Using Cell Phones to Monitor & Evaluate Behavior Change Through Community Health Clubs in South Africa

Authors: J. Rosenfeld & J. Waterkeyn
Presented by: Jason Rosenfeld, MPH

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2.4 billion users worldwide in 2006
41% living in developing countries
152 million users in Africa in 2006 alone\textsuperscript{11}
Hygiene Behavior Change: Data Collection Tools

- **Paper-Based Surveys**
  - Measurement error: skip patterns and sloppy entry
  - Data cleaning and entry errors

- **Personal Digital Assistants**
  - Technologically advanced
  - Expensive *Cellular Phones*
  - Simple, readily available technology
  - Use to date in research is limited
What is Mobile Researcher?

- Allows you to conduct surveys on a mobile phone.
- Surveys are assigned to your phone for you to conduct.
- Each conducted survey is stored on your phone until it can be uploaded.
- Once it has been uploaded, it is removed from your phone.
Answer each question

- Each survey consists of many questions, presented one at a time.

This is the question – you either answer this or ask the respondent

This is where the response goes – depending on the type of question

Press the Left selection key to access Options – you can go back or quit the survey

Once you have entered a response press the Right selection key to continue
Mobile Researcher Platform

The Research Console:
web-based portal centralizing all research activities

• Custom defined surveys
• Deploy in multiple languages
• Unlimited studies & surveys
• Real-time management & analyses

The Cellular Phone:
commercially available with Java and web-browser

• Uses common cell phone applications
• Multiple surveys assigned
• Surveys follow user defined logic
• Research conducted without network coverage
CHC HH Observations

This survey is live - any changes will take effect immediately.

Today
No interactions

Yesterday
No interactions

Responses in last 30 days

Top 5 Researchers by Responses

- Buyirwe M. W. 1.
- Nambah D. W. 2.
- Gidye M. W. 3.
- Nsamwalo P. W. 5.
Hygiene Behavior Change

• Diarrheal incidences can be reduced dramatically when combined with hygiene behavior change monitoring

Few rigorous studies asserting the power of health promotion to achieve hygiene behavior change

• Limited time and resources to implement effective monitoring and evaluation schemes

However...

cost-effective and sustainable approach to inducing measurable hygiene behavior change
Hygiene Behavior Change: Measurement

Direct vs. Indirect Measurement of Diarrhea

- **Direct**: difficult to measure slight changes induced by an intervention\(^9\)
  - Incidence, respondent bias and recall

- **Indirect**: diarrhea can be reduced if the 5 F’s of Fecal-Oral diarrhea transmission are blocked\(^{10}\)
  - Via observable, proxy indicators

Examples of observable proxy indicators in CHCs:
- Ask to wash your own hands
Community Monitoring of Hygiene Behavior Change: The CHC Approach

• M&E is integrated from the very beginning

- Formative Research
- Syllabus & Materials
- Membership Card
- Household Inventory

• Membership Card
  – Measures attendance and completion of weekly homework
  – Self-monitoring and ownership of data apart from implementing NGO or organization

• Household Inventory
  – Measures proxy and priority indicators identified through formative research
  – Measured by direct observation
## Membership Card

<table>
<thead>
<tr>
<th>NO.</th>
<th>TOPIC</th>
<th>DATE</th>
<th>SIGNATURE</th>
<th>RECOMMENDED PRACTICES</th>
<th>COMPLETE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Personal Hygiene</td>
<td></td>
<td></td>
<td>1. Clean clothes/bedding</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Skin Disease</td>
<td></td>
<td></td>
<td>2. No skin diseases in the home</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Treatment of Diarrhoea</td>
<td></td>
<td></td>
<td>3. Know how to make SSS</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Diarrhoea Transmission</td>
<td></td>
<td></td>
<td>4. Soap available in the home</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Diarrhoea through fingers</td>
<td></td>
<td></td>
<td>5. Wash hands with soap</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Handwashing with soap</td>
<td></td>
<td></td>
<td>6. Pouring water for handwashing</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>When to wash hands</td>
<td></td>
<td></td>
<td>7. Handwashing Song</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Hand Washing facility</td>
<td></td>
<td></td>
<td>8. Handwashing Facility</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Water collection</td>
<td></td>
<td></td>
<td>9. Clean Water Source</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Drinking Practices</td>
<td></td>
<td></td>
<td>10. Jug/ladle/ 2 cup system</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Diarrhoea through water</td>
<td></td>
<td></td>
<td>11. Covered drinking water container</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Water Management</td>
<td></td>
<td></td>
<td>12. Water Management Committee</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Diarrhoea through flies</td>
<td></td>
<td></td>
<td>13. Safe Garbage Disposal</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Diarrhoea through food</td>
<td></td>
<td></td>
<td>14. Safe Food Storage</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Diarrhoea through fruit</td>
<td></td>
<td></td>
<td>15. Pot Rack / good storage</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>The Good Food Chain</td>
<td></td>
<td></td>
<td>16. Good food song</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>Roundworms</td>
<td></td>
<td></td>
<td>17. Clean short nails</td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>Thread worms</td>
<td></td>
<td></td>
<td>18. No worms in children</td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>Defecation Practices</td>
<td></td>
<td></td>
<td>19. Safe sanitation method (ZOD)</td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>Sanitation Options</td>
<td></td>
<td></td>
<td>20. Clean maintained toilet</td>
<td></td>
</tr>
<tr>
<td>22</td>
<td>Solid Waste</td>
<td></td>
<td></td>
<td>22. No litter around house</td>
<td></td>
</tr>
<tr>
<td>23</td>
<td>Rat control</td>
<td></td>
<td></td>
<td>23. Vector Control</td>
<td></td>
</tr>
<tr>
<td>24</td>
<td>Solid Waste Management</td>
<td></td>
<td></td>
<td>24. Rubbish pit/black bags</td>
<td></td>
</tr>
</tbody>
</table>
A Case for the Mobile Researcher: Health Clubs in Zimbabwe

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Before CHC (%)</th>
<th>After CHC (%)</th>
<th>Difference (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Refuse pit</td>
<td>24</td>
<td>96</td>
<td>72</td>
</tr>
<tr>
<td>2 Pot rack for drying dishes</td>
<td>68</td>
<td>97</td>
<td>29</td>
</tr>
<tr>
<td>3 Hand washing facility</td>
<td>10</td>
<td>91</td>
<td>81</td>
</tr>
<tr>
<td>4 Protected water source</td>
<td>49</td>
<td>87</td>
<td>38</td>
</tr>
<tr>
<td>5 Covered drinking water</td>
<td>63</td>
<td>97</td>
<td>33</td>
</tr>
<tr>
<td>6 Ladle for taking drinking water</td>
<td>14</td>
<td>86</td>
<td>72</td>
</tr>
<tr>
<td>7 No sharing of cups</td>
<td>26</td>
<td>94</td>
<td>68</td>
</tr>
<tr>
<td>8 Knowledge of SSS</td>
<td>65</td>
<td>92</td>
<td>27</td>
</tr>
<tr>
<td>9 Clean and used VIP latrine</td>
<td>37</td>
<td>55</td>
<td>17</td>
</tr>
<tr>
<td>10 Badza stand for cat sanitation</td>
<td>1</td>
<td>45</td>
<td>48</td>
</tr>
<tr>
<td>11 Bathroom</td>
<td>21</td>
<td>82</td>
<td>61</td>
</tr>
<tr>
<td><strong>Average</strong></td>
<td><strong>34.36</strong></td>
<td><strong>83.82</strong></td>
<td><strong>49.64</strong></td>
</tr>
</tbody>
</table>

- Data collected and ready, but staff unable to collect
- Donor threatened to remove support due to late reports
- Avoidable outcome
Monitoring & Evaluation with the Mobile Researcher: A South African Experience

- Department for Water Affairs and Forestry’s Integrated Water Resource Management (IWRM) Project

- In-Depth Case Studies
  - 3 purposefully selected CHC villages
  - Trained Facilitators use the Household Interview via Mobile Researcher
  - GIS Mapping

- Monthly Monitoring
  - All registered CHC Members visited on a monthly basis
  - Trained Facilitators conduct Household Inventory via Mobile Researcher
  - Cluster Leaders and Facilitators monitor Homework and Attendance
Baseline Data: Household Interview & Inventory

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Yes</th>
</tr>
</thead>
<tbody>
<tr>
<td>HW Facility</td>
<td>28%</td>
</tr>
<tr>
<td>HW Soap</td>
<td>31%</td>
</tr>
<tr>
<td>Zero Open Defecation</td>
<td>69%</td>
</tr>
<tr>
<td>Safe Water Source</td>
<td>16%</td>
</tr>
<tr>
<td>Safe Water Storage</td>
<td>69%</td>
</tr>
<tr>
<td>Ladle to Fetch Water</td>
<td>73%</td>
</tr>
<tr>
<td>Pot Rack</td>
<td>62%</td>
</tr>
<tr>
<td>Safe Food Storage</td>
<td>70%</td>
</tr>
</tbody>
</table>

Household Interview: Case Studies

Household Inventory: Monthly Monitoring
Comparison of M&E Plans

• Original Zimbabwe CHC project (2001) vs. current South Africa CHC project (2008/2009)
  – 1,125 surveys across 3 sites vs. 650 surveys across 4 sites
  – Paper surveys vs. Mobile Researcher

• Operational Challenges
  – Time
  – Data Integrity
  – Enumerator Safety

• Comparative Inputs
  – Zimbabwe: total cost of £26,600; per survey cost of £23.6
  – If Mobile Researcher had been used in Zimbabwe:
    • Total cost = R50,000 (£3,333), with 36% taken up in the cost of the technology
Conclusions

• Mobile Researcher: ideal tool for project M&E
  – Successfully tested in Kenya, Zambia and Nigeria

• Combine with tool like Household Inventory that allows communities to ‘own’ their own data
  – Empowering and assures more sustainable behavior change

• New abilities to conduct effective M&E should enable more rigorous research into health outcomes
  – Assist in increasing the overall assistance to countries aiming to achieve MDGs
References


12. Unpublished data collected by Africa AHEAD