Inequality in mortality and access to antiretroviral therapy in adolescents living with perinatally acquired HIV in sub-Saharan Africa: a Collaborative Initiative for Paediatric HIV Education and Research (CIPHER) cohort collaboration analysis

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Background: Eighty per cent of adolescents living with perinatally and behaviourally acquired HIV live in sub-Saharan Africa (SSA), a continent with marked economic inequality. Extending our previous global description of adolescents living with perinatally acquired HIV (APH), this analysis aimed to describe APH outcomes in SSA by country income group (CIG).

Methods: Through the CIPHER cohort collaboration, individual retrospective data from 12 cohort networks across 5 continents were pooled; 7 networks representing SSA were included here. APH included were HIV-infected children with entry into care at age <10 years (proxy for perinatally acquired HIV) and follow-up at age >10 years. CIG was classified according to World Bank Classification at median year of first visit by country. Cumulative incidence functions were calculated by competing risk analysis for mortality, transfer-out and loss-to-follow-up.

Results: A total of 30,296 APH were included; 75.7% resident in low-income countries (LIC), 4.6% in lower-middle-income countries (LMIC) and 19.8% in upper-middle-income countries (UMIC); 64% of APH were born ≥2000. Median (interquartile range [IQR]) age at antiretroviral therapy (ART) start (8 [6;9] years) and at last follow-up (12 [11;14] years) was equivalent across CIG. About 26,018 (85.9%) ever started ART and 3352 (12.5%) started at age >10 years, both significantly different between CIG ($p < 0.001$) (Table 1). Individual CD4 count improved between ART start and last visit in all CIG ($p < 0.001$). Half of APH had height-for-age *z*-score (HAZ) <−2 at ART start that improved by last visit in LIC ($p < 0.001$) and UMIC ($p < 0.001$) but not in LMIC ($p = 0.18$). Mortality between age 10 and 15 years was lowest in UMIC; however, loss-to-follow-up was highest in UMIC.

MOAB0203 Table 1. APH characteristics by CIG (*N* = 30,296).

	LIC *N* = 22,925	LMIC *N* = 1386	UMIC *N* = 5985
Ever started ART, *n* (%)	19,114 (83.4)	1207 (87.1)	5697 (95.2)
Started ART age >10 years, *n* (%)	2829 (14.8)	141 (11.7)	382 (6.7)
CD4 count (cells/μl) at ART start, median [IQR] (*N* = 15,254)	310 [165; 520]	292 [174; 417]	318 [162; 558]
CD4 count (cells/μl) at last visit, median [IQR] (*N* = 24,223)	668 [434; 945]	735 [532; 985]	729 [513; 971]
HAZ at ART start, median [IQR] (*N* = 16,181)	−2.01 [−2.97; −1.08]	−2.08 [−2.95; −1.33]	−2.02 [−2.86; −1.17]
HAZ at last visit, median [IQR] (*N* = 25,333)	−1.77 [−2.60; −0.95]	−2.02 [−2.77; −1.30]	−1.54 [−2.31; −0.77]
Cumulative incidence of mortality, % (95% CI)	3.5 (3.1; 3.8)	3.9 (2.7; 5.4)	1.1 (0.8; 1.4)
Cumulative incidence of transfer-out, % (95% CI)	17.5 (16.8; 18.3)	27.5 (24.2; 31.0)	23.7 (22.4; 25.1)
Cumulative incidence of loss-to-follow-up, % (95% CI)	13.1 (12.4; 13.8)	8.3 (6.3; 10.6)	14.0 (12.9; 15.3)

Conclusions: Despite starting ART late, improvements in height and CD4 count were observed in most APH surviving to adolescence. Mortality rates are likely underestimated. However, results highlight inequalities in mortality and access to ART according to CIG in SSA.