Poster #795

Viraemic episodes occur frequently in postpartum South African women on ART

Landon Myer[1], Lorna Dunning[1], Nei Yuan Hsiao[2], Tamsin Phillips[1], Allison Zerbe[3], James McIntyre[4,1], Elaine Abrams[3]

(1) Division of Epidemiology & Biostatistics & Centre for Infectious Diseases Epidemiology & Research, University of Cape Town, South Africa, (2) Division of Virology, National Health Laboratory Services / University of Cape Town, (3) ICAP-Columbia University, New York, USA, (4) Anova Health Institute, Johannesburg, South Africa

Background

- Growing numbers of pregnant women starting antiretroviral therapy (ART) globally
- But significant concerns regarding ART adherence, especially postpartum (PP)
- Viral load (VL) monitoring for pregnant and PP women is promoted in international guidelines to identify nonadherence and treatment failure
- Few data on the frequency and magnitude of elevated VL in this group

Methods

- From April 2013-May 2014, we recruited a cohort of pregnant women initiating ART at a public sector primary care antenatal clinic in Cape Town
- Separate from routine HIV care, up to 9 VLs were conducted at regular intervals from pre-initiation through 12 months PP.
- VL taken after reaching viral suppression (VS, <50 copies/mL [c/mL]) were divided into **major (>1000c/mL)** and **minor (>50 and ≤1000c/mL) viraemic episodes (VE)**
- Mixed-effects models examined incidence rates (IR) and rate ratios (IRR) of VE over time by maternal characteristics
- Growth mixture models used to identify patterns of VL responses post-suppression

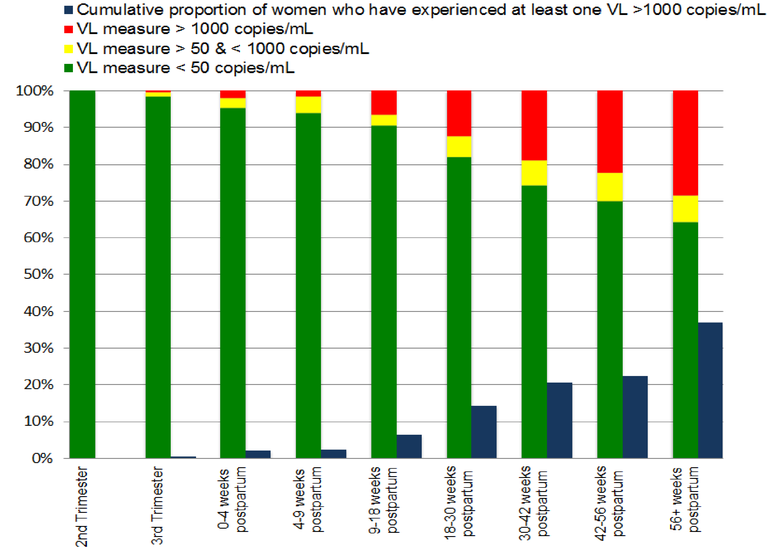
Table 1. *Description of women initiating ART in pregnancy & achieving viral suppression*

N(%) unless otherwise specified	**Total (%)**
Number	523 (100)
Median age (IQR)	28 (24-32)
Parity: Nulliparous	100 (19)
SES: Low	189 (36)
Med	143 (27)
High	189 (36)
Median gestation at ART initiation	**21 weeks**
<=14 weeks	82 (16)
>14-28 weeks	330 (63)
>28 weeks	111 (21)
Previous ARV	
None	374 (72)
NVP only	6 (1)
AZT+NVP	121 (23)
Triple-drug therapy	18 (3)
Median pre-ART CD4 cells/µL	**345**
<200 cells/µL	83 (16)
200-350 cells/µL	177 (34
350-500 cells/µL	116 (22)
>500 cells/µL	147 (28)
Median pre-ART VL log_{10} copies/mL	**3.99**
<3.0 log_{10} copies/mL	72 (14)
3.0-4.0 log_{10} copies/mL	194 (37)
4.0-5.0 log_{10} copies/mL	206 (39)
>5.0 log_{10} copies/mL	51 (10)
Median (IQR) time from ART initiation to VL suppression (days)	**91 (28-130)**
Median time of follow up from suppression.	**322 (141-410)**

Results

- In 607 women, 86% (n=523) achieved VS and are included (Table 1)
- After VS, 2636 VL tests were conducted over a total of 5092 woman-months (wm) of observation
- 707 wm antenatally, 4385 wm PP
- 56% and 39% of women were breastfeeding at 6 and 12 months PP, respectively
- 117 major and 56 minor VE were observed (IR, 2.3 and 1.1 per 100wm, respectively); 60% of major VE involved sustained viraemia>1000c/mL (≥2 consecutive measures)
- From initial VS to 12m PP, 70% of women maintained VS while 22% experienced at least 1 major VE; vast majority of VE (98%) occurred PP (Figure1).

Figure 1*. Results of 2636 serial viral load (VL) tests in 523 HIV-infected women initiating ART in pregnancy following viral suppression, by timing of testing antenatally or postpartum.*



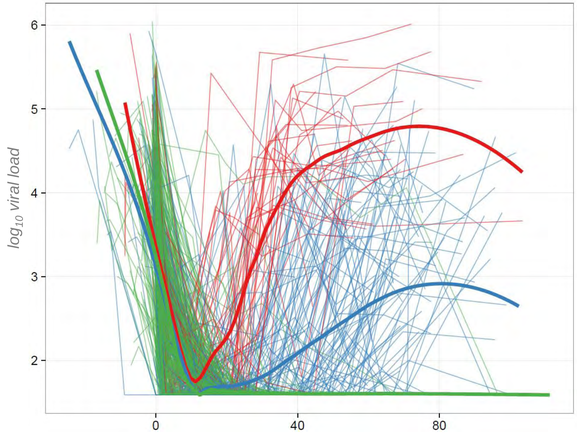
- Major VE after VS was independently associated with:
  - **younger age** (IRR, 0.90 per year; p<0.001)
  - **previous defaulting on ART** (IRR, 3.28 vs no previous ARVs; p=0.030)
  - **PP follow-up** (IRR, 7.85 vs antenatal sampling; p<0.001)
- Among PP women, **VE frequency increased with increasing duration of ART use** (IRR, 1.16 for each additional month after VS; p<0.001).
- In women with any viraemia post-suppression, peak viraemia (median, 3.79 log_{10} c/mL) was linearly related to pre-ART VL (p<0.001)
- Latent class analysis suggests three categories of responses post-suppression (Figure 2): consistent suppression (70% of all women); alternating viraemia and suppression (23%); and sustained viraemia after initial suppression (7%)

Figure 2. VL response profiles and latent classes of responses after initial VS in 523 HIV-infected women initiating ART in pregnancy

Green profiles represent women with consistent VS throughout follow-up

Blue profiles are women with alternating viraemia and VS ('blips')

Red profiles are women with sustained viraemia post-suppression



Discussion

- Viremia occurs frequently after VS in women initiating ART in pregnancy
- VL monitoring postpartum is likely to have substantial yield within ART programs
- Aetiology of viraemic episodes demonstrated here is unclear – and relative contributions of nonadherence versus viral resistance require investigation

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