Differentiated Service Delivery Programme Impact on Clinical Outcomes Among Adolescents With HIV

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BACKGROUND

- In sub-Saharan Africa, clinical outcomes among adolescents with HIV (AWH) on antiretroviral therapy (ART) remain sub-optimal.
- Differentiated service delivery (DSD) models for ART may facilitate better outcomes, but evidence on their effectiveness among AWH is lacking.
- DSD models were offered to AWH in KwaZulu-Natal (KZN), South Africa, from mid 2020

METHODS

- **Design:** Retrospective cohort of adolescents aged 10-18 years, followed from June 2020 to September 2022
- **Data:** routine de-identified data from 123 public healthcare facilities in KZN from June 2020 to September 2023
- **Inclusion Criteria (at study start in June 2020):**
  - Suppressed viral load (<50 c/mL) taken in the last ≤ 9 months
  - On first-line ART for at least 6 months
  - No current episode of TB, pregnancy
- **Composite Outcome:**
  - Loss to care (i.e., > 365 days late for visit) or viraemia (≥50 c/mL)
- **Exposure / "Treatment":**
  - Referral into DSD with ART collection through community-based external pick-up points
- **Causal Contrast:**
  - Intention-to-treat effect of DSD participation
  - Risk difference in 24-month probability of outcome
- **Statistical Analysis:**
  - Marginal structural models using pooled logistic regression and inverse probability of treatment weighting
  - 95% confidence intervals (CIs) through bootstrapping

RESULTS (I)

- From the 6393 AWH on ART, 2247 were found eligible for inclusion in the cohort in June 2020 (Fig. 1)
  - Median (IQR) age was 15 (13-17) years; 60% were female
  - Median (IQR) time on ART was 5 (2-9) years

Exposure to differentiated service delivery programmes slightly lowered viraemia/lost-to-care rates among adolescents with HIV. However, overall clinical outcomes were poor.

RESULTS (II)

- 28% (638) were enrolled in DSD during follow-up, a median 10 months after study entry (Fig. 2)
  - Most received a 6 month script, although some received 12-month prescriptions
  - Median proportion of time spent in DSD following first referral into DSD was 90%
- 94% of AWH had viral loads measured during follow-up, and the median number of viral loads tests done was 2 for both those referred to DSD and those not referred during follow-up.

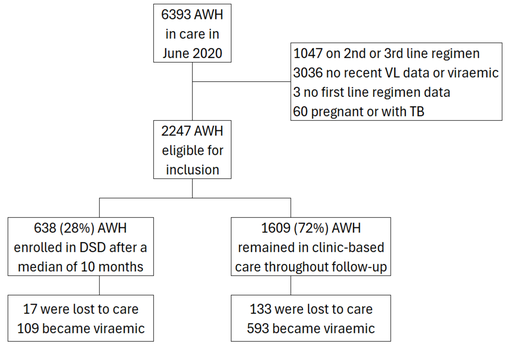


Figure 1:
AWH included in the analysis, DSD referral proportions and study outcome frequencies



Figure 2:
Swimmer's plot of individual (y-axis) follow-up time until outcome by visit location (N=2247)

RESULTS (III)

- 31% of AWH became viraemic during follow-up. Median (IQR) viral load at viral rebound was 475 (150-4040) c/mL.
- Crude incidence of loss-to-care / viraemia were similar during periods of DSD exposure compared to during periods of clinic-based care (Table 1).
- However, marginal structural model results suggested DSD exposure lowers risk of loss and virologic rebound; DSD exposure was estimated to increase 24-month probability of retention without detected viraemia from 65% (95% CI: 64%-67%) to 72% (95% CI: 69%-76%).

Table 1: Outcomes of loss-to-care / viraemia by DSD exposure

	person-years (py)	crude incidence (95% CI) of loss-to-care per 100 py*	crude incidence (95% CI) of viraemia per 100 py*	crude incidence (95% CI) of composite outcome per 100 py*	24-month survival** probability (95% CI) based on IPTW MSM
not in DSD	3306	4.02 (3.37-4.77)	17.93 (16.52-19.44)	20.38 (18.87-21.98)	65% (64%-67%)
in DSD	576	2.95 (1.72-4.72)	18.92 (15.53-22.82)	21.00 (17.43-25.09)	72% (69%-76%)

*AWH referred into DSD contributed to the "not in DSD" group until they were referred for DSD ;
**retention without detected viraemia

CONCLUSIONS

Exposure to DSD programmes was associated with lower viraemia/lost-to-care rates, but overall clinical outcomes of AWH remain concerning.

ADDITIONAL INFORMATION

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Abbreviations: IQR=interquartile range; MSM=marginal structural models; IPTW=inverse probability of treatment weighting