

# CASCADE

Evidence-Based for Engagement in HIV Care

Evidence-Based for Viral Suppression

Evidence-Based Structural Intervention

## INTERVENTION DESCRIPTION

### Goal of Intervention

- Improve engagement in HIV care
- Improve viral suppression

### Target Population

- Adults who tested positive for HIV and who are antiretroviral treatment (ART)-naïve

### Brief Description

The *CASCADE* intervention offers same-day ART initiation to individuals who tested HIV positive and are ART-naïve during a home-based testing campaign (HBT). During the home visit after HIV testing, participants receive point-of-care laboratory blood work, results of their lab work, and pre-ART counseling with a leaflet summarizing the importance of ART adherence. After counseling, study nurses offer ART to participants. Participants who decide to initiate ART receive a 30-day supply of ART, and instructions to visit their health facility within 2 to 4 weeks for their first clinic visit and ART refill. For follow-up visits, including ART refills, participants receive usual care for ART patients (per national and WHO guidelines), with exception of longer intervals between visits at 1.5, 3, 6, 9, and 12 months after ART initiation.

### Theoretical Basis

- None reported

### Intervention Duration

- One home-based session with follow-up visits to the nearest health facility at 2-4 weeks and 1.5, 3, 6, 9, and 12 months after ART initiation

### Intervention Settings

- Missionary hospital
- Public hospital
- Public nurse-led health centers
- Residential homes

### Deliverer

- Lay counselors
- Study nurse
- Team leader

### Delivery Methods

- Residential home visits

**Structural Components**

- Access
  - Provided same-day ART initiation, a 30-day supply of ART, and ART refills
  - Provided follow-up HIV care appointment at nearest health facility
- Physical Structure – Service in a non-traditional setting
  - Provided same-day ART initiation, a 30-day supply of ART, and lab work results in the homes of participants
- Policy/Procedure – Institutional policy/procedure
  - Implemented same-day ART initiation for patients who tested HIV positive

**INTERVENTION PACKAGE INFORMATION**

**An intervention package is not available at this time.** Please contact **Niklaus D. Labhardt**, Division of Infectious Diseases and Hospital Epidemiology, University Hospital Basel, Basel, Switzerland.

**Email:** [n.labhardt@unibas.ch](mailto:n.labhardt@unibas.ch) for details on intervention materials.

**EVALUATION STUDY AND RESULTS****Study Location Information**

The original evaluation study was conducted in rural Lesotho, South Africa between 2016 and 2017.

**Key Intervention Effects**

- Improved engagement in HIV care
- Improved viral suppression

**Recruitment Settings**

- Households participating in home-based testing (HBT) campaign in Lesotho

**Eligibility Criteria**

Participants were eligible if they were adults ( $\geq 18$  years old) who tested HIV positive and were ART naïve.

**Study Sample**

The baseline study sample of 274 participants (137 Same-day ART and 137 Usual care) is characterized by the following:

- 66% female, 34% male
- 65% married or living with partner
- Median age of 39 years
- 77% without regular income
- 44% had CD4 cell count of  $<350$  cells/ $\mu$ L
- 74% newly diagnosed with HIV

**Assignment Method**

Participants (N = 274) were randomized to same-day ART (n = 137) or usual care (n = 137).

**Comparison**

Participants in the usual care comparison group received a referral letter for an appointment at the nearest health facility within 28 days after the HBT campaign. Once participants were linked to care, they had a minimum of two pre-ART health facility visits. The first visit consisted of laboratory blood work and the first pre-ART counseling session. At the second visit, participants were provided with laboratory results and assessed for readiness to start ART. Participants were offered to initiate ART based on the judgment of the health facility staff. Participants who initiated ART were given monthly follow-up visits and drug refill dates.

**Relevant Outcomes Measured**

- Engagement in HIV care was defined as attending at least one health facility visit within 90 days after testing HIV positive during the home-based testing visit.
- Viral suppression at 12 months was defined as viral load <100 copies/mL between 11 and 14 months after enrollment.

**Participant Retention**

Because participant retention is not a criterion for the Linkage to, Retention in and Re-engagement in HIV Care (LRC) chapter, the Prevention Research Synthesis project does not evaluate that information.

**Significant Findings on Relevant Outcomes**

- A significantly greater percentage of intervention participants were engaged in HIV care within 90 days after enrollment than comparison participants (68.6% vs. 43.1%; absolute difference= 25.6%, 95% CI = 13.8 – 36.3,  $p < 0.001$ ).
- A significantly greater percentage of intervention participants were virally suppressed (<100 copies/mL) between 11 and 14 months after enrollment than comparison participants (50.4% vs. 34.3%; absolute difference = 16.0%, 95% CI = 4.4 – 27.2,  $p = 0.007$ ).

In post-hoc analyses:

- A significantly greater percentage of intervention participants were engaged in HIV care between 11 and 14 months after enrollment than comparison participants (63.5% vs. 48.2%; absolute difference = 15.3%, 95% CI = 3.6 – 26.5,  $p = 0.01$ ).
- A significantly greater percentage of intervention participants than comparison participants were engaged in HIV care at any time > 11 months after enrollment (64.2% vs. 49.6%; absolute difference = 14.6%, 95% CI = 2.9 – 25.8,  $p = 0.02$ ).

**Strengths**

- None identified

**Considerations**

*Additional significant positive findings on non-relevant outcomes*

In post-hoc analyses:

- Having a drug refill between 11 and 14 months after enrollment was significantly higher for intervention participants vs. comparison participants ( $\chi^2 = 6.84$ ,  $p = 0.009$ ).
- Among participants who engaged in HIV care within 3 months, having a drug refill between 11 and 14 months after enrollment was significantly higher for intervention participants vs. comparison participants ( $\chi^2 = 6.22$ ,  $p = 0.02$ ).
- A significantly greater percentage of intervention participants-initiated ART vs. comparison participants (68.6% vs. 32.1%; absolute difference = 36.5%, 95% CI = 24.9% - 46.7%,  $p < 0.001$ ).

*Non-significant findings on relevant outcomes*

- There were no significant intervention effects for viral suppression 6 months after enrollment (absolute difference = 11%; 95% CI = -0.1% - 21.6%,  $p = 0.05$ ), viral suppression between 11 and 14 months after enrollment among those with a documented viral load (absolute difference = 4.1%, 95% CI = -5.4% - 15.6%,  $p = 0.38$ ), or lost to follow-up at 12 months after enrollment (absolute difference = 1.5%, 95% CI = -5.2% - 8.2%,  $p = 0.66$ ).

*Negative findings*

- None reported

*Other related findings*

- The study also meets evidence-based criteria for the Structural Interventions (SI) chapter of the *Compendium*.

*Implementation-related findings*

- None reported

*Adverse events*

- Of the 214 patients ever initiating ART, 205 (96%) started on tenofovir disoproxil fumarate, lamivudine and efavirenz. Due to an estimated creatinine-clearance  $<50\text{mL/min}$ , 7 (3%) received zidovudine and 2 (1%) abacavir instead of tenofovir. Cotrimoxazole prophylaxis was given to 84 (39%) of participants at ART initiation. During follow-up, ART side-effects were reported in 8 participants: 6 in same-day ART intervention group: rash ( $n = 2$ ), nausea ( $n = 1$ ), dizziness ( $n = 1$ ), gynecomastia ( $n = 1$ ), elevated alanine aminotransferase levels [ $200\text{ IU/L}$ ] ( $n = 1$ ), and 2 in the usual care comparison group: rash ( $n = 2$ ). Due to side-effects, the ART regimen was changed in 4 participants (3 in the same-day ART intervention group and 1 in the usual care comparison group). Three were changed from efavirenz to nevirapine, and 1 changed from efavirenz to ritonavir-boosted lopinavir.
- Two deaths occurred after enrollment, and both were in the same-day ART intervention group. One woman, aged 39 years, was started on tenofovir disoproxil, lamivudine and efavirenz, and died from anemia and renal failure 16 days after enrollment. At enrollment, she had a CD4 cell count of  $342\text{ cells}/\mu\text{L}$ , a serum creatinine of  $46\ \mu\text{mol/L}$ , hemoglobin of  $6.7\text{g/dL}$ , and body weight of 35kg (77 lbs). The event was classified as late-presenting AIDS (e.g., wasting, anemia). Another woman, aged 71 years, was started on tenofovir disoproxil, lamivudine and efavirenz, and died from a possible cardiovascular event. At enrollment, she had a CD4 cell count of  $323\text{ cells}/\mu\text{L}$ , a serum creatinine of  $57\ \mu\text{mol/L}$ , hemoglobin of  $13.7\text{g/dL}$ , and body weight of 53kg (117 lbs). The village health worker reported her death to the study team, and no further information about the circumstances of her death was available.

**Funding**

Grant R4D Open Call IZ07Z0\_160876/1 from the Swiss National Science Foundation, Stiftung für Infektiologie beider Basel, and the Gottfried and Julia Bangerter-Rhyner Stiftung

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**Researcher: Niklaus D. Labhardt, MD**

Division of Infectious Diseases and Hospital Epidemiology  
University Hospital Basel  
Basel, Switzerland

**Email: [n.labhardt@unibas.ch](mailto:n.labhardt@unibas.ch)**

