No Early Signal that DTG Improves 24-Week Viral Suppression in Infants in Botswana

981

Maureen Sakoi-Mosetlhi[1], Gbolahan Ajibola[1], Oganne Batlang[1], Kenneth Maswabi[1], Molly Pretorius Holme[3], Kathleen M. Powis[1,2,3,4], Shahin Lockman[1,2,3,5], Michael Hughes[6], Joseph Makhema[1], Daniel R. Kuritzkes[2,5], Mathias Litcherfeld[2,5,7], Roger Shapiro[1,2,3]

Affiliations: [1.]Botswana Harvard AIDS Institute Partnership, Gaborone, Botswana. [2.] Harvard Medical School, Boston, MA, United States. [3.] Harvard T.H. Chan School of Public Health, Department of Immunology and Infectious Diseases, Boston, MA, United States. [4.] Massachusetts General Hospital, Departments of Internal Medicine and Pediatrics, Boston, MA, United States. [5.] Brigham and Women's Hospital, Boston, MA, United States. [6.] Harvard T.H. Chan School of Public Health, Department of Biostatistics, Boston, MA, United States.[7.] Ragon Institute of Mass General, MIT, and Harvard, Cambridge, MA, United States

BACKGROUND

- The World Health Organization recommends dolutegravir (DTG)-based 3-drug ART in children >4 weeks weighing >3kg.
- Botswana has recently implemented the use of a DTG-based regimen for infants with HIV from 4 weeks of life as a standard of care.
- DTG-based ART achieves rapid viral load decline in adults and low rates of treatment failure in older children
- Limited information is available for children treated from birth, a time when adherence challenges are of particular concern.

METHODS

- We enrolled 40 infants in the Early Infant Treatment (EIT) study from May 2015 to July 2018 and 11 infants in the Moso study from April 2022 to November 2023.
- All the infants enrolled in the Moso and EIT study had HIV diagnosis and treatment started at < 7 days post-delivery.
- All children started nevirapine (NVP)+lamivudine (3TC)+zidovudine (ZDV) in the first weeks of life in both EIT and Moso Studies.
- Infants in the EIT study were later switched to lopinavir boosted with ritonavir (LPV/r) +3TC+ZDV at 2-5 weeks
- Moso study infants were switched to dolutegravir (DTG)+abacavir (ABC)+3TC at 4-6 weeks.
- We compared the prevalence of 24-week HIV-1 RNA suppression in early-treated children on lopinavir-ritonavir (LPV/r)–based ART in the EIT cohort (2015-2018) to DTG-based ART in the Moso cohort (2022-2023).
- The proportion of children with HIV-1 RNA<40 copies/ml at 24 weeks of age was compared between both cohorts and logistic regression models were fit to evaluate risk factors for non-suppression.

RESULTS

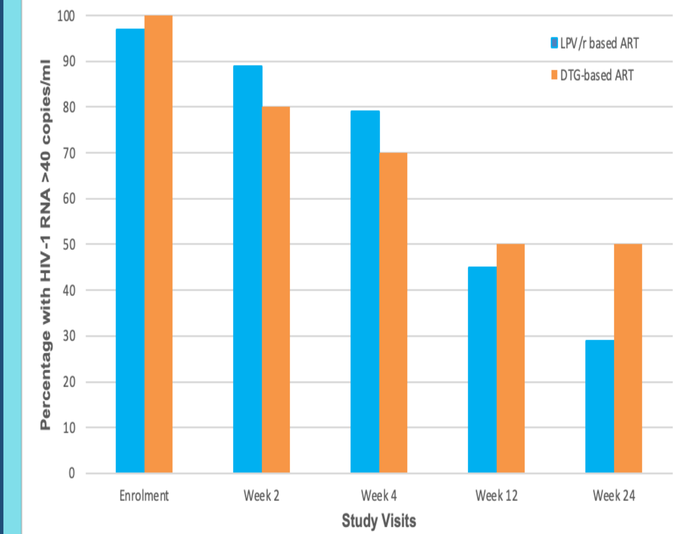
- 38 of 40 EIT participants and 10 of 11 Moso participants had 24-week results (2 EIT deaths <24 weeks; 1 Moso death <24 weeks).
- **HIV-1 RNA was <40 copies/mL at the 24-week visit in 27/38 (71%) EIT participants on LPV/r and in 5/10 (50%) Moso participants on DTG**
- Figure 1 summarizes viremia over time in both cohorts.

- Data from a small number of early-treated infants indicate no improvement in viral suppression rate with the use of DTG-based ART through 24 weeks.
- Adherence challenges remain common among the small number of infants with vertical HIV infection in Botswana, and long-acting agents are urgently needed.

RESULTS (CONT)

- Median log10 infant HIV-1 RNA at birth was 4.1 copies/mL and 3.8 copies/mL for EIT and Moso, respectively.
- The median time on LPV/r and DTG before 24 weeks was 154 days (range 130, 168) and 140 days (range 126, 148), respectively.
- No maternal or infant factors significantly predicted viral suppression at 24 weeks in either cohort, but caregiver-reported adherence challenges were common in most children with detectable viremia at 24 weeks.

Figure 1: Detectable HIV-1 RNA > 40 copies/mL by study visit in the EIT cohort (LPV/r-based ART) and the Moso cohort (DTG-based ART) in Botswana



CONCLUSIONS

- Despite its proven benefit for achieving rapid and durable viral suppression in adults and older children, data from a small number of early-treated infants indicate no improvement in viral suppression with the use of DTG-based ART through 24 weeks.
- Adherence challenges remain common among the small number of infants with vertical HIV infection in Botswana, and long-acting agents are urgently needed.

Author Contact Information
Maureen Sakoi-Mosetlhi (Botswana Harvard AIDS Institute Partnership) email; msakoi@bhp.org.bw

Acknowledgements

Support for this work was provided by the Eunice Kennedy Shriver National Institute of Child Health & Human Development, PAVE and Bill and Melinda Gates Foundation. **We thank the** co-authors, the study team; Tshepho Theodorah Frank, Obonwe Pule, Tsholofelo Kebopetswe, Martha Ngwaca, Sikhulile Moyo, Terence Mohammed, Comfort Maphorisa, Otwel Elias, Jack Disaro, Seretlogelwa Moseki, Gorata Kenyaditswe, Leungo Veronica Olaotse, Tsholofelo Rebatenne, Kaone Pearl Molefi, Mercy Mupahua, Atlasaone Morongwana, Johannes Gabaitse, Tsitsi Shamiso Moyo, Modiegi Diseko, Judith Mabuta, Shally Morgan, Tumalano Sekoto, Ngozana Seonyaneng. Special thanks to Moso and EIT participants and their caregivers.