Comparison of Models of Care to Promote Postpartum Viral Suppression in South African Women

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BACKGROUND

- Maintaining viral suppression (VS) in postpartum women on antiretroviral therapy (ART) is a major concern.
- There is significant interest in both integrated models of service delivery for maternal and child health (MCH), and in differentiated service delivery models (DSD) postpartum
- There are few rigorous data comparing these intervention strategies.

METHODS

- We conducted a secondary analysis of individual patient trial data of postpartum women living with HIV (WLH) from Cape Town to compare head-to-head (i) an integrated MCH model with maternal and childcare co-located and co-scheduled (MCHART; June 2013 – Dec 2014 ;NCT01933477) versus (ii) a DSD model with mothers referred to community based "adherence clubs" for maternal ART dispensing separate to childcare (PACART; Jan 2016 – Nov 2019; NCT03200054).

Table 1 – Characteristics of women enrolled in PACART and Phase III MCHART

Characteristic	PACART (n= 411)	Phase III MCHART (n = 471)
Mean age (SD), years	29(5)	28(5)
Age groups		
18-25 years	84(20%)	137(29%)
25-30 years	155(38%)	154(33%)
30-35 years	121(29%)	124(26%)
> 35 years	50(12%)	56(12%)
Missing age	1(0%)	0(0%)
IsiXhosa	386(94%)	456(97%)
Nulliparous	103(25%)	87(18%)
Completed Secondary/any Tertiary Education	130(32%)	117(25%)
Currently Employed	123(30%)	184(39%)
Married/Cohabiting	173(42%)	193(41%)
Newly diagnosed HIV+ in this pregnancy	249(61%)	268(57%)
Previous ART	50(12%)	19(4%)
Previous TB	27(7%)	52(11%)
Delivery		
In Primary care	157(38%)	186(39%)
Hospital care	253(62%)	271(58%)
Born out of facility	1(0%)	14(3%)
Median duration on ART [IQR], weeks	23[18,29]	18[12,23]
Missed ART dose reported in previous 30 days	84(20%)	64(14%)
Median days postpartum [IQR]	10[6,21]	5[4,7]

AC: Adherence Club; MCH: maternal-and-child Health; ART: antiretroviral therapy SD: standard deviation; IQR: interquartile range

A Postpartum model of integrating ART into Maternal and Child Health Services (MCH) achieved better levels of viral suppression than a Differentiated Service Delivery (DSD) model

- Data for both interventions came from randomized controlled trials (RCTs) conducted in the same primary care community health service comparing each intervention to the local standard of care (SOC, referral to general adult ART services with children attending separate well child visits).
- Both trials measured demographic and behavioural covariates using the same tools; study viral load testing was conducted by trial personnel separate to routine antenatal ART.
- ART regimen for all participants was tenofovir+lamivudine+efavirenz.
- Analyses used frequentist network methods via generalized linear mixed models to compare viral suppression (VS, <50 copies/ml) under each model of care at 6m and 12m postpartum using the SOC as the reference; results are reported as odds ratios (OR) with 95% confidence interval (CI).

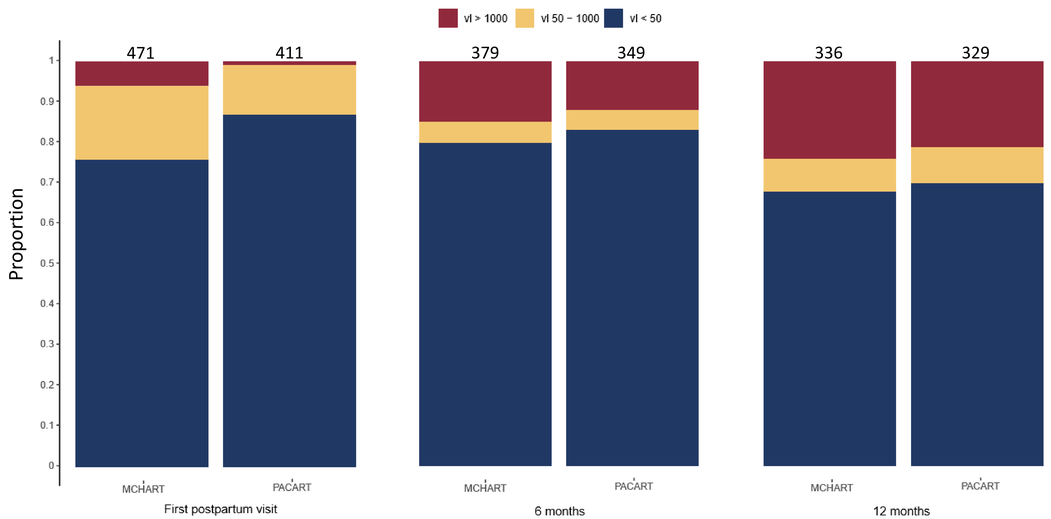


Figure 1 – Distribution of viral suppression among participants enrolled in PACART and phase III MCHART

RESULTS

- A total of 882 women (mean age: 29y; median time postpartum at enrolment: 1w [IQR, 0.6-1.9]) were included: 471 in MCHART and 411 in PACART.
- Follow-up through 12m was >85% in both trials; in women retained, VS was achieved by 299/375(80%) and 289/349(83%) women at 6m postpartum, and by 229/336(68%) and 231/329(70%) women at 12m postpartum in MCHART and PACART, respectively.
- VS in integrated MCH at 6m and 12m was higher than in the DSD model (6m: 88% vs 87%; 12m: 80% vs 74%); VS under the SOC was higher in PACART than MCHART (6m: 79% vs 71%; 12m: 67% vs 55%, both p<0.05).
- In network comparisons, integrated MCH in MCHART was associated with significantly higher levels of VS compared to the DSD model in PACART at 12m postpartum (aOR 2.48; 95%CI 1.25-4.95; Table 2); results were consistent at VL<1000 copies/mL and robust across a range of sensitivity analyses.

Table 2 – Crude and adjusted odds ratios for viral suppression between ART models of care generated from IPD NMA one-step generalized mixed effects models (GLMMs) at 6 and 12 months postpartum

Model	Treatment	6 months (n = 720)	12 months (n = 657)
		OR (95% CI)	OR (95% CI)
Unadjusted	MCH vs SOC (direct)	3.27* (1.90 – 5.62)	3.30* (2.03 – 5.35)
	AC vs SOC (direct)	1.73* (1.00 – 3.01)	1.43 (0.89 – 2.29)
	MCH vs AC (indirect)	1.90 (0.88 – 4.07)	2.31 (1.18 – 4.55)
	MCH vs SOC (direct)	3.17* (1.85 – 5.45)	3.33* (2.02 – 5.49)
Adjusted**	AC vs SOC (direct)	1.83* (1.01 – 3.31)	1.33 (0.81 – 2.19)
	MCH vs AC (indirect)	1.73 (0.78 – 3.84)	2.48 (1.25 – 4.95)

OR: Odds Ratio; MCH: Integrated Maternal and Child Health ART model of care; AC: Adherence Club; SOC: Standard of Care
*p < 0.05
**Models were adjusted for age, parity, education, employment, socioeconomic score, marital status, HIV diagnosis status, TB history, and duration on ART at outcome visit

CONCLUSIONS

- These novel data comparing two postpartum interventions in the same community suggest that integration of ART and postpartum MCH services achieved higher levels of VS compared to referral of mothers to DSD models of care in this setting.

ADDITIONAL KEY INFORMATION

New Investigator Award for CROI 2024

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