Marked increase in ART initiation after implementation of universal treatment in Durban, South Africa

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Conflict of interest statement

We declare that we have no conflicts of interest.
Background: South Africa

South Africa has the largest HIV epidemic

- Over 7 million people living with HIV\(^1\)
- Prevalence up to 25% in some districts\(^2\)
- Universal ART for all people living with HIV was implemented in September 2016\(^3\)
  - Prior to this, South Africa used a CD4 threshold of <500 cells/mm\(^3\) for ART initiation
  - Providing universal ART prevents immunosuppression and reduces opportunistic infections such as TB\(^4,5\)

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5. TEMPRANO Study NEJM 2015;373: 808–822.
Background: Durban

- **Ethekwini Municipality (Durban)**
  - Capital of Province of KwaZulu-Natal
  - Largest shipping terminal in Southern Africa
  - Population of 3.5 million
  - 600,000 people living with HIV (1 in 70 of all people with HIV globally)

Fig 1. Prevalence of HIV among adults aged 15–49 in 2017²
Aims

- We aimed to assess the impact of implementing universal ART on:
  - the number of ART initiations
  - the mean CD4 count at ART initiation
  - the proportion of people initiating ART with advanced HIV infection (CD4 <200 cells/mm$^3$)
  - the proportion of people with HIV/TB co-infection at ART initiation
Methods

• Setting
  • Prince Cyril Zulu Clinic
  • Large urban clinic in central Durban
  • Located next to central transport hub and serves widespread urban population

• Data Source
  • Audit of routinely collected clinical and laboratory data that is recorded at time of ART initiation

Figure 2: Map of clinic location
Methods

• Eligibility criteria
  • Non-pregnant adults aged 15 years and above
  • Initiated ART between 01 Jan 2015 and 30 June 2018

• Analysis
  • Assess trends in ART initiations, CD4 count at initiation and proportion with TB per quarter using descriptive statistics

• Ethical approval
  • University of Kwazulu-Natal Biomedical Research Ethics Committee
Results

- 9675 patients initiated ART between Jan 2015 to June 2018
- 5229 (54.0%) were female and 4446 (46.0%) were male
- Median age was 34 years (IQR 28-40)
- Mean CD4 count at ART initiation 334 cells/mm\(^3\) (standard deviation 236)*
- Overall, 31.9% had advanced HIV with a CD4 <200 cells/mm\(^3\)
- Overall, 16.7% had HIV/TB co-infection at ART initiation

*97 (1.0%) with missing initiation CD4 count
Results: ART initiations

Implementation of universal treatment

<table>
<thead>
<tr>
<th>Quarter</th>
<th>Number of initiations</th>
</tr>
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<tbody>
<tr>
<td>Q1 2015</td>
<td>600</td>
</tr>
<tr>
<td>Q2 2015</td>
<td>500</td>
</tr>
<tr>
<td>Q3 2015</td>
<td>650</td>
</tr>
<tr>
<td>Q4 2015</td>
<td>700</td>
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<tr>
<td>Q1 2016</td>
<td>650</td>
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<td>Q2 2016</td>
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<td>Q3 2017</td>
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<td>Q4 2017</td>
<td>650</td>
</tr>
<tr>
<td>Q1 2018</td>
<td>500</td>
</tr>
<tr>
<td>Q2 2018</td>
<td>400</td>
</tr>
</tbody>
</table>

Mean CD4 count

% with CD4 < 200

% with TB
Results: Mean CD4 count at ART initiation

![Bar chart showing number of initiations and mean CD4 count across different quarters from Q1 2015 to Q2 2018. The chart includes a trend line indicating an increase in mean CD4 count over time. A dark area highlights the implementation of universal treatment.](chart.png)
Results: Proportion with CD4 <200 cells/mm³

Implementation of universal treatment

Number of initiations / CD4 (cells/mm³)
Results: Proportion with TB

Implementation of universal treatment
# Results

<table>
<thead>
<tr>
<th></th>
<th>Before universal treatment</th>
<th>After universal treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of ART initiations</td>
<td>750*</td>
<td>960*</td>
</tr>
<tr>
<td>Mean CD4 count</td>
<td>270 cells/mm³ (SD 174)</td>
<td>386 cells/mm³ (SD 266)</td>
</tr>
<tr>
<td>Proportion with CD4 &lt;200 cells/mm³</td>
<td>37.8% (95% CI 36.4-39.3)</td>
<td>27.6% (95% CI 26.4-28.8)</td>
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<tr>
<td>Proportion with TB</td>
<td>18.8% (95% CI 17.6-20.0)</td>
<td>15.0% (95% CI 14.1-16.0)</td>
</tr>
</tbody>
</table>

SD, standard deviation; CI, confidence interval. *in the quarter immediately before/after universal treatment
Discussion

• In this large urban South African clinic there was an initial rise in ART initiations, sustained increase in initiation CD4 count, and decrease in the proportion with TB at ART initiation after implementation of universal treatment.

• Our study is limited by the single site study design, and may not be representative of all Ethekwini clinics.

• Further work is needed to assess the impact of universal treatment in a wider range of clinics in Ethekwini, and to include treatment outcomes such as viral suppression.

• Overall, our findings support rollout of universal ART to combat the HIV and TB epidemic in this high prevalence urban setting.
Acknowledgements

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References


