



# Low attainment of virologic suppression among HIV-infected children on antiretroviral treatment 12 months after virologic failure in western Kenya



## University of Nairobi of Nairobi Annual HIV/AIDS Collaborative Meeting

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# **Background**

- **Long term Virologic suppression among Paediatrics  
Critical for optimal health outcomes among CLWHIV**
- **Low Virologic Suppression threatens our reaching the final 90 goal for children**
- **Access to Routine viral load testing in low and middle income countries still limited**

## Background cont'd

- Routine VL testing was introduced in November 2013 with support from CDC
- Kenyan guidelines recommend testing 6 months after initiation of ART and yearly thereafter
- Children with VL  $\geq 1000$  copies per milliliter (cpm) (unsuppressed) are recommended to have enhanced adherence counseling with follow-up VL in 3 months
- Those with VL  $< 1000$  cpm (suppressed) should have annual VL testing

# **Study Objective**

- **To determine outcomes of routine viral load testing in a cohort of children on ART in Western Kenya**

# Methods

- **Nested case control study**
- **1190 Participants selected from cohort of 1272 children (<15yrs) receiving ART at 5 MOH facilities in Western Kenya who had routine viral load test June 2014–May 2015**
- **A random sample of 98 cases and 201 controls for followed for 12 months**
- **Data manually abstracted from patient charts (demographic, clinical and caregiver characteristics)**
- **Data analyzed using Stata/SE Version 12**
- **Multivariate logistic regression – factors associated with failure to suppress**

# Results

- **66/98 (67%) unsuppressed and 135/201 (67%) suppressed children at baseline had a follow-up VL performed ( $p=0.98$ ).**
- **VL suppression was greater among those suppressed (62.7%) at baseline compared to those who had virologic failure (22.7%) ( $p<0.0001$ )**



## **Follow up of children initially unsuppressed (N=66)**

- **Only ART regimen was predictive of suppression in the cases**
- **Children on second line therapy (Lpv/r) were 10-fold more likely to suppress than those on NNRTI-based ART**
- **Clinical and sociodemographic variables not predictive (inc. OI, clinic adherence)**

**Table:**  
**Risk factors for failure to suppress on repeat testing among children on ART (n=66).**

Measure	Descriptive Summary			Crude <sup>†</sup>	
	Resuppressed (n=15)	Failed to resuppress (n=51)	p-value	OR (95% CI)	p-value
Age, median (IQR) <sup>*‡</sup>	9 (5,11)	8 (6,10)	0.66	0.97 (0.82-1.15)	0.74
Gender, n (%) <sup>¶</sup>					
Female	6 (40.0)	16 (31.4)		Ref	
Male	9 (60.0)	35 (68.6)		1.46 (0.44-4.80)	0.53
WHO Stage <sup>‡‡</sup>					
I/II	10 (71.4)	37 (78.7)		Ref	
III/IV	4 (28.6)	10 (21.3)		0.68 (0.18-2.62)	0.57
CD4, median (IQR) <sup>‡</sup>	811 (369, 1058)	513 (395, 1002)	0.36	0.95 (0.85-1.06)	0.35
Time on ART (years), n (%) <sup>*‡</sup>			0.16		
1-2	2 (13.3)	9 (17.7)		Ref	
3-5	10 (66.7)	20 (39.2)		0.44 (0.08-2.46)	0.35
>5	3 (20.0)	22 (43.1)		1.63 (0.23-11.46)	0.62
Time since baseline VL (months), n (%) <sup>*‡</sup>			0.67		
≤ 6	1 (6.7)	8 (15.7)		Ref	
7-12	7 (46.7)	21 (41.2)		0.38 (0.04-3.6)	0.39
>1	7 (46.7)	22 (43.1)		0.39 (0.04-3.7)	0.42



**Table cont'd: Risk factors for failure to suppress on repeat testing among children on ART (n=66).**

Measure	Descriptive Summary			Crude <sup>†</sup>		Adjusted <sup>†</sup>	
	Resuppressed (n=15)	Failed to resuppress (n=51)	p-value	OR (95% CI)	p-value	aOR (95% CI) (n=65)	p-value
<b>ART Regimen, n (%)<sup>*‡</sup></b>			<b>&lt;0.001</b>				
<b>NNRTI</b>	4 (26.7)	40 (78.4)		Ref		Ref	
<b>LVP/r _1stLine</b>	2 (13.3)	5 (9.8)		0.25 (0.04-1.73)	0.16	0.5 (0.1-4.1)	0.52
<b>LVP/r _2ndLine</b>	9 (60)	6 (11.8)		0.07 (0.02-0.29)	<0.001	0.1 (0.0-0.4)	0.003
<b>Regimen change**</b>			<b>0.19</b>				
<b>No</b>	11 (73.3)	46 (90.2)		Ref			
<b>Yes</b>	4 (26.7)	5 (9.8)		0.30 (0.07-1.30)	0.11		
<b>Missed clinic visit, n (%)<sup>‡¶</sup></b>			<b>0.21</b>				
<b>No</b>	6 (42.9)	13 (25.5)		Ref		Ref	
<b>Yes</b>	8 (57.1)	38 (74.5)		2.19 (0.64-7.51)	0.21	4.0 (0.8-25.5)	0.10
<b>History of OIs, n (%)<sup>‡</sup></b>			<b>0.03</b>				
<b>No</b>	12 (85.7)	27 (52.9)		Ref		Ref	
<b>Yes</b>	2 (14.3)	24 (47.1)		5.33 (1.08-26.28)	0.04	5.3 (0.8-36.9)	0.09

# Discussion

- Overall, 70% of those who had a viral load at follow up were suppressed
- 77% of the children who were initially unsuppressed remained unsuppressed
- An effective second line ART regimen is noted to be important in achieving viral resuppression

# **Limitation**

- **Risk factors examined were limited to information within patient files**

# **Conclusion**

- **Outcomes for children with treatment failure are currently suboptimal**
- **A more effective Second line ART Regimen increases a child's likelihood of suppressing hence possibly better outcomes.**
- **Tailored approach to management of children with treatment failure is needed**

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