Impact of UTT on Viral Suppression in South Africa: a National Cohort Study

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BACKGROUND

- South Africa implemented Universal Test-and-Treat (UTT) in September 2016. UTT aims to increase viral suppression by extending ART eligibility to all patients and reducing barriers to uptake.
- **We assessed how UTT has affected progression of patients from presentation to viral suppression.**

NATIONAL LABORATORY COHORT

- We analyzed the **complete laboratory records of South Africa's public sector HIV program** maintained by South Africa's National Health Laboratory Service (NHLS).
- Data included all CD4 counts, HIV viral loads, and ART-workup labs, April 2004 - March 2018, except for labs in KwaZulu-Natal prior to 2010.
- **We constructed a national HIV cohort** through novel record linkage of routine laboratory data, enabling **longitudinal follow-up of all patients in South Africa's public-sector HIV program**.
- The linkage attained 93.7% sensitivity and 98.6% positive predictive value relative to manually-coded data. For details: https://doi.org/10.1101/450304.

ANALYSIS

- We analyzed progression from presentation (first CD4) to different stages of the HIV care cascade observed in the labs: an ART lab workup within 90 days of presentation (ALT/HG/CRT, taken prior to starting ART), HIV viral monitoring within 15 months of presentation (indicating a patient is on ART and retained in care), and viral suppression (<400 copies/mL) within 15 months of presentation.
- Patients were followed for 15 months to include routine viral loads at 6 and/or 12-months, with a 3-month buffer. Analyses were stratified by CD4 count at presentation and prevailing treatment guidelines.

In a longitudinal national cohort in South Africa, **UTT increased viral suppression.** However, both pre- and post-UTT, a majority of patients did not reach documented viral suppression.

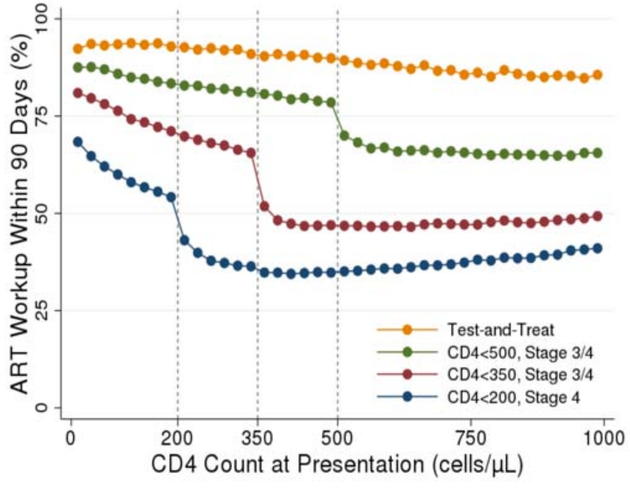

Fig 1. Percent of patients presenting for care who had an ART workup within 90 days, by CD4 at presentation.

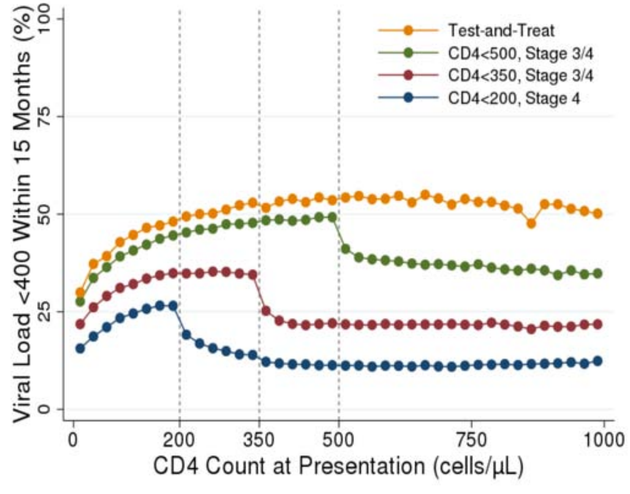

Fig 2. Percent of patients presenting for care reaching viral suppression within 15 months, by CD4 at presentation.

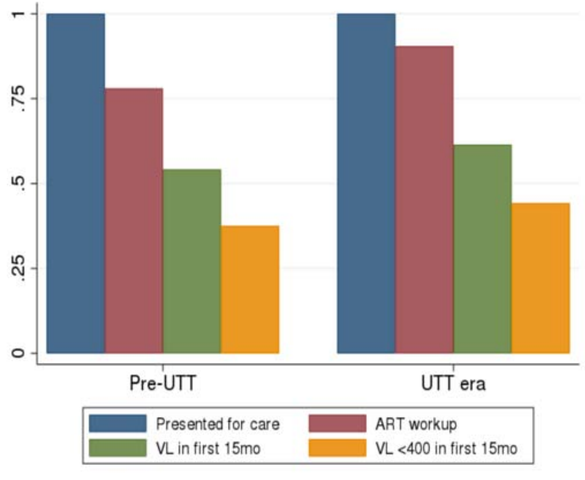

Figure 3. Proportion of patients presenting for care who had an ART workup, were virally monitored, and had a suppressed viral load in pre-UTT (Jan 2015-Aug 2016) and UTT (Sept-Dec 2016) eras.

Note: Figures 1 and 2 are stratified by prevailing treatment guidelines at time of presentation: CD4<200 or Stage 4 (2004-Aug 2011), CD4<350 or Stage 3/4 (Aug 2011-Dec 2014), CD4<500 or Stage 3/4 (Jan 2015-Aug 2016), UTT (Sept 2016).

RESULTS

- **Cohort Size.** 11M patients had a first CD4 count 2004-2016, including 266,479 in the UTT era (Sept-Dec 2016).
- **Eligibility expansions increased ART uptake.** The share of patients progressing from presentation to ART workup increased over time, from 46% before Aug 2011 to 91% under UTT. These gains were due in part to expansions of ART eligibility and in part to improvements affecting patients at all CD4 counts (**Figure 1**).
- **Eligibility expansions increased viral suppression to a lesser extent.** Viral suppression increased due to eligibility expansions and other factors, e.g. increased viral monitoring. However, in both the pre-UTT and UTT eras, most patients presenting with HIV did not reach documented viral suppression in 15 months (**Figure 2**).
- **UTT had a modest impact on the longitudinal HIV care cascade.** Comparing pre-UTT and UTT eras (**Figure 3**), the share of patients presenting for care who had an ART workup increased, 78% to 91%; the share virally monitored increased, 54% to 61%; and the share with documented viral suppression increased, 38% to 44%.