

Mobile Technology for Community Health (MoTeCH) in Ghana

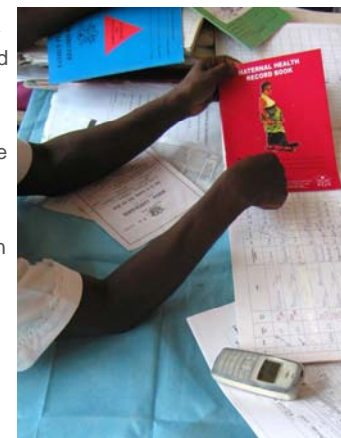
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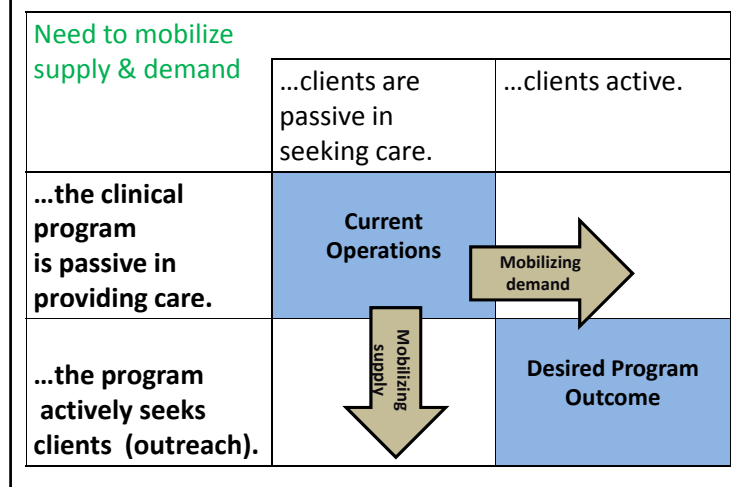



MoTeCH Ghana Overview

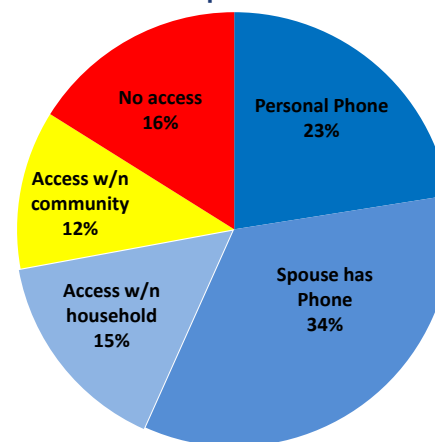
- Objective: Develop mobile-phone-based health information technology and test the proposition that improved health information improves health outcomes.
- Seeking to increase the quantity and quality of antenatal and neonatal care while building a long-term software platform
- Focus: 1) Information delivered to “pregnant parents” and 2) Information relevant to the delivery of health services by “Community Health Officers” (CHOs) – part of the “Community-based Health Planning and Services” (CHPS) Initiative
- Location: Kassena-Nankana West district in the Upper East region of Ghana

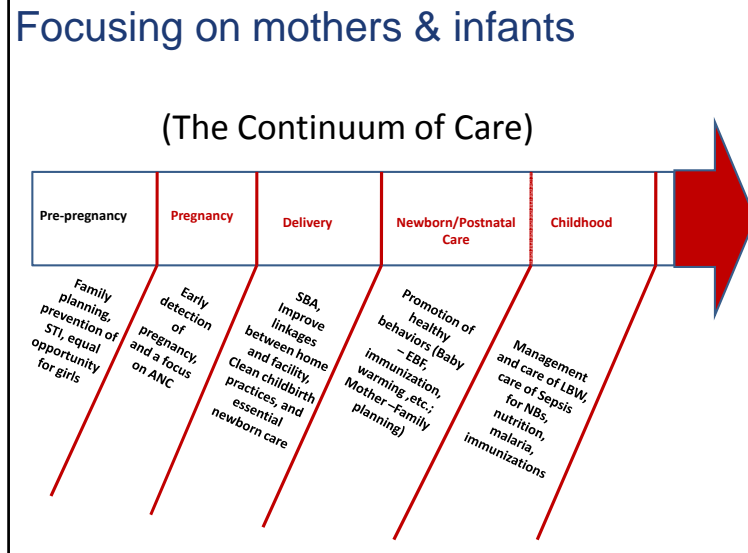


The Problem



Phone access among women in MoTeCH pilot district





Project Components

System for community health workers

- Develop simplified paper registers for clinical information
- Enter patient encounters using simple mobile phones
- Generate monthly reports
- Alerts and reminders for clients that need care



System for "Pregnant Parents"

- Regular educational messages sent based on estimated due date
- Choose to receive SMS (text) or voice messages, in Kassim, Nankam, or English
- Frequency and time of day chosen when registering
- Informative and actionable

MoTeCH Components: Simplified Registers



- Capture child health, maternal health, illness/injury, family planning, and community outreach health service encounter data
- Previously nurses' registers were ad hoc, with content varying between facilities
- Provide standardized platform for recording health data
- Simplified Registers have received very positive feedback from nurses thus far. Nurses say they have made their documentation and reporting work much easier

Mobile Phone System

Data Entry using mobile phones



- Health workers enter health service data into simple forms on inexpensive (\$40) mobile phones by health workers
- Using this data, MoTeCH can generate a majority of nurses' monthly reports
- Aim: to reduce the amount of time nurses spend on reporting, to allow them more time to provide health services
- Presently, MoTeCH reports are compared to manually-aggregated reports for accuracy

Mobile Phone System

- MoTeCH generates alerts and reminders for health workers and clients according to care schedules set by the Ghana Health Service
- Clients receive reminders when they or their child are due for specific types of care (prenatal care, child immunizations)
- Nurses will receive reminders of their clients that have defaulted for particular types of care, so they can follow-up during home visiting
- Clients and nurses also receive alerts for crucial postnatal visits

Automatic Reminders and Reports

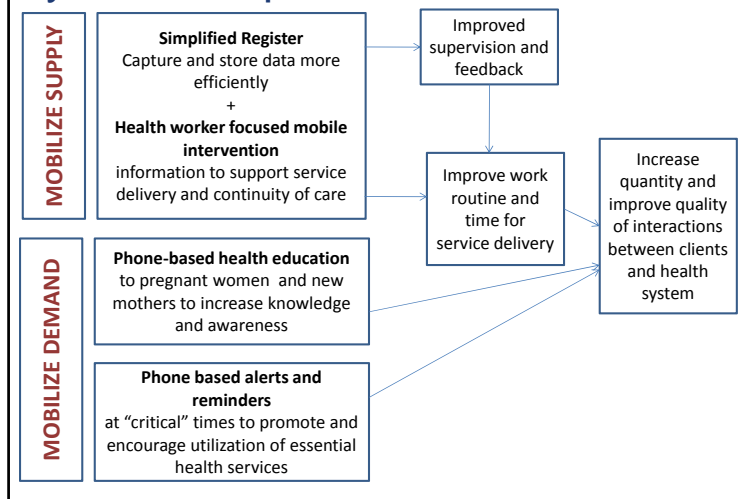


Mobile Midwife

- Health information messaging service for pregnant parents
- Messages delivered once a week; day and time, language, and SMS/voice selected by the client
- Messages specific to the client's gestational age
- Clients can also flash MoTeCH, and will be called back with their message
- Recently extended to include the first year of the child's life



Systemic Impact



Early Lessons Learned: Clients

- Serious lack of basic maternal/newborn health information available in the field
- Most households have a mobile, but mother does not always have access to it
- SMS is not widely used in rural areas
- Many people cannot read/understand English
- Women without personal phones have difficulty using others' phones to access their messages
- Cultural myths and traditional beliefs strongly effect prenatal and birth choices; messages should target beliefs that are detrimental to health

Early Lessons Learned: Health Workers

- Workers are inundated with data collection and reporting requirements
- Adding data entry via mobile phones negatively effects time use, need for a larger time savings
- Input and buy-in from various levels of the local health system is critical
- More economical in the long run to provide java enabled handsets to nurses



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MoTeCH Software Platform

- Versatile platform – not specific to maternal/child care
- Based on OpenMRS – adds “Rules Engine” and components to process inbound/outbound text and voice messages
- OpenSource development model (other organizations can use, adapt, and contribute)
- Next project: ARV compliance in India for HIV/AIDS patients
- Integration of “Diagnostics Engine”

Measuring Impact

- Evaluation research conducted in collaboration with the Navrongo Health Research Centre
- Assess changes in health seeking behavior and coverage of essential maternal and child health indicators
- Qualitative research with MoTeCH clients, health workers, and sub-district/district supervisors
- Operations research studies to assess the impact of MoTeCH on health worker routines and information quality
- Future: randomized control trial (RCT) to determine the effect of MoTeCH on client health service utilization

Operations Research: Time-Use Study

- Direct observation of health workers, to determine the proportion of their time spent on various activities
- Activity grouped into 4 categories:
 1. Direct patient care (treatment, procedures, health education)
 2. Indirect patient care (documentation and reporting, arranging referral, etc.)
 3. Operations and staff development (supervision, training, stocking supplies)
 4. Personal time (breaks, personal errands, etc.)
- Data collection before and after the introduction of MoTeCH, to determine the impact of the simplified registers and mobile phone intervention on the proportions of time health workers spend in each activity category

Operations Research: Quality of Aggregated Data Study

- Aim: to determine the impact of the simplified registers and mobile phone data collection/aggregation on the quality of the monthly reports submitted by health workers
- Data quality = accuracy + completeness
- Method: Comparison between...
 1. Reports compiled by research fieldworkers using the raw data in health workers' registers
 2. Hand-written reports compiled by health workers
 3. Reports generated by MoTeCH using the data uploaded by health workers using a mobile phone
- Preliminary results: Baseline study found significant differences between #1 and #2 above; Follow-up study will seek to determine whether reports compiled manually by health workers or reports generated by MoTeCH are more accurate

RCT: Primary outcomes of interest

- Improve access to antenatal care
- Improve quality by increasing preventative treatment of malaria during pregnancy and tetanus toxoid immunization
- Increase the proportion of deliveries attended by a skilled attendant
- Increase the proportion of newborns seen by a health professional with 24 /48 hours post-delivery
- Increase knowledge and practice of essential home practices (early identification)
- Increase the proportion of children fully immunized

