High Retention and Viral Suppression Rates Among HIV-infected Adolescents Attending an Adolescent-friendly Clinic in South Africa

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South African HIV-infected Adolescents

• Estimated 870,000 infected adolescents and young adults in 2013 ages 15 to 24
  o Behaviorally infected
  o Perinatally infected
Approaching Wave of Perinatally HIV-infected Adolescents in South Africa

The graph shows the incidence of HIV-infected infants and the prevalence of HIV-infected children ages 0-14 years from 2003 to 2012. The incidence of HIV-infected infants, represented by the dark blue bars, shows a decreasing trend after 2007. The prevalence of HIV-infected children, represented by the light blue line, peaks around 2008 and then decreases.
Hypotheses

Adolescents attending a dedicated adolescent clinic have higher retention in care compared to those attending the standard pediatric clinic.

Adolescents attending a dedicated adolescent clinic have higher viral suppression compared to those attending the standard pediatric clinic.
Study Design

• Cross-sectional, retrospective analysis
• Perinatally HIV-infected adolescents and young adults ages 13 to 24
• Attending Don McKenzie Hospital’s HIV clinic in Botha’s Hill, South Africa
KwaZulu-Natal Province

South Africa

Don McKenzie Hospital

Durban

Pietermaritzburg

Lesotho

Swaziland
Setting
Methods

• Records from April 2007 to November 2015
  o Demographic information
  o Clinical data
  o Laboratory data

• Tracking
  o Patients not in care → no refill or visit in 3 months
    • Contacted by clinic staff via phone
    • Home visit by clinic staff
    • Searched national laboratory database for recent labs
Study Population

• Inclusion criteria
  o Attending Don McKenzie Hospital’s clinic
    • Standard Clinic (n=153)
    • Adolescent Clinic (n=88)
  o Ages 13 to 24 years
  o Perinatally HIV-infected
  o Receiving antiretroviral therapy
Adolescent Clinic Enrollment

**Standard Clinic**
- Initiate ART
- 6 months ART
- Stable weight
- After March 2009

**Adolescent Clinic**
- Capacity 80
- Filled 2012

**Adult Clinic**

**Transportation**
- Disinterest
- Schedule conflicts
## Standard vs. Adolescent Clinic

<table>
<thead>
<tr>
<th>Feature</th>
<th>Standard Clinic</th>
<th>Adolescent Clinic</th>
</tr>
</thead>
<tbody>
<tr>
<td>First patients</td>
<td>April 2007</td>
<td>March 2009</td>
</tr>
<tr>
<td>Clinic dates</td>
<td>Weekdays</td>
<td>Saturdays</td>
</tr>
<tr>
<td>Medication collection</td>
<td>On campus pharmacy</td>
<td>Pre-packaged</td>
</tr>
<tr>
<td>Lab draws available</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Meal provided</td>
<td>None</td>
<td>Lunch</td>
</tr>
<tr>
<td>Additional activities</td>
<td>Individual counseling</td>
<td>Individual or group counseling</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sports</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Music</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Dancing</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Various social activities</td>
</tr>
<tr>
<td>Staff</td>
<td></td>
<td>1 physician, 3 counselors</td>
</tr>
<tr>
<td>Facilities</td>
<td></td>
<td>Don McKenzie Hospital</td>
</tr>
</tbody>
</table>
Outcome Definitions

• Retention in care
  o Medication refilled in last 3 months
  o Transfers
    • Considered retained if had active prescription within 3 months of documented transfer

• Viral suppression
  o Viral load <400 copies/ml at most recent results

• Retained and suppressed
  o Clinic visit, pharmacy refill and viral load <400 copies/ml within the last 12 months
Tracking Results

254 initiated ART

13 initiated as inpatients and transferred at discharge

189 active

Not in care at Don McKenzie
- 5 deaths
- 29 transfers
- 18 lost to follow-up
  - 11 alternate site
  - 4 defaulted therapy
  - 3 unknown

13 initiated as inpatients and transferred at discharge
## Demographics

<table>
<thead>
<tr>
<th></th>
<th>Standard Clinic (n=153)</th>
<th>Adolescent Clinic (n=88)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent male (n)</td>
<td>53% (80)</td>
<td>43% (38)</td>
<td>0.181</td>
</tr>
<tr>
<td>Median age at ART initiation (IQR)</td>
<td>9.7 (7.5-12.0)</td>
<td>11.2 (9.4-12.8)</td>
<td>0.002</td>
</tr>
<tr>
<td>Median pre-ART CD4 (IQR)</td>
<td>211 (110 – 353)</td>
<td>94 (35- 220)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Median months on ART (IQR)</td>
<td>74 (58-92)</td>
<td>80 (57-98)</td>
<td>0.246</td>
</tr>
<tr>
<td>Percent initial ART: NNRTI (n)</td>
<td>95% (145)</td>
<td>100% (88)</td>
<td>0.029</td>
</tr>
<tr>
<td>Percent current ART: PI (n)</td>
<td>32% (35)</td>
<td>16% (14)</td>
<td>0.245</td>
</tr>
<tr>
<td>Percent history of tuberculosis (n)</td>
<td>54% (83)</td>
<td>48% (42)</td>
<td>0.351</td>
</tr>
</tbody>
</table>
Overall Outcomes

- Retention 89% (214/241)
- Viral suppression 84% (196/233)
Higher Retention and Viral Suppression with Adolescent Clinic

<table>
<thead>
<tr>
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<th>Adolescent Clinic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initiated ART</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Retained</td>
<td>85</td>
<td>95</td>
</tr>
<tr>
<td>Suppressed</td>
<td>80</td>
<td>91</td>
</tr>
</tbody>
</table>
Higher Retention in Adolescent Clinic

<table>
<thead>
<tr>
<th></th>
<th>Unadjusted OR (p-value)</th>
<th>Adjusted OR (p-value)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard clinic vs. adolescent clinic</td>
<td>3.7 (0.019)</td>
<td>8.5 (0.002)</td>
</tr>
<tr>
<td>Males</td>
<td>3.9 (0.002)</td>
<td>4.9 (0.010)</td>
</tr>
<tr>
<td>Age at ART initiation</td>
<td>0.9 (0.012)</td>
<td>1.0 (0.010)</td>
</tr>
<tr>
<td>Months on ART</td>
<td>1.0 (0.934)</td>
<td>1.0 (0.038)</td>
</tr>
<tr>
<td>Pre-ART CD4</td>
<td>1.0 (0.383)</td>
<td>1.0 (0.393)</td>
</tr>
<tr>
<td>Tuberculosis history</td>
<td>0.6 (0.224)</td>
<td>0.8 (0.741)</td>
</tr>
</tbody>
</table>
## Higher Viral Suppression in Adolescent Clinic

<table>
<thead>
<tr>
<th></th>
<th>Unadjusted OR (p-value)</th>
<th>Adjusted OR (p-value)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard clinic vs. adolescent clinic</td>
<td>2.5 (0.031)</td>
<td>3.8 (0.005)</td>
</tr>
<tr>
<td>Males</td>
<td>0.8 (0.515)</td>
<td>0.8 (0.556)</td>
</tr>
<tr>
<td>Age at ART initiation</td>
<td>0.9 (0.051)</td>
<td>0.9 (0.086)</td>
</tr>
<tr>
<td>Months on ART</td>
<td>1.0 (0.840)</td>
<td>1.0 (0.372)</td>
</tr>
<tr>
<td>Pre-ART CD4</td>
<td>1.0 (0.934)</td>
<td>1.0 (0.372)</td>
</tr>
<tr>
<td>Tuberculosis history</td>
<td>0.9 (0.692)</td>
<td>1.0 (0.955)</td>
</tr>
</tbody>
</table>
Retained with Viral Suppression in last 12 Months

- Tracked all 241 patients for viral load results in last 12 months
- 73% retained and suppressed
  - Standard clinic (64%)
  - Adolescent clinic (90%)
- Adolescent clinic attendance
  - Adjusted OR 8.4; p<0.001
Sensitivity Analysis

• Excluding all subjects (n=3) lost in the first 6 months of therapy
  o Would not have been eligible for adolescent clinic
• No change in results for retention, viral suppression or combined retention with viral suppression
• No difference when adjusting for propensity score
Limitations

- Retrospective analysis
- Not randomized
- Survival bias
Next Steps

• Qualitative analysis
  o Interviews with adolescents in adolescent clinic
  o Interviews with adolescents in standard clinic
  o Interviews with adolescents not in care
  o Interviews with care givers
Acknowledgements

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Questions