Children who acquire HIV infection perinatally are at higher risk of early death than those acquiring infection through breastmilk: a meta-analysis

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Abstract:

BACKGROUND: Assumptions about survival of HIV-infected children in Africa without antiretroviral therapy need to be updated to inform ongoing UNAIDS modelling of paediatric HIV epidemics among children. Improved estimates of infant survival by timing of HIV-infection (perinatally or postnatally) are thus needed. METHODOLOGY/PRINCIPAL FINDINGS: A pooled analysis was conducted of individual data of all available intervention cohorts and randomized trials on prevention of HIV mother-to-child transmission in Africa. Studies were right-censored at the time of infant antiretroviral initiation. Overall mortality rate per 1000 child-years of follow-up was calculated by selected maternal and infant characteristics. The Kaplan-Meier method was used to estimate survival curves by child's HIV infection status and timing of HIV infection. Individual data from 12 studies were pooled, with 12,112 children of HIV-infected women. Mortality rates per 1,000 child-years follow-up were 39.3 and 381.6 for HIV-uninfected and infected children respectively. One year after acquisition of HIV infection, an estimated 26% postnatally and 52% perinatally infected children would have died; and 4% uninfected children by age 1 year. Mortality was independently associated with maternal death (adjusted hazard ratio 2.2, 95%CI 1.6-3.0), maternal CD4<350 cells/ml (1.4, 1.1-1.7), postnatal (3.1, 2.1-4.1) or peri-partum HIV-infection (12.4, 10.1-15.3). CONCLUSIONS/RESULTS: These results update previous work and inform future UNAIDS modelling by providing survival estimates for HIV-infected untreated African children by timing of infection. We highlight the urgent need for the prevention of peri-partum and postnatal transmission and timely assessment of HIV infection in infants to initiate antiretroviral care and support for HIV-infected children.