Elizabeth Glaser Pediatric AIDS Foundation

Until no child has AIDS.

TUPEB0423

Shifting Dynamics of HIV Transmission Timing Among Infants in the Era of Option B+ and Implications for Infant Testing

A.Tiam[1,4], S. Kassaye[2] R. Machekano[1], M. Gill[1], M. Mokone[3], S. Mohale[3], M. Makhohlisa[3], M. Letsie[5], M. Tsietso[5], I. Seipati[5], V. Tukei[3], A. Isavwa[3], L. Guay[1,6]

1. Elizabeth Glaser Pediatric AIDS Foundation, Washington D.C. 2. Georgetown University, Washington D.C.; 3. Elizabeth Glaser Pediatric AIDS Foundation, Lesotho; 4. Centre for International Health, University of Bergen, Bergen, Norway, 5. Ministry of Health, Lesotho; 6. Milken Institute School of Public Health, The George Washington University

BACKGROUND

- Universal, lifelong antiretroviral treatment (ART) for HIV-positive pregnant women (Option B+) will significantly reduce mother-to-child transmission (MTCT) of HIV.
- First-line ART regimen, included in the 2013 Lesotho PMTCT guidelines, consists of one combination pill taken once per day containing the following: Tenofovir (TDF) 300 mg, Lamivudine (3TC) 300 mg, and Efavirenz (EFZ) 600 mg. The alternate regimens are TDF +3TC+NVP or AZT +3TC + EFZ/NVP or ABC + 3TC + EFZ/NVP.
- The World Health Organization recommends infant HIV testing at 4-6 weeks to capture HIV transmission that occurs *in-utero, intrapartum* or during breastfeeding within the first few weeks of life.
- In-utero infection is associated with high mortality of 20-30% by age 8-12 weeks.
- We conducted an implementation research study to determine the relative yield of HIV birth testing.

METHODS

- This was a prospective cohort study of HIV-positive and HIV-negative pregnant women attending antenatal clinics (ANC) and their infants, to evaluate implementation of Option B+ within 13 selected health facilities.
- The aim was to assess PMTCT program effectiveness by determining HIV transmission rates and 24 month HIV-free survival among HIV-exposed infants, and to identify factors associated with transmission and survival.
- In addition to 6- and 14-week infant testing, that is performed routinely according to national guidelines, Dried blood spots were obtained at birth and sent to National Reference Lab for PCR using Roche CAP/CTM HIV-1 qualitative test v2.0.
- Data were collected/entered into electronic tablets, linked to a database designed specifically for this study and stored on a secure server.

RESULTS

- 622 women gave birth to 629 infants: median age of women was 29 years; median gestational age at first ANC was 24 weeks
- 431/629 (68%) infants were tested at birth
- 583/629 (93%) were tested by six weeks. This included some infants who were not tested at birth.
- 400/426 (94%) of infants uninfected at birth were retested at six weeks.
- In-utero HIV infection with positive birth PCR occurred in 5/431 infants (**1.2%**, 95% CI:[0.4% - 2.7%])
- An additional three infants tested positive at 6 weeks, two with a prior negative birth test and one without a prior birth PCR-test, for a cumulative MTCT incidence of **1.4**% (95% CI:[0.5% - 2.7%])
- Six-week MTCT rate was 2/221 (**0.9%**) (95% CI:[0.1-3.2]) among women who initiated ART before pregnancy compared to 6/345 (**1.7%**) (95%CI:[0.6-3.7]) among women who started ART during pregnancy
- Maternal HIV RNA levels at delivery were associated with MTCT: median HIV RNA was 1.28 $\log_{10}$ copies/mL among non-transmitting women versus 5.04 $\log_{10}$ copies/mL among transmitting women (p=0.001).

CONCLUSION

- Universal antenatal maternal ART resulted in very low six-week MTCT **(1.4%**); MTCT rates were lowest with pre-pregnancy ART initiation.
- Among infants who acquired HIV infections by six weeks, the majority **(5/8, 63%)** had acquired HIV *in-utero* or *peripartum.*
- Our findings suggest that introduction of birth testing would identify the majority of HIV-infected infants.
- With introduction of new technologies for EID such as point-of-care, accompanied by rapid infant ART initiation, the addition of birth testing could significantly impact the health of HIV-infected infants.

This work was made possible by the United States Agency for International Development (USAID) and the generous support of the American people through USAID Cooperative Agreement No. AID-674-A-16-00005. The content included here is the responsibility of EGPAF and does not necessarily represent the official views of these donors.

Appolinaire Tiam, MBChB, DipHIVMan, MMed
atiam@pedaids.org
Elizabeth Glaser Pediatric AIDS Foundation