

# Monitoring for Advanced Disease in the UTT Era: Trends in CD4 Count Testing Volumes Among Patients Presenting for HIV Care in South Africa

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Since the expansion of HIV treatment eligibility with UTT, first CD4 test volumes have declined

## BACKGROUND

- South Africa eliminated CD4 criteria for ART eligibility in 2016 under its Universal Test and Treat (UTT) policy
- In September 2017, the general UTT policy was updated with a directive to initiate ART on the day of HIV diagnosis (same-day initiation—SDI)
- However, CD4 count at entry into care remains an important marker of disease progression.
- National guidelines specify patients should still have a CD4 count done at enrolment into HIV care

## OBJECTIVE

- We quantified first CD4 count testing volumes in five provinces of South Africa, as captured in two patient-level clinical databases

## METHODS

- We analyzed data on all CD4 counts recorded within the Three Interlinked Electronic Registers (TIER. Net) database and National Health Laboratory Services (NHLS) in this district
- We defined “CD4 count at presentation” as the first CD4 tests for each patient within each database
- We assessed volumes and compared trends of CD4 tests conducted within Gauteng (excluding City of Johannesburg), Limpopo, Mpumalanga, Northern Cape between January 2004 and March 2018 (with the exception of Kwazulu-Natal which joined NHLS database in 2010)
- We also assessed changes in CD4 test volumes with the implementation of UTT in September 2016 and Same-Day Initiation (SDI) of treatment in September 2017.
- Linear regression was used to adjust for pre-trends in the daily first CD4 count volumes for patients presenting in care.

## RESULTS

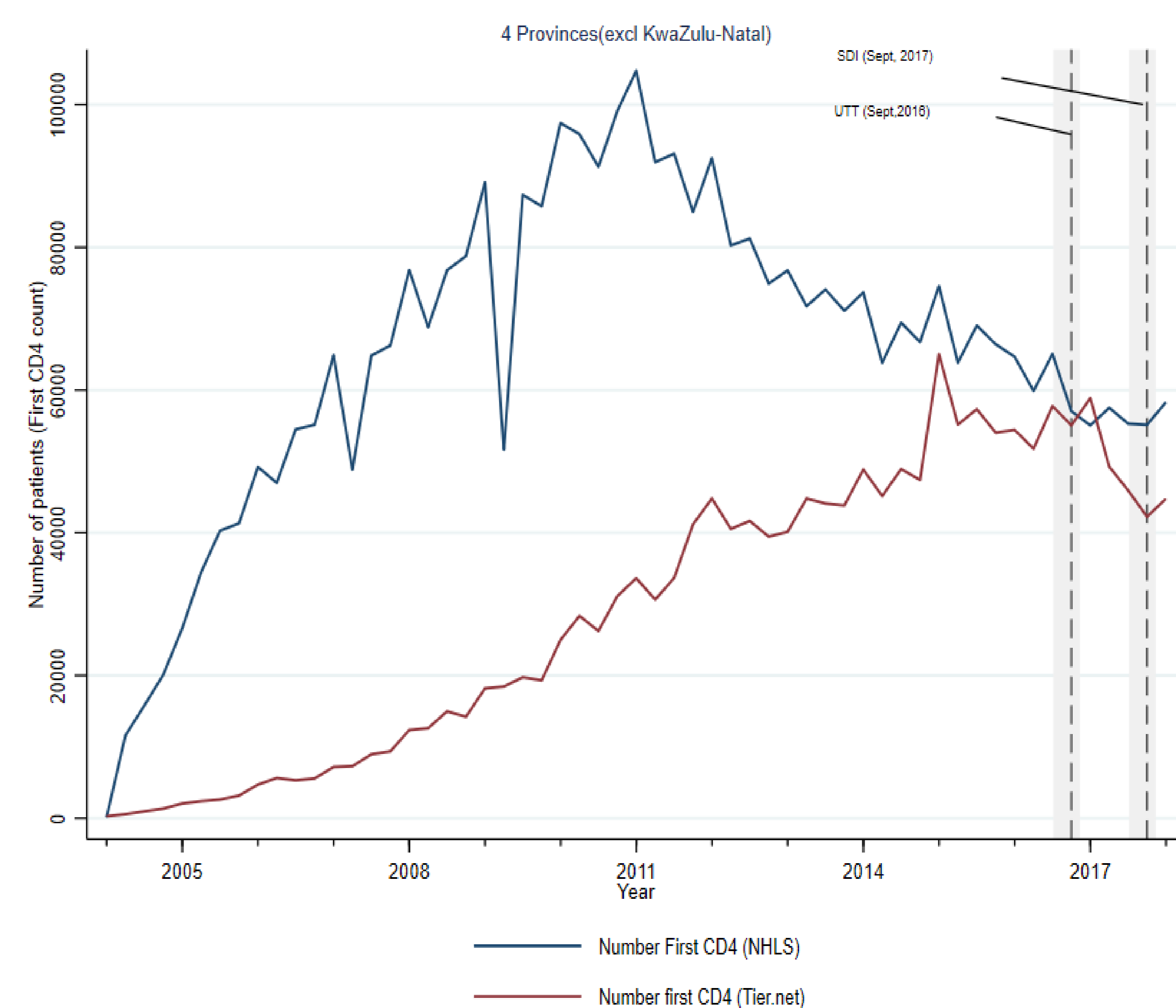
- A total of 5,274,218 (NHLS) and 2,265,557 (TIER. Net) individuals with a first CD4 count from 1724 facilities were analyzed (Table 1).
- Median (IQR) age was 33 (27.0, 40.0) years in NHLS, and 34 (27.0, 41.1) years in TIER.Net (Table 1).
- The median (IQR) CD4 count at clinical presentation were 263 (118, 452) cells/ $\mu$ l and 196 (92, 340) cells/ $\mu$ l in the NHLS and TIER.Net,; respectively (Table 1).
- Majority of patients presented with low CD4 count (<200) in both the NHLS (34.9 %) and in TIER.Net (48.1%) (Table 1).
- First CD4 count testing volumes increased from 2004 reaching over 110,456 in 2011 within NHLS. Decreasing trends were observed starting in 2011 and persisted during the UTT (Fig1)
- TIER.Net data which were back-captured in the early years of the treatment program lagged behind the NHLS data until 2015, after which a similar trend were observed (Fig1)
- First CD4 count volumes fell by 26% from August 2016, month before UTT to March 2018 (Fig1)
- First CD4 testing volumes 6 months after UTT adoption decreased within the NHLS by 99 patients per day (95% confidence interval, CI: -205 to 8) after adjusting for pre-trend.

## TABLE & FIGURE

Table 1: Characteristics of Adult patients at entry into care First CD4 count (cells/ $\mu$ l)

| Variable  | NHLS               | TIER.net           |
|---|--------------------|--------------------|
| <b>Total entering care</b>  | -                  | 3,038,850 (100.0)  |
| <b>Total No of patients with first CD4 count</b>                          | 5,274,218 (100.0%) | 2,265,557 (100.0%) |
| <b>Sex</b>  |                    |                    |
| Female  | 3,447,251 (65.4%)  | 1,494,791 (66.0%)  |
| Male  | 297,219 (32.9%)    | 770,746 (34.0%)    |
| Unknown   | 90,113 (1.7%)      | -                  |
| <b>Age (Years)</b>  |                    |                    |
| Mean (SD)   | 33.6 (11.8)        | 34.1 (11.1)        |
| Median (IQR)  | 33 (27.0, 40.0)    | 33 (27.0, 41.1)    |
| <b>Total No of Facilities</b>   | 1724               | 1724               |
| <b>Facility type and first CD4 count (cells/<math>\mu</math>l) volume</b> |                    |                    |
| Community health care centre (CHC)  | 653,975 (12.4%)    | 311,681 (13.8%)    |
| Primary health care (PHC)   | 3,083,705 (70.9%)  | 1,509,621 (66.6%)  |
| Hospitals   | 1,536,538 (27.0%)  | 68,263 (19.6%)     |
| <b>First CD4 count (cells/<math>\mu</math>l)</b>                          |                    |                    |
| Median (IQR)  | 263 (139, 487)     | 196 (92, 340)      |
| <b>First CD4 count category (cells/<math>\mu</math>l)</b>                 |                    |                    |
| <200  | 1,841,869 (34.9%)  | 1,053,872 (48.0%)  |
| 200-350   | 1,253,992 (23.8%)  | 586,821 (26.8%)    |
| >350-500  | 928,955 (17.6%)    | 280,197 (12.8%)    |
| >500  | 1,249,402 (23.7%)  | 272,253 (12.4%)    |

Figure 1: Number of patients diagnosed in public sector with first CD4 count from January 2004-March 2018 in NHLS and Tier. Net by quarterly calendar period



## CONCLUSION & RECOMMENDATIONS

- Decreasing trends in first CD4 counts volumes were observed starting in 2011 and persisted during the UTT era.
- Further research is needed to understand the reasons for this decline in CD4 tests volumes after expansion of ART eligibility with UTT

Trends of falling CD4 test volumes since 2011 may reflect falling numbers of people entering HIV care over time, rather than changes in clinical practice.

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