mHealth Experiences: from Rigorous Research to Transformative Scale

B RAMKRISHNAN, CARE India
ICT4D Conference 2017, Hyderabad
CARE has been working in India for over 65 years, focusing on alleviating poverty and social injustice.
Member of CARE International Confederation working in 94 countries.
Empowerment of women and girls from poor and marginalised communities leading to improvement in their lives.
Comprehensive programmes in education, health, livelihoods and disaster preparedness and response.
How did it evolve?

1996
Received flagship government health sector project - Integrated Nutrition Health Project (INHP) with a vision to create relevant formats to collect service delivery information.

2002
Built up INHP II and INHP III to introduce data driven supportive supervision indicators in manually calculable and compliable formats.

2010
TOSA foundation funded an ICT intervention to evaluate mobile based forms within a small group of FLWs.

2011
Proposed data driven approach for better service delivery as one of the solution levers for Integrated Family Health Initiative (IFHI).

2012 - 2015
Launched CCS to leverage ICTs to increase data driven approaches for better service delivery through FLWs with a vision to conduct a Randomized Control Trial (RCT).
To improve health and nutrition outcomes in Bihar BMGF signed a memorandum of understanding with Government of Bihar in 2010. The program was called Ananya.

CARE India is the lead consortium partners to improvise the quality of care in maternal, newborn, child health and nutrition (MNCHN)

One of the core solution levers of CARE’s strategy to leverage Information Communication Technology (ICT) to increase data driven based decision making in the public health system

CARE conceptualized to conduct Randomized Controlled Trial (RCT) on the usage of ICT/mobile based jobaids to improvise the quality/frequency of interactions between beneficiaries and Frontline Worker (FLW) as an innovation in 2012

For better evidence, a minimum two year study period and large number of FLWs was proposed

To track all the events of pregnant mother and child up to 6 year’s of age through FLWs, CARE adopted concept of Continuum of Care Services
CORE SOLUTION LEVER: LEVERAGE ICT

Mobile Landscaping among FLWs in the context of Shaping Demands & Practices for Maternal & Child Health

Mobile ownership

- 86% of the FLWs had owned their handset for more than a year; although majority had been using mobile phones since 2 years
- 23%
- 77%

Year: 2011

MoH – National Health Mission (NHM)

MWCD – Integrated Child Development Services (ICDS)
Our key questions

- Is mobile technology **usable and effective** in the hands of AWW and ASHA during continuum of care
- Can we establish the use of mobile technology as **job-aids** for AWW and ASHAs Frontline Workers (FLWs) and help improve Service Delivery
- Can real-time data help effective **Supportive Supervision**

**Objective: To examine usefulness of technology aids for better nutrition and health outcomes**
OUR INNOVATION WAS DONE IN ONE OF THE MOST REMOTE DISTRICTS OF BIHAR COVERING 334K POPULATION DURING 2012-14

STATE: BIHAR
DISTRICT: SAHARSA

Innovation Coordinates (Saharsa Districts)

<table>
<thead>
<tr>
<th>Blocks</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health Subcentres</td>
<td>70 (35 Treatment, 35 Control)</td>
</tr>
<tr>
<td>Treatment Population Coverage</td>
<td>3,34,470</td>
</tr>
<tr>
<td>Treatment CHWs</td>
<td>569 (#ASHA: 240, #AWW: 272, #ANM: 45, # Lady Supervisor: 12)</td>
</tr>
</tbody>
</table>

Innovation Timeline:
- Jan ’12: Formative work
- Mar ’12: Baseline survey
- Jun ’12: Launched at 35 sub-centres
- Aug ’12: Training completed
- Nov ’13: AWW application launched
- Feb ’13: Supervisory application launched
- Aug ’14: Endline survey completed
THIS IS A HANDSET BASED APPLICATION ENABLING PLANNING AND TRACKING FLW-CLIENT INTERACTIONS

Interaction between CHW and client between pregnancy and first 24 months

- Automatic Scheduling of Home Visits
- Prompts Structured Key Messages
- Suggest a Video to Reinforce
- Remind to Collect Relevant Data

Data Driven Dialogs Between CHWs and Supervisors
## CCS - CONTENTS AND FEATURES

<table>
<thead>
<tr>
<th>Name-based tracking</th>
<th>Tools</th>
</tr>
</thead>
<tbody>
<tr>
<td>Registration (Pregnant Woman, Children up to 6 years)</td>
<td>Communication aids: context-specific audio/video clips</td>
</tr>
<tr>
<td>Services (antenatal care, postnatal care, exclusive breastfeeding and initiation of</td>
<td>Date arithmetic tools (EDD, BMI and Referral)</td>
</tr>
<tr>
<td>complementary feeding, immunization, family planning)</td>
<td></td>
</tr>
<tr>
<td>Events (birth, death, migration)</td>
<td></td>
</tr>
<tr>
<td>Complications &amp; High Risk Pregnancy Tracking</td>
<td></td>
</tr>
<tr>
<td>Growth Monitoring up to 6 years of child’s age as per WHO standards</td>
<td></td>
</tr>
<tr>
<td>Home visit scheduler with guided questions in a structural manner to cover 19</td>
<td></td>
</tr>
<tr>
<td>necessary home visits in the continuum of care (-9 to +24 months)</td>
<td></td>
</tr>
<tr>
<td>Due List (on-demand mobile based)</td>
<td></td>
</tr>
<tr>
<td>Nutritional Components (THR, Spot Feeding &amp; Preschool Activities)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Real-time supervisory review module</th>
<th>Functionality features</th>
</tr>
</thead>
<tbody>
<tr>
<td>Application for ANM and LS</td>
<td>Hindi, menu-driven, with audio prompt</td>
</tr>
<tr>
<td>ANM Vaccination Planner for VHND</td>
<td>Seamless integration of guided interactions and recording of data</td>
</tr>
<tr>
<td>Drill down to case level, helps supervisors to monitor</td>
<td>Synchronized between ASHA, AWW and ANM, LS</td>
</tr>
<tr>
<td></td>
<td>Convergence capability between MoHFW and MWCD at gross root level</td>
</tr>
<tr>
<td></td>
<td>All data ‘uploaded’ when connected – sync with MCTS feasible</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Phones</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic phones (J2ME)</td>
<td>Simple and easy to use interface design for low-literate frontline workers</td>
</tr>
<tr>
<td>Smart phones (Android)</td>
<td></td>
</tr>
</tbody>
</table>
EVALUATION OF THE CCS USING RCT DESIGN BY AN INDEPENDENT AGENCY (MATHEMATICA POLICY RESEARCH)

Baseline

- 70 sub-centers were randomly assigned (35 Treatment and 35 Control)

Process study

- Visited 2 of 4 blocks (8 sub-centers)
- 23 CHWs
- CARE Program staff

Endline

- 1553 women who gave birth last year
- 572 ASHAs/AWWs, 79 ANMs, 13 LSs
- Handful of in-depth qualitative interviews

- Treatment and control sub-centers identical, except that treatment receives CCS
- Counterfactual is the basic Ananya program, including paper-based home visit planner
- Endline provides impact of CCS relative to existing Ananya interventions
RIGOROUS MEASUREMENT SHOWED THAT CHWS REGISTERING, REACHING AND TRACKING PREGNANT WOMEN AND INFANTS, IMPROVED QUANTITY OF HOME VISITS AS WELL AS CRITICAL BEHAVIORS

<table>
<thead>
<tr>
<th></th>
<th>Control mean</th>
<th>Adjusted treatment mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Home Visit in Final trimester</td>
<td>42</td>
<td>52**</td>
</tr>
<tr>
<td>Home Visit within 24 hours of delivery</td>
<td>39</td>
<td>43</td>
</tr>
<tr>
<td>Home Visit within 1 week of delivery</td>
<td>60</td>
<td>73***</td>
</tr>
<tr>
<td>Family Planning Home Visit</td>
<td>27</td>
<td>29</td>
</tr>
<tr>
<td>Home Visit in Final trimester</td>
<td>42</td>
<td>52**</td>
</tr>
<tr>
<td>Home Visit within 24 hours of delivery</td>
<td>39</td>
<td>43</td>
</tr>
<tr>
<td>Home Visit within 1 week of delivery</td>
<td>60</td>
<td>73***</td>
</tr>
<tr>
<td>Family Planning Home Visit</td>
<td>27</td>
<td>29</td>
</tr>
<tr>
<td>At least 3 ANC visits</td>
<td>28.8</td>
<td>49.8***</td>
</tr>
<tr>
<td>EIBF</td>
<td>62.2</td>
<td>75.9***</td>
</tr>
<tr>
<td>STSC</td>
<td>57.8</td>
<td>65.2*</td>
</tr>
<tr>
<td>Delayed bathing by atleast 2 days</td>
<td>47.6</td>
<td>45.7</td>
</tr>
<tr>
<td>Use of any modern method of contraception</td>
<td>26.2</td>
<td>36.9***</td>
</tr>
</tbody>
</table>

Source: CCS Endline; */**/*** Significantly different from zero at the .10/.05/.01 level, two-tailed test; Sample sizes are 1,527 to 1,553 (all women) 1,045 (children 5 months or older).
CCS INNOVATION IN ACTION
The evidence has informed the decision of Government of India to adapt and scale, beginning with 100,000+ FLWs as Integrated Child Development Services Common Application Software (ICDS-CAS).

From 559 FLWs (CCS) to 100,000+ FLWs (CAS)
CARE INDIA AS CENTRAL TRAINING AGENCY

- To train 100,000 + FLWs in CAS application across eight focus states (selective districts/blocks) in a cascading training model (Andhra Pradesh, Bihar, Chhattisgarh, Jharkhand, Madhya Pradesh, Maharashtra, Rajasthan and Utter Pradesh)
- To monitor the quality of further trainings
- To ensure effective usage of the CAS application at frontline worker level
TRANSFORMATIVE SCALE IN ACTION
Name: Laxmi Sharma  
Age: 60 years  
Anganwadi Worker  
Centre Code: 23419070110  
State: Madhya Pradesh  
District: Murena  
Project: Murena Rural  
Village: Dhannerampur

- I am from Dhannerampur  
- More than 22 years of working experience as AWW  
- I never used touch mobile  
- I am liking it  
- I am using it for household survey entry  
- I love to learn it
ICT-RTM DASHBOARD OF ICDS
BENEFICIARY INFORMATION

Makdon 04 [23435090310]

Beneficiary Information

- Name: छात्र
- Gender: Male
- Caste: ST
- Minority: No
- Disabled: No
- Resident: Yes
- Current Age (Months): 5
- Mother: संदीप बाई
- Not Fully Immunized

Growth Monitoring

- Weight For Age (Months)

![Weight For Age Graph](image-url)
LEARNINGS

- Collaboration with FLWs from the application design phase itself
- Don’t make manual forms into digital forms
- mHealth apps: Keep it very simple
- Leverage the local trainers
- Plan additional handholding strategies for the slow learners and low literates
- Have fulltime technology support staffs to handle issues faced by FLWs
- Create an environment of continued monitoring within the workflows
- Boost the data driven decision making at every level in the value chain
CHALLENGES

- Training and handholding of a slow learner
- Attitudes of some frontline workers
- Network/Bandwidth issues in hard to reach areas
- Charging of phones in the rural setups
- 10% of phones always under repair after year one
- Phone’s life (3 years)
- Uninstall of the application by extended family members
“I feel proud using this with women in my village. It increases my value in their eyes.” ~ Ms. Sabnam Kumari

About prompts (guided questions): “I don’t need to remember everything. It (the mobile) guides me what to discuss.” ~ Ms. Neetu Devi

About Job-aid: “showing videos to clients make our job easier. They also believe us more – when I show videos in the mobile.” ~ Ms. Lucy Kumari

“If we provide the proper 3Ts (technology, tools and training) to a frontline workers, the fourth T (transformation) in her catchment happens automatically.” – Ramkrishnan Balakrishnan, ICT Expert, CARE
FOCUSBING ON KEY SOCIAL DETERMINANTS OF HEALTH

Nutrition

21.34. Direct nutrition interventions can account for reduction in stunting by only 20% with the balance attributable to indirect interventions such as access to water, sanitation and hygiene (WASH)². The governance structure to administer an effective nutrition program must reflect a multi-sectoral approach. The PM Nutrition Council set up to address malnutrition in 200 high-burden districts convened in 2010 but there was no follow up. A National Nutrition Mission (NNM) should be launched with representation from other relevant Ministries. The PM Nutrition Council should be expanded to include a few Chief Ministers by rotation. For monitoring and evaluation, a Technical Secretariat/Policy Coordination Unit is proposed at NITI Aayog, which shall service the PM Nutrition Council. Analogous to the structure at the Central level headed by the top political executive, we also need to push for State Nutrition Councils.

21.35. There is an urgent need for a full-fledged and web-enabled Nutrition Information System. It should be synergised with the Health Management Information System and the Mother and Child Tracking System. It should also incorporate data from Swachh Bharat. The WCD Ministry in Bihar has already piloted a software application. This application needs to be replicated across the country.

21.36. For optimal nutritional outcomes, coordination among different frontline workers (ASHA, ANM and AWW) is essential. One of the mechanisms to motivate them could be through the provision of joint performance-based initiatives.

21.37. Convergence of nutrition initiatives is important from two perspectives - geographic and programmatic.
THANKS