MOBILE DEVICES- THE ESSENTIAL MEDICAL EQUIPMENT FOR THE FUTURE

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INTRODUCTION

The use of mobile devices in the health sector in Ghana has been increasing over the past five years. There are various pilot projects in Ghana where mobile devices are being used to

1. Collect health data.

2. Facilitate Telemedicine

3. Provide health messages to clients

4. Follow-up children and women to reduce drop-out from service

5. Manage logistics to reduce stock-outs

6. Conduct Health Surveys.

7. Conduct facilitative supervision

The mobile devices in use range from Pocket digital Assistants to simple phones and smart phones. Some of the initial pilots, using mobile devices, used pocket digital assistants, due to the low telephone network coverage. With the increase in availability of mobile communication service providers, phones of varying complexity have become the choice tool for use in various fields in health. Mobile technology holds immense potential for addressing health delivery bottlenecks. Indeed mobile devices will become as important as the stethoscope in the years ahead.

SITUATIONAL ANALYSIS

The projects that are currently ongoing in Ghana using mobile devices are found in various parts of the country, mostly covering just one district. All these projects have demonstrated that.

1. Mobile devices can be easily used at the lowest level of service delivery.

2. It is easy to train health workers to use it.

3. It can be a useful tool for following up clients and ensuring that drop-outs are minimized.

4. It can be used to generate reports.

SENE DISTRICT PDA Project[1]

The Pocket digital Assistant EPI data capture project in the Sene District was started in 2004 as a collaborative work between the Berekum Health Directorate initially and later Sene District Health Directorate and Access to Health an NGO from the United states .The **aim** of the project is to use information technology to improve service delivery at the lowest level of service delivery – Community Based Health Planning and Services (CHPS) compounds. It is one of the pioneer mobile health projects in Ghana and indeed the very first mobile project within the Ghana Health Service.

Objectives of the project are:
1. To use the appropriate technology available to reduce the time Community Health Officers spend to generate monthly report on services.
2. Generate more accurate reports that can be used to make decisions by the CHO and the DHMT.
3. Improve the follow up of children/mothers registered for services and reduce the drop-out rate for immunization and safe motherhood services

The project uses customized software created on a java platform and installed on the PDA to collect the individual clients' data. Recently the project has started using smart phones (Nokia E63) to run the application.
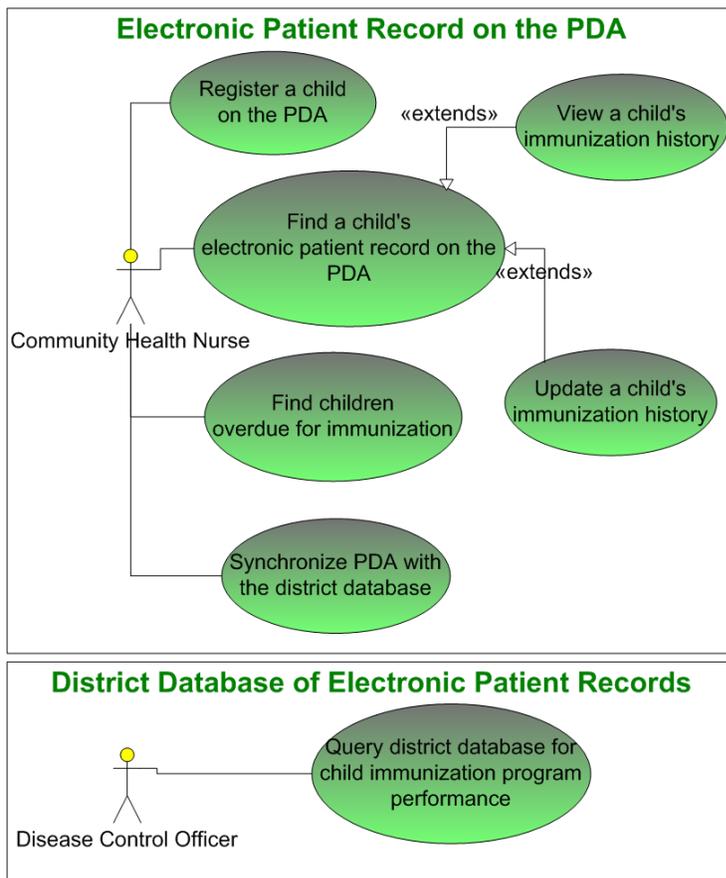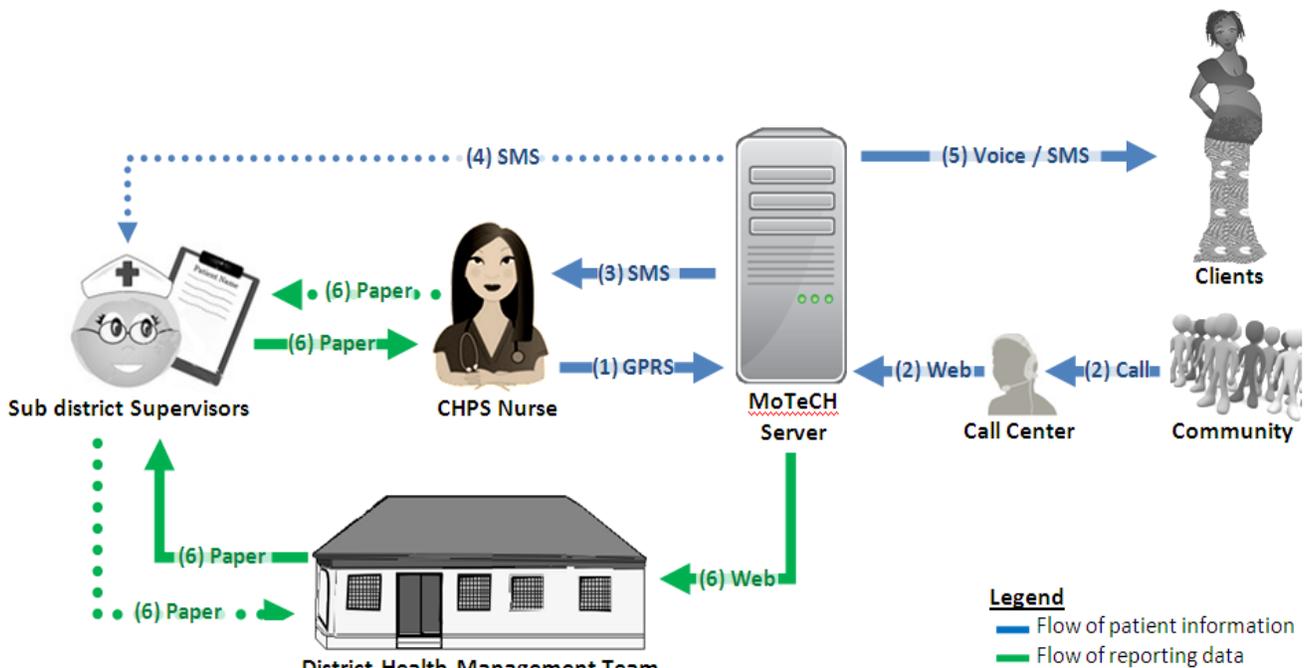
The project has reached an advance stage in collecting EPI data and use of EPI data collected to ensure that every registered child completes his/her immunization. The Safe motherhood aspect of data collection i.e. Antenatal care supervised delivery and postnatal care is still in the rudimentary phase.

Data is collected by the Community Health Officers at the CHPS compounds by registering each child who receives immunization service onto the PDA. Each child in the district is given a unique identity number. Every month this register is used to follow up children in the communities. This same data is synchronized with a computer at the District Health Directorate and an interface is used to generate the monthly immunization facility report as required by the EPI program. Safe motherhood reports can also be generated using the same interface. With support from Global Alliance for Vaccine Initiative (GAVI) the project has been extended to three more districts.

*MOBILE TECHNOLOGY FOR HEALTH (MoTeCH)* [2]

Mobile Technology for Community Health (MoTeCH) is an initiative of Grameen Foundation, Columbia University's Mailman School of Public Health, and Ghana Health Service. Funded by the Bill & Melinda Gates Foundation, the project aims to determine how best to use mobile phones to increase the quantity and quality of antenatal and neonatal care in rural Ghana.

MoTeCH has developed a system that uses low-cost GSM mobile phone technology to capture and transmit health data collected by community health workers during client encounters. The system uses a Java 2 Platform Micro Edition (J2ME) application to capture client data and store it on a mobile phone using the xForms standard. GPRS is then used to transfer this data from the phone to a central patient electronic medical records system (OpenMRS) which is stored on the MoTeCH server. The MoTeCH system analyses client data against proper care regimens to determine due dates for certain care events, and sends reminders to healthcare workers and clients for these events. The client data is also aggregated to automatically generate nurses' monthly reports. The diagram below shows the flow of client and reporting data in MoTeCH:

Sub district Supervisors

CHPS Nurse

MoTeCH Server

Call Center

Community

Clients

(4) SMS

(5) Voice / SMS

(3) SMS

(6) Paper

(6) Paper

(1) GPRS

(2) Web

(2) Call

(6) Paper

(6) Web

(6) Paper

District Health Management Team

Legend
Flow of patient information
Flow of reporting data

DISEASE CONTROL/WHO FACILITATIVE SUPERVISION TOOL USING THE PDA

The World Health Organization –Ghana supported the Disease Control Unit of the Ghana Health Service to develop and pilot a facilitative supervision tool using Epi-Surveyor. Epi Surveyor is a free tool to enable data collection on PDAs. It is "Word-processor easy": this eliminates technical barriers to creation of forms and installation on PDAs.
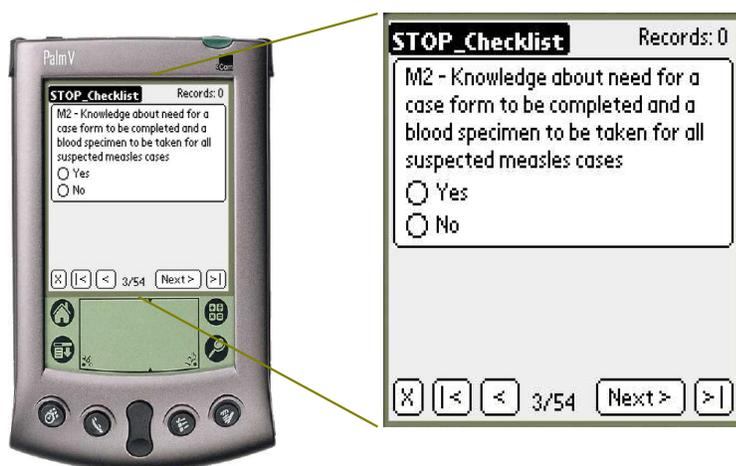
The objective was to facilitate the writing of supervisory reports and facilitate action that needs to be taken to support service delivery. Under the support, training and PDAs were provided for Regional Supervisors in all the ten regions. A Checklist for basic integrated supervision was created and adapted at National level. Quarterly supervision was supposed to be done by the Regions analyzed and reported to the National level. Experiences gathered from the implementation were that; there was quick mastery of the PDAs by national and some Regional supervisors. Useful and neat supervisory information were made available within a short period after supervision. It was very obvious that the PDA-based system added value to existing supervision and monitoring activities.

From the pilot use of the PDAs for supervision the following challenges were identified: Supervisors were not charging the units and synchronizing with PCs regularly. Capacity for troubleshooting is low; some had technical problems with synchronization with their computers. The quality and intensity of follow-up from National level was low including technical support and back-up.

There are plans to use the lessons learnt from this pilot and institutionalize the use of PDAs for integrated facilitative supervision within the service.

Millennium Village Project Telemedicine Project[3]

The Millennium Village project in Ghana is being implemented in Amansie West District in the Ashanti Region. Bonsaaso is part of the Millennium Villages project, in which villages are selected by

development agencies to receive assistance in reaching the Millennium Development Goals and lifting residents – in this case 30,000 – out of poverty.

Since 2006 development partners have built and improved Bonsaaso's schools and health clinics and provided an ambulance to the nearest district hospital in Tonto Krom, 12km away.

But even with the district's first ambulance maternal deaths did not decrease, as villagers could not communicate when they needed the vehicle.

Half of women in Ghana give birth at home with no skilled health worker present, while the lack of access to equipment and skilled health workers is a principal driver of childbirth deaths, according to UNICEF.

In 2006 mobile handset producer Ericsson teamed with mobile telecommunications firm Zain to install internet access and mobile phone coverage in the villages in 2006. They distributed free handsets to health workers and sold handsets to villagers for US$10 each.

With the phones, residents can call the Health facilities in case of obstetric emergencies so that ambulance can be dispatched to bring the client to the Hospital. The Hospital will be prepared adequately handle the emergency as they would have been informed on the phone about the condition of the pregnant woman.

The UN says maternal health overall has improved in Bonsaaso due to improved primary healthcare services. But it is clear that access to mobile phones has contributed significantly to the drop in deaths during childbirth.

USAID-DELIVER PROJECT[4]-

The USAID Deliver Project in collaboration with the President's Malaria Initiative and the National Malaria Control Program has since July 2009 promoted the use of Episurveyor, mobile phone survey software for collecting data on malaria logistics at the service points every quarter. The tool enables data on malaria logistics to be collected efficiently. The tool has improved the speed and accuracy of completing and disseminating quarterly malaria logistic reports from the peripheral facilities. This ensures that commodities for managing malaria like drugs and rapid diagnostic test kits are available at the service site.

Early Warning System- EWS- Focus Regions Project.

The USAID sponsored project which is working in Greater Accra Region, Western Region and Central Region is piloting a logistics management system using mobile phones in six districts in the target regions. The proposed system, Early Warning System (EWS) will facilitate data collection from SDPs over SMS through facility workers' personal mobile phones. These SMSes will then be sent to toll-free short code registered with each of the mobile phone networks in Ghana which will route the text messages to a local server that indexes and stores them in a database with a user-friendly web dashboard.

The main objectives of the system are to provide near real-time information on status of health commodities to decision-makers at all levels and reinforce the availability of all essential health commodities by improving the timeliness and accuracy of paper-based ordering and reporting from the SDPs.

The system will involve the regional medical stores, district directorates and health facilities. Stock on hand of selected FP, malaria and HIV commodities will be transmitted on a weekly

basis (Friday afternoons) in response to a prompt SMS. These data could then be analyzed over a period of the most recent 2-3 months to calculate the facilities months of stock and average monthly consumption and stock status

Following the submission of stock levels, the system will generate a reminder SMS to those facilities that have reached their minimum stock levels to place an order. If a facility reaches its re order or emergency order point, the system will generate a reminder SMS to the facility, and also to other key personnel, such as the District Pharmacist.

SMS for Life-Logistic Management Project

This is a project that is yet to be implemented. It is similar to the USAID|DELIVER project. It will be implemented in early part of 2011, as a pilot project in six districts in three Regions (Brong-Ahafo, Upper East and Greater Accra Region.)

SMS for Life is an SMS based methodology for the prevention of stock-outs at primary care level. The solution has been successfully piloted and is now in national scale-up in Tanzania. The project will bring weekly visibility to the four dose forms (by weight or age) of malaria medicines, RDT"s and amoxicillin stocks at the health facility level and display via internet, mobile phone and mapping technology. Reporting will be provided on actual stock levels and out of stock situations on a weekly basis per health facility. The overall purpose is to provide accurate and timely stock data transparency to support the elimination of malaria medicine stock-outs at the health facility level.
They propose to track five Malaria products and one non malaria medicine, amoxicillin.
The five malaria products are RDT's and four dosage forms (i.e. by weight or age group) of ACT's. They are proposing to use the health facility workers own personal phones and will provide support for all main mobile phone providers in Ghana. They will establish a short, free to the user, number for the system so that health workers can send messages without having the need for credit on their phone.

Conclusion

The rapid expansion of the use of mobile phones in Africa in general and Ghana in particular is phenomenal. In Ghana mobile phones are being used in the most remote villages. The ease of access to phones, the increase in mobile networks, the increasing capacity of the phones to carry different soft-wares, the low dependence of the phones on electricity, makes them, the most appropriate tool for collecting health data at the lowest level of service delivery, the CHPS compounds and transmitting the data to a central data collation site. It also holds huge promise as a tool to improve the referral system and provide professional advice to peripheral service providers as well as clients. Mobile devices with geographical positioning applications also hold promise as a disease surveillance tool for tracking disease outbreaks and response to epidemics. Managers can also use mobile devices to improve supervision and feedback as well as monitor medical commodities.

For doctors, medical assistants and nurse prescribers, mobile devices with the appropriate software can be used to improve diagnosis and prescriptions for clients. It can also be used to monitor and assist clients with chronic diseases to adhere to their medication.

There is the need for a clear policy direction by the Health Service on the use of mobile devices in health. There is the need to draw lessons from the various projects that are being implemented. It is envisaged that given the necessary consideration, mobile devices running relevant applications will become very important medical equipment- as important as the stethoscope.

Reference

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