Program impact pathways in mHealth: implications for monitoring and evaluation

Purnima Menon, PhD
Senior Research Fellow
International Food Policy Research Institute
South Asia Office, New Delhi
From your (tech) idea to a better world...the road is long
A black box lies between an object of implementation and its impact on an outcome. Both in intervention design and in monitoring and evaluation, it helps to try and open this black box.
What are some things inside the black box that we should consider as we work our way from our idea to impact on health/nutrition?

1. Objects of Implementation
- Nutrition-specific interventions
- Nutrition-sensitive interventions
- National multisectoral agendas
- NGO projects (usually sub-national)
- Implementation innovations

2. Implementing Organization(s)
- Frontline workers, supervisors and managers

3. Enabling Environment:
- Government, funders, civil society, private sector

4. Individuals, households and communities

5. Implementation Processes
- Initiation, Planning & Design, Implementation, Sustaining

Adapted from Damschroeder et al., *Implementation Science* 4:50, 2009

Nutrition behaviors

Nutritional Status

Slide credit: D. Pelletier and the Society for Implementation Science in Nutrition
What are program impact pathways? How can you develop them?

**What are program impact pathways?**
- Based on the concept of *program theory*
  - Operational theory [how do things get done/implemented]
  - Impact theory [how do those things have an impact on an outcome]
- Detail-oriented, recognize complexity, temporality, multiple actors, articulate pathways and assumptions
- We recommend that implementers and evaluators develop PIPs before re-casting them as logic models, log frames and other “theories of change”

**How can you develop them?**
- Review program manuals and materials
- Interviews and meetings with implementation teams
- Box and arrow diagramming, with temporality and notes on assumptions
Example of a program impact pathway of **one component** of Alive & Thrive in Bangladesh
The ICDS-CAS case: the intervention & the context

The mHealth intervention
• ICDS Common Application software – three components
  • Phone
  • Software application
  • Dashboard at multiple levels
• Multiple goals/outcomes
  • Data capture
  • Data use
  • Implementation of services

Context: India’s ICDS program (complex!)
Program Impact Pathway: Implementation platforms
Program Impact Pathway: Implementation processes - Monitoring and Supervision

- Central level ICDS officials monitor activities of AWWs and provide feedback.
- State level ICDS officials monitor activities of AWWs and provide feedback.
- DPOs monitor activities of AWWs and provide feedback.
- CDPOs monitor activities of AWWs and provide feedback.
- Supervisors monitor AWWs using the sector management module.
- Supervisors contact AWWs.
- Supervisors complete AWC visit forms.
- Supervisors complete beneficiary feedback forms.
- Feedback to AWWs.
- AWWs receive performance updates via SMS.
- AWWs improve service delivery.
- AWWs use the app.
Program Impact Pathway: Implementation processes
# Theory of Change/ Logic Framework

<table>
<thead>
<tr>
<th>Inputs</th>
<th>Outputs</th>
<th>Short-term outcomes (12 months)</th>
<th>Long-term outcomes (3-5 years)</th>
<th>Long-term impact</th>
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| • Government agency support (including MWCD, National Informatics Center)  
• Funding and other resources  
• ICDS-CAS intervention development  
  o Use cases and features designed and developed  
  o Device procurement  
• Training  
  o Personnel  
  o Guides and manuals  
  o Schedule  
• Implementation plan | • Functional CAS Application – 10 of 11 registers digitized and automated  
• Reporting dashboards developed with the beneficiary drill-down capability  
• # AWWs trained  
• # AWWs’ Supervisors trained  
• # CDPOs and DPOs trained  
• # of devices delivered  
• Help desk established | • Increased motivation and job-satisfaction of AWWs  
• AWW/LS effectiveness and efficiency is improved  
  o Better ability to reach high-need beneficiaries in timely manner  
  o Daily activities are tackled and supported  
  o LSs are better able to manage AWWs  
• Beneficiaries are tracked by name  
• Beneficiary knowledge and practices are improved  
  o Increased birth preparedness  
  o Increased awareness of appropriate child feeding practices  
• Beneficiary growth monitoring is more regularly tracked  
• Home visit scheduling is automated  
  o More regular home visits  
  o Better life-stage appropriate messaging and counselling  
• Real-time dashboard and reporting systems are utilized | Improved Child Health  
• Stunting  
• Anemia  
• Weight-for-age  
• Height-for-age  
• Weight-for-height  
• Height/length  
Improved Maternal Health  
• Family planning practices adopted  
• Better birth spacing  
• Reduction in maternal anemia  
Early Childhood Education  
• Improvements in cognitive abilities | • Reduction in maternal mortality  
• Reduction in neonatal and child mortality  
• Improved prematurity rates  
• Improved educational achievement  
• Improved fertility plans  
• Health systems strengthened |

### Primary outcomes
- Adequate number or frequency of home visits by the AWW
- Appropriate extent or level of counselling by the AWW

### Aspirational outcomes
- Not expected to be achieved in time frame of the evaluation but will be measured from learning perspective.

### Not measured
Process evaluation questions

- **Q1.** How do upstream, contextual factors, and processes affect the roll-out of the ICT-RTM intervention?
  - Procurement, training processes, state's and trainers’ perception of introducing a new technology, change management etc.

- **Q2.** How do mid-stream and contextual factors affect the use of the ICT-RTM application by the ICDS frontline workers (AWW, LS)?
  - Work context, ease of use, content knowledge, perceived role of the technology in the context of the larger ICDS program role, motivation, monitoring systems, technology support and perceived supervision and feedback

- **Q3.** How do client populations feel services have changed since introduction of the technology?
  - Perception of CDPOs, DPOs, and ICDS directors about using ICT-RTM for supervision and decision-making capabilities; Use of dashboards and timely data access
Timelines for CAS evaluation (Oct 2016 – Mar 2019) aligned with temporality of intervention roll-out

- **Proposal (UCB, UCSF)**
  - Oct - Dec 2016
  - Document review & TOC

- **Collab with IFPRI**
  - Oct - Dec 2016
  - Baseline survey tools and design document

- **Baseline survey initiated**
  - May 2017

- **Baseline survey completed**
  - August 2017

- **Baseline results shared**
  - Dec 2017

- **IE qualitative study**
  - Mar-Apr 2018

- **Technology evaluation**
  - Mar-Apr 2018

- **Time Use Study**
  - Mar-Apr 2018

- **Cost analysis initiated**
  - Jun 2018

- **Endline survey initiated (Bihar)**
  - Oct 2018

- **Endline survey (MP)**
  - Jan - Feb 2019

- **Observe LS training for pilot blocks (MP)**
  - Mar

- **Observe AWW training (MP & Bihar)**
  - May

- **Observe LS training (MP & Bihar)**
  - Jul

- **Observe AWW training (MP & Bihar)**
  - Sep

- **Phone survey: AWWs in MP**
  - Dec

- **PE Survey (MP)**
  - Jan

- **PE Survey (Bihar)**
  - Feb-Mar

- **PE Partners Meeting**
  - Aug

- **Endline survey initiated (Bihar)**
  - Nov 2018

- **Endline survey (MP)**
  - Jan - Feb 2019

- **Endline survey initiated (Bihar)**
  - Dec

- **Endline survey (MP)**
  - Dec

- **PE upstream interviews**
  - Oct 2018

- **PE Partners Meeting**
  - May

- **Phone survey**
  - Aug

- **Endline survey initiated (Bihar)**
  - Nov 2018

- **Endline survey (MP)**
  - Jan - Feb 2019
Activity time!

• Choose your favorite mHealth intervention
  • An app? A component of an app?
  • A phone?
  • SMS messages?

• Think of the context you will embed this into
  • Frontline worker outreach program
  • Health facility
  • Client platform

• Think of the ultimate outcome you want to change
  • Data use
  • Service delivery
  • Household behaviors
  • Growth
  • Development
  • Mortality!

• Now let’s the dots!