LA-ART for Breastfeeding Women with HIV in Zimbabwe: Clinical Impact and Cost-Effectiveness

Sujata Tewari[1], Risa Hoffman[2], Shahin Lockman[3,4,5], Clare Flanagan[1], Karen Webb[6], Stephanie Horsfall[1], Anesu Chimwaza[7], Caitlin Dugdale[1,8], Judith Currier[2], Efison Dhodho[6], Angela Mushavi[7], Florence Ebem[1], Kudakwashe Takarinda[6], Sophie Desmonde[11], Andrea Ciaranello[1,8,9]

[1] Massachusetts General Hospital, Boston, MA, USA; [2] David Geffen School of Medicine at the University of California, Los Angeles, CA, USA; [3] Brigham and Women's Hospital, Boston, MA, USA; [4] Department of Immunology and Infectious Diseases, Harvard TH Chan School of Public Health, Boston, MA, USA; [5] Botswana Harvard Health Partnership, Gaborone, Botswana; [6] Organization for Public Health Interventions and Development, Harare, Zimbabwe; [7] Zimbabwe Ministry of Health and Child Care, Harare, Zimbabwe; [8] Harvard Medical School, Boston, MA, USA; [9] Harvard University Center for AIDS Research, Cambridge, MA, USA; [10] University of Alabama at the Birmingham Heersink School of Medicine, AL, USA; [11] Centre d'Epidémiologie et de Recherche en santé des POPulations (CERPOP), French National Institute for Health and Medical Research (Inserm), University of Toulouse, France.

BACKGROUND

- Long-acting injectable ART (LA-ART), e.g., with cabotegravir/rilpivirine (CAB/RPV), may reduce barriers for postpartum (PP) women with HIV who face adherence challenges, reduce vertical transmission (VT), and improve maternal and infant health outcomes.

METHODS

- We used the Cost-effectiveness of Preventing AIDS Complications (CEPAC) model to simulate mother-child pairs.
- Modeled cohorts: women who had been engaged in antenatal care and faced adherence challenges while prescribed oral tenofovir/lamivudine/dolutegravir (TLD) in pregnancy, along with their infants:
  1. Women not virally suppressed at delivery (NVS)
  2. Women virally suppressed at delivery (VS)
- Modeled ART strategies immediately after delivery:
  1. *SOC* (standard of care: continuation of TLD)
  2. *LA-ART* (switching from TLD to long-acting CAB/RPV)
- Modeled outcomes included VT, pediatric life expectancy (LE), and total costs (defined as maternal drug costs in breastfeeding plus pediatric HIV-related lifetime care costs).
- Incremental cost-effectiveness ratios (ICERs) were calculated in $/year of life saved (YLS).
  - "Cost-effective" was defined as ICER <$800/YLS (0.5x Zimbabwe GDP).
- In sensitivity analyses, we varied CAB/RPV cost and efficacy, TLD efficacy, and impact of CAB/RPV on engagement in care.

Table 1. Select base-case model input parameters

Parameter	NVS	VS
Standard of care (TLD)		
6-month suppression (%) [1,2,3]	63	78
Annual drug costs (USD) [4]	43.20	
LA-ART (CAB/RPV)		
6-month suppression (%) [5]	85	90
Annual drug costs (USD), [4]	144	
24-month engagement in care (%) [6]	70	79
Mean breastfeeding duration (months) [7]	18	
Vertical transmission risk (%/month) [8]	0.60-0.89	

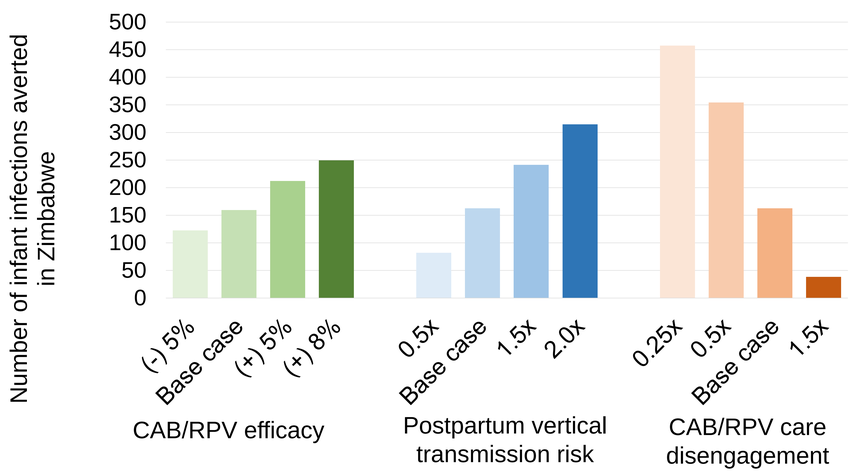
1 Asare OFID 2022, 2 ORCHID, CROI 2024, 3 Pepperrell CID 2021, 4 Global Fund 2023, 5 LATITUDE, CROI 2024, 6 Stover JAIDS 2021, 7 Zimbabwe Multiple Indicator Cluster Survey 2019, 8 UNAIDS 2024

LA-ART for breastfeeding women with HIV who face adherence challenges in Zimbabwe could markedly reduce infant HIV infections. LA-ART could save money for women without viral suppression at delivery and could be cost-effective for women with viral suppression if cost is ≤ $84/year.

RESULTS

- *LA-ART* reduced projected vertical transmission compared to *SOC* (**Table 2** and **Figure 1**), averting approximately 160 infant infections per year in Zimbabwe.
- If *LA-ART* also reduced postpartum care disengagement by 75%, ~450 infant infections could be averted per year.

Figure 1. Projected annual infant infections averted by postpartum use of LA-ART vs. SOC in Zimbabwe



RESULTS, continued

Cost-effectiveness (**Table 2**):

- For women not virally suppressed at delivery (NVS), *LA-ART* improved projected pediatric life expectancy while saving money.
  - *LA-ART* would not be cost-effective if CAB/RPV cost >$276/year or if 6-month suppression was <68%.
- For women virally suppressed at delivery (VS), *LA-ART* led to higher projected pediatric life expectancy than *SOC,* but total costs were higher, and *LA-ART* would not be cost-effective with base-case assumptions.
  - *LA-ART* would become cost-effective if CAB/RPV cost ≤ $84/year.

Table 2. Projected base-case outcomes and cost-effectiveness

	PP VT (%)	Total VT (%)	Annual infections averted [a]	Pediatric LE (years)	Total costs ($) [c]	ICER ($/life-year saved) [b]
Women not virally suppressed at delivery (NVS)						
SOC	4.38	7.49	*Reference*	66.08	764	*Reference*
LA-ART	3.46	6.58	66	66.40	763	More effective, less expensive
Women virally suppressed at delivery (VS)						
SOC	2.72	4.17	*Reference*	67.40	444	*Reference*
LA-ART	2.34	3.80	97	67.52	554	2,449

[a] Weighted to the estimated number of infants in Zimbabwe born in 2023 to mothers with HIV who are breastfeeding and on oral ART with low adherence. Total n=31,388 (NVS = 7,211, VS = 24,177).
[b] Combined ICER: from pediatric lifetime healthcare costs from birth plus maternal drug costs during breastfeeding
[c] 2023 United States dollars, discounted at 3%/year.

Abbreviations: ICER, incremental cost-effectiveness ratio; LE, life expectancy; PP, postpartum; VT, vertical transmission

CONCLUSIONS

- Switching to CAB/RPV at delivery for breastfeeding women with a history of adherence challenges on oral TLD could markedly reduce infant infections in Zimbabwe.
- *LA-ART* for women without viral suppression at delivery could improve outcomes and save money in Zimbabwe.
- *LA-ART* for women with viral suppression could improve outcomes and be cost-effective in Zimbabwe if drug costs were ≤$84/year.
- Policymakers should prioritize postpartum women in studies of LA-ART efficacy and should make LA-ART regimens available in resource-limited settings.

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Contact: Sujata Tewari, setewari@mgh.harvard.edu