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## A new plan for extended paediatric HIV testing is needed in Africa



Since 2016, WHO recommends that mother-to-child HIV transmission should be prevented by means of lifelong treatment with antiretrovirals (ARVs) for all pregnant HIV-infected women, exclusive breastfeeding during the first 6 months, and unrestricted duration of breastfeeding.<sup>1</sup> Despite roll-out of this recommendation worldwide, an estimated 180 000 new paediatric infections occurred in 2017.<sup>2</sup> This estimation supposedly accounts for the whole duration of HIV transmission, but is likely to be underestimated for several reasons. HIV exposure in children extends beyond last screening at 18–24 months, because breastfeeding could be prolonged for several additional months in sub-Saharan Africa. Furthermore, there is a misbelief that HIV postnatal transmission after 4–6 months of breastfeeding is extremely infrequent, when a weaning food has been introduced.<sup>3</sup> Finally, in most highly endemic areas, retesting HIV-uninfected women in the postpartum period is insufficiently implemented, even though they are at risk of HIV acquisition,<sup>4,5</sup> with highly effective transmission through breastfeeding during acute infection.<sup>5</sup> The modelling group for paediatric HIV (UNAIDS and SPECTRUM) mentioned that there is no clear estimate of the HIV transmission rate beyond 1 year-old that can be added to the actual model, but presumed it contributes little to the overall new infection.<sup>6,7</sup> Paediatric HIV infections arising from these situations escape detection and, therefore, the true number of those infected is unknown.

We had the opportunity to follow-up children who were HIV-exposed but uninfected at 1 year of age, with a repeated HIV test when they were 6–7 years old. These children were initially enrolled in a phase 3 trial evaluating the efficacy of two regimens of infant pre-exposure prophylaxis with daily lamivudine versus lopinavir-ritonavir to prevent HIV transmission from breastfeeding until 1 year of age. The trial was done between Nov 16, 2009, and May 7, 2012, and recruited 1273 mother-child pairs in four countries (Burkina Faso, South Africa, Uganda, and Zambia).<sup>8</sup> All children that were uninfected with HIV at the end of the trial were recalled 5–6 years later to evaluate long-term safety of the 12-month prophylaxis they received at birth.

Among 1101 eligible children, 562 children could be enrolled (98 from Burkina Faso, 120 from South Africa, 166 from Uganda, and 178 from Zambia). At follow-up, we recorded eight HIV-infected children, two in each country, giving a rate of transmission after 12 months of age of 2.0% (95% CI 0.56–7.13) in Burkina Faso, 1.7% (0.45–5.87) in South Africa, 1.7% (0.33–4.28) in Uganda, and 1.1% (0.31–4.00) in Zambia. These values might be underestimated because some of the 18 known infant deaths between the end of the trial and the follow-up study could have been attributable to HIV infection. Extrapolation of these late HIV transmission rates at the country level for this specific 5-year period (2009–13) gives a cumulative estimate of 790 children for Burkina Faso, 14 200 for South Africa, 10 200 for Uganda, and 4300 for Zambia who had an undiagnosed HIV infection. At the continent level, these undetected infections could account for 94 500 (95% CI 40 000–207 000) individuals, according to demographic data reported by IndexMundi.

Evaluation of the prevention of HIV mother-to-child transmission programmes has shown that 50% of women have dropped HIV care by 6-month postpartum, resulting in an equal number of children with the same characteristics as the ones we described.<sup>9</sup> Absence of maternal ART initiation, ART discontinuation, or lack of adherence are major concerns and justify the evaluation of additional strategies to prevent mother-to-child transmission, such as prolonged infant PrEP or point-of-care monitoring of maternal HIV viral load. Additionally, once children are 2 years old they leave the HIV prevention programme and are erroneously presumed safe from HIV at any further contact with paediatric care, unless they suffer from symptoms suggestive of HIV infection because WHO recommends repetitive testing postpartum but not beyond this point.<sup>1</sup>

The high rate of late postnatal HIV transmissions that we report from four African countries, with various HIV epidemics and health systems, strongly advocates for a change in infant HIV testing. Taking the opportunity of repeated contacts with the health-care system in a child life (via maternal and child healthcare center, expanded programme of immunisation, outpatient paediatric

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clinics), exposure to HIV should be systematically investigated, and, if the mother is HIV-positive, a final test after the end of breastfeeding should be reported in the child health card. If such a result is not reported, the child should be tested for HIV and referred for prompt ART initiation if infected. Since every month of delay in diagnosing HIV infection impacts survival from HIV/AIDS, the participation of all health-care workers—and not only those currently involved in the HIV control programme—is crucial to substantially reduce paediatric HIV-related deaths.

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