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Viral Suppression and Retention 2-5 Years After ART Initiation in Pregnancy in Uganda

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Background

Uganda adopted Option B+ (lifelong ART for all pregnant and breastfeeding HIV-infected women, regardless of CD4 count) in 2012 with roll-out in 2013.

- 95% of pregnant women at public clinics tested for HIV[1]
- >85% of HIV-infected pregnant women initiated on ART[1]

Concerns about effectiveness of Option B+

- Limited data show 52-73% achieve viral suppression at delivery[2,3]
- 17-40% of women lost to follow-up (LTFU) at 12 months postpartum[4,5,6]
- Higher LTFU than non-pregnant women initiating ART for clinical indication[4]

Knowledge gaps

- Long-term retention in care several years after cessation of breastfeeding
- Reasons for disengagement from care
- Data on viral suppression, particularly in rural clinics

Objective

To evaluate retention in care and viral suppression up to 5 years postpartum in a population initiated on lifelong ART during pregnancy.

Methods

Study Design and Population

- We evaluated retention in care and viral suppression among previously ART-naïve HIV-infected women who had initiated ART during pregnancy at 12-28 weeks gestation in the PROMOTE-Pregnant Women and Infants (PIs) study (NCT00993031) in Tororo, a municipality in rural eastern Uganda[7,8]
  - Participants initiated lifelong ART ~3 years before national guidelines
  - Participants breastfed and were followed for up to 1 year postpartum in the study, then referred for ongoing ART in community clinics
- 200 women were randomly selected after completing the trial for **PROMOTE B+**, a cross-sectional follow-up study

Study Procedures

- Home visitors made up to 3 contact attempts by phone or in-person to provide an invitation to participate in the study
- If participant could not be located, home visitors recorded information from a close contact on vital status and if participant had relocated

Measurements

- Questionnaire: Demographics, food insecurity (Household Hunger Scale[9]), partnerships, subsequent pregnancies, infant vital status
- Personal clinical record booklets (provider documentation) to abstract: Date of most recent clinic visit, ART regimen, CD4 count, infant HIV testing
- HIV-1 RNA and urine pregnancy testing were performed

Analysis

- Outcomes: 1. Viral suppression: HIV-1 RNA <400 copies/ml
  2. Retention in care: Attended an HIV clinic in the past 90 days
- Logistic regression models were used to examine factors associated with viral suppression

Results

Fig. 1. Study Schema and Enrollment of Participants

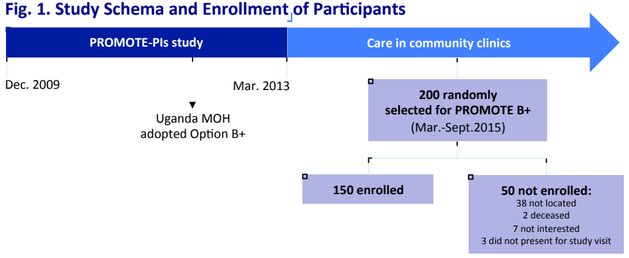


Table 1. Characteristics of Study Participants, N = 150

Characteristic		n (%) or median (IQR)
Age, years		34.5 (29.9-37.6)
Food insecurity		55 (37%)
No. of living children		4 (3-6)
Years since ART initiation		4.2 (3.4-4.7)
Years postpartum since index pregnancy on ART		3.8 (3.1-4.3)
≥ 1 Pregnancy after ART initiation		58 (39%)
Pregnant		19 (13%)
Breastfeeding		23 (15%)
Married (monogamous or polygamous)		120 (80%)
HIV status of primary partner	Positive Negative Unknown	89 (59%) 28 (19%) 22 (15%)
HIV status disclosed to primary partner		131 (87%)
Most recent CD4 count, cells/mm^3		664 (475-870)
ART taken in last 3 days		131 (87%)
Current ART regimen (N = 131)	Efavirenz Nevirapine Lopinavir	78 (59%) 35 (27%) 18 (14%)
Public clinic (vs. private/PEPFAR-funded), (N = 135)		87 (63%)
Total no. of HIV clinics at which participants are in care		33

Table 2. Prevalence of Retention in Care and Viral Suppression

	n/N	% (95% CI)
Retention in care	**135/150**	**90.0 (84.0-94.3)**
Not enrolled = out of care (M = F)*	135/200	67.5 (60.5-73.9)
Viral suppression	**121/150**	**80.7 (73.4-86.7)**
Participants retained in care	121/135	89.6 (83.2-94.2)
Not enrolled = unsuppressed (M = F)*	121/200	60.5 (53.6-67.3)

*M = F, missing = failure

Table 3. Analysis of Factors Associated with Viral Suppression, N = 150

		Viral Suppression	
		OR (95% CI)	aOR (95% CI)
HIV status disclosed to partner		**5.24 (1.21-22.6)**	**4.51 (1.02-19.8)**
Food security		**2.61 (1.00-6.88)**	2.27 (0.78-6.59)
Age, per 10 years		1.83 (0.83-4.00)	
Years since ART initiation		1.30 (0.62-2.74)	
Higher than primary level education		0.78 (0.17-3.57)	
PEPFAR/private vs. govt. clinic		0.68 (0.30-1.57)	
Phone ownership		2.23 (0.94-5.3)	
Pregnant or breastfeeding vs. neither		0.98 (0.40-2.44)	
Viral suppression at delivery in index pregnancy on ART		4.91 (0.93-25.9)	
ART regimen	Efavirenz Nevirapine Lopinavir	1.00 0.59 (0.17-2.01) 1.68 (0.19-14.5)	

Infant Vital Status and HIV Status

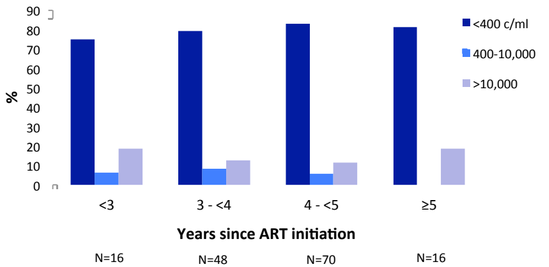
Index pregnancy on ART during PROMOTE-PIs (N = 147 infants)

- 144 alive
- 2 deceased
- 1 unknown vital status
- 0 HIV-infected

Subsequent pregnancies after referral to community clinics (N = 46 infants)

- 46 alive
- 0 deceased
- 1 HIV-infected

Fig. 2. Viral Suppression Sustained Years After ART Initiation, N = 150



Discussion

- Following initiation of Option B+, of women who were successfully contacted at 2-5 years postpartum
  - 90% were retained in care
  - 80.7% demonstrated viral suppression
- Viral suppression was associated with
  - Disclosure of HIV status to primary partner
  - Food security
- Interventions to facilitate disclosure and to address food insecurity[10] may improve long-term retention in care with viral suppression
- Retention in care may be suboptimal among women who were not successfully contacted for follow-up. However, studies from adult ART clinics in Uganda suggest most LTFU are in care at other clinics.[11]
- Given patient mobility, tools to track patients across clinic systems would be valuable to monitor and optimize long-term outcomes following ART initiation during pregnancy and breastfeeding.

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Acknowledgments: The authors thank the PROMOTE B+ study participants, the study staff, and the Infectious Diseases Research Collaboration.
This research was supported by grants from NIAID T32 AI060530, K24 AI051982, and the UCSF Center for AIDS Research through P30 AI027763.