DO ART (DELIVERY OPTIMIZATION OF ANTIRETROVIRAL THERAPY)

Evidence-Based Structural Intervention

INTERVENTION DESCRIPTION

Goals of Intervention

- Reduce barriers to HIV care
- Improve antiretroviral therapy (ART) initiation
- Improve viral suppression

Intended Population

- Persons with HIV (PWH)

Brief Description

Delivery Optimization of Antiretroviral Therapy (DO ART) is a community-level antiretroviral therapy (ART) intervention for people with HIV (PWH) in South Africa and Uganda to increase viral suppression. Two interventions were evaluated against standard clinic ART delivery: (1) community-based ART initiation with quarterly monitoring and ART refills through mobile vans and (2) a hybrid approach that consisted of ART initiation at a clinic site followed by mobile van monitoring and refills. Participants in the community-based ART group receive same-day ART initiation including standardized counseling and the national HIV program's regimen of ART. Seven days after ART initiation, participants receive a call asking about symptoms, side effects, and adverse events. Participants return to a mobile van parked at a known location and scheduled time for five in-person follow-up visits at 1, 3, 6, 9 and 12 months for ART resupply, clinical monitoring, counseling, and ascertainment of adverse events and social harms. Participants receive an automated text message reminder the week before their visit is due to schedule appointments for their mobile van visits. Participants can reschedule visits by text message, request additional ART if traveling, and nominate someone else to collect their medication. Participants who missed appointments are contacted and their visit is rescheduled. The mobile phone service is regularly available on evenings and weekends and an application is used for standardized monitoring. For HIV and ART monitoring, participants complete a clinical questionnaire to screen for symptoms of ART adverse events, TB, and other common opportunistic infections. HIV plasma viral load is assessed for treatment success at month 6. Participants also receive individualized adherence support. Participants who require additional clinical services are referred to care and followed until they are linked to a clinic. Participants in the hybrid group are counseled to notify the study team once they initiate ART at the clinic to facilitate transition to the community for refills and monitoring. Until notification of ART initiation, they receive quarterly phone calls to inquire whether they have initiated ART and record adverse events. Once participants initiate ART at the clinic, they follow the identical procedures described above for the community-based ART delivery group.

Theoretical Basis
- None reported

Intervention Duration
- Ongoing

Intervention Settings
- Mobile vans

Deliverers
- Trained nurses
- Supervised lay counselors

Delivery Methods
- Counseling
- Individualized adherence support
- Mobile phone
- Mobile van clinic

Structural Components
- Access – HIV medical care
  - Increased access to HIV medical care for individuals with detectable HIV viral load through community-based ART initiation, monitoring, and resupply
- Capacity Building – Provider/supervisor training
  - Program staff received standardized national training in nurse-led HIV testing and counseling; clinical evaluation for ART initiation; ART initiation, monitoring, and adverse effects; and national algorithms for HIV care
- Physical Structure – Services provided in a non-traditional setting
  - Established community-based ART services through mobile vans in the community
- Policy/Procedure – Institutional policy/procedure
  - Staff used a mobile phone application for standardized monitoring that included counseling guidelines and required all steps to be completed before the encounter was closed

INTERVENTION PACKAGE INFORMATION

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EVALUATION STUDY AND RESULTS

Study Location
The original evaluation study was conducted in South Africa and Uganda between May 2016 and March 2019.

Key Intervention Effects
- Improved viral suppression

Recruitment Settings
HIV testing at community locations and at home, as well as referrals from clinics

Eligibility Criteria
Persons with HIV were eligible if able to provide informed consent, aged 18 years or older, residents of participating communities, clinically stable (i.e., CD4 cell count >100 cells per µL, WHO HIV stage 1–3, not pregnant, normal renal function, and no symptoms on a standardized symptom screen for active tuberculosis), and not taking ART at the time of assessment or in the past 3 months. One year after study activation, the inclusion criterion of detectable viral load was added because of higher-than-expected proportion of participants with suppressed viral load at baseline, probably reflecting pre-existing diagnosis of HIV and undisclosed ART use.

Study Sample
The overall baseline study sample of n = 1,315 is characterized by the following:
- 51% male persons, 49% female persons
- 37% persons 18-24 years old, 55% persons 30-49 years old, 8% persons ≥ 50 years old
- 23% persons reported condom use at last sex
- 89% persons were WHO clinical stage 1, 9% persons were WHO clinical stage 2, 2% persons were WHO clinical stage 3
- 66% persons had a CD4 cell count of 350 cells per µl or more, 22% persons had a dried blood spot viral load of 20-999 copies per mL, 40% persons had a dried blood spot viral load of 1000-9999 copies per mL, 39% persons had a dried blood spot viral load of ≥ 10,000 copies per mL

Note: Percentages may not add up to 100% due to rounding.

Assignment Method
Participants (n = 1,531) were randomly assigned to 1 of 3 study arms: community-based ART(n = 508), hybrid approach (n = 509), or standard clinic-based ART (n = 514).

Comparison
Participants in the standard clinic ART delivery group were referred to established local ART clinics for ART initiation, monitoring, and refills, and received quarterly telephone calls to document ART initiation and adverse events.

Relevant Outcomes Measured
- Viral suppression was measured as < 20 copies per mL at 12 months.

Participant Retention
- 82% persons completed each visit (months 1, 3, 6 and 9) in the community-based ART delivery group

Participant retention is not a criterion for the Structural Intervention (SI) chapter. The PRS Project does not evaluate this information.

Significant Findings on Relevant Outcomes
- Excluding those who were virally suppressed at baseline, a higher percentage of community-based ART group participants in South Africa and Uganda were virally suppressed than control (clinic) group participants at 12 months post-intervention (74% vs 63%, Risk Ratio (RR) = 1.18, 95% Confidence Interval (CI): 1.07 – 1.29). *
    - Among men only, a higher percentage of community-based ART participants were virally suppressed compared to the clinic group: (73% vs. 54%, RR = 1.34, 95% CI: 1.16 – 1.55). *

- Among men, a higher percentage of the hybrid approach participants were virally suppressed compared to the clinic group (66% vs. 54%, RR = 1.19, 95% CI:1.02 – 1.40; p = 0.026). *
- In South Africa, a significantly higher percentage of men in the community-based ART were virally suppressed compared to men in the clinic group at 12 months post-intervention (72% vs. 65%, RR = 1.39, 95% CI: 1.06 – 1.25).
- Among all participants including those who were virally suppressed at baseline (intent-to-treat analysis), a higher percentage of participants in the community-based ART were virally suppressed compared to the clinic group (75% vs. 65%, RR = 1.15, 95% CI: 1.06 – 1.25).

*Adjusted for gender, age younger than 30 years, baseline CD4 cell count (WHO category), and study site.

Considerations

Additional significant positive findings on non-relevant outcomes

- None reported

Non-significant findings on relevant outcomes

- None reported
- There was no significant difference in the percentage of participants who were virally suppressed between the community group and clinic group for age
- There were no significant differences in the percentage of participants who were virally suppressed between the hybrid group and the clinic group for study participants overall, women overall, age, and women in South Africa

Negative findings

- None reported

Other related findings

- Post-intervention, viral suppression was similar for men (73%) and women (75%) in the community-based ART group, compared with men (54%) and women (73%) in the clinic group
- In a pre-planned sensitivity analysis, using the WHO viral suppression threshold of less than 1000 copies per mL, community-based ART remained superior overall

Implementation research-related findings

- None reported

Process/study execution findings

- In Uganda, the annual cost per person virally suppressed was $275 USD in the community-based group and $214 USD in the clinic group (using a referenced annual cost of $291 USD per person for streamlined clinic based ART).
- In South Africa, the annual cost per person virally suppressed was less in the community-based group ($325 USD – $390 USD) than the clinic group ($402 USD – $422 USD). (Using a referenced annual cost of $249 USD per person for clinic-based ART).

Adverse events

- Serious adverse events occurred in 20 participants: 8 in the clinic group, 5 in the hybrid group, and 7 in the community group.
    - 14 of 20 of the serious adverse events (7 in the clinic group, 1 in the hybrid group, and 6 in the community group) were considered related or possibly related to HIV

- Excluding serious adverse events, 13 participants had a severe adverse event in the study:
  - 2 in the clinic group, 4 in the hybrid group, and 7 in the community group, of which 9 were due to high blood pressure, which was measured routinely in the community groups and once in the clinic group
- Excluding the high blood pressure readings, of the 4 participants with other severe adverse events:
  - 1 occurred in the clinic group, 2 in the hybrid group, and 1 in the community group
- Reported social harms related to trial participation occurred in 2 participants
  - Both were in the community group

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REFERENCES AND CONTACT INFORMATION

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