

Engagement in care and viral load outcomes in the first 6 months after ART initiation: Evidence from 24 South African clinics

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Background

- The early HIV treatment period (months 0-6) carries the highest risk of treatment interruptions, disengagement, and re-engagement in care.
- The impact of treatment interruptions in the initial 6 months of HIV care on achieving viral suppression remains unclear.
- We conducted a retrospective cohort study to quantify associations between patterns of engagement in care and viral suppression by 6 months on ART in South Africa.

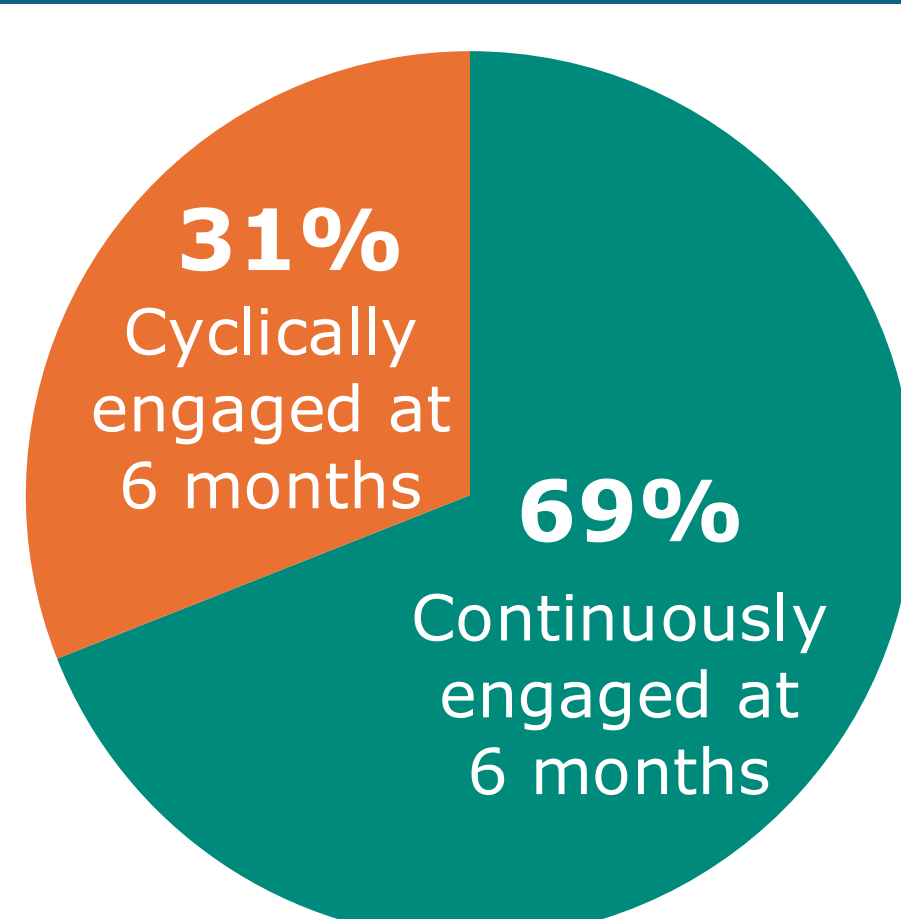
Methods

- Enrolled adults (≥ 18 years) who initiated ART from Jan 2018 - Nov 2024 from 24 public sector clinics in Gauteng, KwaZulu-Natal, Mpumalanga, and Eastern Cape provinces and were retained in care for ≥ 6 months after initiation/re-initiation. Out of 57,553 initiators, 40,865 (71%) were retained.
- Engagement patterns for first six months were defined as:
 - Continuously engaged** (no visit late ≥ 28 days)
 - Cyclically engaged** (≥ 1 visit ≥ 28 days late with return to care by 6 months).
- Viral load (VL) results were categorized as:
 - Undetectable (VS) (<50 copies/mL)
 - Low level viremia (50–199 copies/mL)
 - Intermediate viremia (200–999 copies/mL)
 - Unsuppressed (≥ 1000 copies/mL).
- Data source: South Africa's national ART database (TIER.Net)
- Modified Poisson regression to estimate adjusted risk ratios (aRRs) for viral suppression, adjusting for age, sex, year of initiation, ART regimen, engagement pattern, baseline CD4 count, and WHO clinical

Results

Study sample

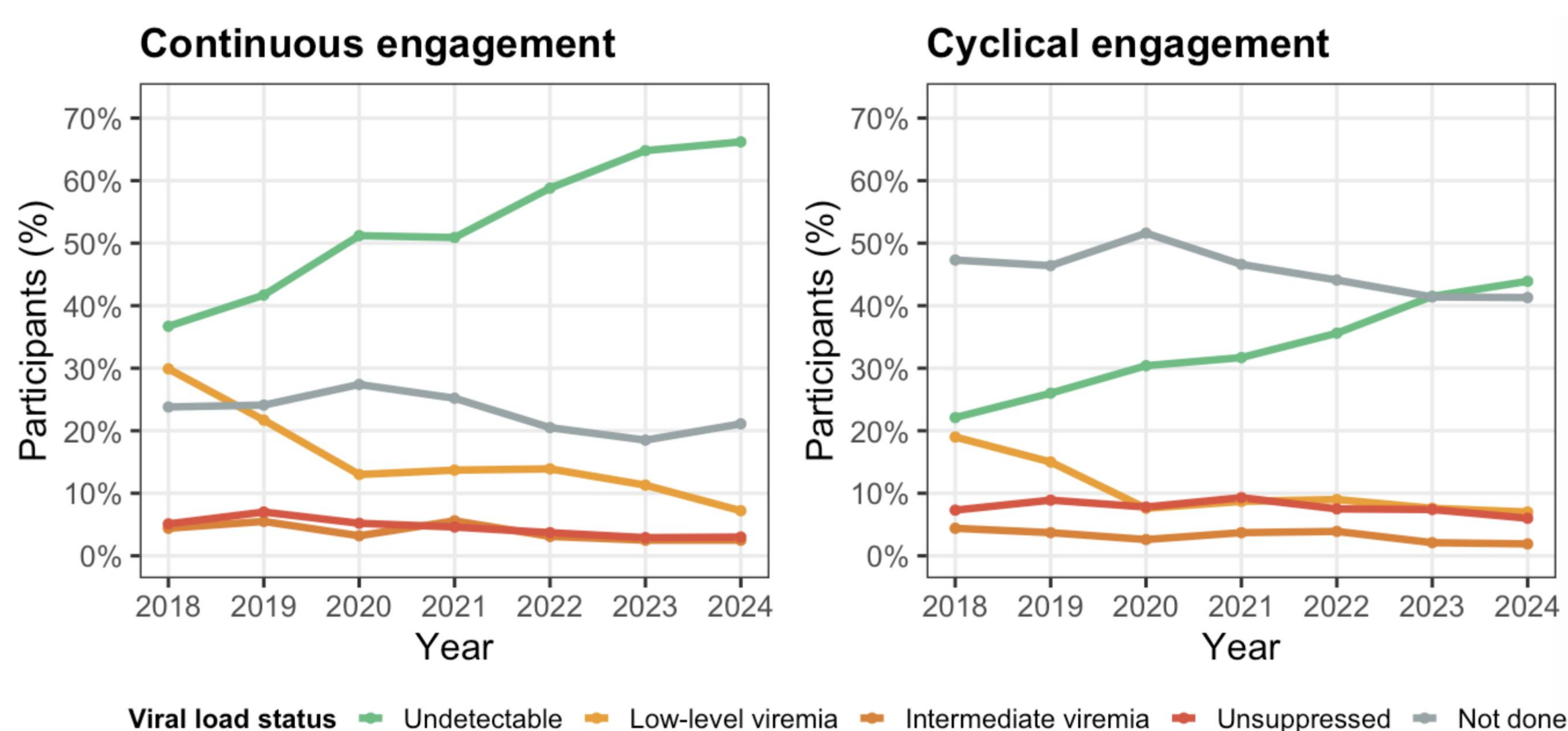
- N=40,865 clients retained in care at 6 months
- 66% female, median age 33 years
- 21% had a baseline CD4 of <200 and 6% were WHO Stage 3 or 4.



Viral load test uptake

- Viral load test completion rates remained stable over the study period within each group (continuous and cyclical)
- Continuous engagers were more likely to have VL tests than cyclical engagers.

Figure 1. Viral load outcomes by year of initiation and engagement pattern months 0-6



Overall viral load suppression trends (2018-2024) (Fig 1)

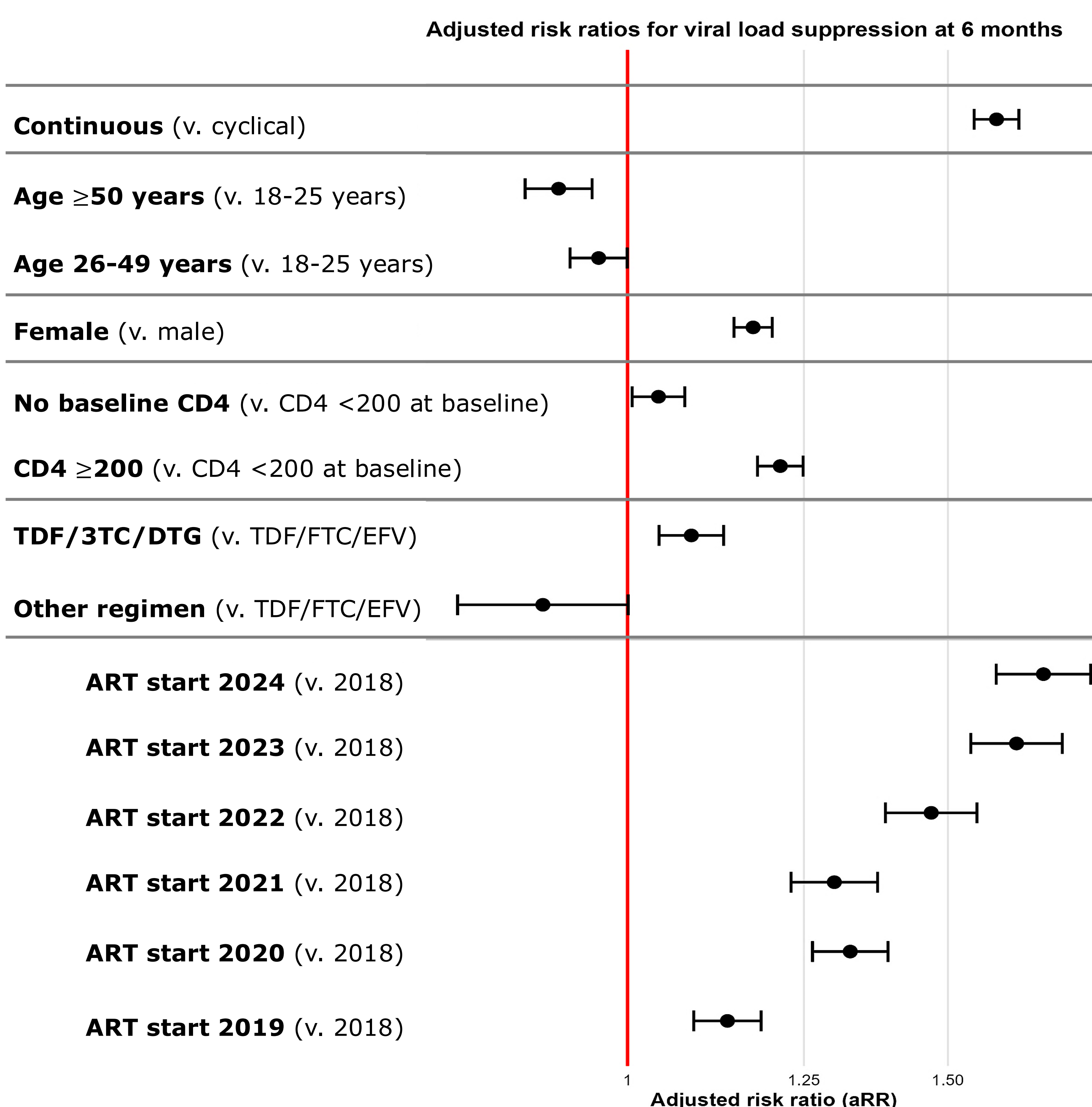
Continuously engaged:

- Suppression: 37% $\rightarrow$ 66% (+29 percentage points)
- Low-level viremia: 30% $\rightarrow$ 7%

Cyclically engaged:

- Suppression: 22% $\rightarrow$ 44% (+22 percentage points)
- Low-level viremia: 19% $\rightarrow$ 7%

Figure 2. Predictors of viral load suppression (<50 copies/mL)



Predictors of suppression at 6 months (Fig 2):

- Continuous engagement (compared with cyclical) was strongly associated with viral suppression (aRR 1.55–1.64).
- Baseline CD4 count ≥ 200 cells/ μ L was also associated with higher suppression (aRR 1.21).
- Later year of initiation showed progressive improvement, with initiation in 2024 associated with 1.67 times higher suppression than in 2018 (aRR 1.57-1.77).

Conclusions and recommendations

- Continuous engagement** in the first six months of HIV treatment is associated with **much higher rates of viral suppression** compared to cyclical (interrupted) engagement (aRR 1.6).
- Viral suppression rates improved steadily between 2018 and 2024; this likely reflects both the **advent of dolutegravir** (replacing efavirenz) and other improvements in service delivery and the quality of care over this time period.
- Preventing treatment interruptions during the early treatment period is important.** Targeted interventions that support adherence and minimize care gaps in the first six months of treatment are likely to build on these gains and further improve long-term viral control.