Making mHealth solutions count in developing countries amidst the looming challenges

World Vision Uganda
Joel Nsumba & Geoffrey Babughirana
## ICT4D mHealth – mHealth for AIM-H Catchment in WVU

### Uganda Map

<table>
<thead>
<tr>
<th>Specs</th>
<th>Kabale</th>
<th>Busia</th>
</tr>
</thead>
<tbody>
<tr>
<td>Distance from capital</td>
<td>480</td>
<td>230</td>
</tr>
<tr>
<td>Sub counties</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>ADPs</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Parishes</td>
<td>13</td>
<td>16</td>
</tr>
<tr>
<td>Villages</td>
<td>162</td>
<td>137</td>
</tr>
<tr>
<td>VHTs/CHWs</td>
<td>576</td>
<td>314</td>
</tr>
<tr>
<td>Health Centers</td>
<td>18</td>
<td>8</td>
</tr>
<tr>
<td>Total Population</td>
<td>51,334</td>
<td>61,234</td>
</tr>
</tbody>
</table>
ICT4D mHealth – Approach: Timed and Targeted Counselling

- BCC approach at individual/household level
- Integrates MNCH, HIV, Nutrition and WASH
- VHTs/CHWs take lead
- Delivers key messages (7-11) when needed; “timely”
- Focus on the 1000 days – the critical window of opportunity.

mHealth Specifics

- Technology: MoTECH Suite
- Mobile Phone: Nokia 206
- MNO: MTN, Airtel
ICT4D mHealth – Mobile Health application Logic

Health facility

Routine MNCH data collection and reporting

Community

Registered Pregnant women and children below 2 years are followed in the community by VHTs

Reminders, Postpartum child and parent, pregnancy and delivery visits.

Referral System

- Automated notification of referral center during emergencies
- Ambulance Notification

mHealth application system flow

Web Based User’s interface

Real time data visualization, report generation and progress monitoring and integration into national eHealth
ICT4D mHealth—Phased implementation

Phase 1: System design and development
- Functional MTS system application customized for WVU.

Phase 2: Set up of mhealth infrastructure in 24 facilities and 3 ADPs.
- Capacity building and equipping of VHTs, WV Staff and DHTs.
- Training of Health care workers at the health facilities.
- Evidence generation

Phase 3: Integration into the national eHealth strategy
- Ongoing system Monitoring
- Discussion with the MoH on the integration into the DHMIS.
- Evaluation and scale-up assessment
ICT4D mHealth – Our Expectations

**Expected Goal:**
- To empower and strengthen Community Health Systems for positive MNCH outcomes

**Expected Outcomes:**
- 1) Improved knowledge and skills of community health workers to use mobile technologies to deliver BCC messages and collect data.
- 2) Strengthened health Information management systems through implementation of Mobile Health solution at the Facility level.
- 3) Functional DHIS systems that provides real time data to inform decision making and facilitate service delivery.
VHTs submission of data to the CommCarehq servers over the two years

<table>
<thead>
<tr>
<th></th>
<th>2014</th>
<th></th>
<th>2015</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Submitted</td>
<td></td>
<td>Submitted</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Jan-Mar</td>
<td></td>
<td>Jan-Mar</td>
</tr>
<tr>
<td></td>
<td></td>
<td>368</td>
<td></td>
<td>368</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Apr-Jun</td>
<td></td>
<td>Jul-Sept</td>
</tr>
<tr>
<td></td>
<td></td>
<td>350</td>
<td></td>
<td>332</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Jul-Sept</td>
<td></td>
<td>Oct-Dec</td>
</tr>
<tr>
<td></td>
<td></td>
<td>332</td>
<td></td>
<td>564</td>
</tr>
</tbody>
</table>
ICT4D mHealth – Celebrated Results

Mobile ttC household visitation registration for women and children
ICT4D mHealth – Celebrated Results

Summary of indicators tracked for children 1-2 years for Jan-2014 – Sept 2015
## ICT4D mHealth – Celebrated Results

Improved DHIS2 Report Submissions

### Kabale Kitunga HC II GOVT - Jul to Dec 2015

<table>
<thead>
<tr>
<th>Name</th>
<th>Actual Reports</th>
<th>Expected Reports</th>
<th>Percent</th>
<th>Reports On Time</th>
<th>Percent On Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>HMIS 105:1</td>
<td>6</td>
<td>6</td>
<td>100</td>
<td>6</td>
<td>100</td>
</tr>
<tr>
<td>HMIS 105:7-8</td>
<td>6</td>
<td>6</td>
<td>100</td>
<td>6</td>
<td>100</td>
</tr>
<tr>
<td>HMIS 105:2.8-2.12</td>
<td>6</td>
<td>6</td>
<td>100</td>
<td>6</td>
<td>100</td>
</tr>
<tr>
<td>HMIS 105:2.1-2.7</td>
<td>6</td>
<td>6</td>
<td>100</td>
<td>6</td>
<td>100</td>
</tr>
<tr>
<td>HMIS 105:3-4</td>
<td>6</td>
<td>6</td>
<td>100</td>
<td>6</td>
<td>100</td>
</tr>
<tr>
<td>HMIS 105:5-6</td>
<td>6</td>
<td>6</td>
<td>100</td>
<td>6</td>
<td>100</td>
</tr>
<tr>
<td>HMIS 033b: Disease Surveillance</td>
<td>17</td>
<td>26</td>
<td>65.4</td>
<td>17</td>
<td>65.4</td>
</tr>
</tbody>
</table>

### Kabale Kitunga HC II GOVT - Jul to Dec 2014

<table>
<thead>
<tr>
<th>Name</th>
<th>Actual Reports</th>
<th>Expected Reports</th>
<th>Percent</th>
<th>Reports On Time</th>
<th>Percent On Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>HMIS 105:1</td>
<td>6</td>
<td>6</td>
<td>100</td>
<td>4</td>
<td>66.7</td>
</tr>
<tr>
<td>HMIS 105:7-8</td>
<td>6</td>
<td>6</td>
<td>100</td>
<td>4</td>
<td>66.7</td>
</tr>
<tr>
<td>HMIS 105:2.8-2.12</td>
<td>4</td>
<td>6</td>
<td>100</td>
<td>5</td>
<td>125.0</td>
</tr>
<tr>
<td>HMIS 105:2.1-2.7</td>
<td>6</td>
<td>6</td>
<td>100</td>
<td>5</td>
<td>83.3</td>
</tr>
<tr>
<td>HMIS 105:3-4</td>
<td>6</td>
<td>6</td>
<td>100</td>
<td>4</td>
<td>66.7</td>
</tr>
<tr>
<td>HMIS 105:5-6</td>
<td>5</td>
<td>6</td>
<td>100</td>
<td>3</td>
<td>60.0</td>
</tr>
<tr>
<td>HMIS 033b: Disease Surveillance</td>
<td>20</td>
<td>26</td>
<td>76.9</td>
<td>20</td>
<td>76.9</td>
</tr>
</tbody>
</table>
ICT4D mHealth – Key enabling factors

- Capacity built for 887 VHTs to collect data using the CommCare application
- CommCare-DHIS2 interface.
- 24 health facilities facilitated to access MTS-interface and DHIS2 interface,
- 36 Health center staff trained and equipped with skills on the use of MTS and DHIS2 (Commcare-DHIS2 interface) applications
Key challenges and Obstacles

Fig. 1: Reasons for non submission of ttC case forms

- No data: 16%
- Application Error: 18%
- Unwillingness: 7%
- Poor internet connection: 24%
- Poor telecom network: 14%
- Poor battery: 21%
challenges and Obstacles

- High costs of running the intervention (internet, mobile phone maintenance, training, supervision and mentorship)
- Lack of real-time interface for key stakeholders to ably keep track CHW performance, close referrals and health service delivery decision making and reporting
- Network Signal strength and Connectivity challenges in the project catchment areas
Innovations to address challenges and gaps
Cost effective web based internet bundles
distributor
Innovations to address challenges and gaps
Cost effective web based internet bundles distributor
Innovations to address challenges and gaps
Cost effective web based internet bundles distributor
Innovations to address challenges and gaps
CommCare-DHIS2 web based interface

Data is programatically retrieved from the CommCareHQ servers and uploaded into the integrated database.

User logs into the DHIS2 and downloads the reports from DHIS2.

User manually uploads the data downloaded from DHIS2, into the integrated database due to lack of a standard API.

INTEGRATED DATABASE

Reports specific to the data from the Mhealth application can be viewed after analysis and consolidation by the system.

Reports pertaining to the comparison of the data from the Mhealth application and the DHIS2 can be viewed after analysis and consolidation by the system.
Innovations to address challenges and gaps
CommCare-DHIS2 web based interface
Innovations to address challenges -
Other innovations

• Mapping and Identification of Network spots within catchment areas
• Encourage frequent interactions between VHT coordinators, Facility in-charges and the DHT
• Mentoring of Health Facility staff on CommCare-DHIS2.
• Provision of internet enabled computers at all participating Health Facilities
Stakeholder engagement

Local

District Health Teams

International

Private Donors

WV United States

Funding

ICT4D CONFERENCE
Local leverage for strategic and systematic Integration for sustainability

- WVU is a technical content contributor to the National CHMS through ttC
- Systems integration efforts are underway
- Alignment of future interventions to the national e-Health policy guidelines
- Engagements with local MNOs for sustainability
Key Recommendations for scaling

• Developing a multiple MNO SimCard module to eliminate network related issues
• In-house management of the internet data bundle distribution to save costs on any future intervention.
• Adopt an interactive web based interface for VHTs with facility teams and World Vision
• Development of a National Office ICT4D strategic plan for smooth implementation
• Embed RDL and VDL approaches in mHealth