Can Improved Data Systems Help Moms Have Healthier Babies?

A Case Study in Interoperability and Crowdsourcing

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• Discuss how MomConnect is improving access, coverage, and quality of ANC for women in South Africa

• Discuss how data system interoperability and crowdsourcing are improving information systems and access to data for improved data-informed decision making
Integration of data systems

“. . . the property that allows for the unrestricted sharing of resources between different systems. This can refer to the ability to share data between different components or machines, both via software and hardware, or it can be defined as the exchange of information and resources between different computers through local area networks (LANs) or wide area networks (WANs). Broadly speaking, interoperability is the ability of two or more components or systems to exchange information and to use the information that has been exchanged.”
Chocolate Association of America
Take out your phones
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Crowdsourcing:
“... an online, distributed problem-solving and production model that leverages the collective intelligence of online communities for specific purposes.”
“...an approach to accomplishing a task by opening it up to broad sections of the public. Innovation tournaments, paying online participants for categorizing images, and seeking feedback from a specific target group are examples of crowdsourcing. What ties these approaches together is that the task/request is outsourced with little restriction on who might participate.”
MomConnect

South African National Department of Health (NDOH) initiative to support maternal health through the use of cell phone-based technologies

Overall aims:
1. Record all pregnancies in the public health system as early as possible
2. Send targeted health promotion messages to pregnant women
3. Provide pregnant women with mechanism to provide feedback – i.e., crowdsourcing
Why cell phones?

- Successfully used to improve MCH outcomes by multiple projects in several countries
- High levels of cell phone access
- Potential to accelerate proven value
MomConnect

- Launched on 21 August 2014 at KT Motubatse Clinic, Soshanguve (Tshwane District, Gauteng Province)

- Launched by Minister of Health, US Ambassador, and other partners

- Over 500,000 women registered in first year
MomConnect registration process
How does it work?

1. Nurse confirms pregnancy at clinic.
2. Nurse helps user register on their phone via USSD.
3. User answers questions about pregnancy.
4. User is registered.
5. Pregnancy is registered in the National Database.
6. User receives weekly SMS messages to inform them of their pregnancy and baby health up to their child is 1 year old.
Data points collected:

- **Phone number**—automatically collected if using own phone; manually entered if using health care worker’s phone
- **Preferred facility code**—nationally approved 6 digit code that is used to uniquely identify a health facility
- **Estimated due date**
- **ID number** (or passport number)—in the event of no ID or passport being available the user must enter their date of birth
- **Preferred language**—out of 11 official languages

Collected via USSD
What is USSD?

Unstructured Supplementary Service Data
Why USSD?

- **Familiarity**: Most South Africans use USSD regularly to top up airtime or send a Please Call Me.
- **Multiple Options**: USSD allows the user to choose and navigate from a menu of options.
- **Any phone can access**: USSD works on every phone, from the most basic to the most advanced. If you can get a call or send an SMS, you can use USSD.
- **No airtime needed**: Negotiations with the Mobile Network Operators means the service will be free for the user. A user can access with no airtime.
Please enter the clinic code for the facility where this pregnancy is being registered.

1234AE

Please Select the month when the baby is due:
1. Apr
2. May
3. Jun
4. Jul
5. Aug
6. Sept
7. Oct
8. Nov
9. Dec
Interoperability

• Designed to be interoperable with other systems
  o Compliant with South African Health Normative Standards Framework for eHealth (HNSF) and eHealth Architecture

• Information sent to a health information exchange and stored
  o Will be linked with the National Patient Master Index
  o Other links being actively explored e.g., TIER.Net (HIV information database), National Health Laboratories System (NHLS)
What data does MomConnect collect?

- Preferred language / 11
- Estimated due date
- ID # / passport # / DOB
- # of registrations
- Location - facility number
- Service quality ratings
- Complaints / compliments / specific pregnancy related questions – Helpdesk
Service quality survey

- Most critical areas for patient-centered care
  - staff were friendly and helpful
  - waiting times: duration and acceptability
  - the facility was clean
  - privacy was respected by staff
- 5 separate questions
Q2. How do you feel about the time you had to wait at the facility?
   - Very satisfied | Satisfied | Not satisfied | Very unsatisfied
Q3. How long did you wait to be helped at the clinic?
   - Less than an hour | Between 1 and 3 hours | More than 4 hours | All day
Service rating data

- Data automatically uploaded to DHIS2
- Monthly and yearly summary reports for provinces, districts, sub districts, and facilities
  - Number of service ratings during the time period
  - Response rate ( # number service ratings / # registrations)
  - Service rating data by question
Service rating data – by question

Allows for comparison between facilities / provinces / districts regardless of the total number of service ratings received.

<table>
<thead>
<tr>
<th>Response</th>
<th>#</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very unsatisfied</td>
<td>1</td>
<td>10</td>
</tr>
<tr>
<td>Unsatisfied</td>
<td>2</td>
<td>20</td>
</tr>
<tr>
<td>Satisfied</td>
<td>3</td>
<td>30</td>
</tr>
<tr>
<td>Very satisfied</td>
<td>4</td>
<td>40</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>10</td>
<td>100</td>
</tr>
</tbody>
</table>
Service rating data:
Average facility service rating
October 2014 – September 2015
Survey response rates

- First six months ~ 10% of women answered the survey
- A follow-up message was added
- Currently ~25% of women registering responded to the survey
- 78,916 service ratings received 10/14 – 09/15
Survey challenges

- 78% of users who started the survey completed it.
- Average of 1.5 user sessions to complete the survey:
  - Implies many users experience time outs.
- Positioning of the answers may affect the ratings.
- Potential bias in the responses due to respondent self-selection.
Helpdesk

• Send a compliment/complaint about services
• Complaint must be resolved within 10 days
• Approximately 6x as many compliments as complaints
• Ask specific pregnancy-related questions
• Stock answer response
Examples of complaints and resolutions

- Lack of iron supplements in clinics reported by multiple users
- Long waiting times and lack of information on when patient will be seen
- No new complaints verifies resolution
Future uses of MomConnect data

- Week of pregnancy at 1st visit - develop interventions to encourage women to seek ANC before 20 weeks
- Woman’s age – understand magnitude of youth pregnancy
- FAQs - identify topics and locations for health education
- Language - inform district health promotion programs
Conclusion

- Crowdsourced data can be an effective tool to improve service quality
- Access to ‘real time’ data improves services
- USSD & SMS data collection enables national scale data collection
- Interoperability, standardizing MFLs, improving national patient master index all strengthen HIS and foster data-informed decision making
MEASURE Evaluation SIFSA is implemented by the Carolina Population Center at the University of North Carolina at Chapel Hill in partnership with John Snow, Inc., ICF International, Management Sciences for Health, Palladium, and Tulane University. For more information, visit https://www.cpc.unc.edu/measure/sifsa and www.measureevaluation.org

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