MOBILE TECHNOLOGY FOR COMMUNITY HEALTH (MOTECH)

MoTeCH is an initiative of the Ghana Health Service (GHS) that reports to a Strategic Advisory Committee (SAC)MoTeCH partners include the Columbia University Mailman School of Public Health Heilbrunn Department of Population and Family Health, the Grameen Foundation, and the Navrongo Health Research Centre of the Ghana Health Service.

MoTeCH explores the potential for health service benefits of information technology. Little research has been done on the feasibility of utilizing mobile phone technology for reforming routine health information operations and improving community health care worker efficiency and health service effectiveness. Filling these critical knowledge gaps, the project will build upon promising healthcare reform efforts underway in Ghana. Further, it will test the promise of technology in reforming routine health information operations strengthening community-based health care services.

The project is working toward these goals by:

- Reviewing existing health information systems and assessing community health service information needs
- Developing a community service delivery system for testing mobile phone-based information systems for improving maternal, newborn, and early childhood care;
- Developing the district health management system software that is needed to accommodate mobile phone-transmitted service information;
- Evaluating the impact of mobile phone technology introduction on health service volume and delivery, and disseminating lessons learned about mobile phone applications to key stakeholders, policy makers, and health system managers so that, if effective, this type of data gathering can be replicated in similar settings.
- A national scaling up of a community-driven approach to health care services was launched by the Ghana Ministry of Health (GHS) in 2000 to reduce maternal and childhood mortality. Known as “CHPS” for the Community-based Health Planning and Services Initiative, the program relocates nurses from clinics to communities and mobilizes evidence-based strategies such as volunteerism and social support to enhance work processes and improve health outcomes.
- While CHPS works where it is implemented, the program has yet to achieve its full promise as a scaled up service system. Patient needs associated with pregnancy, delivery, and early infancy are not fully addressed, in part because information available to nurses and volunteers is inadequate for supporting home-based services to newborns. Currently, community-based health care workers spend vast amounts of time recording service encounters on patient cards and manually aggregating data for monthly reports, but this information is not used to enhance their daily work. The current system does not allow individual-level data to be used to guide clinical decision-making processes.

- While these problems are significant, they are not insurmountable. MoTeCH is testing whether the adaptation of existing mobile phone technology can help address these problems by significantly easing information capture and feedback for community-based health care workers, thereby improving their efficiency and effectiveness. In addition to data collection, MoTeCH is supporting information feedback capabilities, via alerts and reminders to community-based nurses and health information messages as well as personalized reminders to pregnant and new parents to increase utilization of health services
- The MoTeCH Initiative has piloted the simplified registers in two districts in the Upper East Region of Ghana, Kassena-Nankana District and Kassena-Nankana West District. The simplified registers were introduced in May, 2010. Beginning in July, 2010, the mobile phone component of MoTeCH was also piloted in Kassena-Nankana West District. With the two districts serving as the pilot districts of MoTeCH, the Builsa and the Bongo districts of the same region will serve as control zones for the evaluation of the project's impact on health worker routines
- At the start of 2011, the simplified registers and mobile phone component of MoTeCH will be replicated in Awutu Senya District in the Central Region. This exercise will evaluate the resources, manpower, and processes required to implement MoTeCH in another part of Ghana.

  The mobile phone currently used for this project is the Nokia 1680. The phone costs $35 dollar and is java enabled

- **The Software**
- MoTeCH utilizes a versatile platform that is not specific to maternal or child health care needs. MoTeCH uses OpenMRS, which is an open source medical record system as the basis of the medical records management. It has added "rules engine" and other components to process both inbound and outbound text and voice messages. By using an OpenSource development model, MoTeCH hopes to share its resources with other organizations who can adapt it to their own needs and contribute to its future expansion.
- MoTeCH is led by the Ghana Health Service, and if its technology is successful it will be used by the Service on a large scale. However its technology is being designed to be portable and replicable in other countries. By using low cost phones and "open source" software that will be freely available and flexible, Ghana's MoTeCH system may have widespread use elsewhere in Africa.

The MoTeCH program provides expecting and recent mothers with valuable resources including:

- The Mobile Midwife Initiative: Mobile Midwife is an innovative program which provides expecting or new mothers accurate health education and reminders of upcoming clinic checkups for themselves or their babies,
- The option to use both SMS or voices options,
- Several language choices including English, Kassim, Nankam,
- Alerts or notifications about upcoming appointments at the clinic. This in turn reduces the number of defaulters (patients overdue for checkups

- MoTeCH enables nurses to directly enter patient encounter information into their mobile phones. This information is then used in the generation of the nurses' monthly reports. This automatic generation of reports saves the nurses valuable time and improves report accuracy.
- The MoTeCH system's search component further allows nurses to search for patients' records through their mobile phone. On an individual level, a nurse can look for specific information on a patient, such as their due date or contact information. The system also allows for nurses to search information about groups of patients in their catchment area. An example of this would be a search for all defaulters (patients overdue for checkups) or a listing of women with upcoming due dates.
- Another valuable tool that MoTeCH provides nurses with is the alert or automated SMS functions. On a weekly basis nurses are notified via text messages on various patient updates such as new defaulters and both upcoming and recent deliveries. This can allow for nurses to work together more efficiently in planning ahead for upcoming deliveries of care.