# A Novel Model of Community Cohort Care for HIV-infected Adolescents Improves Outcomes

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Poster #835

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## Background

- Adolescents account for 40% of new HIV infections in Haiti and have worse outcomes than all other age groups.
- The implementation of a youth-friendly Adolescent HIV clinic in 2009 at GHESKIO in Haiti improved linkage, assessment for antiretroviral therapy (ART) eligibility, and ART initiation, but did not significantly improve long-term retention in care or ART adherence.
- HIV-infected adolescents receiving care at the Adolescent HIV Clinic in Haiti report the largest barriers for retention are: stigma, social isolation, lack of family support, and long clinic appointments.
- We piloted a novel model of HIV care called *community cohort care* to address each of these barriers.

**Study objectives**:

1. To evaluate *community cohort care* as a model for HIV service delivery to improve assessment for and initiation of ART, retention, and viral suppression among adolescents at the GHESKIO Adolescent HIV Clinic in Port-au-Prince.
2. To compare outcomes among adolescents in *community cohort care* to a historical cohort of adolescents receiving standard care at the GHESKIO Adolescent HIV Clinic.

## Methods

**Study Setting:**
- Haiti is the poorest country in the Western Hemisphere with the highest adolescent and adult HIV prevalence (0.4% and 1.8%, respectively).
- GHESKIO was established in 1982 and is the largest public HIV clinic in Haiti and located in Port-au-Prince. GHESKIO provides HIV testing, counseling, and treatment free of charge to patients.
- An Adolescent HIV clinic providing youth-friendly HIV services according to WHO guidelines was opened in 2009.

**Study Population:**
- Community cohort care: adolescents ages 10-20 years, who newly tested HIV+ between November 2014 and October 2015 at the GHESKIO Adolescent HIV Clinic and were agreeable to cohort care.
- Historical cohort: adolescents ages 13-19 years who newly tested HIV+ between January 2009 and December 2012 at the GHESKIO Adolescent HIV Clinic.

**Definitions:**
- ART assessment conducted by CD4 cell count within 3 months of testing
- ART initiation determined by documentation of ART start in EMR
- Retention at 12 months defined as being alive with a clinic visit between 11 and 13 months from HIV testing.
- Viral load suppression defined as <1000 copies/µl.

**Statistical Analysis**: Kaplan-Meier methods estimated incidence of retention at 12 months from HIV testing.

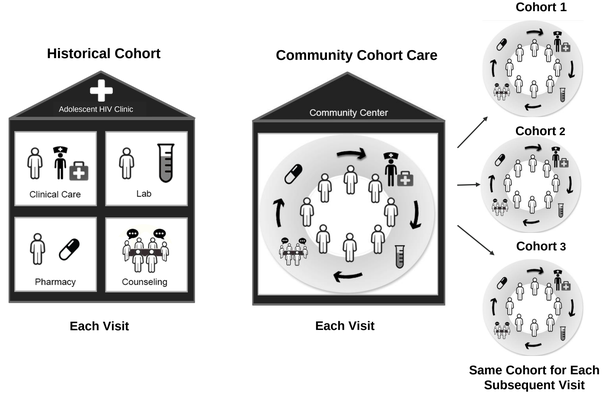
## Comparison of Community Cohort Care to Historical Cohort

**Historical care in Adolescent HIV Clinic:** Adolescents visited the clinic monthly and all clinical services were provided sequentially with the adolescent rotating to a clinician for medical management, a social worker for counseling, the laboratory for phlebotomy, and visiting the pharmacy for prescription refills. All encounters were done on an individual basis.

**Community Cohort Care:** Adolescents were grouped in cohorts of 5-8 teens (stratified by age group 10-15 and 16-20) who met monthly for integrated clinical care, counseling, and social activities in a community setting. All clinical services (laboratory tests, ART initiation and management, and pharmacy refills) and group counseling was provided during the cohort meeting by the same nurse and peer educator each month. Group counseling included an empowerment curriculum which addressed issues including social isolation, family rejection, HIV stigma and disclosure, and other individual barriers.

| | Historical Care in Adolescent Clinic | Community Cohort Care |
|---|---|---|
| **Patient** | **INDIVIDUAL:** Monthly individual clinic session at the Adolescent HIV Clinic | **COHORT:** Monthly cohort session with 5-8 peers in a community room |
| **Setting** | **ADOLESCENT HIV CLINIC:** All services including counseling, clinical, laboratory and pharmacy are provided at the Adolescent HIV Clinic at GHESKIO | **COMMUNITY:** All services including counseling, clinical, laboratory and pharmacy are provided in a group setting in the community |
| **HIV Services** | **SEQUENTIAL:** Each patient rotates to counselor, clinician, laboratory staff, and pharmacist individually and sequentially | **INTEGRATED:** Each patient receives all services in the cohort group session with one nurse |

**Figure 1. Illustration of HIV service delivery in Adolescent HIV Clinic and Community Cohort Care**




## Results

**1) Assessment for and initiation of ART:**
- *Community cohort care*: 100% of adolescents were assessed for ART eligibility on the day of testing. 100% started ART with median time to initiation of 0 days (Table 2).
- Historical cohort: 462 (65%) adolescents were assessed for eligibility, 330 (46%) were eligible with CD4 <350 cells/µL, and 305 (92%) started ART with median time to initiation of 20 days.

**2) Retention and Viral Suppression:**
- *Community cohort care*: 86% (95% CI: 74-92) of participants were retained at 12-months from HIV testing (Fig 1). Among those with a viral load measurement 6-12 months from ART initiation, 5/19 (26%) were virally suppressed (Table 2).
- Historical cohort: 66% (95% CI: 63-67) of adolescents were retained 12 months from HIV testing. Viral load was not routinely measured before 2012.

**3) Social Harms:**
- No *community cohort care* participants reported social harms including increased stigma or unintended disclosure.

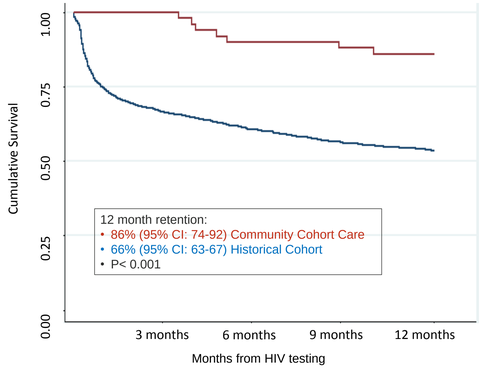
**Table 1. Baseline Characteristics**

| | Historical Cohort (N=710) | Community Cohort Care (N=50) |
|---|---|---|
| Median Age | 18 (IQR 16-19) | 18 (IQR 15-19) |
| Female | 568 (80%) | 38 (76%) |
| Median CD4 at HIV testing | 414 (IQR 238-604) | 537 (IQR 339-805) |

**Table 2. Outcomes**

| | | |
|---|---|---|
| Assessment for ART Initiation | 462 (65%) | 50 (100%) |
| Median time to ART initiation | 20 days | 0 days |
| 12-month retention | 66% (95%CI: 63-67) | 86% (95%CI: 74-92) |
| Viral load suppression | - | 5/19 (26%) |

**Figure 1. Cumulative 12-month Retention: Historical Cohort vs. Community Cohort Care**




## Discussion

- Community cohort care is a novel model of care for HIV-infected adolescents in a resource-poor setting that has not been previously studied and builds upon community-based models of HIV delivery of services for adults and pregnant women.
- Community cohort care normalizes HIV health management by providing clinical care in the context of a cohort meeting in the community such that adolescents experience HIV health management as a group norm.
- The cohort aspect of this model provides adolescents social support and many adolescents felt the cohorts became surrogate families.
- Receiving care in the community rather than a specialized HIV medical facility decreased the medical stigma adolescents described with clinic-based care.
- Community cohort care integrates clinical care with peer counseling at the same session by the same providers to streamline services and increase longitudinal relationships with providers.
- This pragmatic intervention is easily adaptable to other resource-limited settings and high-risk groups.
- A larger randomized trial is necessary to rigorously evaluate the efficacy of community cohort care.
- No social harms were reported.

## Summary

- Community cohort care for HIV-infected adolescents in Haiti significantly improved retention by an absolute difference of 20% and decreased time to ART initiation.
- Viral suppression remains poor indicating a need for increased efforts to improve adherence to ART among adolescents.

## Acknowledgement

This study was generously funded by the MAC AIDS Foundation, the Flora Family Foundation, and UNICEF.