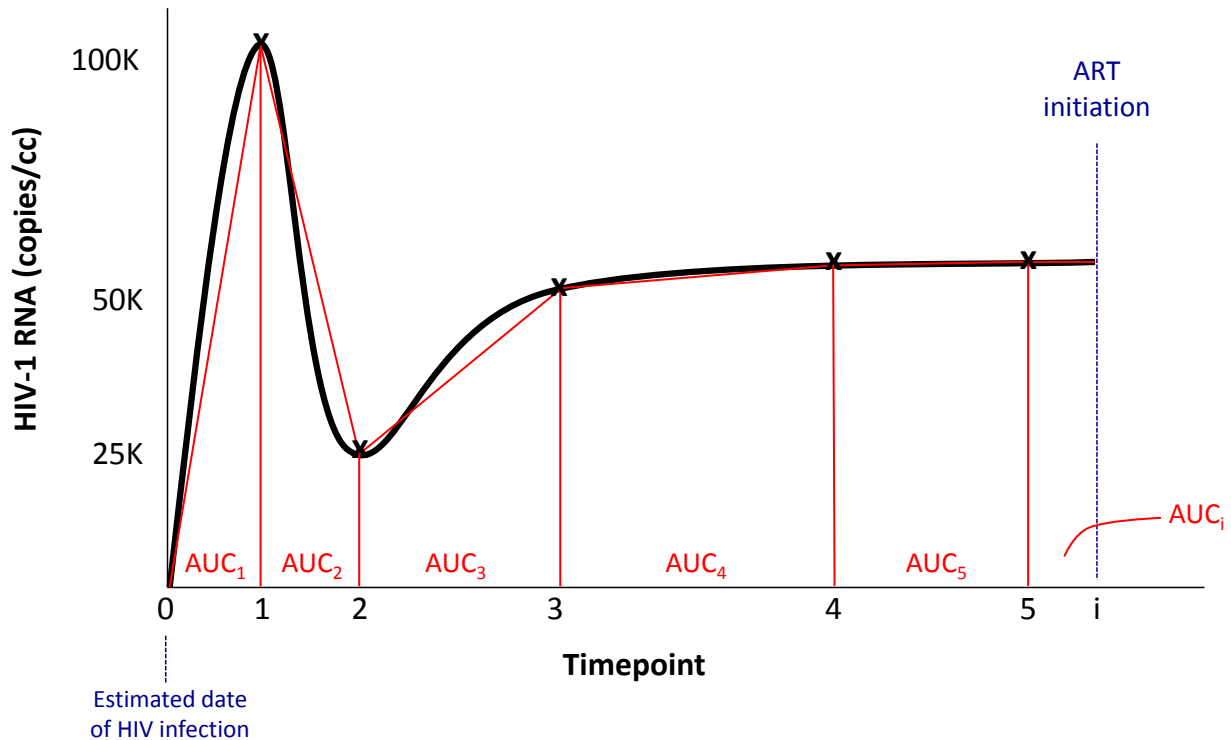
As shown in the schematic figure below, we used a trapezoidal area estimation rule to estimate the approximate area under the viral load curve (AUC) (i.e., cumulative viremia) between each pair of adjacent viral load measurements VL_i and VL_{i-1} as follows:

AUC for interval (i) = $\lambda t \left(\frac{VL_i + VL_{i-1}}{2} \right)$, where VL_i and VL_{i-1} are the viral load values at times t_i and t_{i-1} , respectively, and $\lambda t = t_i - t_{i-1}$ is the duration of the interval between adjacent viral load measurements.

Viral load was estimated as a linear function of time between measurements, and was defined as zero at the time of estimated HIV infection. Viral load was assumed to be constant over the short interval between the last available measurement and the start of ART.

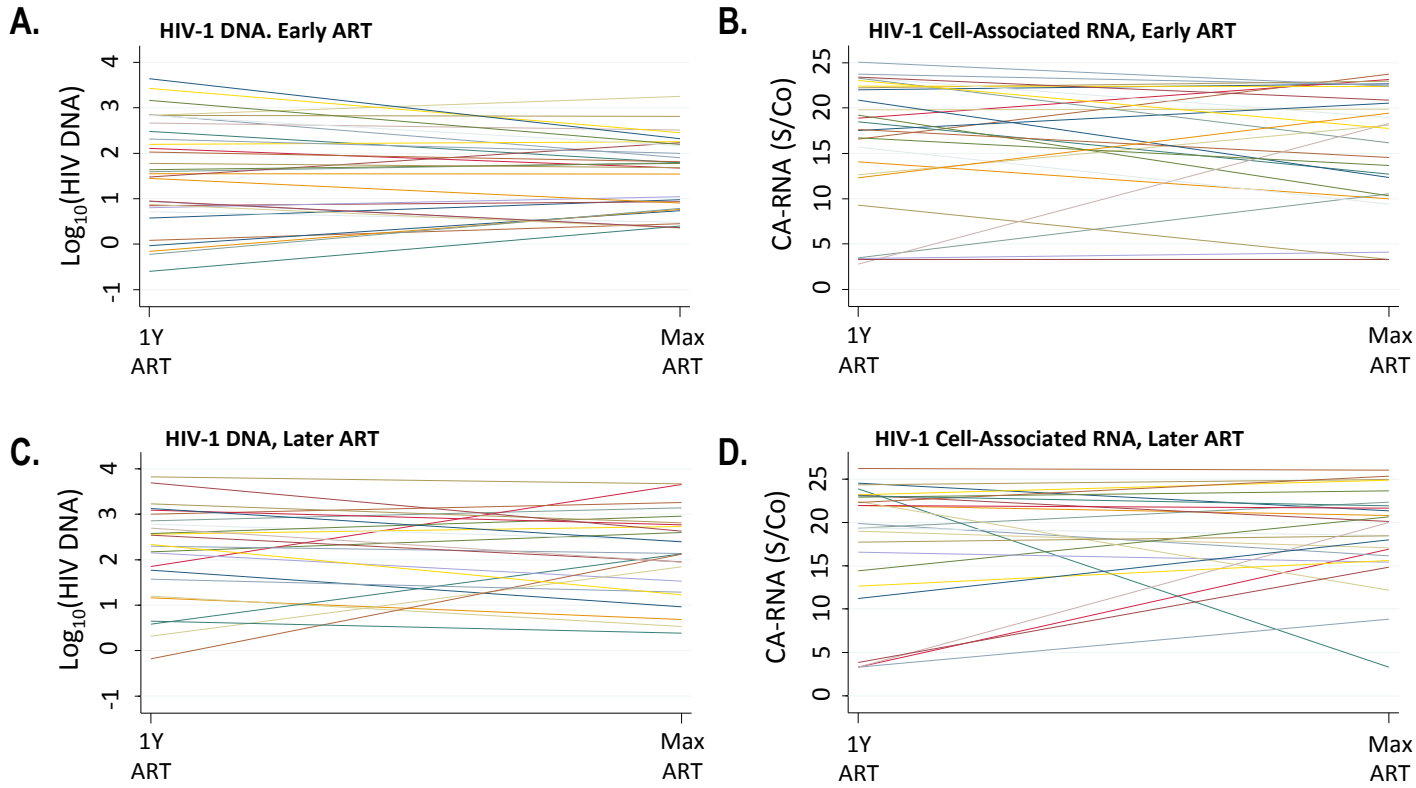
Total pre-ART cumulative viremia was defined as the sum of the component trapezoidal AUC segments from estimated infection date to the date of ART initiation as follows:

$$\text{Total pre-ART cumulative viremia} = \sum_1^i \lambda t \left(\frac{VL_i + VL_{i-1}}{2} \right)$$



Supplementary Figure 1. Trapezoidal area method for estimating cumulative pre-antiretroviral therapy (pre-ART) cumulative exposure to HIV viremia. Area under viral load (VL) curve (black line) is estimated by summing trapezoidal areas delineated as $AUC_1, AUC_2, \dots, AUC_i$ (red lines). Time of ART is indicated (dashed blue line).

Supplementary Figure 2. Individual HIV DNA and cell-associated RNA trajectories within early vs. later ART groups



Supplementary Figure 2. HIV-1 DNA and cell-associated RNA trajectories in individual patients initiating early versus later ART. (A) HIV-1 DNA levels over time since estimated date of HIV infection in individual patients initiating early ART, with values at one year following ART initiation (“1Y ART”), and at participants’ last available time point (“Max ART”) under observation. (B) HIV-1 cell-associated RNA levels over time in patients initiating early ART. (C) HIV-1 DNA levels in patients initiating later ART. (D) HIV-1 cell-associated RNA levels in patients initiating later ART. Individual lines represent patient-specific trajectories over time.