Vertical Transmission in Infants Born to Women with HIV on Antiretroviral Treatment

0778

Kim Anderson[1], Emma Kalk[1], Alexa Heekes[2], Florence Phelanyane[2], Nisha Jacob[3], Andrew Boulle[1,2,3], Ushma Mehta[1], Gayathri Sridhar[4], Leigh Ragone[4], Vani Vannappagari[4,5], Mary-Ann Davies[1,2,3]

[1]Centre for Infectious Disease Epidemiology and Research, School of Public Health, Faculty of Health Sciences, University of Cape Town, South Africa, [2]Health Intelligence, Western Cape Department of Health, Cape Town, South Africa,
[3]Division of Public Health Medicine, School of Public Health, University of Cape Town, South Africa, [4]ViiV Healthcare, Durham, NC, USA, [5]Department of Epidemiology, Gilling School of Public Health, University of North Carolina, Chapel Hill, NC, USA



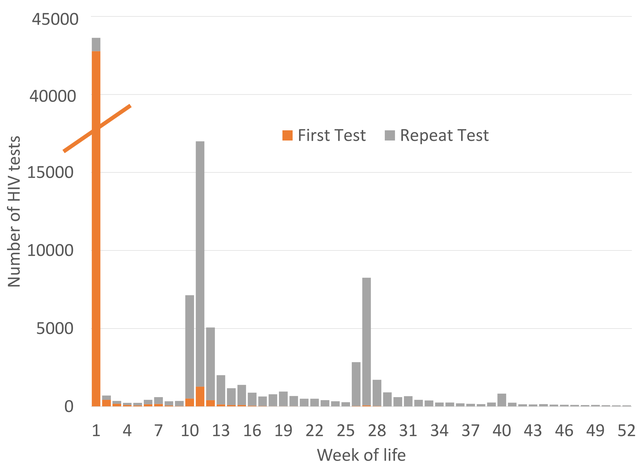
BACKGROUND

- Monitoring of mother-infant pairs with HIV exposure is needed to assess effectiveness of vertical transmission prevention programmes and progress towards elimination of vertical transmission.

METHODS

- We used routinely-collected data on infants with HIV exposure, born May 2018 – April 2021 to mothers diagnosed with HIV prior to delivery, in the Western Cape, South Africa, with follow-up through mid-August 2022.
- We assessed proportion of infants with HIV exposure who were diagnosed with HIV at birth (≤7 days), 10 weeks (>1 to 14 weeks) and >14 weeks as proxies for intrauterine, intrapartum/early breastfeeding and late breastfeeding transmission, respectively.
- To calculate proportions, the denominator used was infants not previously testing positive and with an available test at each interval.

Figure 1: All infant HIV tests performed, by week of life



Note: Includes positive, negative and repeat tests; includes HIV-PCRs, ELISA and Rapid assays; but excludes duplicate results from the same day for the same infant. Peaks in testing align with programmatic testing at birth, 10 weeks and 6 months, although 6-month PCR testing was only introduced in year 3, prior to which 9-month Rapid screening was conducted. Rapid tests are not routinely captured electronically and may be missing from the data.

At delivery, mothers had
VL<100: 74%
CD4≥350: 62%

At birth, 10 weeks & >14 weeks,
0.8%, 0.4% & 1.1%
of infants tested positive

RESULTS

Mothers

- 68% of mothers started antiretroviral treatment (ART) before pregnancy (although 5% of them had no ART during pregnancy); 27% started during pregnancy; and, at delivery, 5% had no prior ART recorded.
- 90% of mothers received any ART during pregnancy; 86% received any ART in the year after delivery.
- Most pregnancy regimens included non-nucleoside reverse transcriptase inhibitors (84%); 11% integrase strand transfer inhibitors and 5% protease inhibitors.
- 43% of mothers had viral load (VL) results at delivery, of whom 74% had VL <100 copies/ml.
- 68% of mothers had CD4 count results during pregnancy, of whom 62% had CD4 count ≥350 cells/µl.
- Of mothers whose infants were diagnosed with HIV: 94% had started ART before or during pregnancy; 49% had VL results at delivery, of whom 16% had VL <100 copies/ml.

Infants

- Among 49 824 HIV-exposed infants, 925 (2%) were diagnosed with HIV.
- HIV-PCR results were available for 83% of eligible infants at birth, 67% at 10 weeks and 48% at >14 weeks of age.
- Among eligible infants who were tested at the different timepoints, 0.8% were positive at birth, 0.4% at 10 weeks and 1.1% at >14 weeks. Of infants diagnosed with HIV, 47% were identified at birth, 18% at 10 weeks and 35% at >14 weeks of age.
- Of infants who first tested positive at 10 weeks, 68% had previous negative birth tests (suggesting intrapartum/early breastfeeding transmission) and 52% who first tested positive at >14 weeks had previous negative tests at 1-14 weeks (suggesting late breastfeeding transmission).
- Overall infant mortality was 1% (n=720/49824) but was 4% (n=41/925) among infants with HIV.
- An additional 742 infants were diagnosed with HIV in the study period but were excluded from analysis as maternal evidence of HIV was after delivery (n=341) or no linked maternal data was available (n=401).

CONCLUSIONS

- Despite high maternal ART coverage, ongoing vertical transmission is a concern, with a substantial proportion attributable to breastfeeding transmission.
- Interventions to improve maternal viral suppression and reduce vertical transmission in pregnancy and breastfeeding are needed to achieve an HIV-free generation.

ADDITIONAL INFORMATION

Author contact information: kim.anderson@uct.ac.za

Acknowledgements: We acknowledge the infants included in the study, their mothers, clinicians and service providers. We thank the Provincial Health Data Centre for their assistance with data extraction.

Funding: ViiV Healthcare

Figure 2: Vital status and HIV status at different time points for infants with HIV exposure

