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Effectiveness of Differentiated Service Delivery ART Care Among Priority Populations in Sub-Saharan Africa: Evidence from a Systematic Review and Meta-analysis

Christine Muhumuza, Mahmood Ahmad, Ruchius Philbert & Tamale Bridget

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KEY WORDS Differentiated service delivery; ART care; HIV treatment; viral suppression; retention in care; Uganda; sub-Saharan Africa; systematic review; meta-analysis.

Abstract

Effectiveness of Differentiated Service Delivery ART Care Among Priority Populations in Sub-Saharan Africa: Evidence from a Systematic Review and Meta-analysis BACKGROUND: Differentiated service delivery (DSD) for antiretroviral therapy (ART) is a patient-centred approach designed to improve HIV treatment access, retention, adherence, and viral suppression. In sub-Saharan Africa, including Uganda, DSD models such as community ART groups, fast-track refills, multi-month dispensing, and community-based ART delivery are increasingly used to reduce clinic burden and improve outcomes among people living with HIV. AIM: To assess the effectiveness of DSD ART care compared with standard facility-based ART care among priority populations in sub-Saharan Africa.

METHODS: Evidence from multiple trials and implementation studies was systematically synthesized using logit transformations and random-effects modelling. Statistical heterogeneity was assessed using the I^2 statistic. RESULTS: The pooled estimate demonstrated high effectiveness of DSD ART care across included studies, with a 95% confidence interval of 0.82 to 0.95.

Moderate heterogeneity was observed, suggesting variation across study populations, DSD models, and implementation contexts. Overall, DSD ART care was associated with improved retention in care, reduced clinic congestion, greater patient convenience, and high levels of viral suppression. Community-based and patient-centred models appeared particularly beneficial for stable clients, as they reduced transport burden, waiting time, and frequency of clinic visits.

Evidence from Uganda and other sub-Saharan African settings also suggests that DSD models can achieve outcomes comparable to or better than standard care, although implementation quality, health worker capacity, supply chains, and local infrastructure remain important determinants of success. CONCLUSION: DSD ART care is an effective strategy for improving HIV treatment delivery in sub-Saharan Africa. However, scale-up should be context-specific and supported by strong health systems, reliable drug supply, monitoring systems, and patient-centred implementation approaches.

KEYWORDS: Differentiated service delivery; ART care; HIV treatment; viral suppression; retention in care; Uganda; sub-Saharan Africa; systematic review; meta-analysis. References Long L, Kuchukhidze S,

Pascoe S, Nichols BE, Fox MP, Cele R, et al. Retention in care and viral suppression in differentiated service delivery models for HIV treatment delivery in sub-Saharan Africa: a rapid systematic review.

J Int AIDS Soc. 2020;23:e25640. Byonanebye DM, Kwarisiima D, Owaraganise A, et al. High viral suppression and low attrition in healthy HIV-infected individuals receiving streamlined ART delivery in rural Uganda.

BMC Infect Dis. 2020. Guthrie T, Muheki C, Greener R, Ndyomugyenyi R, Kiwanuka J, Makumbi F, et al. Similar costs and outcomes for differentiated service delivery models for HIV treatment in Uganda.

J Int AIDS Soc. 2022.

Computed figures from the companion data repository

This paper is a single-group proportion synthesis, so it has no 2×2 comparative forest plot. Its companion data repository (github.com/mahmood726-cyber/dsd-art-ssa) openly publishes the per-study data as **data/raw_studies.csv** (5 studies, 6,500 participants), and the figures below are rendered directly from that dataset: per-study proportions come straight from the file, and the pooled estimate is a REML random-effects synthesis of logit-transformed proportions with a Knapp–Hartung small-sample variance correction.

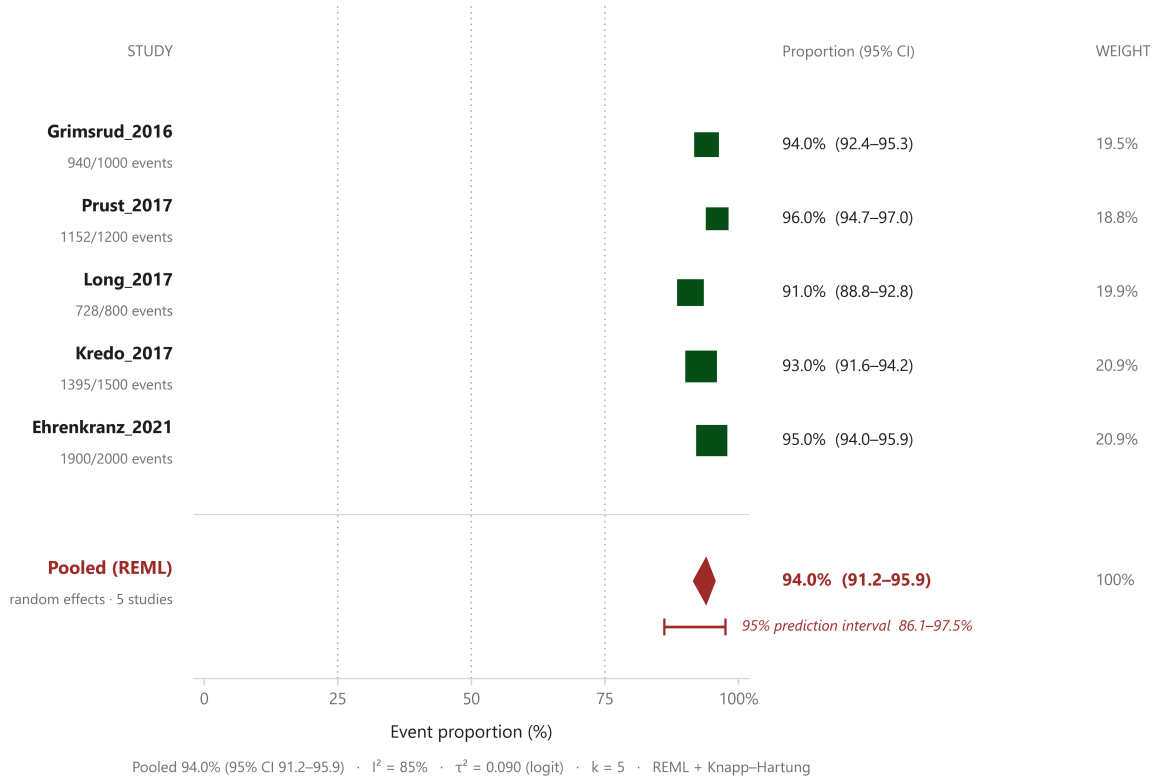

Figure 1. Proportion forest plot — differentiated ART service delivery among priority populations in sub-Saharan Africa. Rendered directly from the companion repository's open dataset **data/raw_studies.csv** (5 studies, 6,500 participants). Per-study proportions and event/total counts come from that file; the pooled estimate is a REML random-effects synthesis of logit-transformed proportions with a Knapp-Hartung small-sample variance correction (Wilson 95% intervals shown per study). Pooled proportion 94.0% (95% CI 91.2–95.9); $I^2 = 85\%$, $\tau^2 = 0.090$ on the logit scale.

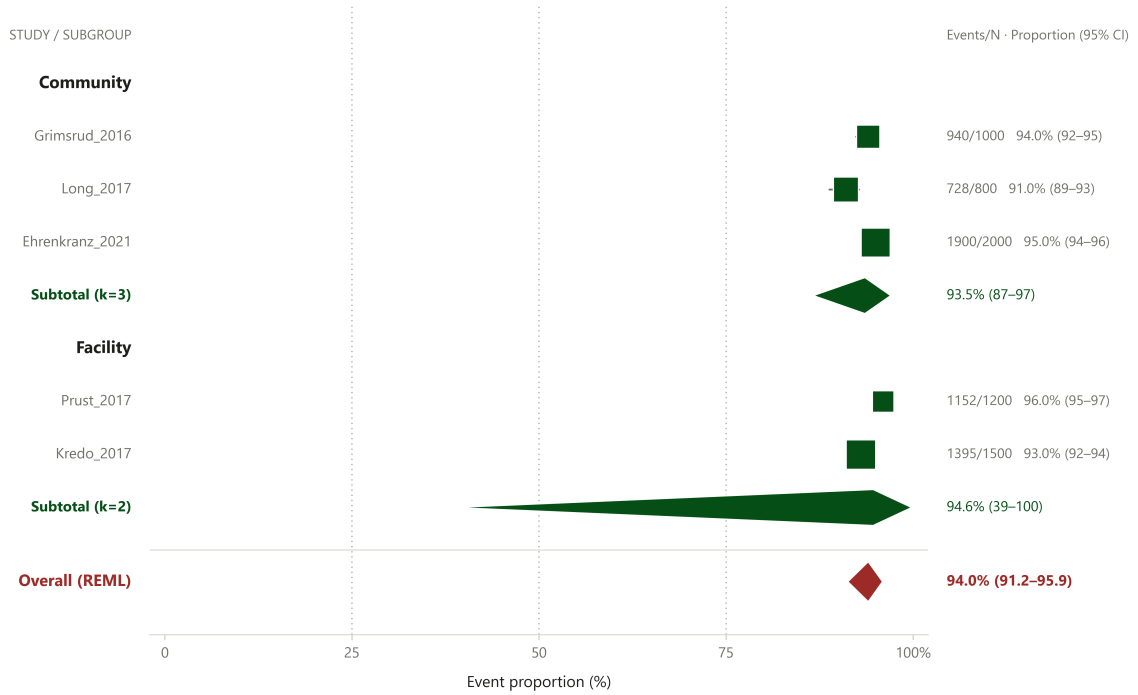

Figure 2. Subgroup synthesis by delivery model — differentiated ART service delivery among priority populations in sub-Saharan Africa. Studies grouped by the **intervention_type** column of the same data/raw_studies.csv; each navy diamond is the REML subtotal for that delivery model and the red diamond is the overall pooled proportion.

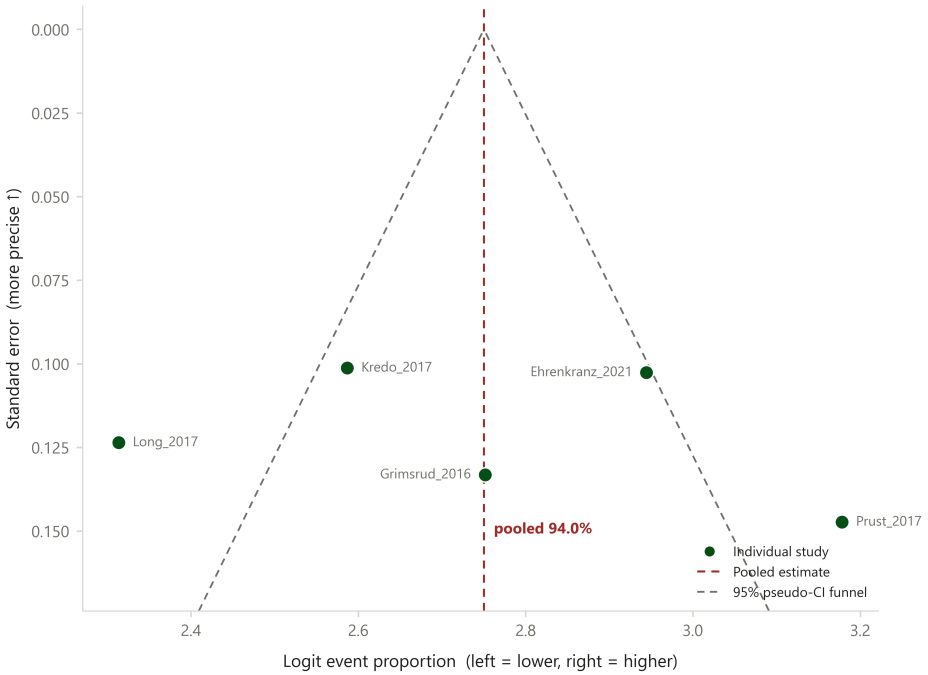

Figure 3. Funnel plot (logit proportion vs standard error) — differentiated ART service delivery among priority populations in sub-Saharan Africa. Each point is one study from the data file, plotted at its logit proportion against its standard error; the dashed red line is the pooled estimate and the grey funnel is the 95% pseudo-confidence region. A small-study / asymmetry visual check.

HOW TO CITE

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Reproducibility & data provenance. Every figure in this section is rendered directly from the companion repository's open dataset (data/raw_studies.csv, dsd-art-ssa). Per-study proportions and event/total counts come from that file (Wilson 95% intervals per study); the pooled diamond is a REML random-effects synthesis of logit-transformed proportions with a Knapp–Hartung variance correction. Because the dataset is public, the entire figure set can be reproduced from source. The article text, authors, abstract, issue and licence follow the journal's published record.

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