The impact of disclosure on adherence in HIV-infected adolescents in Botswana: a longitudinal study

HARRIET OKATCH, PHD, MPH

R. ROGERS, K. MORALES, J. CHAPMAN, T. MARUKUTIRA, O. TSHUME, G. ANABWANI, R. GROSS, E. LOWENTHAL
Introduction

“Disclosure”

- Informing a child/adolescent of his/her HIV status

Children receiving HIV treatment often aren’t told they are HIV-infected until well into adolescence

Impact of disclosure on adherence unclear
Qualitative Studies

“I had to tell her about her condition and that is when she had the courage of taking (the medicine)”

“(disclosure) helped because even when she gets tired of drugs then she remembers that it is good to take the drug and she takes it...you cannot tell a child to take drugs everyday when she does not know for what reason.”

1Vreemanet al., AIDS Patient Care ST 2010
2Bikaako-Kajura et al., AIDS Behav. 2006
Cross-sectional Studies

Mixed results comparing disclosed to non-disclosed (N=8)

- 5-better adherence among disclosed
- 3-no difference in adherence
One study assessed pill count adherence at 6 & 12 months post-disclosure (N=67)

<table>
<thead>
<tr>
<th></th>
<th>Before disclosure</th>
<th>After disclosure</th>
<th>p-value*</th>
<th>After disclosure</th>
<th>p-value*</th>
</tr>
</thead>
<tbody>
<tr>
<td>% Adherence by pill count</td>
<td>98 (94–100)</td>
<td>99.4 (95–100)</td>
<td>0.75</td>
<td>99.4 (95.8–100)</td>
<td>0.85</td>
</tr>
<tr>
<td>Number (%) of children with</td>
<td>12/43 (27.9%)</td>
<td>9/37 (24%)</td>
<td>0.72</td>
<td>10/48 (20%)</td>
<td>0.43</td>
</tr>
<tr>
<td>adherence by pill count &lt;95%</td>
<td></td>
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</tr>
<tr>
<td>CD4% (n = 67)</td>
<td>24 (19–30)</td>
<td>27 (20–31)</td>
<td>0.02</td>
<td>26 (21–31)</td>
<td>0.01</td>
</tr>
<tr>
<td>CD4, cells/mm³ (n = 67)</td>
<td>615 (444–829)</td>
<td>684 (432–888)</td>
<td>0.09</td>
<td>628 (453–898)</td>
<td>0.29</td>
</tr>
<tr>
<td>Number (%) of children with</td>
<td>81/95 (85%)</td>
<td>50/64 (78%)</td>
<td>0.91</td>
<td>77/93 (83%)</td>
<td>0.53</td>
</tr>
<tr>
<td>HIV-RNA &lt;50 copies/ml</td>
<td></td>
<td></td>
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</table>

Note: *When compared with data before HIV disclosure.

Sirikum et al. AIDS Care. 2014
Study aim

To examine the impact of disclosure on adherence in HIV infected adolescents in Botswana enrolled in a longitudinal adherence study
Study Design

Prospective cohort study
  ◦ Quarterly study visits

Setting
  ◦ Gaborone, Botswana
  ◦ Botswana-Baylor Children’s Clinical Centre of Excellence

Population
  ◦ 300 HIV infected adolescents ages 10-19
  ◦ All cART-experienced
Variables

Exposure: Disclosure

- Baseline: Does the adolescent know his/her HIV status?
- Visits: Has the subject newly learned his/her HIV status?
- Disclosure interval

Outcome: Adherence

- Medication event monitoring system (MEMS)
- Continuous- percentage adherence
Analysis

Segmented general linearized mixed model

Adherence = $\beta_0 + \beta_1 \cdot \text{time} + \beta_2 \cdot \text{disclosure} + \beta_3 \cdot \text{time} \cdot \text{disclosure}$

- Pre-disclosure: $Y = \beta_0 + \beta_1 \cdot \text{time}$
- Post-disclosure: $Y = (\beta_0 + \beta_2) + (\beta_1 + \beta_3) \cdot \text{time}$

Control for age
Results ($N=300$)

Baseline disclosure - 65%

<table>
<thead>
<tr>
<th>Age</th>
<th>Number of adolescents</th>
<th>Disclosure rate (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt;16</td>
<td>66</td>
<td>100</td>
</tr>
<tr>
<td>13-15</td>
<td>87</td>
<td>85</td>
</tr>
<tr>
<td>10-12</td>
<td>41</td>
<td>31</td>
</tr>
</tbody>
</table>

74 cases of incident disclosure

Median age = 12.2 yrs (IQR 11.6-12.9)

Age at disclosure = 13.1 yrs (IQR 12.4-13.7, range 10.9-16.1)
### Characteristics of Incident Disclosed (N=74)

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Median (IQR)</th>
<th>Number (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age-years</td>
<td>12.2 (11.6-12.9)</td>
<td></td>
</tr>
<tr>
<td>Age at diagnosis-years</td>
<td>4.8 (2.60-7.2)</td>
<td></td>
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<tr>
<td>Time on medication-years</td>
<td>7.1 (4.6-8.6)</td>
<td></td>
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<tr>
<td>Recent CD4 cell counts- cells/mm$^3$</td>
<td>883 (651-1059)</td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>32 (43.2%)</td>
<td></td>
</tr>
<tr>
<td>Baseline WHO Clinical Status</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stage 4</td>
<td>5 (6.8%)</td>
<td></td>
</tr>
<tr>
<td>Stage 3</td>
<td>10 (13.5%)</td>
<td></td>
</tr>
<tr>
<td>Stage 2</td>
<td>34 (46.0%)</td>
<td></td>
</tr>
<tr>
<td>Stage 1</td>
<td>25 (33.8%)</td>
<td></td>
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</tbody>
</table>
Slope: -0.35
p-value: 0.06
Change in median adherence postdisclosure

Median adherence (%)

Time (Months)

Slope: -0.57
p-value: 0.02
Change in median adherence over time (Disclosure: Time = 0)

Pre-disclosure
Slope:   -0.35  
p-value:  0.06

Post-disclosure
Slope:   -0.57  
p-value:  0.02

Disclosure interval
Slope:    3.85  
p-value:  0.02
Discussion

There is a statistically significant increase in adherence during the disclosure interval
- Likely too small to have clinical effect

Post-disclosure
- Adherence levels decline at a faster rate
- Data suggest need for intensified adherence support post-disclosure
<table>
<thead>
<tr>
<th>Strengths</th>
<th>Limitations</th>
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<tr>
<td>◦ Longitudinal adherence observations</td>
<td>◦ Misclassification bias?</td>
</tr>
<tr>
<td>◦ MEMS-objective</td>
<td>◦ Only observed &gt;10 year olds</td>
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<tr>
<td>◦ Controlled for age</td>
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</tr>
<tr>
<td>◦ Generalizable to SSA countries</td>
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Conclusion

- Brief increase in adherence around the time of disclosure in adolescents in Botswana
- More rapid decline in adherence after the immediate post-disclosure period
- Findings highlight the importance of post-disclosure adherence support for adolescents
Acknowledgements

Study Participants

Study team: Keboletse Mokete, Tebo Dipotso, Omphile Lepodisi

Colleagues in the group: Leah Genn, Mitchelle Matesva, Will Schupman

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