The peripartum viral load cascade and outcomes of infants exposed to HIV in Lesotho

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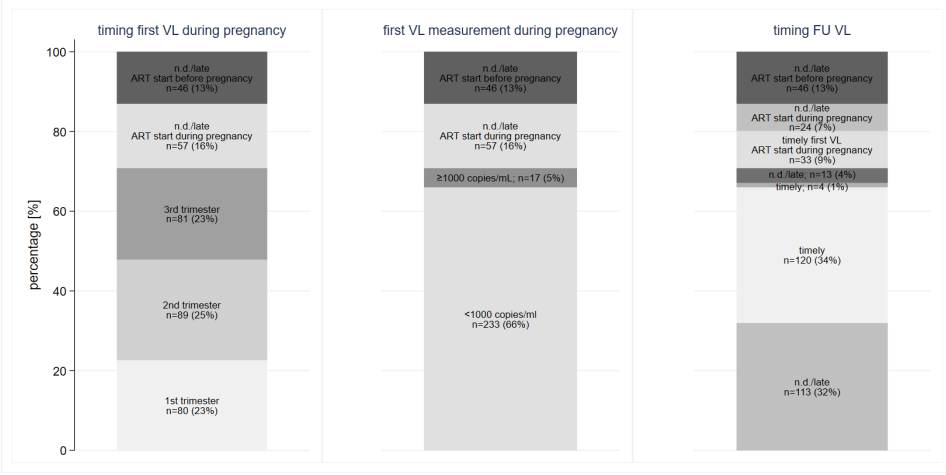
Background

- HIV programs averted 3.4 million child HIV acquisitions since 2000, but antiretroviral therapy (ART) coverage among pregnant people has changed little over the last decade, and the decline in new HIV acquisitions among children has slowed considerably, with 130,000 cases in 2022 (1).
- Vertical transmission of HIV can occur prenatally, during labor, or while breastfeeding.
- A peripartum viral load ≥1000 copies/mL is the main risk factor for vertical transmission (2).
- **Evidence gap**: There is limited data on adherence to viral load monitoring and service delivery for pregnant and breastfeeding people and their infants in resource-limited settings.

Results

- A total of 353 pregnancies among people with HIV and 357 infants exposed to HIV met the inclusion criteria (**Figure A**).
- Among 17/353 (5%) pregnant people with an initial viral load ≥1000 copies/mL, a timely follow-up viral load was provided for 4/17 (24%) . Among 233/353 (66%) with an initial viral load <1000 copies/mL, a timely follow-up was provided for 120/233 (52%) . For 103/353 (29%) no viral load measurement was available during pregnancy (**Figure B**).
- Among 357 infants exposed to HIV, nevirapine prophylaxis and cotrimoxazole prophylaxis were initiated in time for 301/357 (84%) and 282/357 (79%) respectively.
- Among 357 infants exposed to HIV, 247/357 (77%) and 172/357 (48%) received timely first infant HIV testing and 9-month HIV testing, respectively. Vertical transmissions occurred in 2/357 (1%) infants (**Figure C**).

Figure B. Viral load monitoring cascade and follow-up outcome of peripartum parent. ART: antiretroviral therapy; FU: follow-up; n.d.: not done; VL: viral load.



Conclusions

- Substantial gaps in viral load monitoring were found, with only 44% of pregnancies receiving guideline-adherent testing.
- 77% of infants exposed to HIV received timely HIV testing by 2 months, but only 48% by 9 months, with 1% observed vertical transmission.

Methods

- **Participants from the Viral Load Cohort North-East Lesotho (VICONEL) (3)** who attended their first antenatal care visit after 31 December 2019, had a delivery before 1 January 2022, and initiated dolutegravir-based ART before delivery, along with their infants, were included in this study. Data were collected through a medical chart review of paper-based registers at 20 healthcare facilities across two districts in Lesotho and combined with data from the VICONEL cohort.
- **Viral load (VL) monitoring** was done per routine care. Guideline-adherent VL monitoring was defined as: 6 months after ART initiation, every 6 months thereafter if VL was <1000 copies/mL, and within 3 months if VL was ≥1000 copies/mL.
- **Infant HIV testing** was conducted per routine care. Guideline-adherent testing was defined as: the first test within 6 weeks after birth and the second test at 9 months. As the 24-month outcome, we considered either the first positive or the last negative HIV test taken beyond 9 months, respectively.
- **Infant nevirapine and cotrimoxazole prophylaxis** followed routine care. Guideline-adherent prophylaxis was defined as: nevirapine at birth and cotrimoxazole at 6 weeks of age.

Figure A. Study flow chart. ANC: antenatal care; ART: antiretroviral therapy; HIV: human immunodeficiency virus; VICONEL: Viral Load Cohort North-East Lesotho

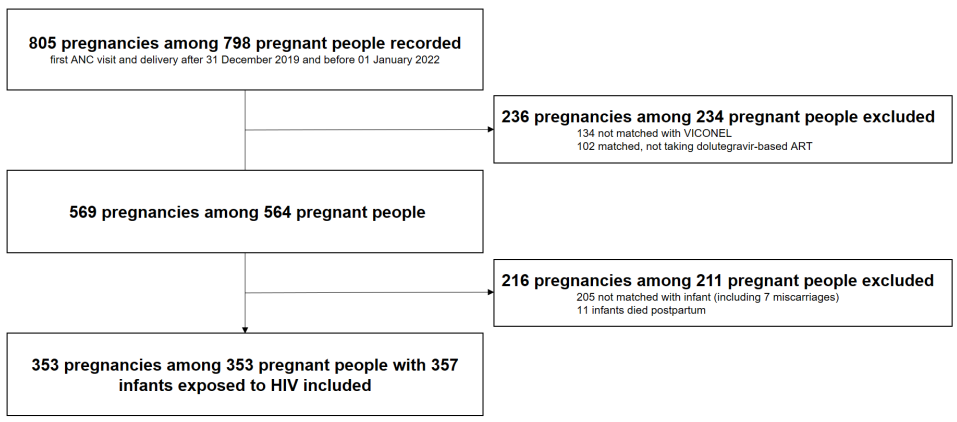
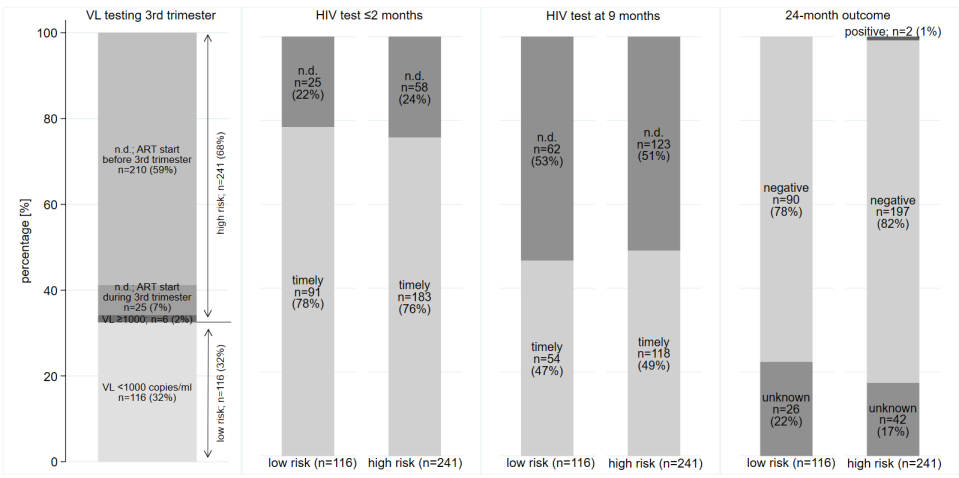


Figure C. HIV testing and outcomes of infants exposed to HIV. ART: antiretroviral therapy; n.d.: not done; VL: viral load [copies/mL].



Correspondence | References | Funding

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References:
1. Joint United Nations Programme on HIV/AIDS (UNAIDS). The path that ends AIDS: UNAIDS Global AIDS Update 2023 [Internet]. Licence: CC BY-NC-SA 3.0 IGO; 2023. Available from: https://thepath.unaids.org/wp-content/themes/unaids2023/assets/files/2023_report.pdf
2. World Health Organisation. Consolidated guidelines on HIV prevention, testing, treatment, service delivery and monitoring: recommendations for a public health approach [Internet]. 2021 [cited 2023 Jul 19]. Available from: https://www.who.int/publications-detail-redirect/9789240031593
3. Cohort profile: the Viral load Cohort North-East Lesotho (VICONEL) from 2016 to 2022 – cohort description, test volumes, predictors of viraemia, and the road ahead | medRxiv [Internet]. [cited 2024 May 9]. Available from: https://www.medrxiv.org/content/10.1101/2024.03.12.24304025v1

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