Comparison of daily reports and retrospective recall for eliciting drug injection partners

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Diaries rarely used in social network research (Fu, 2007), yet may be useful method, especially when:

- networks are large
- context or relation prevents observation
- forgetting is significant (recall data)
- temporal patterns are important

Circumstances favoring diaries often present in infectious disease epidemiology
Injection drug users (IDUs) at high risk for infection with blood-borne pathogens (contaminated equipment, other blood exposures)

We assessed:

- feasibility of daily reports and network elicitation via automated interviews (IVR)
- extent of forgetting in retrospective recall of drug injection partners
- effectiveness of recall cues
- reliability of retrospectively reported injection risk with particular partners
Sample

- 2 phase study in Seattle, March-May, 2008
  - phase 1: 2-week daily reporting of inj. episodes
    - 40 out-of-treatment participants from:
      - a prior study of HCV transmission in IDUs
      - referrals from other participants
  - phase 2: injection network ascertainment
    - phase 1 participants with high compliance and multiple recent partners (estimated)
    - usually months after phase 1
Procedure: Daily interviews

- 28 days
- participants given mobile phones w/ call restrictions
- 3-hour slots for calling in, 2 reminder calls
- increasing incentives for continued compliance
- recall period = since last interview (last 24 hours if missed prior interview)
- IVR with recorded voice
- content: whether injected, injection partners (first name/nickname/etc.), partner injection risk
  - filler questions to balance length if < 3 partners
- spoken responses allowed
- participants told to respond in private
- length ~ 5-7 minutes
Procedure: Follow-up interview

- completed within 24 hours of last daily interview
- IVR alone in private office
- recall period = “since you started the study”
- content: elicitation of partners (free recall, 5 location cues, network cues), injection risk with specific partners
- duration = 9-15 minutes
- interviewer-assisted unduplication of partners reported in daily interviews
Participants

14 started study
  • 2 dropped out for reasons unrelated to study
  • 1 completed daily and follow-up interviews, but reported no partners

11 included in analysis:
  • 88% men; median age = 38 (range = 23-51)
  • 64% white (others = black, Latino, mixed)
  • 82% high school graduates, 27% employed
  • 55% homeless
  • 73% ever incarcerated
  • 18% HIV+, 45% HCV+ (self-report)
  • primary drug: 55% heroin, 45% methamphetamine.
Daily interviews

number completed:
  • mean/median = 25 (of 28; 89%), range = 20-28

proportion of days with reported injection:
  • mean = 84%, median = 87%, range = 31-100%

proportion of injection days with 1+ injection partners:
  • mean = 67%, median = 63%, range = 17-100%
### Injection risk with partners reported in daily interviews

<table>
<thead>
<tr>
<th>Proportion of partners</th>
<th>Mean</th>
<th>Median</th>
<th>Range</th>
<th>% with 1+ risky partners</th>
</tr>
</thead>
<tbody>
<tr>
<td>Needle or syringe reuse</td>
<td>.17</td>
<td>.09</td>
<td>0-.50</td>
<td>55</td>
</tr>
<tr>
<td>Shared cooker, spoon, cotton, or rinse water</td>
<td>.55</td>
<td>.55</td>
<td>0-1.0</td>
<td>82</td>
</tr>
<tr>
<td>Any injection risk</td>
<td>.57</td>
<td>.55</td>
<td>0-1.0</td>
<td>91</td>
</tr>
</tbody>
</table>

Of 70 partners in aggregate:

- needle/syringe reuse with 9%
- shared cooker/spoon/cotton/rinse water with 53%
- any injection risk with 56%
Distribution of partners in daily interviews

- median reported on days with partners = 1 for all
- maximum in a day: median = 2, range = 1-5
- unique partners (cumulative over 28 days):
  - mean = 6.4, median = 7, range = 1-15
### Follow-up interview: Partners recalled by stage

<table>
<thead>
<tr>
<th>Measure</th>
<th>Mean</th>
<th>Median</th>
<th>Range</th>
<th>% responding to cues</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total elicited</td>
<td>5.1</td>
<td>5</td>
<td>1-11</td>
<td>---</td>
</tr>
<tr>
<td>Free recall</td>
<td>4.3</td>
<td>4</td>
<td>1-8</td>
<td>---</td>
</tr>
<tr>
<td>Recall cues</td>
<td>0.8</td>
<td>0</td>
<td>0-3</td>
<td>46</td>
</tr>
<tr>
<td>Location cues</td>
<td>0.4</td>
<td>0</td>
<td>0-2</td>
<td>23</td>
</tr>
<tr>
<td>Network cues</td>
<td>0.5</td>
<td>0</td>
<td>0-3</td>
<td>18</td>
</tr>
<tr>
<td>% increase</td>
<td>17</td>
<td>0</td>
<td>0-67</td>
<td>46</td>
</tr>
</tbody>
</table>

In aggregate, recall cues increased partners elicited by 19%
Follow-up: predicting responsiveness to recall cues

![Graph showing the relationship between the number of partners elicited by cues and the number of partners freely recalled. The correlation coefficient, r = 0.52, is indicated.]
Direct comparisons: daily interviews vs. follow-up

$\begin{align*}
\text{number of partners recalled at follow-up} \\
\text{number of partners reported in daily interviews (cumulative unique)}
\end{align*}$

$r = .66$

$\text{ICC} = .64$
Recall status at follow-up of partners reported in daily interviews (in aggregate)

- forgotten (43%)
- freely recalled (53%)
- cue-elicited (4%)

70 unique partners reported by 11 participants in daily interviews
Partnership correlates of recall in follow-up interview

- point biserial correlations computed for each participant with > 2 partners in daily reports, then summarized

<table>
<thead>
<tr>
<th>Variable</th>
<th>N</th>
<th>mean</th>
<th>Median</th>
<th>Range</th>
<th>% positive</th>
</tr>
</thead>
<tbody>
<tr>
<td>Risk</td>
<td>5</td>
<td>.10</td>
<td>.09</td>
<td>-.25 to .58</td>
<td>80</td>
</tr>
<tr>
<td>Recency</td>
<td>7</td>
<td>.66</td>
<td>.50</td>
<td>.21 to .86</td>
<td>100</td>
</tr>
<tr>
<td>Frequency</td>
<td>7</td>
<td>.25</td>
<td>.32</td>
<td>-.26 to .44</td>
<td>86</td>
</tr>
</tbody>
</table>

Of 30 forgotten partners (in aggregate), participants had:
- injected with 5 in last 7 days (+10 others in last 14 days)
- injected multiple times with 6
Those who recall the most, forget the most

$r = .51$
Partners recalled at follow-up but not reported in daily interviews

- 73% of participants reported such partners
- mean = 1.45, median = 1, range = 0-7
- 1 participant who reported 4 such partners may have intentionally underreported/misnamed partners in daily interviews
Overreporting of risk in partnerships or incomplete daily data?

Reported risk at follow-up (%)

- No (n=11), Yes (n=25) for any
- No (n=31), Yes (n=5) for needle/syringe
- No (n=12), Yes (n=24) for cooker/spoon/cotton/rinse water

Reported risk in daily interviews
Underreporting of injection risk in partnerships
Limitations

- small sample, likely unrepresentative of IDUs (biased toward the compliant)
- lack of direct reconciliation between daily reports and follow-up report
- 1+ participants' inconsistent naming of the same partners across daily reports – not responding in private
- small gaps in daily reports (the few missed interviews, time between last daily interview and follow-up)
- forgetting in daily reports?
Conclusions

- Diary studies of networks feasible with IVR in challenging circumstances
  - Require unduplication of reported contacts
  - Disadvantages – cost, other limitations
- IVR as interview mode in network research
- Replication of prior research
  - Forgetting substantial (short recall period)
  - Recall cues effective (6th study), even by IVR
- Unreliability in reported partnership risk
  - Elicit injection partners, not needle-sharing partners!