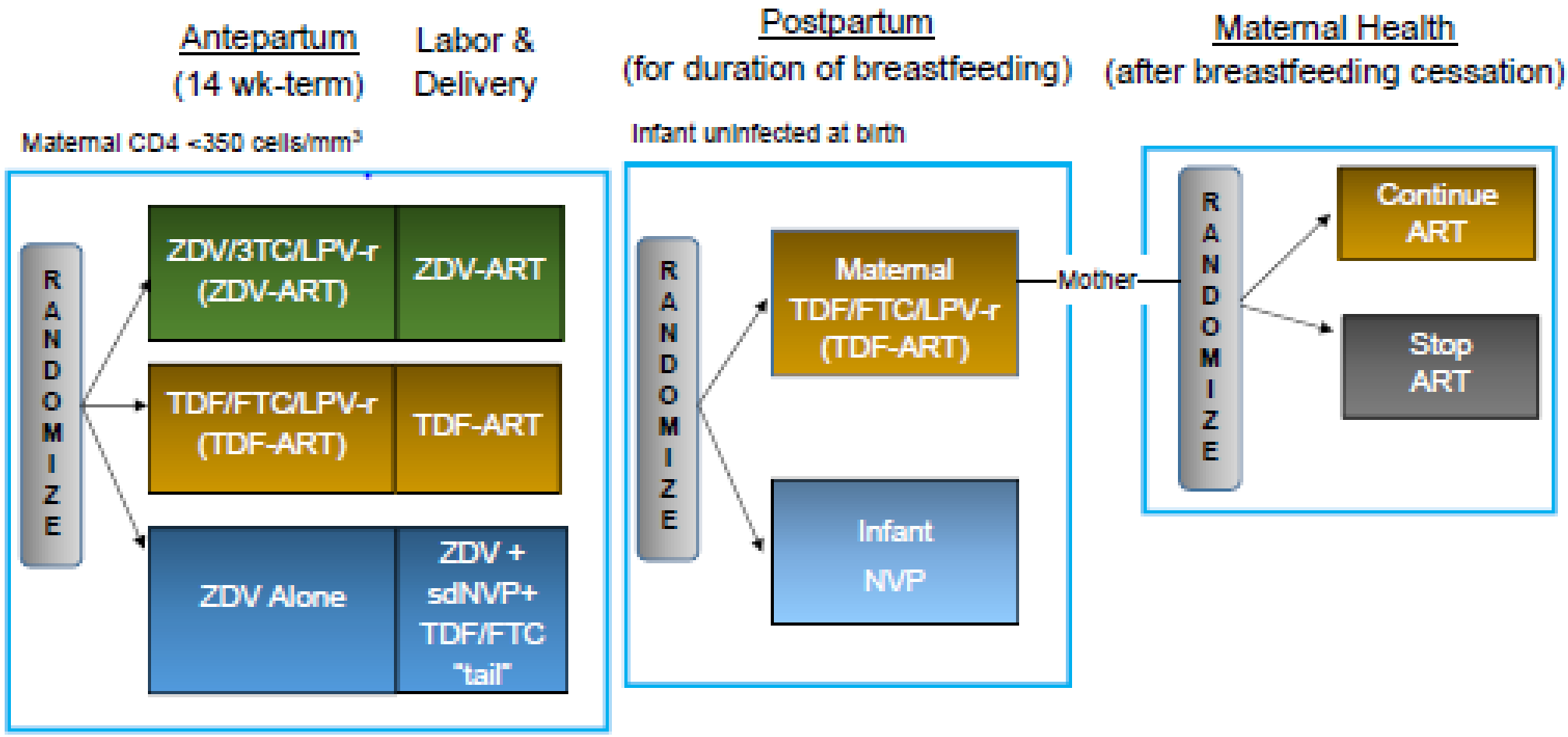
ROLE OF MATERNAL VIRAL LOAD IN HIV TRANSMISSION IN PROMISE

PROMISE TEAM

IMPAACT PREVENTION SCIENCE MEETING, JUNE, 2018

OVERALL STUDY: Randomizations Antepartum, Postpartum during Breastfeeding and at the End of Infant HIV Transmission Risk



VIRAL LOAD ASSESSMENTS IN AP AND PP COMPONENT

- In Antepartum Component, HIV RNA was assessed at entry, week 4 and delivery/postpartum week 1
- In Postpartum Component, HIV RNA was assessed at weeks 1 (6-14 days postpartum, entry), 6 and 14, 26 and 50 weeks postpartum
- Both components, HIV RNA assessments were performed real-time for women receiving ART and stored and batched for those not receiving ART

HIV TRANSMISSION IN THE ANTEPARTUM COMPONENT

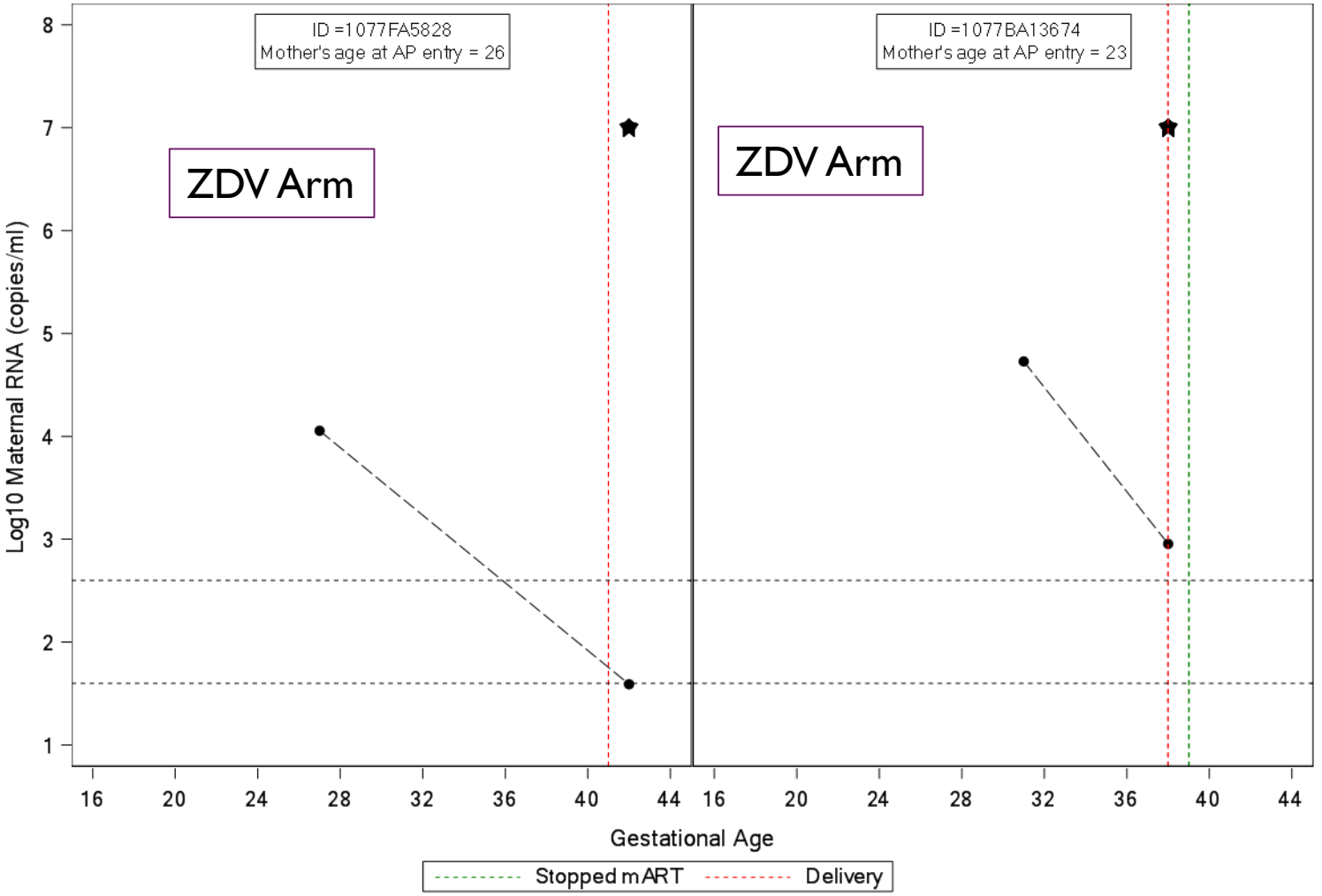
- There were no differences in AP baseline viral load

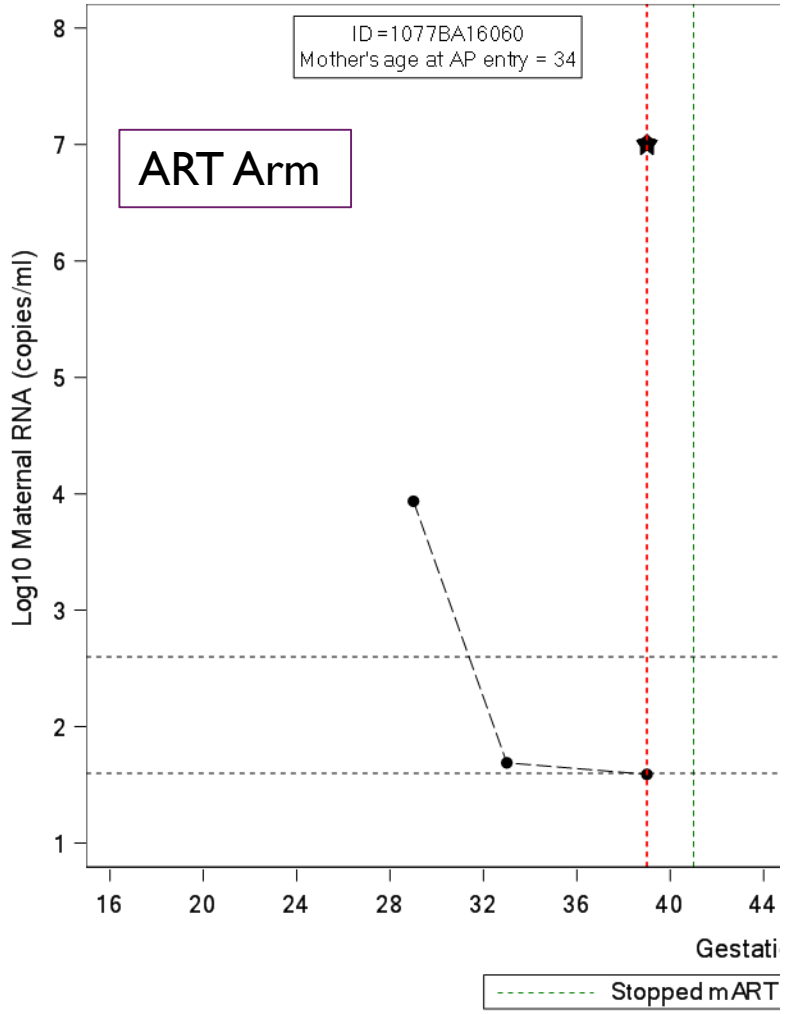
	Periods 1 and 2			Period 2 Only			
	ZDV Alone (N=1543)	ZDV-Based ART (N=1541)	Total (N=3084)	ZDV Alone (N=413)	ZDV-Based ART (N=410)	TDF-Based ART (N=406)	Total (N=1229)
Viral load at enrollment — $\log_{10}$ copies/ml							
Median	3.8	3.9	3.9	3.8	3.8	3.9	3.9
IQR	3.2–4.4	3.3–4.5	3.2–4.4	3.2–4.4	3.2–4.4	3.3–4.5	3.2–4.4

- Among infected infants, viral loads most often greater than 1,000 copies

Subgroup	ZDV Alone	ZDV-Based ART	TDF-Based ART	Difference, ZDV-Based ART and TDF-Based ART vs. ZDV Alone	P Value for Interaction
	no. of mother–infant sets/total no. (%)			*percentage points (repeated CI)*	
Maternal viral load at trial entry					0.22
<1000 copies/ml	0/299	1/253 (0.4)	0/57	0.3 (–0.4 to 1.0)	
≥1000 copies/ml	25/1083 (2.3)	6/1129 (0.5)	2/268 (0.7)	–1.7 (–2.8 to –0.7)	
Missing data	4	3	0		

PATTERN OF MATERNAL VIRAL LOAD IN AP COMPONENT





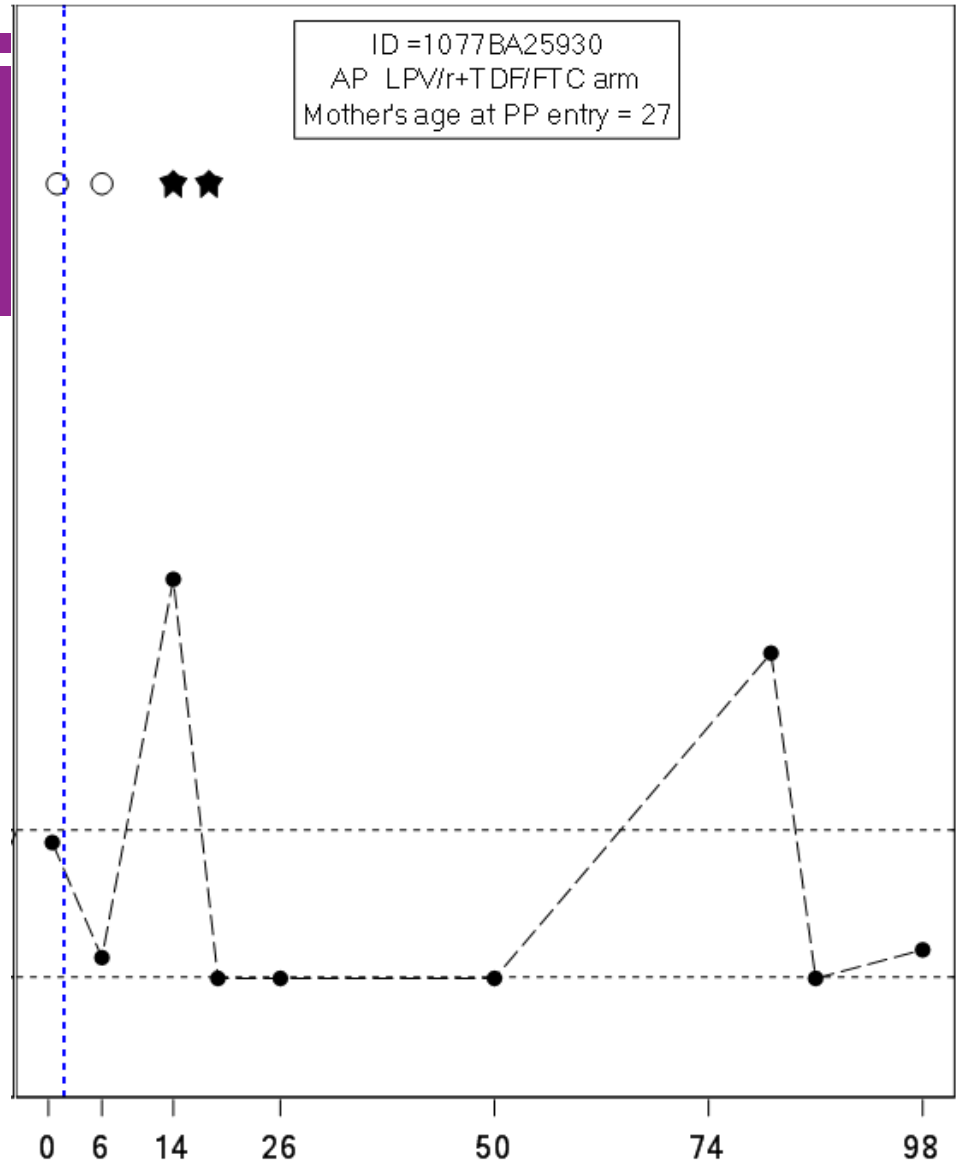
MATERNAL VIRAL LOAD IN POSTPARTUM COMPONENT

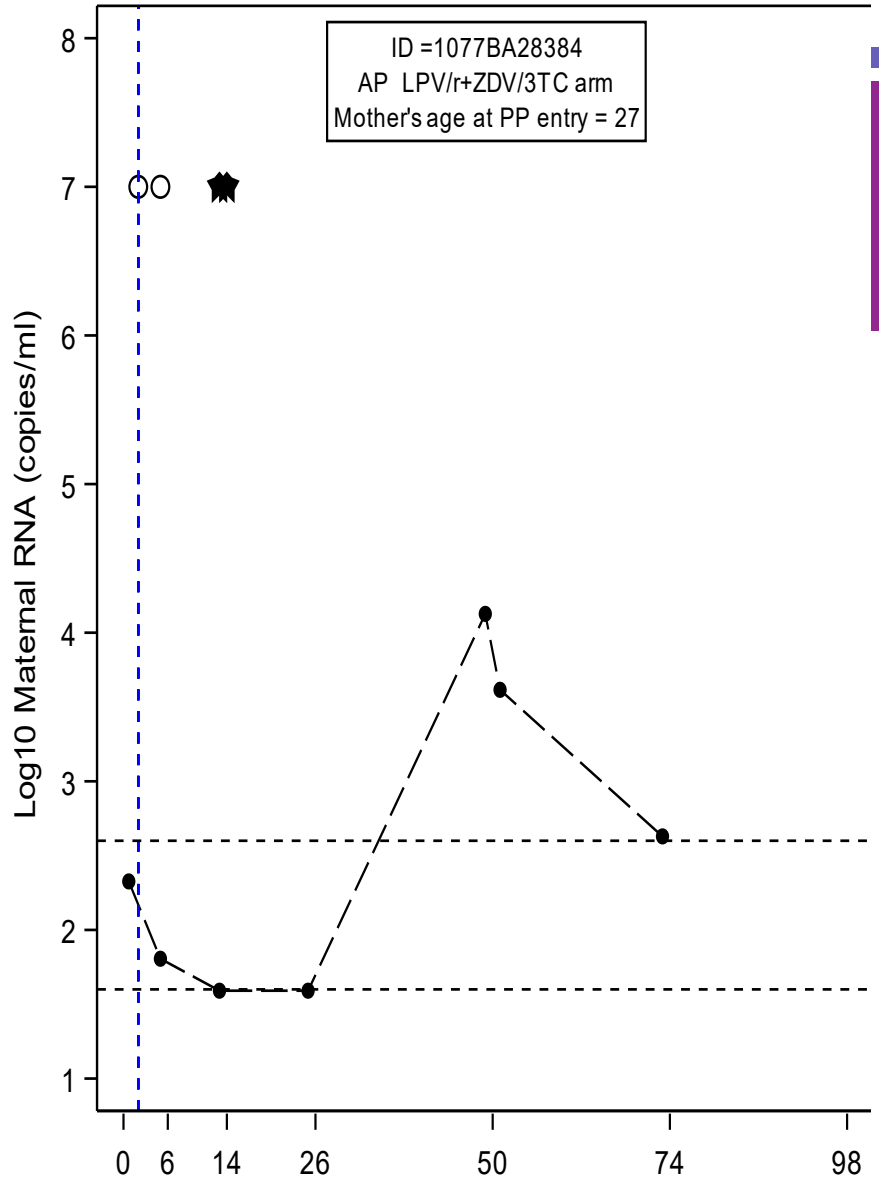
- Maternal viral load was similar at baseline
- By week 6, more women randomized to mART had undetectable viral load compared to those randomized to infant NVP
- Similar distribution of maternal viral loads persisted at subsequent measurements

Characteristic		PP Randomization Arm: Maternal Triple ARV (N=1220)	Infant Prophylaxis (N=1211)	Total (N=2431)
Baseline	N	1,220	1,211	2,431
	Median (Q1-Q3)	222 (40-1,048)	400 (40-1,967)	325 (40-1,450)
	Min-Max	20-2,177,097	20-445,765	20-2,177,097
	N with RNA < 400 copies/ml	672 (55%)	604 (50%)	1,276 (52%)
	N with RNA between 400 and 1000 copies/ml	239 (20%)	210 (17%)	449 (18%)
	N with RNA ≥ 1000 copies/ml	309 (25%)	397 (33%)	706 (29%)
Week 6	N	1,184	1,146	2,330
	Median (Q1-Q3)	39 (39-250)	7,528 (1,375-30,942)	399 (39-9,884)
	Min-Max	19-1,126,783	19-1,747,043	19-1,747,043
	N with RNA < 400 copies/ml	1,034 (87%)	170 (15%)	1,204 (52%)
	N with RNA between 400 and 1000 copies/ml	50 (4%)	80 (7%)	130 (6%)
	N with RNA ≥ 1000 copies/ml	100 (8%)	896 (78%)	996 (43%)

MATERNAL VIRAL LOAD AND HIV TRANSMISSION IN PP COMPONENT

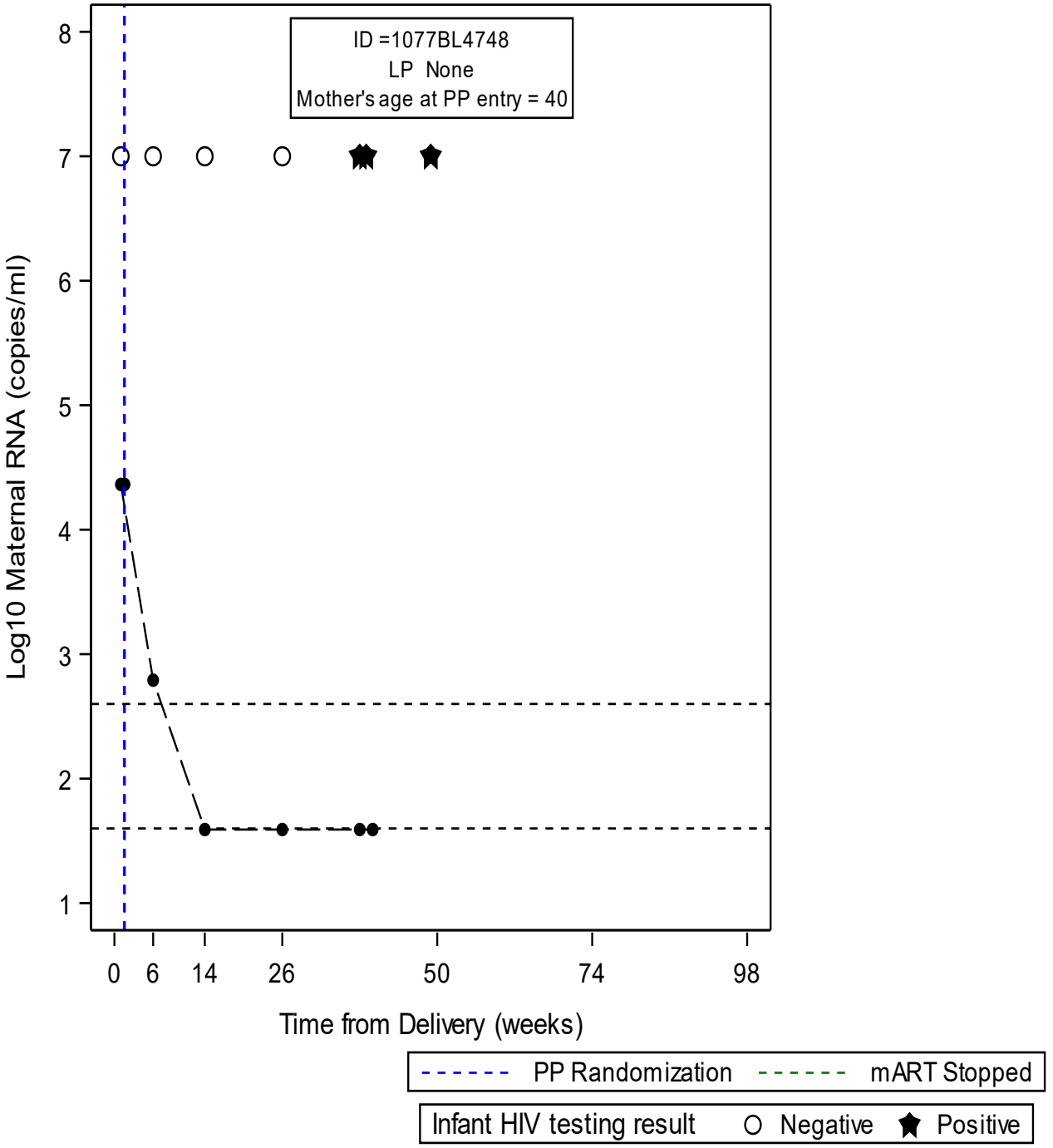
- Baseline maternal viral load was not significantly associated with infant transmission (p=0.11)
- Time-varying maternal viral load was significantly associated with infant HIV infection in the mART arm (hazard ratio (95% CI): 12.04 (2.54, 57.06)) but not in the iNVP arm (hazard ratio (95% CI): 1.04 (0.20 – 5.52))
- Of 7 postnatal infections in mART arm, 2 had maternal viral loads <40 copies/ml close to time of NAT detection in the infant





PP Randomization mART Stopped

Infant HIV testing result Negative Positive


ID =1077BL4748
LP None
Mother's age at PP entry = 40
Log10 Maternal RNA (copies/ml)
8
7
6
5
4
3
2
1
0
6
14
26
50
74
98
Time from Delivery (weeks)
PP Randomization
mART Stopped
Infant HIV testing result
Negative
Positive

DISCUSSION

- Among women receiving mART during breastfeeding, increased maternal viral load was associated with increased risk of infant HIV-1 infection.
- Analysis of viral load and ART adherence is still in progress, but we suspect there will be a correlation between viral load and medication adherence.
- iNVP should be considered in addition to mART in situations with documented poor maternal ART adherence