

Long-term Virologic Responses to Antiretroviral Therapy Among Patients Entering Adherence Clubs in Khayelitsha, Cape Town, South Africa

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Introduction

- Universal Test and Treat was introduced in South Africa in 2016. Antiretroviral therapy (ART) coverage in 2018 was 61.9%.
- Rapid expansion of access to ART required alternative models of care.
- In 2011, ART Adherence Clubs (ACs), a differentiated service delivery model for patients “stable on ART” (on ART for ≥6 months & HIV-RNA viral load [VL] <400 copies/mL), were rolled out across the Cape Town Metropolitan.
- ACs comprise of 25 - 30 patients, with meetings facilitated by lay healthcare workers.
- During sessions patients undergo a brief symptom screen, participate in a group discussion, and collect a two-month supply of pre-packed ART.

Objective

- To investigate long-term virologic outcomes of patients who have accessed care within ACs at some point in Khayelitsha, Cape Town.

Methods

- Retrospective cohort analysis of patients ever enrolled in ACs in Khayelitsha, Cape Town:
 - between January 2011 - June 2017,
 - aged 16 - 85 years, and
 - with a VL measurement in the 15 months before AC enrolment.
- We assessed VL completeness over time.
- Using Cox proportional hazards models, we examined the risk factors for having an elevated VL (VL >1000 copies/mL after AC enrolment); and having confirmed virologic failure (two consecutive VLs >1000 copies/mL within a year after AC enrolment).

Results

Patient Characteristics

- A total of 10 689 ART patients (75% female) were included in the analysis, contributing 17 086 person-years of follow-up from AC entry (median 1.2 years [IQR 0.6 - 2.6]).
- At AC enrolment: 45% were aged 35 - 44 years, median duration on ART was 4.7 years (IQR 2.9 - 7.2), 70% entered ACs between the years 2015 - 2017, and 3% (n=341) were virologically unsuppressed (VL ≥400 copies/mL).

Outcomes

- At analysis closure, 1% of patients had died, 3% had transferred out, 7% were lost to follow-up and 89% were retained.

Table 1. Among patients virologically suppressed at enrolment, viral load completeness at 4, 16, 28 and 40 months after enrolment into an adherence club.

Follow-up time (months)	4	16	28	40
Number of patients, n	6 547	3 856	2 170	1 061
Viral load tests done, n (%)	5 340 (82)	3 171 (82)	1 841 (85)	884 (83)
HIV-RNA >1000 copies/mL, n (%)	141 (2)	122 (4)	85 (5)	54 (6)

- VL testing completeness remained similar over time with 82% of patients having a VL test done after 4 months and 83% after 40 months (Table 1).
- Patients experiencing an elevated VL increased over time with 2% after 4 months and 6% after 40 months (Table 1).

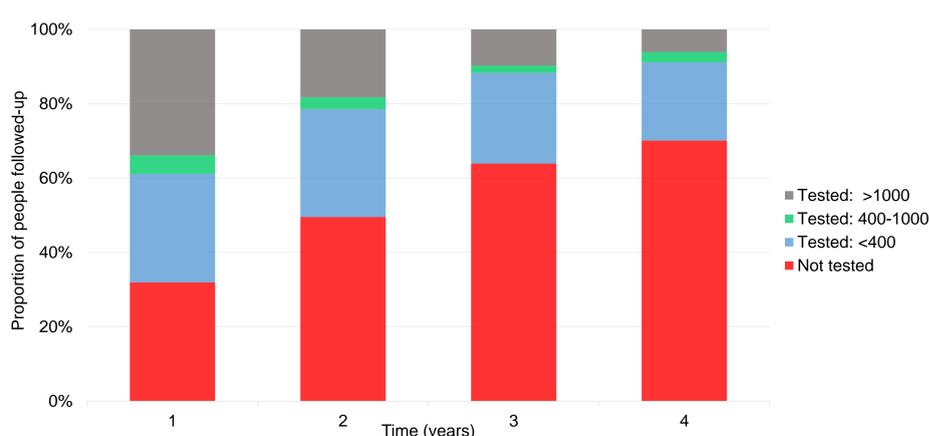


Figure 1. Viral load completeness at 1, 2, 3 and 4 years among patients who experienced an elevated viral load after adherence club entry.

Results

- Among patients with an elevated VL after AC enrolment, 68% had a repeat VL test done within 1 year of follow-up (Figure 1).
- The proportion of patients without repeat VLs increased over time:
 - 32% at 1 year and 70% at 4 years (Figure 1).

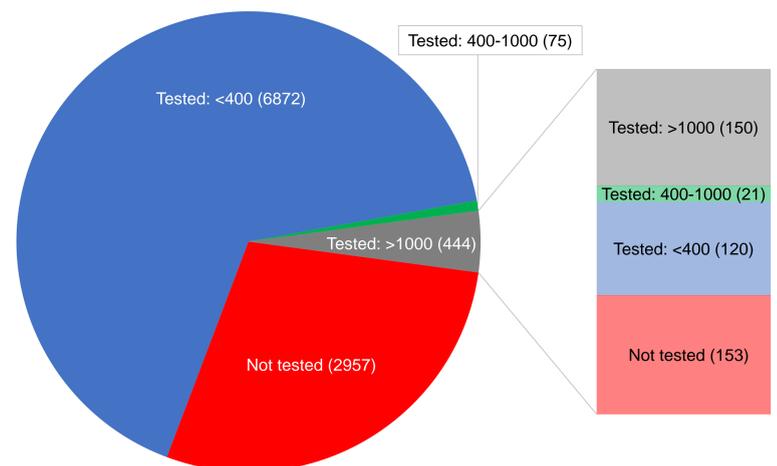


Figure 2. Viral load testing among patients suppressed at adherence club enrolment. Pie chart: first viral load after adherence club enrolment; stacked bar chart: second viral load test among patients with an initial elevated viral load.

- Among patients virologically suppressed at AC entry (n=10 348), 7 391 (71%) had a VL measurement after AC entry (Figure 2) of which:
 - 444 (6%) patients had an elevated VL.
 - Median time from AC entry: 350 days (IQR 168 - 728).
 - Of the 444 with an elevated VL, 291 (66%) had a repeat VL within a year of which:
 - 150 (52%) had confirmed virologic failure.
 - Median time from 1st elevated VL: 112 days (IQR 56 - 168).
 - Overall rate of confirmed virologic failure was 2%.
- Among patients unsuppressed at AC entry, 260 (76%) had a subsequent repeat VL:
 - 172 patients (66%) were still unsuppressed.
 - Median time from AC entry: 112 days (IQR 57 - 196).

Table 2. Adjusted associations for an elevated viral load and confirmed virologic failure among patients virologically suppressed at adherence club entry.

Characteristic at AC entry	Elevated viral load	Confirmed virologic failure
	Multivariate aHR (95% CI) (n=7 391)	Multivariate aHR (95% CI) (n=291)
Sex		
Male	1.13 (0.91 - 1.41)	1.24 (0.85 - 1.81)
Age (years)		
16 - 34	1.0	1.0
35 - 44	0.84 (0.68 - 1.04)	1.03 (0.72 - 1.47)
≥45	0.70 (0.53 - 0.92)	0.67 (0.41 - 1.11)
Year of AC entry	0.85 (0.78 - 0.92)	1.37 (1.17 - 1.59)

- Risk of experiencing an elevated VL was reduced with older age (≥45 vs.16 - 34 years: aHR 0.70 [95% CI 0.53 - 0.92]) and more recent year of AC entry (aHR per increasing year: 0.85 [95% CI 0.78 - 0.92]) (Table 2).
- Confirmed virologic failure was predicted by year of AC entry (aHR 1.37 [95% CI 1.17 - 1.59]) (Table 2).

Conclusion

- We found low rates of elevated VLs and confirmed virologic failure.
- High rates of VL testing and virologic suppression were maintained despite rapid expansion of services.
- Deviations from AC guidelines were a concern:
 - Unsuppressed patients (who should not have entered ACs) had far worse virologic outcomes than suppressed patients, and
 - The proportion of patients with an initial elevated VL who did not receive follow-up VLs increased to 70% after 4 years.
- AC guidelines need to be adhered to for favourable patient outcomes.
- Overall, our findings support the continued scale-up of ACs for ART delivery for stable patients in the national ART programme.

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