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Multi-Country Evaluation of Survival and HIV-Free Survival among Children under 3 Years of Age of Women Living with HIV in Eight Sub-Saharan African Countries: Results from Population-based HIV Impact Assessments

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Background

We used population-based household survey data collected in 2015-2017 to estimate survival and HIV-free survival through age 3 years in children of women living with HIV (CoWLHIV), accounting for maternal antiretroviral treatment (ART) status, in Eswatini, Lesotho, Malawi, Namibia, Tanzania, Uganda, Zambia, and Zimbabwe.

Methods

- Data from the Population-based HIV Impact Assessment (PHIA) surveys from 8 sub-Saharan African countries were used.
- Maternal HIV status and ART use during last pregnancy in the past 3 years, HIV status of their children, current age of living children, and age of death of deceased children were determined through maternal interviews.
- A sub-sample of children underwent HIV testing using rapid test and Geenius™ HIV-1/2 confirmatory assay (>=18 months) and virologic testing (<18 months).
- Maternal HIV status and ART status were determined by self-reported HIV status and ART use during pregnancy; if missing, the confirmed HIV status from the survey and detectable ARV test results were used.
- If women reported being HIV-negative during pregnancy but tested HIV-positive in the survey, they were considered HIV-negative for this analysis.
- Child's HIV status was based on the confirmed status from the survey if the child was sampled and participated in HIV testing or on the mother's report of child's HIV status if the child was not sampled for HIV testing.
- We performed Kaplan-Meier analyses to estimate probability of survival and HIV-free survival at 3 years using a cross-sectional cohort of children 0-3 years of age
- Children were censored at HIV diagnosis, death or 3 years of age.

Results

Table 1. Characteristics of children under 3 years of age in PHIA (n=16,006)

Characteristic	N	%
Total	16006	
Age at time of survey		
0 years	4680	29.2
1 year	4931	30.8
2 years	3832	23.9
3 years	2563	16.0
Place of delivery		
Institution	13489	84.3
Home	2210	13.8
Other	303	1.9
Missing	4	0.0
Urban (vs rural)	5107	31.9
Ever breastfed	15535	97.2
Maternal HIV status		
HIV Positive	2373	14.8
HIV Negative	13618	85.1
Not Tested	15	0.1
ARV Status at Pregnancy among HIV+ mothers		
On ARVs at first antenatal visit	1252	52.8
Newly initiated on ARVs during pregnancy or labor	966	40.7
Mom did not take ARVs during pregnancy or labor	152	6.4
Missing	3	0.1
Country		
Eswatini	801	5.0
Lesotho	1048	6.5
Malawi	1915	12.0
Namibia	1322	8.3
Tanzania	2776	17.3
Uganda	3899	24.4
Zambia	2213	13.8
Zimbabwe	2032	12.7

Results (cont.)

Figure 1. Child survival up to 3 years of Age by HIV Exposure Status (n=16,006)

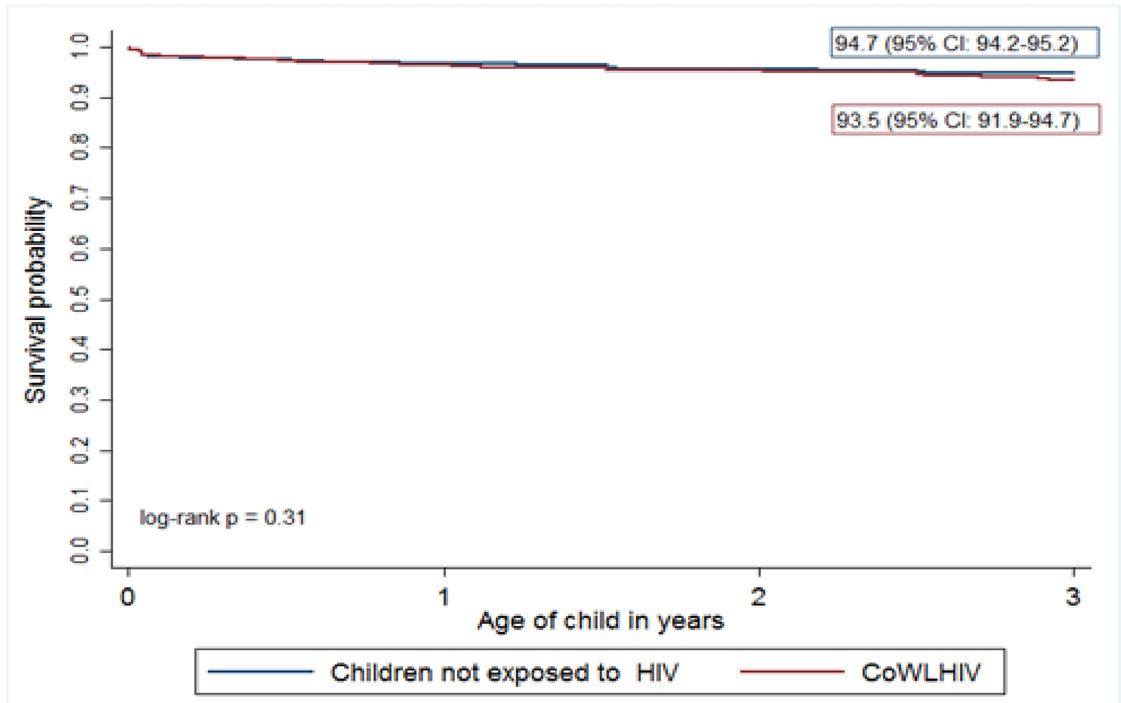
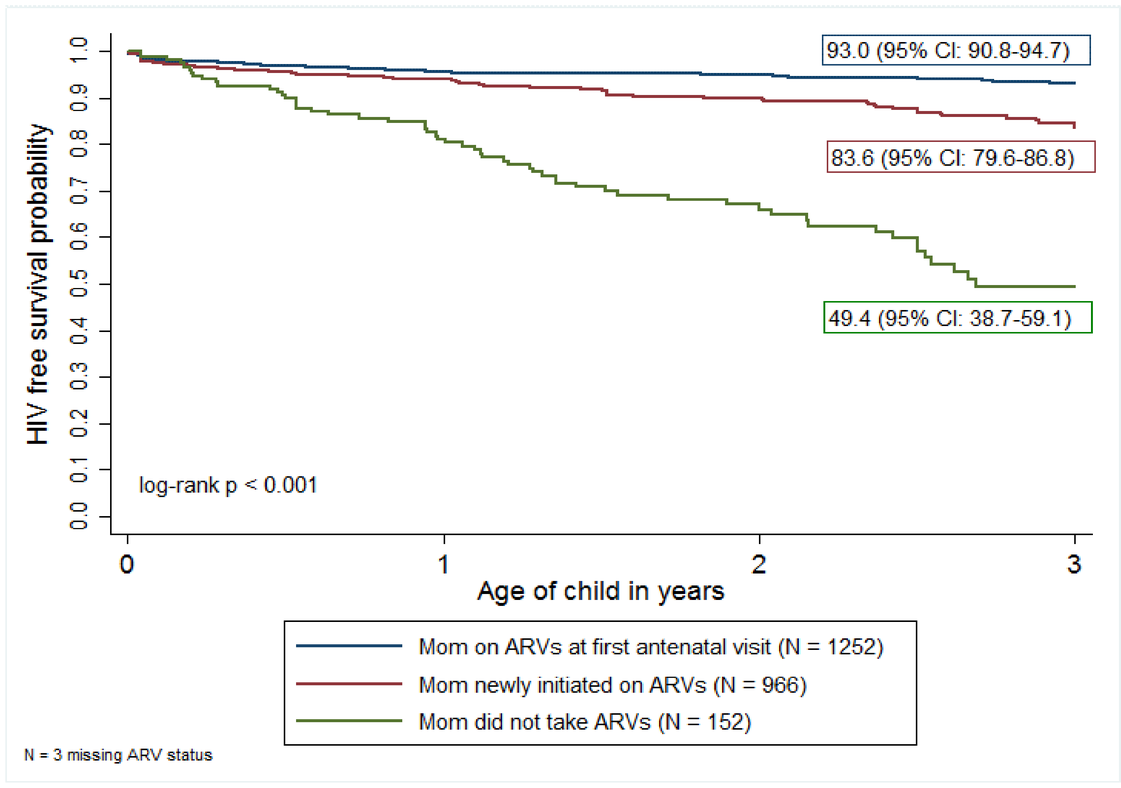


Figure 2. HIV-free Survival among CoWLHIV, by Maternal ARV Use during Pregnancy (n= 2370)



- Of the 16,006 children, 2,373 (14.8%) were CoWLHIV (Table 1).
- At 3 years of follow up, 2,152 were HIV-uninfected, 118 were HIV-infected, and 103 had died.
- Overall survival probability at 3 years was 94.5% (95% CI: 94.0%-94.9%); No difference was observed by HIV exposure status (Figure 1).
- Most mothers were on ART at first antenatal visit (52.8%; range across countries (RAC): 44.6%-75.6%) or had initiated ART during pregnancy (40.7%; RAC: 20.4%-51.4%); a small minority of women did not take any ART during pregnancy (6.4%; RAC: 3.5%-10.7%).
- HIV-free survival at 3 years was 85.3% (95% CI: 83.1%-87.3%) and was highest among children of mothers who were on ART at first antenatal (Figure 2).
- HIV-free survival have improved form 83.6% (95% CI: 79.6-86.8) at 3 years to 93.9% (95% CI: 92.1-95.3) at 1 year among children of mothers who initiated ART during pregnancy.
- At 3 years, cumulative HIV infection rate was 9.1% (95% CI: 7.5%-11.1%) and mortality rate was 6.5% (95% CI: 5.2%-8.1%) (Data not shown).
- Women living in rural areas, with primary or less education who delivered their children at home were significantly less likely to take ARVs during pregnancy (Data not shown).

Our findings demonstrate the impact of maternal ART in decreasing mortality and improving HIV-free survival among CoWLHIV in Africa, particularly when ART is initiated before pregnancy. Scale up of Elimination of MTCT requires programs to focus on timely diagnosis and treatment initiation and retention to care of all WLHIV and on prevention efforts before and during pregnancy and through the postpartum period to address the continued risk of HIV acquisition during this period. Improving coverage to hard-to-reach women and health outcomes of CoWLHIV remains a priority.

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