



# Achieving an undetectable viral load in Pregnancy. Are we starting HAART early enough?

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## Introduction

- Increasing trend to advocate vaginal delivery if the HIV VL is  $< 50\text{c/ml}$  on HAART
- BHIVA 2008 guidelines recommend starting Short Term Antiretroviral Therapy (START) at 20-28 weeks gestation
- Little evidence to support when to initiate START in order to achieve a vaginal birth

## Objectives

- To provide evidence for the optimum gestational age for starting START in order to achieve a VL of <50c/ml by delivery
- To characterise the determinants of the VL response in pregnancy
- To clarify the effect of baseline VL on the timing and success of START

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## Methods

- Retrospective cohort study
- 5 clinical sites
- All women initiating boosted PI, NNRTI or triple NRTI based HAART during pregnancy from 2000-2009
- Undetectable = <50copies/ml or less
- Cox's multivariate proportional hazard model

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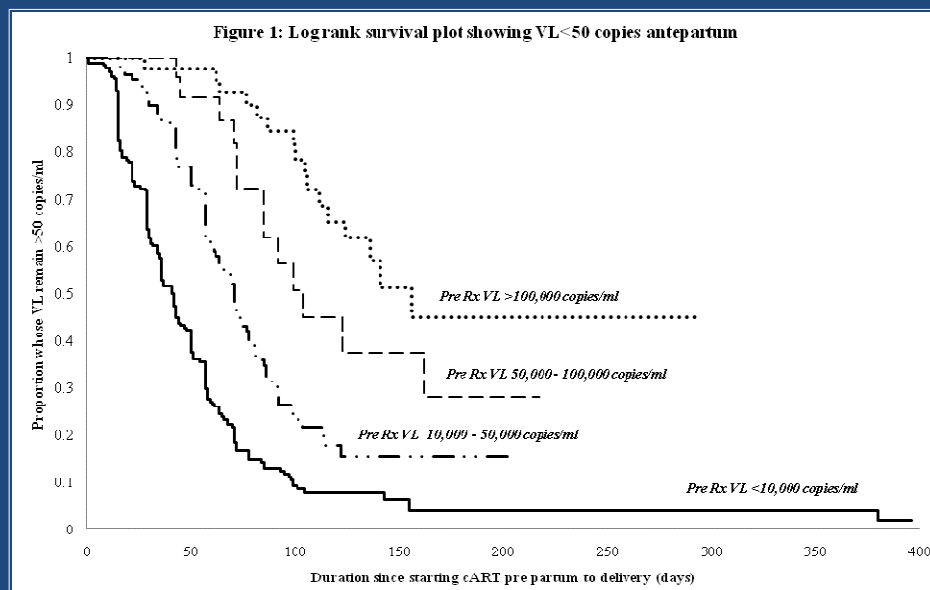
## Results: Baseline characteristics

- 439 pregnancies met inclusion criteria
- 378 had enough data for analysis

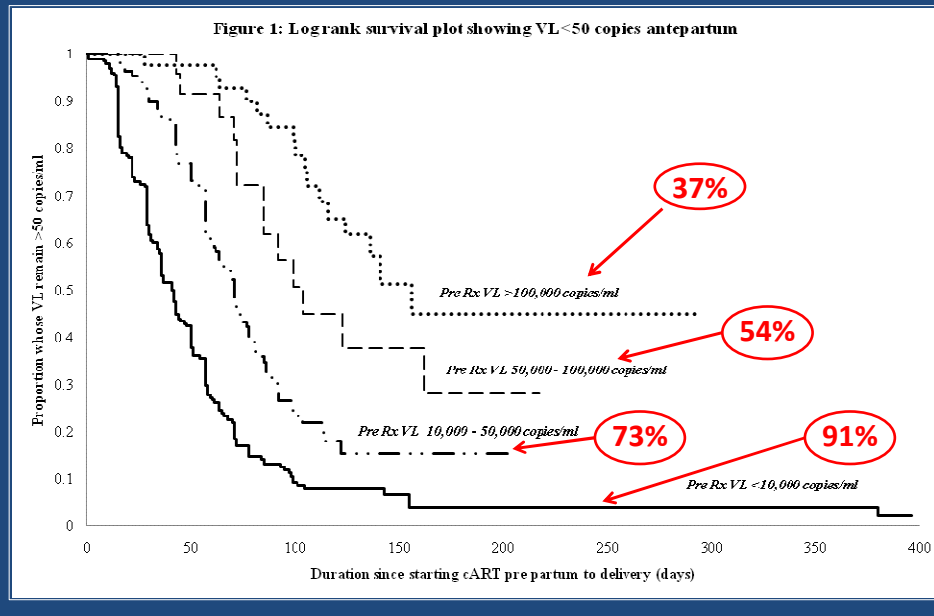
<b>Age</b>	Mean 29.9 years	Range 14.7-49.8
<b>Baseline CD4</b>	Median 330 cells/mm <sup>3</sup>	IQR 195-470 cells/mm <sup>3</sup>
<b>Baseline VL</b>	Median 8243 c/ml	IQR 2341-32640 c/ml
<b>Black African</b>	N=268	70.9%
<b>Hepatitis co-infection</b>	N=21	5.6%
<b>Injection drug use</b>	N=5	1.3%
<b>Previous HAART</b>	N=71	18.7%
<b>Regimen:</b>		
<b>Boosted PI</b>	N=246	65%
<b>NNRTI</b>	N= 129	34%
<b>Triple NRTI</b>	N=3	1%

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## Results: 77.2% overall undetectable at delivery



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## Results: Viral load interquartile range

PreRx VL copies/ml	% <50 by delivery	Multivariate Hazard Ratio*	95% CI for HR	P-value
<2341	93.6%	1.0	n/a	n/a
2341-8242	90.5%	0.86	0.62-1.18	0.344
8243-32640	78.7%	0.68	0.47-0.98	0.038
>32640	46.3%	0.36	0.19-0.5	<0.001

\* Multivariate model adjusted for ethnicity, IDU, age, CD4, VL, gestation at initiation, cART or START, ARV regimen, hepatitis status, previous HAART

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46.3% in top quartile achieved VL<50 by delivery vs 87% in lower 3 quartiles

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## Results: Gestation at initiation and viral load

Baseline VL (copies/ml)	Weeks gestation at initiation on HAART (quartiles)							
	<20.3		20.3-23.3		23.4-26.3		>26.3	
	% <50	HR	% <50	HR	% <50	HR	% <50	HR
<10000	97	1	93	0.86	94	1.18	82	1.43
10000-50000	82	0.61*	78	0.51*	64	0.39*	65	0.6*
50000-100000	72	0.26*	33	0.12*	66	0.53	0	n/a
>100000	55	0.2*	29	0.1*	33	0.12*	0	n/a

\*Statistically significant: p<0.05 or less

No effect in multivariate analysis of:

- Ethnicity
- Age
- IDU
- Hepatitis status
- Previous HAART or zidovudine monotherapy

Effect of CD4 count seen in univariate analysis :

- Not seen in multivariate analysis when adjusted for VL

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## Results: Choice of therapy

- Correlation with choice of therapy in multivariate analysis
  - NNRTI - 72% <50 at delivery (HR 0.7)
  - Boosted PI - 80% <50 at delivery (HR 1.0 )

p=0.016

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## Conclusions

- Overall 77% undetectable by delivery
- Determinants of achieving an HIV VL <50 by delivery are:
  - Baseline VL
  - Gestational age at initiation of therapy
  - Choice of therapy

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## Conclusions

- Women with VL >10,000-100,000 should have commenced HAART by 20 weeks
- Women with VL >100,000 should start without delay
- A VL of >32,000 may also require prompt HAART
- Women with VL <10,000 can defer to 26 weeks
  
- Current guideline recommendations for START may limit the chances of vaginal birth especially if baseline VL is high

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