Use of Unannounced Telephone Pill Counts to Measure Medication Adherence among Perinatally HIV-infected Adolescents and Young Adults

Jeannette Raymond¹, Amelia Bucek¹, Curtis Dolezal¹, Patricia Warne¹, Katherine Elkington¹, Elaine Abrams², Seth Kalichman³, Cheng-Shiun Leu¹, Moira Kalichman³, Claude Ann Mellins¹

HIV Center, NYS Psychiatric Institute & Columbia University¹; ICAP, Columbia Mailman School of Public Health ²; University of Connecticut³
Conflict of Interest Disclosure

No real or apparent conflicts of interest to report.
Medication adherence is challenging in HIV+ adolescents and young adults (AYAs).

- Due to a host of developmental, social, individual and contextual reasons.
- This is a developmental stage marked by increased autonomy, as well as, as experimentation with health and sexual risk-taking behaviors.

Poor adherence in HIV+ AYAs is a public health issue.

- Sub-optimal adherence places AYAs at risk for poor health outcomes.
- HIV+ AYAs constitute the only age group for which morality rates have increased (UNICEF, 2014).
- In the United States, more than 94% of HIV+ AYAs are not virally suppressed (Zanoni & Mayer, 2014).
- As AYAs engage in sexual risk-taking behaviors, they become more likely to transmit HIV to others.
Accurate assessments of adherence are important for both research and clinical care.

Current methods of assessment may not accurately reflect adherence.
- Self-report
- Electronic monitoring devices

Thus, there is a need for an **objective** and **less costly method of assessment** to fully understand and address adherence problems in this population.
Unannounced telephone pill counts have been shown to be a feasible, objective, and less costly.

Kalichman (2008) validated this method with primarily middle-aged adults ($M=46$ years old).

This study is the first that we know of to implement unannounced telephone pill counts among perinatally HIV-infected (PHIV+) AYAs (18-27 years old).
1. Can unannounced telephone pill counts be implemented with PHIV+ AYAs?
   a) Do AYAs agree to participate and complete the protocol?
   b) Are there differences in participant characteristics between the youth who are retained in the protocol and those who are not?
   c) What are the challenges of implementing this procedure with AYAs?

2. How adherent are PHIV+ AYAs to their medication regimens?

3. What else can we learn about AYA medication-taking behaviors through this procedure?
CASAH

CASAH (Child and Adolescent Self-Awareness and Health; R01-MH069133, PI: Claude Ann Mellins, Ph.D.)
- NIMH-funded longitudinal study following PHIV+ and HIV-exposed but uninfected youth
- Youth originally recruited when they were 9-16 years old from four major medical centers in NYC
- Youth complete a psychosocial and mental health diagnostic interview every 12-18 months

CASAH is now in its 14th year
- Youth are now completing a 5th follow-up assessment
- Youth are 18+ years old
- Majority are Black/African-American and/or Hispanic/Latino reflecting epidemiology of the epidemic in US
PILL COUNT METHODS

Eligibility:

- Enrolled in CASAH
- Prescribed ARV medication
- Have access to a phone
- Must not be enrolled in Directly Observed Therapy (DOT)
At the conclusion of the psychosocial interview, youth completes a pill count training session with a phone assessor.

- How to read pharmacy label information
- How to count their pills
- Medication taking habits questionnaire

Viral load (VL) data are abstracted from the participant’s medical chart for the 12 months prior to the interview.
PILL COUNT METHODS

Materials
A phone assessor contacted the participant within a week of training for a **baseline pill count call (call #1)**.

An additional pill count call was made approximately a month later.

An adherence score was calculated using the information gathered during the current and previous call.

For our protocol, two additional monthly calls were made, resulting in three adherence scores.
RESULTS:
SAMPLE CHARACTERISTICS

114 PHIV+ AYAs completed the 5th CASAH follow-up interview (as of 12/18/15)

- 12 were ineligible [i.e. not on medication (N=4), no phone access (N=2), and enrolled DOT (N=6)]
- 102 were eligible to enroll in the sub-study

Demographics (N=102)

- 57% female
- 18-27 years old (M= 22.81 years, SD= 2.62)
- 69% Black/African-American
RESULTS:
PARTICIPATION and RETENTION

$N=102$ eligible;  
$N=6$ youth refused participation

Participant retention

<table>
<thead>
<tr>
<th>Eligible</th>
<th>Enrolled</th>
<th>Baseline call (Score 1)</th>
<th>Call # 2 (Score 1)</th>
<th>Call # 3 (Score 2)</th>
<th>Call # 4 (Score 3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>102</td>
<td>96</td>
<td>77</td>
<td>69</td>
<td>59</td>
<td>56</td>
</tr>
</tbody>
</table>
### RESULTS:
**DIFFERENCES IN PARTICIPATION**

<table>
<thead>
<tr>
<th></th>
<th>Participants with at least one adherence score (N=69)</th>
<th>Eligible participants with NO adherence scores (N=33)</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean (SD); range</td>
<td>Mean (SD); range</td>
<td></td>
</tr>
<tr>
<td>Black/African-American</td>
<td>42 (61%)</td>
<td>28 (85%)</td>
<td>.015</td>
</tr>
<tr>
<td>Not Black/African-American</td>
<td>27 (39%)</td>
<td>5 (15%)</td>
<td></td>
</tr>
<tr>
<td>Viral Load &gt;1000</td>
<td>15 (24%)</td>
<td>11 (48%)</td>
<td>.036</td>
</tr>
<tr>
<td>Viral Load ≤ 1000</td>
<td>47 (76%)</td>
<td>12 (52%)</td>
<td></td>
</tr>
</tbody>
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Variables not reaching significance:
- Gender
- Household composition
- Level of education
- Psychiatric and substance use disorders
Phone assessors called participants an average of 4 times before successfully completing a pill count call (Range= 1-14, SD= 2.53).

The average number of days between each call was 33 (Range= 28-46, SD= 3.40).
RESULTS: IMPLEMENTATION CHALLENGES

Challenges to completing a call identified by phone assessors:

- Financial instability
- Inconsistent phone service, housing
- Completing pill count with participant
- Irregular schedules
- Jobs with varying hours, not at home
- Privacy issues
- Not disclosed to roommates, children in the home
RESULTS: ADHERENCE

Average adherence score: 77% ($SD= 23.80\%$)

<table>
<thead>
<tr>
<th>N</th>
<th>Adherence score M (SD)</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participants with 3 adherence scores</td>
<td>56</td>
<td>79 (19.5)</td>
</tr>
<tr>
<td>Participants with 1 or 2 adherence scores</td>
<td>13</td>
<td>65 (23.3)</td>
</tr>
</tbody>
</table>
Calls provided important information on medication taking behaviors.

Multi-level barriers to adherence identified during the calls:

- **Structural barriers**: no health insurance, sub-optimal pharmacy services
- **Contextual barriers**: major life events, limited support systems
- **Individual barriers**: medication hoarding and disorganization, mental health problems
CONCLUSIONS

- Unannounced telephone pill counts can be a **feasible** method to measure adherence among PHIV+ AYAs.
  - 71% of enrolled participants contributed at least one adherence score
  - Only 58% were able to complete the entire protocol
- There were differences in participation by race and VL, but the majority of participant characteristics tested were not significant (i.e., gender, mental health).
- PHIV+ AYA adherence was **sub-optimal**.
- Average adherence of AYAs who contributed only 1-2 scores was significantly less than those who completed the entire protocol.
- A strength of the procedure is its ability to **identify challenges to adherence** in this population.
**Research:** The protocol needs to be modified to better engage HIV+ AYAs who were significantly less likely to participate in the protocol than those in Kalichman’s study.

- Incorporating feedback from our participants
- Provide study phones or phone minutes to participants

**Clinical:** Unannounced telephone pill counts may be helpful in helping healthcare workers identify:

- AYA patients who are struggling with adherence
  - Especially youth who do want to participate as non-participation might be a proxy for low adherence
- The barriers contributing to poor adherence
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